



# Frequency Data Book



**anglia**

# anglia



## All about us and this book

Anglia is the largest privately owned electronic component distributor in the UK and supplies a very wide range of semiconductors, opto-electronics and interconnect products together with passive and electro-mechanical components.

Awarded the prestigious 'RoHS Trusted' Kitemark, Anglia supports OEM and EMS companies in every sector of electronics manufacturing. It aims to streamline logistics and reduce customers' transaction costs through services that include KAN-BAN, EDI and customer-dedicated inventory culminating in accurate, on-time delivery.

Technical support spans a sampling service, telephone advice from product specialists and on-site visits from field applications engineers. An in-house design team adds expert resources, helps reduce final product costs and accelerates development times.

This book encompasses frequency products from six key manufacturers:



Designed as an invaluable technical resource and insight into their ranges, the book details primary frequency lines and is complete with essential data. Information is also given on alternative characteristics that can be provided.



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A fine balance  
Electronic component distribution

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# MANUFACTURERS REPRESENTED

This book covers frequency products from the following manufacturers and available through **anglia**



Murata are a world leader in Ceramic based technology with a very wide offering of frequency control products including Resonators, Filters, Discriminators and SAW Filters. Murata's products are specified in a diverse range of applications from simple timing solutions in microcontroller based designs to high end applications such as GPS and Automotive.



Micro Crystal is a leading manufacturer of miniature Quartz Crystals and Oscillators with a reputation as an extremely flexible and reliable source of high quality frequency control products. Their high-precision photolithographic process enables sub-miniature tuning fork and high fundamental frequency AT-cut crystals to be produced covering a wide spectrum of frequencies from 10kHz to 250MHz.



NDK (Nihon Dempa Kogyo Co Ltd) is one of the leading worldwide manufacturers of frequency control products. Their product offering includes Crystals, Crystal Oscillators, Voltage Controlled Crystal Oscillators (VCXO), Temperature Compensated Crystal Oscillators (TCXO), Oven Controlled Crystal Oscillators (OCXO), Crystal Filters and SAW devices. The range also includes a wide variety of package sizes, with products specifically designed for high-end applications such as Bluetooth, Wireless LAN and Optical Networks.



IDT (Integrated Device Technology Inc.) specialises in the design and development of network and timing integrated circuit solutions for communications, consumer and computing applications. The IDT product range has been significantly strengthened by its recent merger with Integrated Circuit Systems (ICS) and the acquisition of the timing solutions businesses from Freescale Semiconductor. Among the company's latest portfolio of timing solutions are products for clock generation, distribution, recovery and jitter attenuation.



EPCOS, one of the leading European manufacturers, has a uniquely broad product portfolio of passive electronic components including a strong selection of Surface Acoustic Wave (SAW) resonators and filters. With a reputation for product excellence and quality, EPCOS products are specified in a wide range of high end applications including Automotive.



Hudson offer a cost effective series of frequency products including Ceramic Resonators, Quartz Crystals, Crystal Oscillators and Crystal Filters. A wide variety of frequencies is catered for covering a multitude of applications. The ranges are offered in traditional through hole and more advanced miniature SMD packages. With one of the widest selections of ceramic and quartz crystal products available, Anglia can offer designers the most effective solution for their requirements from the Hudson portfolio.

For the very latest information and news together with details of related products from other manufacturers, please visit our website:

**[www.anglia.com](http://www.anglia.com)**

# PRODUCT OVERVIEW



## Ceramic Resonators

Pages 6, 9 & 11-13

- Cost effective timing solution
- 375kHz to 70MHz frequencies
- Built-in load capacitor types
- SMD and through hole versions



## Ceramic Discriminators

Pages 91-94

- 455kHz and 10.7MHz
- High sensitivity and stability
- Adjustment free
- SMD and through hole versions



## Ceramic Filters

Pages 83-90

- 455kHz and 10.7MHz
- Choice of bandwidths
- High performance
- SMD and through hole versions



## Ceramic SAW Filters

Page 106

- G.P.S.
- Remote keyless entry (R.K.E.)
- R.F.I.D.
- SMD packages



## Quartz Crystals

Pages 17-19 & 43

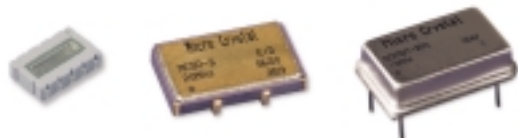
- 30kHz to 250MHz frequencies
- 32.768kHz watch crystals
- High reliability
- Wide temperature range
- Miniature SMD versions



## Oscillators

Pages 46-47 & 78-82

- 32.768kHz frequency
- Standard clock oscillators from 40 to 160MHz
- Oven controlled crystal oscillators (OCXO)
- 3.3V, 5V and 12V versions
- Real time clocks (RTC)
- SMD and through hole packages



# PRODUCT OVERVIEW



## Quartz Crystals

Pages 26-27, 32-35, 38-42 & 44-45

- 3.5MHz to 80MHz frequencies
- Automotive versions
- Wide temperature range
- Types for Bluetooth, WLAN & ZigBee
- SMD and through hole packages



## Oscillators

Pages 48-50, 52-58, 67-68 & 75-77

- Standard clock oscillators
- Application specific types
- Voltage controlled oscillators (VCXO)
- Temperature compensated oscillators (TCXO)
- SMD packages



## Monolithic Crystal Filters

Pages 95-96 & 99-100

- Choice of frequencies from 10.7 to 90MHz
- 2 or 4 pole versions
- SMD and through hole packages



## SAW Filters

Page 108

- Choice of 570 or 1000MHz
- 5GHz WLAN applications
- Miniature SMD packages



## Oscillators

Pages 59-66 & 70-74

- Femto clocks
- Voltage controlled oscillators (VCXO)
- Voltage controlled SAW oscillators (VCSO)
- SMD packages



## SAW Filters

Pages 109-110

- Choice of 70 or 140MHz
- IF filter applications
- Low loss, high performance
- Bandwidth option
- SMD packages





## SAW Resonators

Pages 101-105

- Choice of frequencies
- Single port
- R.K.E. and T.P.M.S. applications
- Miniature SMD packages



## SAW Filters

Pages 107

- Choice of frequencies
- R.K.E. and R.F.I.D. applications
- Miniature SMD packages



## HUDSON

### Ceramic Resonators

Pages 7-8, 10 & 14

- Cost effective timing solution
- 190kHz to 50MHz frequencies
- Built-in load capacitor types
- SMD and through hole versions



### Oscillators

Pages 51 & 69

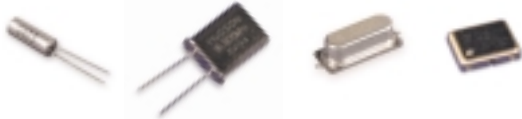
- Standard clock oscillators
- Voltage controlled oscillators (VCXO)
- 3.3V and 5V versions
- Small SMD packages



### Quartz Crystals

Pages 15-16, 20-25, 28-31 & 36-37

- 32.768kHz watch crystals
- 1.8MHz to 200MHz frequencies
- Choice of tolerance and temperature stability
- Cost effective
- SMD and through hole packages



### Monolithic Crystal Filters

Pages 97-98

- Choice of frequencies from 21.4 to 55.845MHz
- 2 or 4 pole versions
- Through hole packages

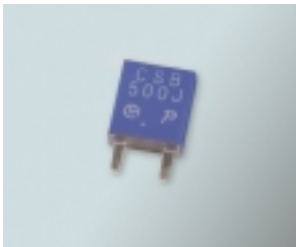


All products listed in this data book comply with the requirements of the RoHS Directive 2002/95/EC.



An easy to use web-based service from Anglia that allows you to add selected products to your personalised list of components for convenient retrieval at any time. It also offers the option to receive email notifications of important supplier communications.

For further details of this beneficial and expanding service, visit [www.anglia.com/part\\_tracker](http://www.anglia.com/part_tracker)



# CERAMIC RESONATORS

CERALOCK®

CSBLA Series

LEADED

## INTRODUCTION

Lower frequency piezo-electric ceramic resonators housed in a boxed package.

## FEATURES

- Shock resistant
- Optimised for MOS

## TYPICAL APPLICATIONS

- General purpose
- Consumer
- Industrial
- Microcontrollers
- Remote controls

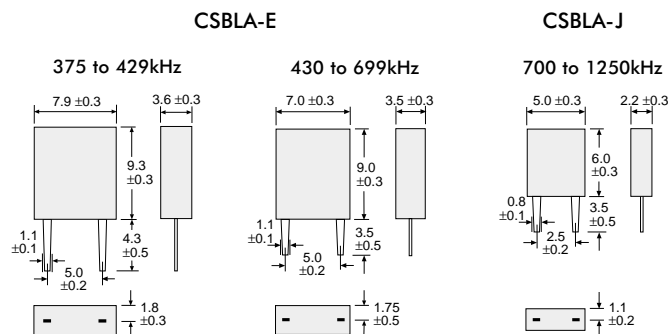
## PACKAGING

Supplied loose as standard. Taped product available to special order.

## SPECIFICATION

Nominal Frequency Range	375 to 1250kHz
Frequency Tolerance	CSBLA-E $\pm 2$ kHz    CSBLA-J $\pm 0.5$ %
Temperature Stability	$\pm 0.3$ %
Operating Temperature Range	-20°C to +80°C

## DIMENSIONS (mm)



## PART NUMBERS

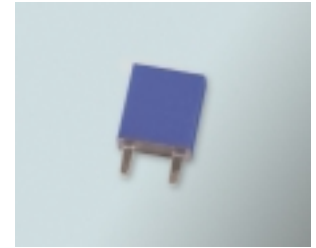
The following table lists a selection of the most popular frequencies that forms our profiled range. Other frequencies are available to special order subject to the limits defined within the Specification section above.

See Page 11  
for SMT alternatives

Frequency kHz	Manf. Part No. & Anglia Order Code	
400	CSBLA400KECE-B0	CSBLA-E (non-washable)
440	CSBLA440KEC8-B0	
455	CSBLA455KEC8-B0	
456	CSBLA456KEC8-B0	
480	CSBLA480KEC8-B0	
500	CSBLA500KEC8-B0	
550	CSBLA550KEC8-B0	
560	CSBLA560KEC8-B0	
600	CSBLA600KEC8-B0	
614	CSBLA614KEC8-B0	
640	CSBLA640KEC8-B0	
800	CSBLA800KJ58-B0	CSBLA-J (washable)
1000	CSBLA1M00J58-B0	



## CERAMIC RESONATORS



ZTB

LEADED

### INTRODUCTION

Very competitively priced lower frequency piezo-electric ceramic resonators, housed in a washable boxed package.

### FEATURES

- Cost effective
- Shock resistant
- Optimised for MOS
- Washable

### TYPICAL APPLICATIONS

- General purpose
- Consumer
- Industrial
- Microcontrollers
- Remote controls

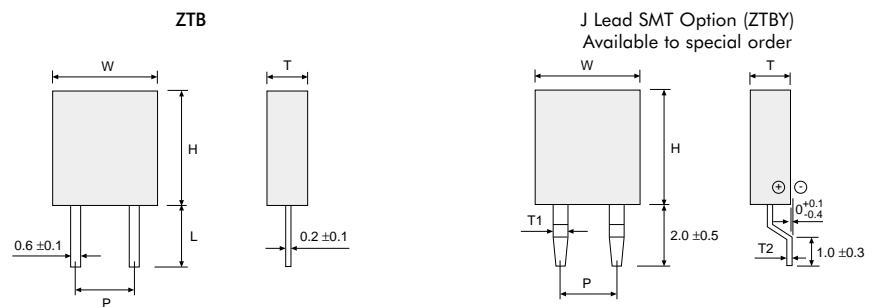
### PACKAGING

Supplied loose as standard. Taped product available to special order.

### SPECIFICATION

Nominal Frequency Range	190 to 1250kHz
Frequency Tolerance	190 to 374kHz $\pm 0.3\%$ , 375 to 1250kHz $\pm 0.5\%$
Temperature Stability	$\pm 0.3\%$
Operating Temperature Range	-20°C to +80°C
Storage Temperature Range	-40°C to +85°C
Aging (10 years)	$\pm 0.5\%$

### DIMENSIONS (mm)



Frequency kHz	W max.	T max.	H max.	P	L
190-249	13.5	3.8	14.7	10.0	8.0
250-374	11.0	3.8	12.2	7.7	7.0
375-429	7.9	3.6	9.3	5.0	4.0
430-699	7.0	3.5	9.0	5.0	4.0
700-1250	5.2	2.8	6.8	2.5	3.5

Frequency kHz	W max.	T max.	H max.	P	T1 $\pm 0.1$	T2 $\pm 0.03$
375-429	8.0	3.5	9.0	5.0	1.1	0.15
430-509	7.5	3.3	8.5	5.0	1.1	0.15
510-699	7.0	3.0	8.5	5.0	1.1	0.15
700-1250	5.0	2.2	6.0	5.0	0.8	0.12

### PART NUMBERS

The following table lists a selection of the most popular frequencies that forms our profiled range. Other frequencies are available to special order subject to the limits defined within the Specification section above.

Frequency kHz	Manf. Part No. & anglia Order Code
400	ZTB400P
440	ZTB440Z
455	ZTB455Z
456	ZTB456Z
480	ZTB480Z
500	ZTB500Z
550	ZTB550E
560	ZTB560E
600	ZTB600E
614	ZTB614E
640	ZTB640E
800	ZTB800J
1000	ZTB1000MJ

# CERAMIC RESONATORS

ZTA

LEADED

**INTRODUCTION**

Very competitively priced higher frequency piezo-electric ceramic resonators, housed in a washable dipped package.

**FEATURES**

- Cost effective
- Shock resistant
- Optimised for MOS
- Washable

**TYPICAL APPLICATIONS**

- General purpose
- Consumer
- Industrial
- Microcontrollers
- Remote controls

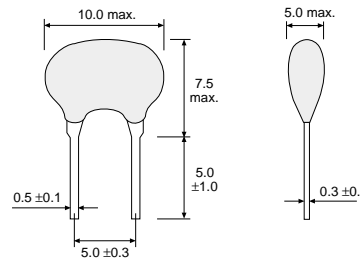
**PACKAGING**

Supplied loose as standard. Taped product available to special order.

**SPECIFICATION**

Nominal Frequency Range	1.26 to 50.0MHz
Frequency Tolerance	±0.5%
Temperature Stability	±0.3%
Operating Temperature Range	-20°C to +80°C
Storage Temperature Range	-55°C to +85°C
Aging (10 years)	1.26 to 6.99MHz ±0.3%, 7.0 to 50.0MHz ±0.5%

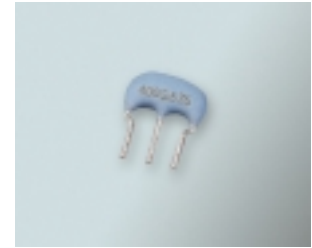
**DIMENSIONS (mm)**



**PART NUMBERS**

The following table lists a selection of the most popular frequencies that forms our profiled range. Other frequencies are available to special order subject to the limits defined within the Specification section above.

Frequency MHz	Manf. Part No. & anglia Order Code	Frequency MHz	Manf. Part No. & anglia Order Code
2.0	ZTA2M00MG	7.37	ZTA7M37MG
2.45	ZTA2M45MG	8.0	ZTA8M00MG
2.5	ZTA2M50MG	10.0	ZTA10M00MG
3.27	ZTA3M27MG	11.0	ZTA11M00MG
3.58	ZTA3M58MG	12.0	ZTA12M00MG
3.68	ZTA3M68MG	14.74	ZTA14M74MG
3.69	ZTA3M69MG	16.0	ZTA16M00MG
4.0	ZTA4M00MG	20.0	ZTA20M00MG
4.19	ZTA4M19MG	24.0	ZTA24M00MG
4.91	ZTA4M91MG	27.0	ZTA27M00MG
5.0	ZTA5M00MG	32.0	ZTA32M00MG
6.0	ZTA6M00MG	40.0	ZTA40M00MG



**INTRODUCTION**

Higher frequency piezo-electric ceramic resonators, with built-in load capacitance, housed in a dipped package. Non-washable.

**FEATURES**

- Shock resistant
- Optimised for MOS
- Built-in load capacitance

**TYPICAL APPLICATIONS**

- General purpose
- Consumer
- Industrial
- Microcontrollers
- Remote controls

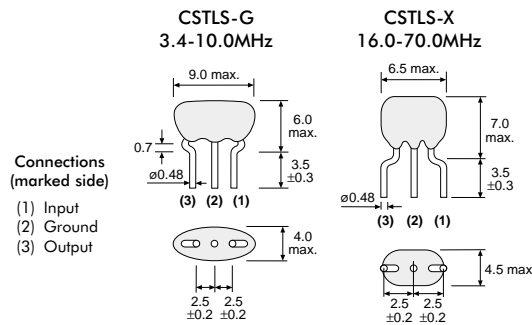
**PACKAGING**

Supplied loose as standard. Taped product available to special order.

**SPECIFICATION**

Nominal Frequency Range	3.4 to 10.0MHz & 16.0 to 70.0MHz
Frequency Tolerance	±0.5% (Options: ±0.1%, ±0.2% & ±0.3%)
Temperature Stability	±0.2%
Operating Temperature Range	-20°C to +80°C

**DIMENSIONS (mm)**



**PART NUMBERS**

The following table lists a selection of the most popular frequencies with a ±0.5% frequency tolerance that forms our profiled range. Other frequencies and frequency tolerances are available to special order subject to the limits defined within the Specification section above.

Frequency MHz	Manf. Part No. & anglia Order Code
3.58	CSTLS3M58G53-B0
3.68	CSTLS3M68G53-B0
3.69	CSTLS3M69G53-B0
4.0	CSTLS4M00G53-B0
4.19	CSTLS4M19G53-B0
4.91	CSTLS4M91G53-B0
5.0	CSTLS5M00G53-B0
6.0	CSTLS6M00G53-B0
7.37	CSTLS7M37G53-B0
8.0	CSTLS8M00G53-B0
10.0	CSTLS10M0G53-B0
16.0	CSTLS16M0X55-B0
20.0	CSTLS20M0X53-B0
24.0	CSTLS24M0X53-B0
27.0	CSTLS27M0X51-B0
32.0	CSTLS32M0X51-B0
40.0	CSTLS40M0X51-B0

# CERAMIC RESONATORS

ZTT

**LEADED**

**INTRODUCTION**

Very competitively priced higher frequency piezo-electric ceramic resonators with built-in load capacitance, housed in a washable dipped package.

**FEATURES**

- Cost effective
- Shock resistant
- Built-in load capacitance
- Optimised for MOS
- Washable

**TYPICAL APPLICATIONS**

- General purpose
- Consumer
- Industrial
- Microcontrollers
- Remote controls

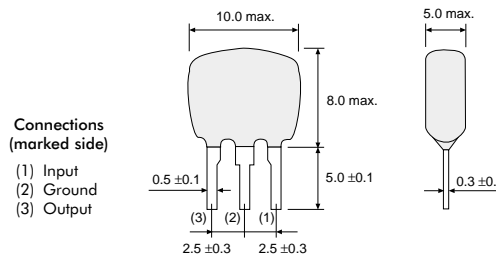
**PACKAGING**

Supplied loose as standard. Taped product available to special order.

**SPECIFICATION**

Nominal Frequency Range	1.8 to 50.0MHz
Frequency Tolerance	±0.5%
Temperature Stability	±0.3%
Operating Temperature Range	-20°C to +80°C
Storage Temperature Range	-55°C to +85°C
Aging (10 years)	1.26 to 6.99MHz ±0.3%, 7.0 to 50.0MHz ±0.5%

**DIMENSIONS (mm)**



**PART NUMBERS**

The following table lists a selection of the most popular frequencies that forms our profiled range. Other frequencies are available to special order subject to the limits defined within the Specification section above.

Frequency MHz	Manf. Part No. & anglia Order Code	Frequency MHz	Manf. Part No. & anglia Order Code
2.0	ZTT2M00MG	7.37	ZTT7M37MG
2.45	ZTT2M45MG	8.0	ZTT8M00MG
2.5	ZTT2M50MG	10.0	ZTT10M00MG
3.27	ZTT3M27MG	11.0	ZTT11M00MG
3.58	ZTT3M58MG	12.0	ZTT12M00MG
3.68	ZTT3M68MG	14.74	ZTT14M74MG
3.69	ZTT3M69MG	16.0	ZTT16M00MG
4.0	ZTT4M00MG	20.0	ZTT20M00MG
4.19	ZTT4M19MG	24.0	ZTT24M00MG
4.91	ZTT4M91MG	27.0	ZTT27M00MG
5.0	ZTT5M00MG	32.0	ZTT32M00MG
6.0	ZTT6M00MG	40.0	ZTT40M00MG



**INTRODUCTION**

Lower frequency piezo-electric ceramic resonators housed in a boxed package with J lead terminations.

**FEATURES**

- Surface mount
- Shock resistant
- Optimised for MOS
- Withstands reflow soldering
- Washable

**TYPICAL APPLICATIONS**

- General purpose
- Consumer
- Industrial
- Microcontrollers
- Remote controls

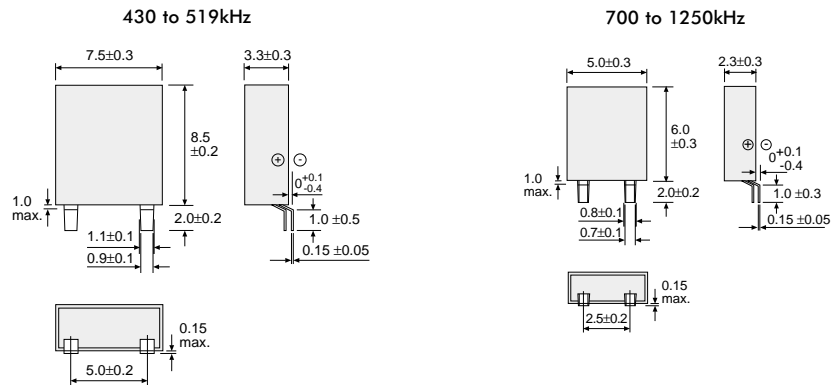
**PACKAGING**

Supplied loose or taped & reeled.

**SPECIFICATION**

Nominal Frequency Range	430 to 1250kHz
Frequency Tolerance	±0.5%
Temperature Stability	±0.3%
Operating Temperature Range	-20°C to +80°C

**DIMENSIONS (mm)**



Pad Pattern



**PART NUMBERS**

The following table lists a selection of the most popular frequencies that forms our profiled range. Other frequencies are available to special order subject to the limits defined within the Specification section above.

Frequency kHz	Manf. Part No. & <b>anglia</b> Order Code	
	LOOSE	TAPED & REELED
440	CSBFB440KJ58-B0	CSBFB440KJ58-R1
455	CSBFB455KJ58-B0	CSBFB455KJ58-R1
456	CSBFB456KJ58-B0	CSBFB456KJ58-R1
480	CSBFB480KJ58-B0	CSBFB480KJ58-R1
500	CSBFB500KJ58-B0	CSBFB500KJ58-R1
800	CSBFB800KJ58-B0	CSBFB800KJ58-R1
1000	CSBFB1M00J58-B0	CSBFB1M00J58-R1

# CERAMIC RESONATORS

CERALOCK®

CSTC Series

SMT

## INTRODUCTION

A series of higher frequency piezo-electric ceramic resonators, with built-in load capacitance, housed in very low profile surface mount packages. Ideally suited for electronic control circuits in small electronic equipment.

## FEATURES

- Surface mount
- Low profile
- Built-in load capacitance
- Automotive specs available

## TYPICAL APPLICATIONS

- Microcontrollers
- USB
- Automotive

## PACKAGING

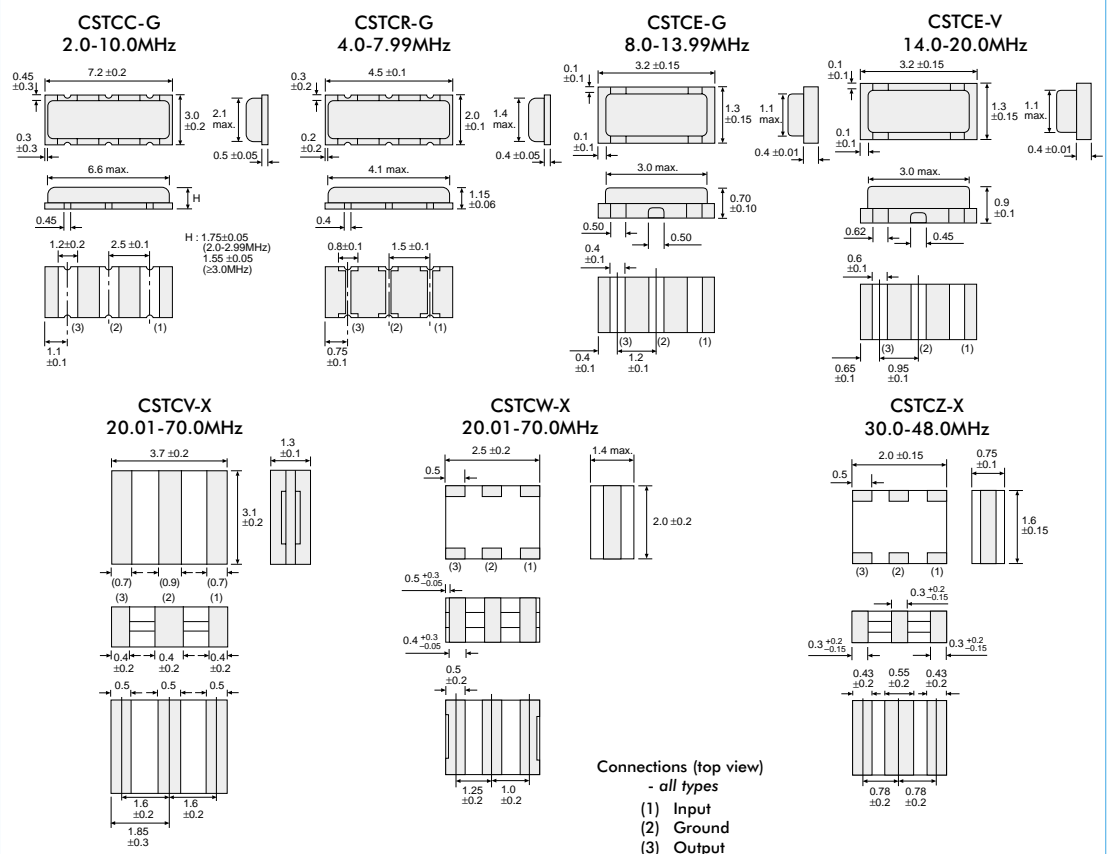
Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	2.0 to 70.0MHz		
Frequency Tolerance	±0.5% (CSTCZ-X ±0.15%)		
Temperature Stability	(see table immediately below)		
Operating Temperature Range	-20°C to +80°C (standard)	-30°C to +85°C (CSTCZ-X)	Option: -40°C to +125°C (automotive)

Frequency (MHz)	Temperature Stability			
	Standard		Automotive	
	Series	Stability	Series	Stability
2.0 to 10.0	CSTCC-G	±0.3%	CSTCC-G-A	±0.4
4.0 to 7.99	CSTCR-G	±0.2%	CSTCR-G-B	±0.15
8.0 to 13.99	CSTCE-G	±0.2%	CSTCE-G-A	±0.2
14.0 to 20.0	CSTCE-V	±0.3%	CSTCE-V-A	±0.3
20.01 to 70.0	CSTCV-X	±0.2%	CSTCV-X-Q	±0.3
20.01 to 70.0	CSTCW-X	±0.2%	-	-
30.0 to 48.0	CSTCZ-X	±0.05%	-	-

## DIMENSIONS (mm)





## PART NUMBERS

The following table lists a selection of the most popular frequencies, with a standard operating temperature, that forms our profiled range. Other frequencies and automotive spec devices are available to special order subject to the limits defined within the Specification section on the previous page.

Frequency MHz	Manf. Part No. & anglia Order Code
2.0	CSTCC2M00G53-R0
2.45	CSTCC2M45G53-R0
2.5	CSTCC2M50G53-R0
3.27	CSTCC3M27G53-R0
3.58	CSTCC3M58G53-R0
3.68	CSTCC3M68G53-R0
3.69	CSTCC3M69G53-R0
4.0	CSTCC4M00G53-R0
4.0*	CSTCR4M00G53-R0
4.0	CSTCR4M00G55-R0
4.19	CSTCC4M19G53-R0
4.19*	CSTCR4M19G53-R0
4.5	CSTCR4M50G53-R0
4.91	CSTCC4M91G53-R0
4.91*	CSTCR4M91G53-R0
5.0	CSTCR5M00G53-R0
5.75	CSTCR5M75G53-R0
6.0	CSTCC6M00G53-R0
6.0*	CSTCR6M00G53-R0
7.37	CSTCR7M37G53-R0
8.0*	CSTCC8M00G53-R0
8.0	CSTCE8M00G52-R0
8.0	CSTCE8M00G55A-R0
8.0	CSTCV8M00T54J-R0
8.86	CSTCE8M86G52-R0
10.0	CSTCC10M0G53-R0
10.0*	CSTCE10M0G52-R0
10.0	CSTCE10M0G55-R0
10.0	CSTCV10M0T54J-R0
10.16	CSTCE10M16G52-R0
10.24	CSTCE10M24G52-R0
10.7	CSTCE10M7G52-R0
11.0	CSTCE11M0G52-R0
12.0	CSTCE12M0G52-R0
14.0	CSTCE14M0V53-R0
16.0*	CSTCE16M0V53-R0
16.0	CSTCV16M0X53J-R0
17.9	CSTCE17M9V53-R0
19.2	CSTCE19M2V53-R0
20.0*	CSTCE20M0V53-R0
20.0	CSTCV20M0X53J-R0
22.11	CSTCW22M1X53-R0
24.0	CSTCW24M0X53-R0
27.0	CSTCW27M0X51-R0
32.0	CSTCW32M0X51-R0
36.0	CSTCW36M0X51-R0
60.0	CSTCW60M0X51-R0

\*Preferred version

# CERAMIC RESONATORS

ZTTC Series

SMT

**INTRODUCTION**

A series of very competitively priced higher frequency piezo-electric ceramic resonators, housed in low profile surface mount packages.

**FEATURES**

- Cost effective
- Surface mount
- Low profile
- Built-in load capacitance

**TYPICAL APPLICATIONS**

- General purpose
- Consumer

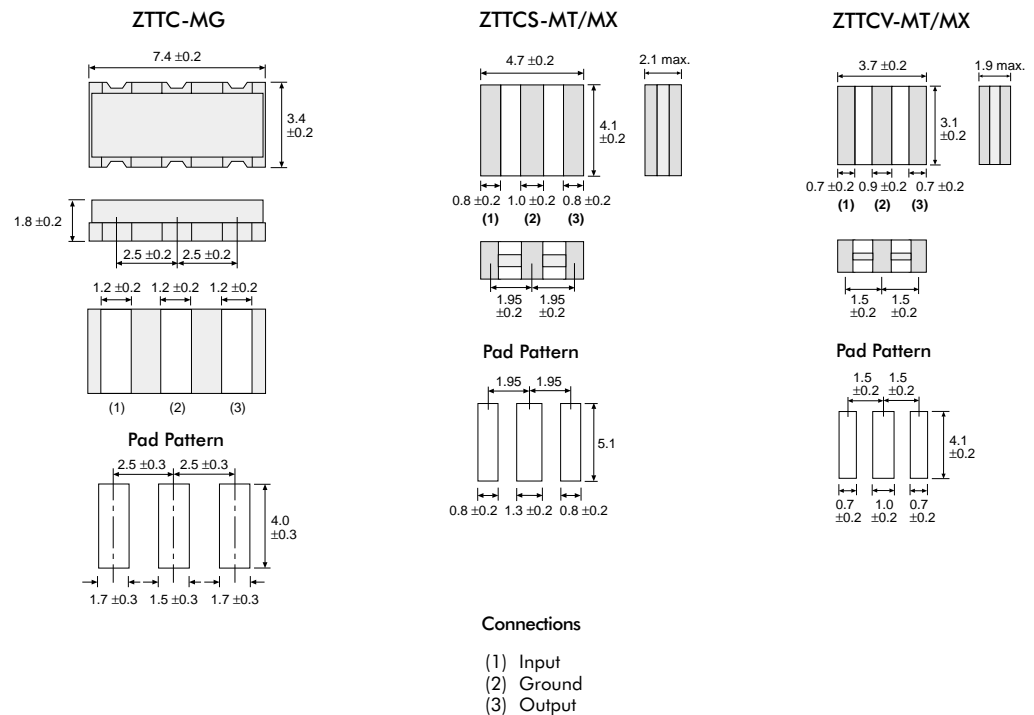
**PACKAGING**

Supplied taped & reeled.

**SPECIFICATION**

	ZTTC-MG	ZTTC-S-MT	ZTTC-S-MX	ZTTCV-MT	ZTTCV-MX
Nominal Frequency Range	2.0 to 8.0MHz	7.0 to 13.0MHz	13.01 to 50.0MHz	7.0 to 13.0MHz	16.0 to 50.0MHz
Frequency Tolerance	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
Temperature Stability	±0.3%	±0.4%	±0.3%	±0.4%	±0.3%
Operating Temperature Range	-20°C to +80°C				
Storage Temperature Range	-55°C to +85°C				
Aging	±0.3% over 10 years				

**DIMENSIONS (mm)**



**PART NUMBERS**

Please contact Anglia to discuss your specific requirements.



## WATCH CRYSTALS

DT-26, DT-38

LEADED



### INTRODUCTION

32.768kHz quartz watch crystals, in through hole DT-26 or DT-38 metal cases, offering a choice of frequency tolerance. The DT-26 also offers a choice of load cap value, 12.5pF (standard) or 6pF (suitable for Dallas chipset). All types are parallel resonant, frequency fundamental.

### FEATURES

- Standard 32.768kHz frequency
- Cylindrical metal case
- Option of DT-26 or DT-38
- Choice of frequency tolerance
- Choice of load cap value on DT-26

### TYPICAL APPLICATIONS

- Clocks and Dallas chipsets
- General timing devices

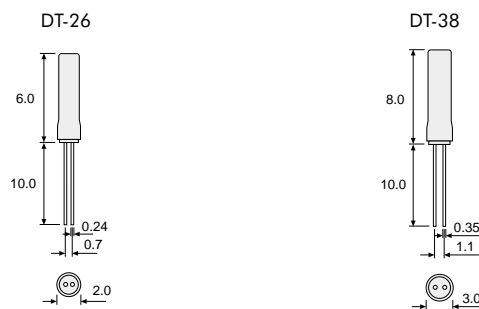
### PACKAGING

Supplied loose as standard.

### SPECIFICATION

Nominal Frequency	32.768kHz
Frequency Tolerance (at 25°C)	±5ppm or ±20ppm
Parabolic Curvature Constant	-0.038ppm/°C <sup>2</sup> max.
Operating Temperature Range	-10°C to +60°C
Storage Temperature Range	-20°C to +70°C
Load Capacitance	6pF or 12.5pF
Shunt Capacitance	2pF max.
Equivalent Series Resistance	35k to 45kΩ
Drive Level	1μW max.
Aging (at 25°C)	±5ppm per year
Insulation Resistance	500MΩ min. at 100Vdc

### DIMENSIONS (mm)



Dimensions are typical

### PART NUMBERS

Frequency kHz	Frequency Tolerance	Load Cap	anglia Order Code	
			DT-26 Case	DT-38 Case
32.768	±20ppm (std)	12.5pF (std)	607001	607000
		6pF	607001A	-
	±5ppm	12.5pF	607001B	607000S

# WATCH CRYSTALS

CM200

SMT

**INTRODUCTION**

32.768kHz cylindrical type quartz watch crystals encapsulated in a heat resistant surface mount package. Offers high stability and suitable for reflow soldering. Available with a choice of load cap value, 12.5pF (standard) or 6pF (for Dallas chipset). Both types are parallel resonant, frequency fundamental.

**FEATURES**

- Standard 32.768kHz frequency
- Surface mount
- Encapsulated in a heat resistant plastic package
- Suitable for reflow soldering
- High stability
- Choice of load cap value

**TYPICAL APPLICATIONS**

- Clocks and Dallas chipsets
- General timing devices

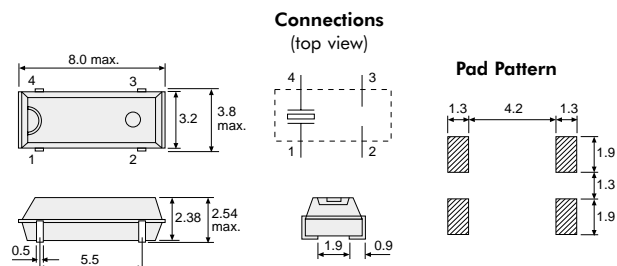
**PACKAGING**

Supplied taped and reeled.

**SPECIFICATION**

Nominal Frequency	32.768kHz
Frequency Tolerance (at 25°C)	±20ppm
Parabolic Curvature Constant	-0.038ppm/°C <sup>2</sup> max.
Operating Temperature Range	-10°C to +60°C
Storage Temperature Range	-20°C to +70°C
Load Capacitance	6pF or 12.5pF
Shunt Capacitance	2pF max.
Equivalent Series Resistance	50kΩ
Drive Level	1μW max.
Aging	±5ppm per year
Insulation Resistance	500MΩ min. at 100Vdc

**DIMENSIONS (mm)**



Dimensions are typical unless otherwise stated.

**PART NUMBERS**

Frequency kHz	Load Cap	anglia Order Code
32.768	12.5pF (std)	XT000
	6pF	XT000A

# WATCH CRYSTALS

MS1V-T1K

SMT



## INTRODUCTION

Quartz watch crystals housed in a miniature square body intended for surface mounting and reflow soldering. All types are parallel resonant, frequencies fundamental.

## FEATURES

- Surface mount
- 2 x 2 x 6mm square case
- Suitable for reflow soldering
- Range of standard frequencies available

## TYPICAL APPLICATIONS

- Medical
- Industrial
- Telecom
- T.P.M.S.

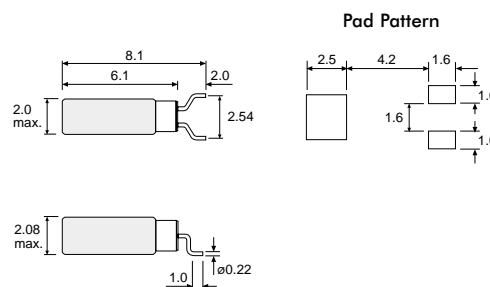
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	30.0 to 200.0kHz
Frequency Tolerance (at 25°C)	±20ppm (Options: ±30ppm, ±100ppm)
Operating Temperature Range	-40°C to +85°C
Storage Temperature Range	-55°C to +85°C
Load Capacitance	12.5pF
Equivalent Series Resistance	60kΩ at 32.0kHz, 30kΩ at 76.8kHz max.
Drive Level	1.0μW max.
Aging	±3ppm first year max.
Insulation Resistance	500MΩ min.

## DIMENSIONS (mm)



Dimensions are typical unless otherwise stated.

## PART NUMBERS

The following table lists a selection of the most popular frequencies with a ±20ppm frequency tolerance that forms our profiled range. Other frequencies and frequency tolerances are available to special order subject to the limits defined within the Specification section above.

Frequency kHz	Manf. Part No. & anglia Order Code
32.0	MS1VT1K32000NBS
32.768	MS1VT1K32768NBS
38.4	MS1VT1K38400NBS
40.0	MS1VT1K40000NBS
60.0	MS1VT1K60000NBS
75.0	MS1VT1K75000NBS
76.8	MS1VT1K76800NBS
77.5	MS1VT1K77500NBS

# WATCH CRYSTALS

MS3V-T1R

SMT

## INTRODUCTION

Quartz watch crystals housed in a miniature square body intended for surface mounting and reflow soldering. All types are parallel resonant, frequencies fundamental.

## FEATURES

- Surface mount
- 1.4 x 1.4 x 5mm square case
- Suitable for reflow soldering
- Range of standard frequencies available

## TYPICAL APPLICATIONS

- Medical
- Industrial
- Telecom
- T.P.M.S.

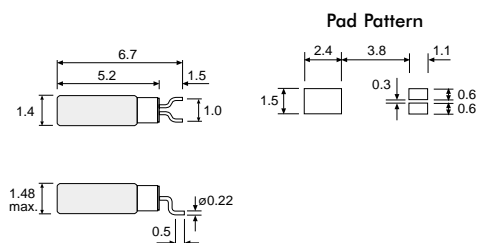
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	30.0 to 200.0kHz
Frequency Tolerance (at 25°C)	±20ppm (Options: ±30ppm, ±100ppm)
Operating Temperature Range	-40°C to +85°C
Storage Temperature Range	-55°C to +85°C
Load Capacitance	7pF, 9pF, 12.5pF
Equivalent Series Resistance	65kΩ at 32.768kHz, 30kΩ at 76.8kHz max.
Drive Level	1.0μW max.
Aging	±3ppm first year max.
Insulation Resistance	500MΩ min.

## DIMENSIONS (mm)



Dimensions are typical unless otherwise stated.

## PART NUMBERS

The following table lists a selection of the most popular frequencies with a ±20ppm frequency tolerance that forms our profiled range. Other frequencies and frequency tolerances are available to special order subject to the limits defined within the Specification section above.

Frequency kHz	Load Cap	Manf. Part No. & anglia Order Code
32.768	12.5pF	MS3VT1R32768NBS
	9pF	MS3VT1R32768PBS
	7pF	MS3VT1R32768QBS
38.4	12.5pF	MS3VT1R38400NBS
	9pF	MS3VT1R38400PBS
	7pF	MS3VT1R38400QBS
75.0	12.5pF	MS3VT1R75000NBS
	9pF	MS3VT1R75000PBS
	7pF	MS3VT1R75000QBS
76.8	12.5pF	MS3VT1R76800NBS
	9pF	MS3VT1R76800PBS
	7pF	MS3VT1R76800QBS
77.5	12.5pF	MS3VT1R77500NBS
	9pF	MS3VT1R77500PBS
	7pF	MS3VT1R77500QBS

# WATCH CRYSTALS

CC7V-T1A

SMT



## INTRODUCTION

32.768kHz quartz watch crystals housed in a surface mount ceramic package and offering the choice of load cap value with the option of industrial or military temperature specification. All types are parallel resonant, frequencies fundamental.

## FEATURES

- Surface mount
- Ceramic package
- Low profile 0.9mm
- Suitable for reflow soldering

## TYPICAL APPLICATIONS

- Medical
- Industrial
- Telecom
- T.P.M.S.

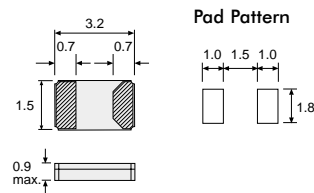
## PACKAGING

Supplied taped & reeled. Trays available to special order.

## SPECIFICATION

Nominal Frequency	32.768kHz
Frequency Tolerance (at 25°C)	±30ppm (Option: ±100ppm)
Operating Temperature Range	-40°C to +85°C (industrial), -55°C to +125°C (military)
Storage Temperature Range	-55°C to +125°C
Load Capacitance	9pF, 12.5pF
Equivalent Series Resistance	70kΩ max.
Drive Level	1.0μW max.
Aging	±3ppm first year max.
Insulation Resistance	500MΩ min.

## DIMENSIONS (mm)



Dimensions are typical unless otherwise stated.

## PART NUMBERS

The following table lists the most popular parts with a ±30ppm frequency tolerance that forms our profile range. An optional frequency tolerance of ±100ppm is available to special order.

Frequency kHz	Load Cap	Spec	Manf. Part No. & Anglia Order Code
32.768	12.5pF	Military	CC7VT1A32768NCM
	12.5pF	Industrial	CC7VT1A32768NCS
	9pF	Military	CC7VT1A32768PCM
	9pF	Industrial	CC7VT1A32768PCS

# QUARTZ CRYSTALS

UM-1

LEADED

**INTRODUCTION**

Very competitively priced AT-cut quartz crystals housed in an industry standard resistance welded, hermetically sealed UM-1 package.

**FEATURES**

- Cost effective
- Wide frequency range
- Tight tolerance and stability over temperature
- J-Lead version available

**TYPICAL APPLICATIONS**

- Pagers
- Wireless telemetry
- Mobile radio

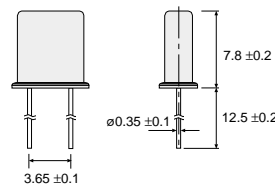
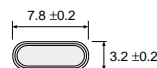
**PACKAGING**

Supplied loose as standard.

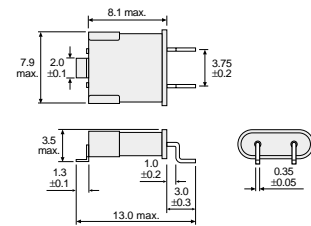
**SPECIFICATION**

Nominal Frequency Range	8.0 to 30.0MHz	24.0 to 75.0MHz	75.0 to 200.0MHz
Vibration Mode	Fundamental (AT)	3rd Overtone (AT)	5th Overtone (AT)
Frequency Tolerance (at 25°C)	±10ppm		
Temperature Stability	±15ppm (Options: ±5ppm, ±10ppm, ±20ppm)		
Operating Temperature Range	-20°C to +70°C		
Storage Temperature Range	-20°C to +70°C		
Load Capacitance	8pF to 33pF, or series		
Shunt Capacitance	5pF (≤18MHz), 7pF (>18MHz)		
Drive Level	100µW max.		
Aging (at 25°C)	±5ppm per year		
Insulation Resistance	500MΩ min. at 100Vdc max.		

**DIMENSIONS (mm)**



J Lead SMT Option Available to special order



**ESR**

AT-cut Fundamental		AT-cut 3rd Overtone		AT-cut 5th Overtone	
Frequency MHz	ESR Ω max.	Frequency MHz	ESR Ω max.	Frequency MHz	ESR Ω max.
8.0-13.99	30	24.0-75.0	40	75.0-124.99	50
14.0-23.99	25			125.0-149.99	60
24.0-30.0	20			150.0-200.0	80

**PART NUMBERS**

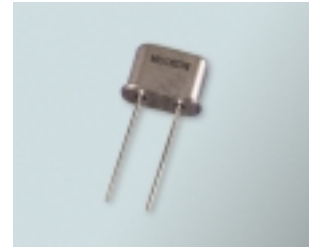
The following table lists a selection of the most popular frequencies that forms our profiled range. Other frequencies and temperature stability levels are available to special order subject to the limits defined within the Specification section above.

Frequency MHz	Temperature Stability ppm over range -20 to +70°C	Load Cap	anglia Order Code
8.192	±15	20pF	607867
10.0	±15	20pF	607817
12.288	±15	20pF	607820
19.44	±15	20pF	607868
24.576	±15	20pF	607831
38.88	±15	20pF	607869

# QUARTZ CRYSTALS

UM-5

LEADED



**INTRODUCTION**

Very competitively priced AT-cut quartz crystals housed in an industry standard resistance welded, hermetically sealed UM-5 package.

**FEATURES**

- Cost effective
- Wide frequency range
- Tight tolerance and stability over temperature

**TYPICAL APPLICATIONS**

- Pagers
- Wireless telemetry
- Mobile radio

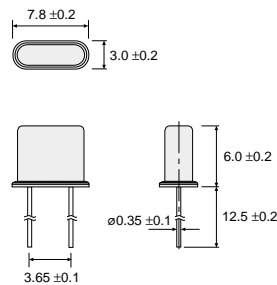
**PACKAGING**

Supplied loose as standard.

**SPECIFICATION**

Nominal Frequency Range	10.0 to 30.0MHz	24.0 to 75.0MHz	75.0 to 200.0MHz
Vibration Mode	Fundamental (AT)	3rd Overtone (AT)	5th Overtone (AT)
Frequency Tolerance (at 25°C)	±20ppm (Option: ±10ppm)		
Temperature Stability	±20ppm (Options: ±5ppm, ±10ppm, ±15ppm)		
Operating Temperature Range	-10°C to +60°C (Option: -20°C to +70°C)		
Storage Temperature Range	-20°C to +70°C		
Load Capacitance	8pF to 33pF, or series		
Shunt Capacitance	5pF (≤18MHz), 7pF (>18MHz) max.		
Drive Level	100µW max.		
Aging (at 25°C)	±5ppm per year		
Insulation Resistance	500MΩ min. at 100Vdc		

**DIMENSIONS (mm)**



**ESR**

AT-cut Fundamental		AT-cut 3rd Overtone		AT-cut 5th Overtone	
Frequency MHz	ESR Ω max.	Frequency MHz	ESR Ω max.	Frequency MHz	ESR Ω max.
10.0-13.99	30	24.0-75.0	40	75.0-124.99	50
14.0-23.99	25			125.0-149.99	60
24.0-30.0	20			150.0-200.0	80

**PART NUMBERS**

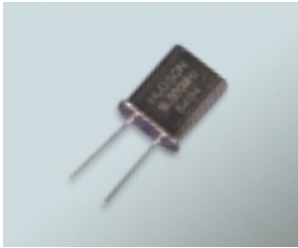
The following table lists a selection of the most popular 3rd overtone frequencies that forms our profiled range. Other frequencies and specification characteristics are available to special order subject to the limits defined within the Specification section above.

Frequency MHz	Tolerance ppm @ 25°C	Temperature Stability ppm over range -10 to +60°C	Load Cap	anglia Order Code
47.9233	±20	±20	series	607180
46.8132	±20	±20	series	607183
57.761	±20	±20	series	607184
57.743	±20	±20	series	607186

# QUARTZ CRYSTALS

HC-49/U

LEADED



**INTRODUCTION**

Very competitively priced AT-cut quartz crystals housed in a superior resistance weld HC-49/U metal case compatible with HC-18/U.

**FEATURES**

- Cost effective
- Well established product
- Wide frequency range
- Superior resistance weld HC-49/U metal case
- Separate insulating pad available

**TYPICAL APPLICATIONS**

- General
- Industrial
- Microcontrollers

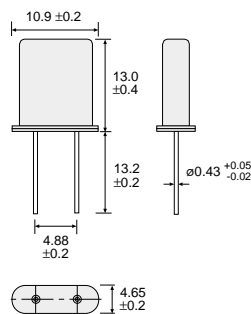
**PACKAGING**

Supplied loose as standard. Taped product available to special order.

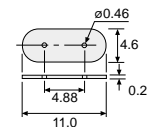
**SPECIFICATION**

Nominal Frequency Range	1.8 to 32.0MHz	24.0 to 75.0MHz	75.0 to 200MHz
Vibration Mode	Fundamental (AT)	3rd Overtone (AT)	5th Overtone (AT)
Frequency Tolerance (at 25°C)	±20 or ±30ppm		
Temperature Stability	±30 or ±50ppm		
Operating Temperature Range	-10°C to +60°C (Option: -20°C to +70°C)		
Storage Temperature Range	-20°C to +70°C (Option: -30°C to +80°C)		
Load Capacitance	8pF to 32pF, or series		
Shunt Capacitance	5pF max. (≤18MHz) or 7pF max. (>18MHz)		
Equivalent Series Resistance	(see ESR tables below)		
Drive Level	200µW max. (≤5MHz) or 100µW max. (>5MHz)		
Aging	±5ppm per year		
Insulation Resistance	500MΩ min. at 100Vdc		

**DIMENSIONS (mm)**



**Insulating Pad**  
A high quality pad manufactured from PTFE



**anglia**  
Order Code  
607100W

**ESR**

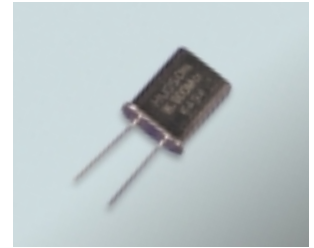
AT-cut Fundamental		AT-cut 3rd Overtone		AT-cut 5th Overtone	
Frequency MHz	ESR Ω max.	Frequency MHz	ESR Ω max.	Frequency MHz	ESR Ω max.
1.8-2.0	500	24.0-75.0	50	75.0-124.99	80
2.01-2.399	450			125.0-149.99	100
2.4-2.99	300			150.0-200.0	120
3.0-3.499	150				
3.5-3.99	90				
4.0-4.99	80				
5.0-5.99	70				
6.0-6.99	60				
7.0-7.99	50				
8.0-9.99	40				
10.0-13.99	35				
14.0-32.0	25				



## QUARTZ CRYSTALS

HC-49/U

LEADED



### PART NUMBERS

The following table lists a selection of the most popular frequencies that forms our profiled range. Other frequencies and specification characteristics are available to special order subject to the limits defined within the Specification section on the previous page.

Frequency MHz	Tolerance ppm @ 25°C	Temperature Stability ppm over range -10 to +60°C	Load Cap	anglia Order Code
1.8432	±20	±50	30pF	607002
2.0	±30	±50	30pF	607003
2.4576	±20	±50	30pF	607004
3.2768	±20	±30	12.5pF	607031
3.579545	±20	±50	16pF	607007
3.6864	±20	±50	30pF	607008
4.0	±20	±50	30pF	607009
4.096	±20	±50	30pF	607041
4.194304	±20	±30	12.5pF	607028
4.194304	±20	±30	series	607028A
4.433619	±20	±30	20pF	607032
4.9152	±20	±50	30pF	607029
5.0	±20	±50	30pF	607013
5.75	±30	±50	30pF	607034
6.0	±20	±50	30pF	607011
6.144	±20	±50	30pF	607012
6.5	±30	±50	12pF	607035
7.3728	±20	±50	30pF	607014
8.0	±20	±50	30pF	607015
8.867238	±30	±50	20pF	607033
9.216	±30	±50	30pF	607016
9.8304	±20	±50	30pF	607046
10.0	±30	±50	30pF	607017
10.16	±30	±50	30pF	607030
10.24	±30	±50	30pF	607042
10.245	±20	±20	series	607107
11.0	±20	±30	30pF	607036
11.0592	±20	±30	30pF	607018
11.0592	±20	±30	20pF	607018A
12.0	±20	±30	30pF	607019
12.288	±20	±50	30pF	607020
14.0	±20	±50	20pF	607048
14.31818	±30	±50	18pF	607047
14.7456	±20	±30	20pF	607021
14.7456	±20	±50	series	607021A
16.0	±20	±30	30pF	607022
16.384	±20	±30	20pF	607060
16.9344	±30	±50	30pF	607026
17.734475	±20	±30	30pF	607023
17.9	±30	±50	30pF	607037
18.26	±30	±50	30pF	607038
18.432	±20	±50	series	607024
19.6608	±20	±30	30pF	607059
20.0	±20	±50	30pF	607025
24.0	±30	±50	30pF	607027
*24.576	±20	±20	30pF	607130
32.0	±30	±30	30pF	607039A
*32.0	±30	±50	32pF	607039
*36.0	±30	±50	32pF	607040
*60.0	±30	±50	30pF	607043

\* Denotes 3rd Overtone

# QUARTZ CRYSTALS

HC-49/4H

**LEADED**



**INTRODUCTION**

Very competitively priced low profile AT-cut quartz crystals housed in the superior resistance weld HC-49/4H metal case compatible with HC-18/U and HC-49/U footprint but offering a 4mm height body. Designed for applications where board height and space is critical.

**FEATURES**

- Cost effective
- Low profile (4mm height)
- Superior resistance weld HC-49/4H metal case
- Separate insulating pad available

**TYPICAL APPLICATIONS**

- General
- Industrial
- Microcontrollers

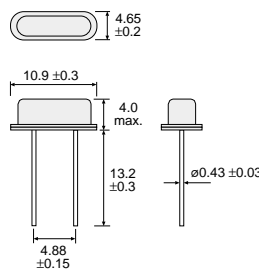
**PACKAGING**

Supplied loose as standard. Taped product available to special order.

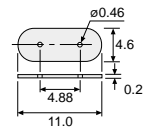
**SPECIFICATION**

Nominal Frequency Range	3.5 to 32.0MHz	24.0 to 70.0MHz
Vibration Mode	Fundamental (AT)	3rd Overtone (AT)
Frequency Tolerance (at 25°C)	±20 or ±30ppm	
Temperature Stability	±30 or ±50ppm	
Operating Temperature Range	-10°C to +60°C (Option: -20°C to +70°C)	
Storage Temperature Range	-20°C to +70°C (Option: -30°C to +80°C)	
Load Capacitance	8pF to 32pF, or series	
Shunt Capacitance	5pF max. (≤18MHz) or 7pF max. (>18MHz)	
Equivalent Series Resistance	(see ESR tables below)	
Drive Level	200µW max. (≤5MHz) or 100µW max. (>5MHz)	
Aging	±5ppm per year	
Insulation Resistance	500MΩ min. at 100Vdc	

**DIMENSIONS (mm)**



**Insulating Pad**  
A high quality pad  
manufactured from PTFE



**anglia**  
Order Code  
**607100W**

3.2 and 2.5 ±0.2mm Height available to special order

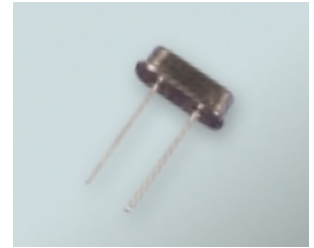
**ESR**

AT-cut Fundamental		AT-cut 3rd Overtone	
Frequency MHz	ESR Ω max.	Frequency MHz	ESR Ω max.
3.5-3.99	150	24.0-70.0	80
4.0-4.99	120		
5.0-5.99	100		
6.0-7.99	80		
8.0-9.99	70		
10.0-13.99	50		
14.0-32.0	40		

# QUARTZ CRYSTALS

HC-49/4H

**LEADED**



**PART NUMBERS**

The following table lists a selection of the most popular fundamental frequencies that forms our profiled range. Other frequencies and specification characteristics are available to special order subject to the limits defined within the Specification section on the previous page.

Frequency MHz	Tolerance ppm @ 25°C	Temperature Stability ppm over range -10 to +60°C	Load Cap	anglia Order Code
3.579545	±30	±50	16pF	607407
3.6864	±30	±50	30pF	607408
4.0	±30	±50	30pF	607409
4.096	±30	±50	30pF	607441
4.9152	±30	±50	30pF	607429
5.0	±30	±50	30pF	607413
6.0	±30	±50	30pF	607411
6.144	±30	±50	30pF	607412
7.3728	±30	±50	30pF	607414
8.0	±30	±50	30pF	607415
9.216	±30	±50	30pF	607416
9.8304	±30	±50	30pF	607446
10.0	±30	±50	30pF	607417
10.24	±30	±50	30pF	607442
11.0	±30	±50	30pF	607436
11.0592	±30	±50	30pF	607418
11.2896	±20	±30	30pF	607449
12.0	±30	±50	30pF	607419
12.288	±30	±30	30pF	607420A
16.0	±30	±50	30pF	607422
17.734475	±20	±30	30pF	607423
18.432	±20	±30	30pF	607424
19.6608	±20	±30	30pF	607459
20.0	±30	±50	30pF	607425
25.0	±30	±50	30pF	607460

See Pages 28-29  
for SMT alternatives

# QUARTZ CRYSTALS

AT-51

LEADED



## INTRODUCTION

The AT-51 quartz crystals are designed for use where high reliability and high stability is required over a wide operating temperature range.

## FEATURES

- Wide temperature range
- High stability
- High reliability

## TYPICAL APPLICATIONS

- Automotive
- Safety critical

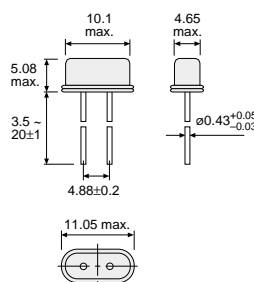
## PACKAGING

Supplied loose as standard. Taped product available to special order.

## SPECIFICATION

Nominal Frequency Range	4.0 to 25.0MHz
Vibration mode	Fundamental (AT)
Frequency Tolerance (at 25°C)	±250ppm or ±1000ppm
Temperature Stability	±250ppm or ±1000ppm
Operating Temperature Range	-40°C to +125°C
Standard Load Capacitance	16pF
Equivalent Series Resistance	(see ESR table below)
Drive Level	50μW (1000 μW max.)

## DIMENSIONS (mm)



## ESR

AT-cut Fundamental	
Frequency MHz	ESR Ω max.
4.0-5.99	180
6.0-7.99	120
8.0-9.99	80
10.0-11.99	70
12.0-15.99	60
16.0-25.0	50

## PART NUMBERS

Please contact Anglia to discuss your specific requirements.

See Page 27  
for SMT alternatives

# QUARTZ CRYSTALS

AT-51AD, AT-51CD2

SMT



## INTRODUCTION

Surface mount quartz crystals designed for use where high reliability and high stability is required over a wide operating temperature range. Offer choice of 2 or 4 terminal package styles.

## FEATURES

- Surface mount
- Wide temperature range
- High stability
- High reliability
- Suitable for reflow soldering

## TYPICAL APPLICATIONS

- Automotive
- Safety critical

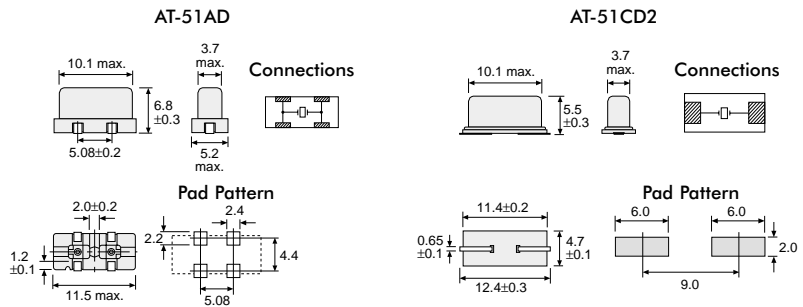
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	4.0 to 25.0MHz
Vibration Mode	Fundamental (AT)
Frequency Tolerance (at 25°C)	±250ppm or ±1000ppm
Temperature Stability	±250ppm or ±1000ppm
Operating Temperature Range	-40°C to +125°C
Standard Load Capacitance	16pF
Equivalent Series Resistance	(see ESR table below)
Drive Level	50μW (1000 μW max.)

## DIMENSIONS (mm)



## ESR

AT-cut Fundamental	
Frequency MHz	ESR Ω max.
4.0-5.99	180
6.0-7.99	120
8.0-9.99	80
10.0-11.99	70
12.0-15.99	60
16.0-25.0	50

## PART NUMBERS

Please contact Anglia to discuss your specific requirements.

# QUARTZ CRYSTALS

HC-49/4SMX

SMT

**INTRODUCTION**

Very competitively priced surface mount quartz crystals housed in the superior resistance weld HC-49/4SMX metal case which offers a low profile, 4mm height body. Designed for applications where board height is critical.

**FEATURES**

- Cost effective
- Surface mount
- Low profile (4mm height)
- Superior resistance weld HC-49/4SMX metal case

**TYPICAL APPLICATIONS**

- General
- Industrial
- Microcontrollers

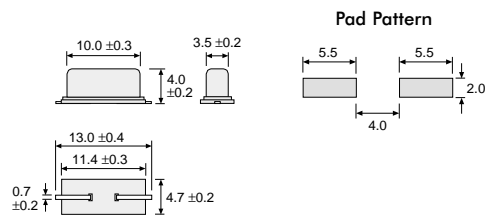
**PACKAGING**

Supplied taped & reeled.

**SPECIFICATION**

Nominal Frequency Range	3.5 to 32.0MHz	24.0 to 70.0MHz
Vibration Mode	Fundamental (AT)	3rd Overtone (AT)
Frequency Tolerance (at 25°C)	±20, ±30 or ±50ppm (Options : ±10, ±15ppm)	
Temperature Stability	±30 or ±50ppm	
Operating Temperature Range	-10°C to +60°C or -20°C to +70°C	
Storage Temperature Range	-20°C to +70°C or -30°C to +80°C	
Load Capacitance	8pF to 33pF, or series	
Shunt Capacitance	5pF max. (≤18MHz) or 7pF max. (>18MHz)	
Equivalent Series Resistance	(see ESR tables below)	
Drive Level	200µW max. (≤5MHz) or 100µW max. (>5MHz)	
Aging	±5ppm per year	
Insulation Resistance	500MΩ min. at 100Vdc	

**DIMENSIONS (mm)**



3.2 and 2.8 ±0.2mm Height available to special order

**ESR**

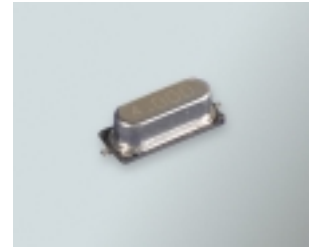
AT-cut Fundamental	
Frequency MHz	ESR Ω max.
3.5-3.99	150
4.0-4.99	120
5.0-5.99	100
6.0-7.99	80
8.0-9.99	70
10.0-13.99	50
14.0-32.0	40

AT-cut 3rd Overtone	
Frequency MHz	ESR Ω max.
24.0-70.0	80

# QUARTZ CRYSTALS

HC-49/4SMX

SMT



**PART NUMBERS**

The following table lists a selection of the most popular fundamental frequencies that forms our profiled range. Other frequencies and specification characteristics are available to special order subject to the limits defined within the Specification section on the previous page.

Frequency MHz	Tolerance ppm @ 25°C	Temperature Stability ppm over range -10 to +60°C	Load Cap	anglia Order Code
3.579545	±30	±50	16pF	XT407
3.6864	±30	±50	30pF	XT408
4.0	±30	±50	30pF	XT409
4.096	±30	±50	30pF	XT441
4.9152	±30	±50	30pF	XT429
6.0	±30	±50	30pF	XT411
6.144	±30	±50	30pF	XT412
7.3728	±30	±50	30pF	XT414
8.0	±30	±50	30pF	XT415
9.8304	±20	±50	30pF	XT447
10.0	±30	±50	30pF	XT417
11.0	±30	±50	30pF	XT436
11.0592	±30	±50	30pF	XT418
12.0	±30	±50	30pF	XT419
12.288	±30	±50	30pF	XT420
13.5	±20	±30	18pF	XT472
14.318	±30	±50	20pF	XT446
14.7456	±30	±50	30pF	XT421
16.0	±30	±50	30pF	XT422
17.734475	±50	±50	30pF	XT423
18.432	±50	±30	30pF	XT424
18.75	±20	±30	18pF	XT405*
19.44	±20	±30	18pF	XT468*
19.53125	±20	±30	18pF	XT406*
19.6608	±30	±50	30pF	XT459
20.0	±30	±50	30pF	XT425
20.141601	±20	±30	18pF	XT452*
22.1184	±30	±50	30pF	XT426
23.4375	±20	±30	18pF	XT471*
24.576	±30	±30	30pF	XT430
25.0	±20	±30	18pF	XT460*
26.5625	±20	±30	18pF	XT410*
27.0	±20	±50	18pF	XT445

\* -20°C to +70°C Operating Temperature Range

# QUARTZ CRYSTALS

HC-49/PQ40

SMT

**INTRODUCTION**

Very competitively priced surface mount quartz crystals housed in the superior resistance weld HC-49/PQ40 metal case which offers a low profile, 4mm height body. Designed for applications where board height is critical.

**FEATURES**

- Cost effective
- Surface mount
- Low profile (4mm height)
- Superior resistance weld HC-49/PQ40 metal case.
- 4 solder pads

**TYPICAL APPLICATIONS**

- General
- Industrial
- Microcontrollers

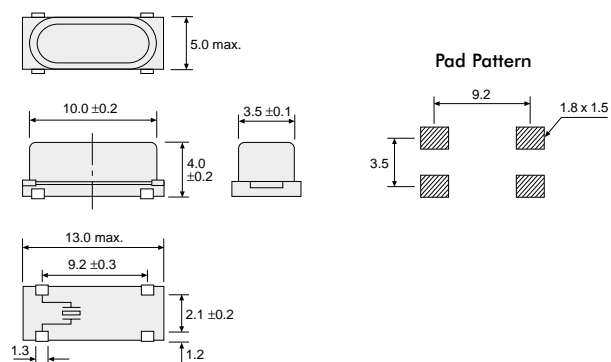
**PACKAGING**

Supplied taped & reeled.

**SPECIFICATION**

Nominal Frequency Range	3.5 to 32.0MHz	24.0 to 70.0MHz
Vibration Mode	Fundamental (AT)	3rd Overtone (AT)
Frequency Tolerance (at 25°C)	±30ppm	
Temperature Stability	±50ppm	
Operating Temperature Range	-20°C to +70°C	
Storage Temperature	-30°C to +80°C	
Load Capacitance	8pF to 33pF, or series	
Equivalent Series of Resistance	(see ESR tables below)	
Shunt Capacitance	5pF max. (≤18MHz) or 7pF max. (>18MHz)	
Drive Level	200µW max. (≤5MHz) or 100µW max. (>5MHz)	
Aging at 25°C	±5ppm per year	
Insulation Resistance	500MΩ min. at 100Vdc	

**DIMENSIONS (mm)**



**ESR**

AT-cut Fundamental	
Frequency MHz	ESR Ω max.
3.5-3.99	150
4.0-4.99	120
5.0-5.99	100
6.0-7.99	80
8.0-9.99	70
10.0-13.99	50
14.0-32.0	40

AT-cut 3rd Overtone	
Frequency MHz	ESR Ω max.
24.0-70.0	80



# QUARTZ CRYSTALS

HC-49/PQ40

SMT



**PART NUMBERS**

The following table lists a selection of the most popular fundamental frequencies that forms our profiled range. Other frequencies and specification characteristics are available to special order subject to the limits defined within the Specification section on the previous page.

Frequency MHz	Tolerance ppm @ 25°C	Temperature Stability ppm over range -20 to +70°C	Load Cap	anglia Order Code
3.579545	±30	±50	16pF	XT507
3.6864	±30	±50	16pF	XT508
4.0	±30	±50	16pF	XT509
4.9152	±30	±50	16pF	XT529
8.0	±30	±50	16pF	XT515
11.0	±30	±50	30pF	XT436
11.0592	±30	±50	16pF	XT518
12.0	±30	±50	16pF	XT519
12.288	±30	±50	30pF	XT520
14.318	±30	±50	16pF	XT546
14.7456	±30	±50	16pF	XT521
16.0	±30	±50	16pF	XT522
19.6608	±30	±50	30pF	XT559
20.0	±30	±50	16pF	XT525
24.0	±30	±50	16pF	XT527

# QUARTZ CRYSTALS

NX1255GB

SMT

## INTRODUCTION

Surface mount AT-cut quartz crystals housed in a 4 terminal hermetically sealed ceramic package, size 11.8 x 5.5 x 2.5mm. All types are parallel resonant. Frequencies are fundamental.

## FEATURES

- Surface mount
- Excellent performance
- Compatible with industry package 6SMX & GSX-9

## TYPICAL APPLICATIONS

- General purpose
- Consumer
- Telecoms
- Office automation
- Audio visual

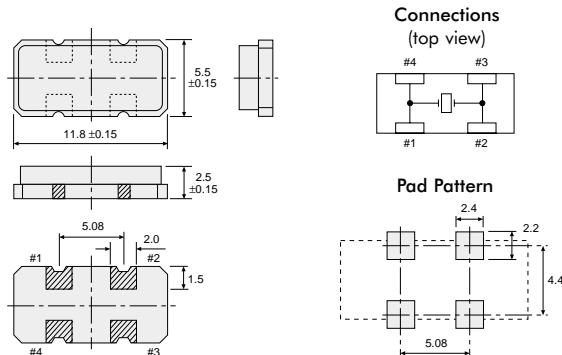
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	3.5 to 25.0MHz
Vibration Mode	Fundamental (AT)
Frequency Tolerance (at 25°C)	±50ppm
Temperature Stability	±50ppm
Operating Temperature Range	-10°C to +70°C
Load Capacitance	12pF
Equivalent Series Resistance	(see ESR table below)
Drive Level	100µW typ., 500µW max.

## DIMENSIONS (mm)



## ESR

AT-cut Fundamental	
Frequency MHz	ESR Ω max.
3.5-3.99	150
4.0-7.99	120
8.0-11.99	80
12.0-25.0	50

## PART NUMBERS

The following table lists a selection of the most popular frequencies that forms our profiled range. Other frequencies are available to special order subject to the limits defined within the Specification section above.

Frequency MHz	Tolerance ppm @ 25°C	Temperature Stability ppm over range -10 to +70°C	Load Cap	Manf. Part No. & anglia Order Code
3.579545	±50	±50	12pF	<b>NX1255GB035B</b>
3.6864	±50	±50	12pF	<b>NX1255GB037B</b>
4.0	±50	±50	12pF	<b>NX1255GB040B</b>
7.3728	±50	±50	12pF	<b>NX1255GB073B</b>
7.68	±50	±50	12pF	<b>NX1255GB076B</b>
8.0	±50	±50	12pF	<b>NX1255GB080B</b>
9.8304	±50	±50	12pF	<b>NX1255GB098B</b>

# QUARTZ CRYSTALS



NX1255GB Automotive

SMT

## INTRODUCTION

Surface mount AT-cut quartz crystals housed in a 4 terminal hermetically sealed ceramic package, size 11.8 x 5.5 x 2.5mm, designed for automotive applications. All types are parallel resonant. Frequencies are fundamental.

## FEATURES

- Surface mount
- Excellent performance
- Compatible with industry package 6SMX & GSX-9
- Excellent heat resistance and environmental characteristics
- Automotive specification

## TYPICAL APPLICATIONS

- Telecoms
- Automotive

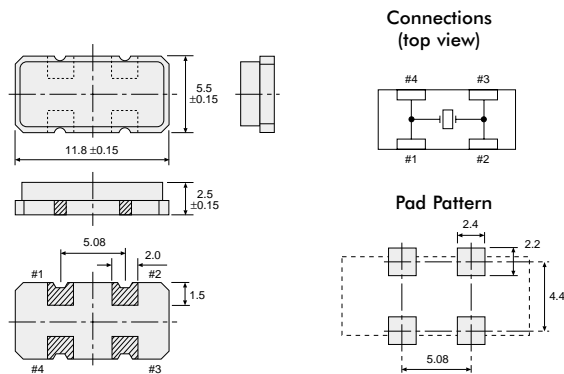
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	3.5 to 25.0MHz
Vibration Mode	Fundamental (AT)
Frequency Tolerance (at 25°C)	±100ppm
Temperature Stability	±150ppm
Operating Temperature Range	-40°C to +125°C
Load Capacitance	12pF
Equivalent Series Resistance	(see ESR table below)
Drive Level	100µW typ., 500µW max.

## DIMENSIONS (mm)



## ESR

AT-cut Fundamental	
Frequency MHz	ESR Ω max.
3.5-3.99	200
4.0-7.99	180
8.0-11.99	120
12.0-25.0	80

## PART NUMBERS

Please contact Anglia to discuss your specific requirements.

# QUARTZ CRYSTALS

NX8045GB

SMT

## INTRODUCTION

Surface mount AT-cut quartz crystals housed in a small 2 terminal hermetically sealed ceramic package, size 8.0 x 4.5 x 1.8mm. All types are parallel resonant. Frequencies are fundamental.

## FEATURES

- Surface mount
- Excellent performance
- Wide choice of frequencies

## TYPICAL APPLICATIONS

- General purpose
- Consumer
- Telecom
- Office automation
- Audio visual

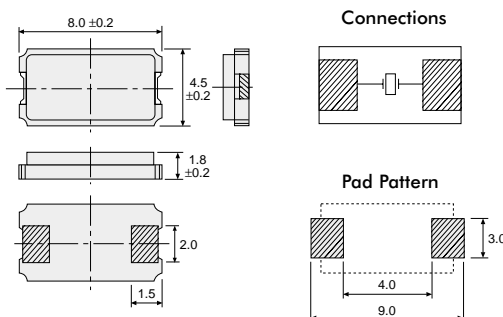
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	5.0 to 40.5MHz
Vibration Mode	Fundamental (AT)
Frequency Tolerance (at 25°C)	±50ppm (Option: ±30ppm)
Temperature Stability	±50ppm (Option: ±30ppm)
Operating Temperature Range	-10°C to +70°C
Load Capacitance	8pF (Options: 12pF, 14pF, 16pF, 30pF)
Equivalent Series Resistance	(see ESR table below)
Drive Level	50µW typ., 500µW max.

## DIMENSIONS (mm)



## ESR

AT-cut Fundamental	
Frequency MHz	ESR Ω max.
5.0-7.99	300
8.0-9.99	200
9.5-9.99	120
10.0-11.99	100
12.0-12.99	80
13.0-40.5	50

## PART NUMBERS

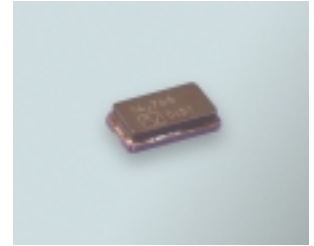
The following table lists a selection of the most popular frequencies that forms our profiled range. Other frequencies and specification characteristics are available to special order subject to the limits defined within the Specification section above.

Frequency MHz	Tolerance ppm @ 25°C	Temperature Stability ppm over range -10 to +70°C	Load Cap	Manf. Part No. & anglia Order Code
10.0	±50	±50	8pF	NX8045GB100C
12.0	±50	±50	8pF	NX8045GB120C
12.288	±50	±50	8pF	NX8045GB122C
14.7456	±50	±50	8pF	NX8045GB147C
16.0	±50	±50	8pF	NX8045GB160C
17.734475	±50	±50	8pF	NX8045GB177C
18.432	±50	±50	8pF	NX8045GB184C
19.6608	±50	±50	8pF	NX8045GB196C
20.0	±50	±50	8pF	NX8045GB200C
24.0	±50	±50	8pF	NX8045GB240C
24.576	±50	±50	8pF	NX8045GB245C
25.0	±50	±50	8pF	NX8045GB250C
27.0	±50	±50	8pF	NX8045GB270C
32.768	±50	±50	8pF	NX8045GB327C
36.864	±50	±50	8pF	NX8045GB368C
40.0	±50	±50	8pF	NX8045GB400C

# QUARTZ CRYSTALS

NX8045GB Automotive

SMT



## INTRODUCTION

Surface mount AT-cut quartz crystals housed in a small 2 terminal hermetically sealed ceramic package, size 8.0 x 4.5 x 1.8mm, designed for automotive applications. All types are parallel resonant. Frequencies are fundamental.

## FEATURES

- Surface mount
- Excellent performance
- Wide choice of frequencies available
- Excellent heat resistance and environmental characteristics
- Automotive specification

## TYPICAL APPLICATIONS

- Automotive
- T.P.M.S.
- R.K.E. systems

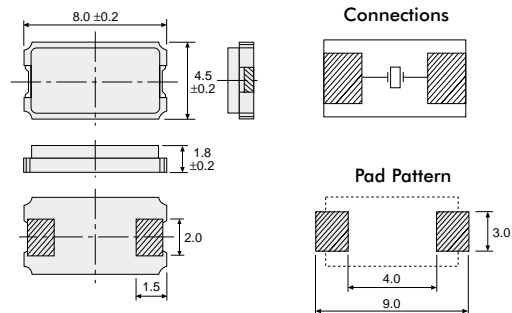
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	5.0 to 40.0MHz
Vibration Mode	Fundamental (AT)
Frequency Tolerance (at 25°C)	±50ppm
Temperature Stability	±180ppm
Operating Temperature Range	-40°C to +150°C
Load Capacitance	8pF, 12pF, 14pF, 16pF, 30pF
Equivalent Series Resistance	(see ESR table below)
Drive Level	10μW typ., 500μW max.

## DIMENSIONS (mm)



## ESR

AT-cut Fundamental	
Frequency MHz	ESR Ω max.
5.0-7.99	300
8.0-9.99	220
10.0-40.00	150

## PART NUMBERS

Please contact Anglia to discuss your specific requirements.

# QUARTZ CRYSTALS

DX-57

SMT

**INTRODUCTION**

Very competitively priced surface mount quartz crystals housed in an ultra-thin 5 x 7mm ceramic package. Ideal for use in the latest wireless applications.

**FEATURES**

- Cost effective
- Surface mount
- Ultra-thin ceramic package
- Size 5 x 7mm
- Height 1.4mm max.

**TYPICAL APPLICATIONS**

- Communication equipment
- PDA's
- Wireless security systems

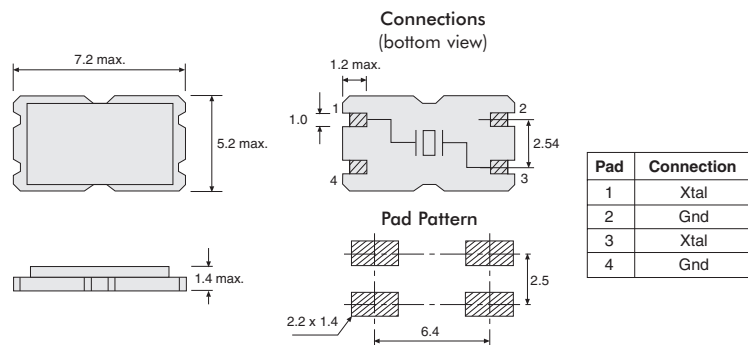
**PACKAGING**

Supplied taped & reeled.

**SPECIFICATION**

Nominal Frequency Range	10.0 to 30.0MHz	24.0 to 60.0MHz
Vibration Mode	Fundamental (AT)	3rd Overtone (AT)
Frequency Tolerance (at 25°C)	±20, ±30 or ±50ppm	
Temperature Stability	±30 or ±50ppm (Option: ±100ppm)	
Operating Temperature Range	-20°C to +70°C	
Storage Temperature Range	-30°C to +80°C	
Load Capacitance	8pF to 32pF, or series	
Shunt Capacitance	7pF max.	
Equivalent Series Resistance	(see ESR tables below)	
Drive Level	100µW max.	
Aging	±5ppm per year	
Insulation Resistance	500MΩ min. at 100Vdc	

**DIMENSIONS (mm)**



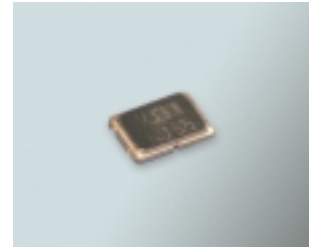
**ESR**

AT-cut Fundamental		AT-cut 3rd Overtone	
Frequency MHz	ESR Ω max.	Frequency MHz	ESR Ω max.
10.0-13.99	60	24.0-29.99	50
14.0-30.0	50	30.0-60.0	100

# QUARTZ CRYSTALS

DX-57

SMT



**PART NUMBERS**

The following table lists a selection of the most popular fundamental frequencies that forms our profiled range. Other frequencies and specification characteristics are available to special order subject to the limits defined within the Specification section on the previous page.

Frequency MHz	Tolerance ppm @ 25°C	Temperature Stability ppm over range -20 to +70°C	Load Cap	anglia Order Code
10.0	±30	±50	18pF	XT617
11.0592	±30	±50	18pF	XT618
12.0	±30	±50	18pF	XT619
13.5	±20	±50	18pF	XT672
14.31818	±30	±50	18pF	XT663
14.7456	±30	±50	18pF	XT621
16.0	±30	±50	18pF	XT622
16.384	±30	±50	18pF	XT660
18.432	±30	±50	18pF	XT624
18.75	±20	±30	18pF	XT605
19.44	±20	±30	18pF	XT668
19.53125	±20	±30	18pF	XT606
19.6608	±30	±50	18pF	XT659
20.0	±30	±50	18pF	XT625
20.141601	±20	±30	18pF	XT652
23.4375	±20	±30	18pF	XT671
24.0	±30	±50	18pF	XT627
24.576	±30	±50	18pF	XT631
25.0	±20	±30	18pF	XT660
26.5625	±20	±30	18pF	XT610
27.0	±50	±50	20pF	XT645

# QUARTZ CRYSTALS

NX5032GA

SMT

## INTRODUCTION

Ultra small surface mount AT-cut quartz crystals housed in a 5.0 x 3.2mm package. All types are parallel resonant. Frequencies are fundamental.

## FEATURES

- Surface mount
- Very compact and thin

## TYPICAL APPLICATIONS

- Consumer
- Security
- Office automation
- Audio visual

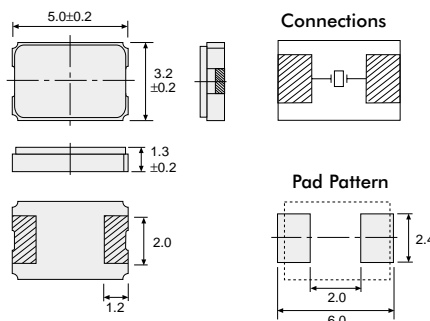
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	8.0 to 55.0MHz
Vibration Mode	Fundamental (AT)
Frequency Tolerance (at 25°C)	±20ppm, ±30ppm or ±50ppm
Temperature Stability	±30ppm or ±50ppm
Operating Temperature Range	-10°C to +70°C or -20°C to +70°C
Load Capacitance	8pF to 30pF
Equivalent Series of Resistance	(see ESR table below)
Drive Level	50µW typ. 500µW max.

## DIMENSIONS (mm)



## ESR

AT-cut Fundamental	
Frequency MHz	ESR Ω max.
8.0-9.49	300
9.5-9.99	150
10.0-19.99	120
20.0-29.99	70
30.0-55.0	50

## PART NUMBERS

The following table lists a selection of the most popular frequencies that forms our profiled range. Other frequencies are available to special order subject to the limits defined within the Specification section above.

Frequency MHz	Tolerance ppm at 25°C	Temperature Stability ppm over range	Load Cap	Manf. Part No. & anglia Order Code
10.0	±50	±50 -20 to +70°C	8pF	NX5032GA100CRB
12.0	±20	±50 -10 to +70°C	8pF	NX5032GA120CAA
12.288	±20	±50 -10 to +70°C	8pF	NX5032GA122CAA
14.31818	±50	±50 -10 to +70°C	30pF	NX5032GA143DR
14.7456	±50	±50 -10 to +70°C	18pF	NX5032GA147AR
16.0	±30	±30 -20 to +70°C	8pF	NX5032GA160CJ
24.576	±50	±50 -10 to +70°C	20pF	NX5032GA245FR



# QUARTZ CRYSTALS

NX5032GA Automotive

SMT



## INTRODUCTION

Ultra small surface mount AT-cut quartz crystals housed in a 5 x 3.2mm package and designed for automotive applications. All types are parallel resonant. Frequencies are fundamental.

## FEATURES

- Surface mount
- Very compact and thin
- Vibration resistant
- Automotive temperature specification

## TYPICAL APPLICATIONS

- Automotive
- R.K.E. systems
- Security systems
- ZigBee

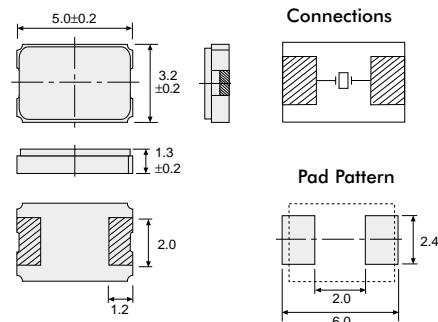
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	8.0 to 40.0MHz
Vibration Mode	Fundamental (AT)
Frequency Tolerance (at 25°C)	±50ppm
Temperature Stability	±180ppm
Operating Temperature Range	-40°C to +150°C
Load Capacitance	8pF
Equivalent Series of Resistance	(see ESR table below)
Drive Level	10µW typ. 500µW max.

## DIMENSIONS (mm)



## ESR

AT-cut Fundamental	
Frequency MHz	ESR Ω max.
8.0-9.99	300
10.0-11.99	220
12.0-40.0	150

## PART NUMBERS

Please contact Anglia to discuss your specific requirements.

# QUARTZ CRYSTALS

NX5032SA

SMT

## INTRODUCTION

High precision surface mount AT-cut quartz crystals housed in a very compact 4 terminal hermetically sealed ceramic package with metal cover, size 4.9 x 3.1 x 0.75mm. Optimised for Wireless LAN (WLAN) applications. All types are parallel resonant. Frequencies are fundamental.

## FEATURES

- Surface mount
- Very compact & thin
- Shielded case for low EMI emissions

## TYPICAL APPLICATIONS

- Wireless LAN
- Mobile communications

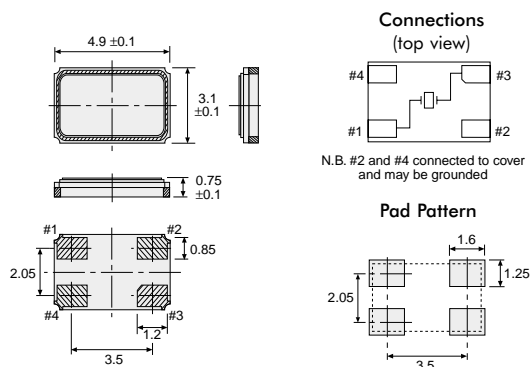
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	12.0 to 39.0MHz	
Vibration Mode	Fundamental (AT)	
Frequency Tolerance (at 25°C)	± 10ppm	
Temperature Stability	± 10ppm	± 15ppm
Operating Temperature Range	-20°C to +75°C	-30°C to +85°C
Load Capacitance	10pF	
Equivalent Series Resistance	40Ω max.	
Drive Level	10μW typ., 100μW max.	

## DIMENSIONS (mm)



## PART NUMBERS

The following table lists a selection of the most popular frequencies that forms our profiled range. Other frequencies and specification characteristics are available to special order subject to the limits defined within the Specification section above.

Frequency MHz	Temperature Stability ppm over range -20 to +75°C	Manf. Part No. & anglia Order Code
22.0	± 10	NX5032SA220WLAN
44.0	± 10	NX5032SA440WLAN

# QUARTZ CRYSTALS

NX5032SD Automotive

SMT



## INTRODUCTION

High precision surface mount AT-cut quartz crystals housed in a very compact 4 terminal hermetically sealed ceramic package with metal cover, size 4.9 x 3.1 x 0.75mm. Optimised for automotive applications. All types are parallel resonant. Frequencies are fundamental.

## FEATURES

- Surface mount
- Very compact & thin
- Shielded case for low EMI emissions

## TYPICAL APPLICATIONS

- Wireless LAN
- Mobile communications
- Automotive
- T.P.M.S.

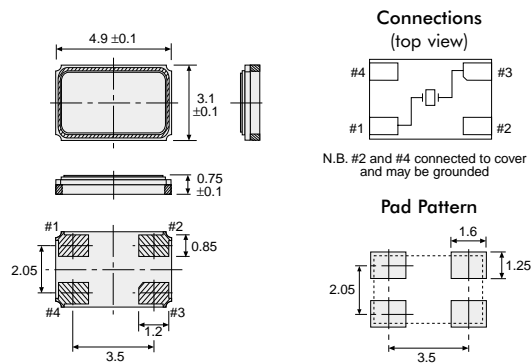
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	12.0 to 39.0MHz
Vibration Mode	Fundamental (AT)
Frequency Tolerance (at 25°C)	±50ppm
Temperature Stability	±180ppm
Operating Temperature Range	-40°C to +125°C
Load Capacitance	8pF
Equivalent Series Resistance	40Ω max.
Drive Level	10μW typ., 100μW max.

## DIMENSIONS (mm)



## PART NUMBERS

The following table lists a selection of the most popular frequencies that forms our profiled range. Other frequencies are available to special order subject to the limits defined within the Specification section above.

Frequency MHz	Manf. Part No. & anglia Order Code
10.178125	NX5032SD011BLA
13.225625	NX5032SD132BLA
13.56	NX5032SD135BX
13.59	NX5032SD1359BX

# QUARTZ CRYSTALS

NX3225SA

SMT

## INTRODUCTION

High precision surface mount AT-cut quartz crystals housed in an ultra compact 4 terminal hermetically sealed ceramic package with metal cover, size 3.2 x 2.5 x 0.6mm. Compatible with industry package FA-238. Optimised for Bluetooth applications. All types are parallel resonant. Frequencies are fundamental.

## FEATURES

- Surface mount
- Ultra compact
- Thin & lightweight (17mg)

## TYPICAL APPLICATIONS

- Bluetooth
- Wireless LAN
- ZigBee
- R.K.E. systems
- D.A.B.

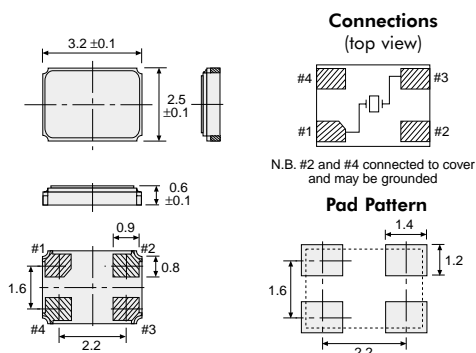
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	12.0 to 55.0MHz	
Vibration Mode	Fundamental (AT)	
Frequency Tolerance (at 25°C)	±10ppm	
Temperature Stability	±10ppm	±15ppm (standard)
Operating Temperature Range	-20°C to +70°C	-30°C to +85°C
Load Capacitance	10pF	
Equivalent Series Resistance	(see ESR table below)	
Drive Level	10µW typ., 100µW max.	

## DIMENSIONS (mm)



## ESR

AT-cut Fundamental	
Frequency MHz	ESR Ω max.
12.0-12.99	120
13.0-15.99	100
16.0-19.99	80
20.0-29.99	70
30.0-55.0	50

## PART NUMBERS

The following table lists a selection of the most popular frequencies with standard stability that forms our profiled range. Other frequencies and specification characteristics are available to special order subject to the limits defined within the Specification section above.

Frequency MHz	Temperature Stability ppm over range -30 to +85°C	Manf. Part No. & anglia Order Code
16.0	±15	NX3225SA160BLT
18.432	±15	NX3225SA184BA
19.2	±15	NX3225SA192HE
19.6608	±15	NX3225SA19611A
24.0	±15	NX3225SA240EFA
26.0	±15	NX3225SA260HI
27.0	±15	NX3225SA270EFA
32.768	±15	NX3225SA327BU
33.0	±15	NX3225SA330EFA
39.0	±15	NX3225SA390HU
40.0	±15	NX3225SA400BFA

# QUARTZ CRYSTALS

CC6F-T1A

SMT



## INTRODUCTION

Inverted Mesa AT quartz crystals housed in a thin surface mount ceramic package, size 3.5 x 2.2 x 0.7mm. Choice of commercial or military temperature range.

## FEATURES

- Surface mount
- Ceramic package
- Low profile (0.7mm)
- Commercial or military temperature ranges available

## TYPICAL APPLICATIONS

- Industrial
- Telecom
- VCXO

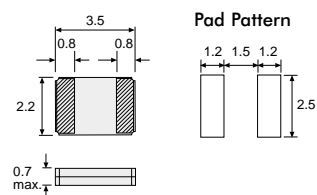
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	30.0 to 250.0MHz
Vibration Mode	Fundamental (AT) Inverted Mesa
Frequency Tolerance (at 25°C)	±50ppm
Temperature Stability	±30ppm
Operating Temperature Range	-40°C to +85°C (Comm.) or -55°C to +125°C (Mil.)
Storage Temperature Range	-55°C to +125°C
Load Capacitance	10pF or series
Shunt Capacitance	2.4pF at 50MHz, 2.9pF at 155MHz
Equivalent Series Resistance	100Ω at 50MHz, 35Ω at 155MHz max.
Drive Level	100μW max.
Aging	±3ppm first year max.
Insulation Resistance	500MΩ min.

## DIMENSIONS (mm)



Dimensions are typical unless otherwise stated.

## PART NUMBERS

The following table lists a selection of the most popular frequencies that forms our profiled range. Other frequencies are available to special order subject to the limits defined within the Specification section above.

Frequency MHz	Load Cap	Temperature Spec	anglia Order Code
50.0	series	Mil.	CC6FT1A500GYA
		Comm.	CC6FT1A500GZ
	10pF	Mil.	CC6FT1A500HYA
		Comm.	CC6FT1A500HZ
77.76	series	Mil.	CC6FT1A777GYA
		Comm.	CC6FT1A777GZ
	10pF	Mil.	CC6FT1A777HYA
		Comm.	CC6FT1A777HZ

# QUARTZ CRYSTALS

NX2520SA

SMT

## INTRODUCTION

Ultra compact, thin and lightweight, surface mount quartz crystals housed in a 2.5 x 2.0 x 0.55mm size package. Choice of standard or Bluetooth specification.

## FEATURES

- Surface mount
- Ultra compact
- Thin & lightweight (11mg)

## TYPICAL APPLICATIONS

- Bluetooth
- Wireless LAN
- ZigBee

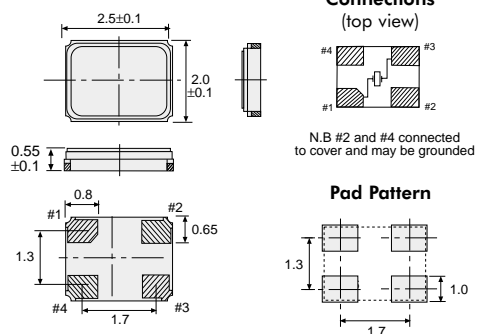
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

	Standard Spec	Bluetooth Spec
Nominal Frequency Range	16.0 to 80.0MHz	
Vibration Mode	Fundamental (AT)	
Frequency Tolerance (at 25°C)	± 15 to ± 100ppm	± 10ppm
Temperature Stability	± 15 to ± 50ppm	± 10 to ± 15ppm
Operating Temperature Range	-10°C to +75°C	-10°C to +60°C
Load Capacitance	8pF	10pF
Equivalent Series of Resistance	(see ESR table below)	
Drive Level	50µW typ. 200µW max.	10µW typ. 100µW max.

## DIMENSIONS (mm)



## ESR

AT-cut Fundamental	
Frequency MHz	ESR Ω max.
16.0-19.99	120
20.0-29.99	100
30.0-80.0	50

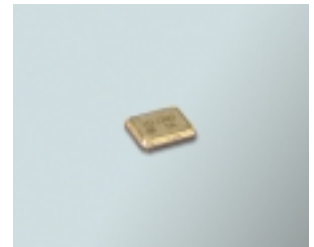
## PART NUMBERS

Please contact Anglia to discuss your specific requirements.

# QUARTZ CRYSTALS

NX2016AA

SMT



## INTRODUCTION

Very small and lightweight surface mount AT-cut quartz crystals housed in a 2.0 x 1.6 x 0.45mm size package. Choice of standard or Bluetooth specification.

## FEATURES

- Surface mount
- Ultra compact
- Thin & lightweight (6mg)

## TYPICAL APPLICATIONS

- Bluetooth
- Wireless LAN

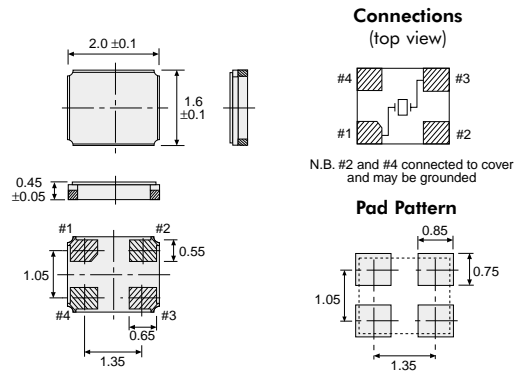
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

	Standard Spec	Bluetooth Spec
Nominal Frequency Range	24.0 to 80.0MHz	
Vibration Mode	Fundamental (AT)	
Frequency Tolerance (at 25°C)	± 15 to ± 100ppm	± 10ppm
Temperature Stability	± 15 to ± 50ppm	± 10 to ± 15ppm
Operating Temperature Range	-10°C to +75°C	-10°C to +60°C
Load Capacitance	8pF	10pF
Equivalent Series of Resistance	(see ESR table below)	
Drive Level	50µW typ. 200µW max.	10µW typ. 100µW max.

## DIMENSIONS (mm)



## ESR

AT-cut Fundamental	
Frequency MHz	ESR Ω max.
24.0-24.99	100
25.0-35.99	80
36.0-80.0	60

## PART NUMBERS

Please contact Anglia to discuss your specific requirements.

# CLOCK OSCILLATORS

OV-1564-C2

SMT

## INTRODUCTION

32.768kHz surface mount clock oscillators housed in a very small 5.0 x 3.2mm size ceramic package. Choice of frequency tolerance.

## FEATURES

- Surface mount
- Ceramic package
- Ultra low power consumption

## TYPICAL APPLICATIONS

- Metering
- Timing
- Automotive

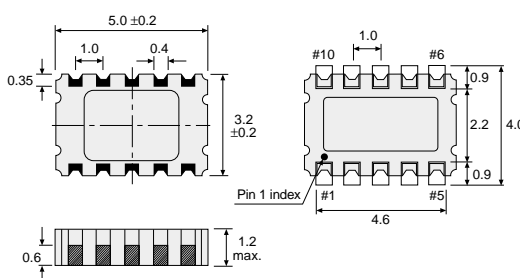
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency	32.768kHz
Frequency Tolerance	±10ppm or ±20ppm
Operating Temperature Range	-40°C to +85°C
Supply Voltage (V <sub>DD</sub> )	1.2 to 5.5V
Current Consumption (max.)	0.5µA
Output Symmetry at 1/2V <sub>DD</sub>	40 to 60%
Output Load	CMOS
Output Level "L" (max.)	0.4V
Output Level "H" (max.)	V <sub>DD</sub> - 0.4V
Rise/Fall Time (10%-90% V <sub>DD</sub> ) (max.)	50ns
Start up time (max.)	600ms
Stand-by Function	Tri-state

## DIMENSIONS (mm)



### Connections

- #1 = V<sub>DD</sub>
- #5 = CLKOUT
- #6 = GND
- #10 = CLKOE
- Others = N.C.

Dimensions are typical unless otherwise stated.

## PART NUMBERS

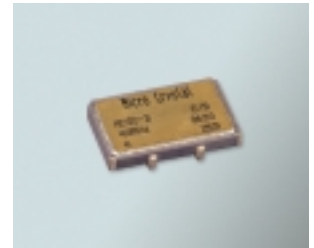
Frequency kHz	Frequency Tolerance	Manf. Part No. & anglia Order Code
32.768	±10ppm	OV1564C2A
	±20ppm	OV1564C2B



# CLOCK OSCILLATORS

MCSOFV

SMT



## INTRODUCTION

High frequency surface mount clock oscillators housed in a ceramic package.  
Choice of operating temperature range.

## FEATURES

- Surface mount
- Ceramic package
- Low voltage (3.3V)
- Low power consumption
- Fast start up

## TYPICAL APPLICATIONS

- Ethernet
- Fibre channel
- SONET
- SDH

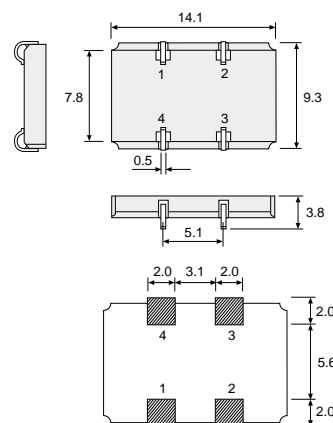
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	40.0 to 160.0MHz
Overall Stability	±100ppm
Operating Temperature Range	-A 0°C to +70°C, -B -40°C to +85°C, -C -55°C to +125°C
Supply Voltage (V <sub>DD</sub> )	3.3V ±5%
Current Consumption (max.)	30mA
Current Consumption Stand-by (max.)	24mA
Output Symmetry at 1/2V <sub>DD</sub>	40 to 60%
Output Load	HCMOS or TTL
Output Level "L" (max.)	0.4V
Output Level "H" (min.)	V <sub>DD</sub> -0.5V
Rise/Fall time (10%-90%V <sub>DD</sub> ) (max.)	3ns
Start up time (max.)	5ms
Stand-by Function	Tri-state

## DIMENSIONS (mm)



### Connections

- 1 = Enable/Diable
- 2 = GND
- 3 = Output
- 4 = V<sub>DD</sub>

Dimensions are typical unless otherwise stated.

## PART NUMBERS

Please contact Anglia to discuss your specific requirements.

# CLOCK OSCILLATORS

2560TK

SMT

## INTRODUCTION

High reliability surface mount quartz crystal oscillators, housed in a small 4 terminal ceramic package offering superior heat resistance and environmental characteristics. Compatible with industry package types IQXO-71 and SG-710. Operating from a 3.3V supply they will directly drive CMOS. A stand-by function provides a tri-state output.

## FEATURES

- Surface mount
- Low supply voltage (3.3V)
- Low current consumption
- CMOS output

## TYPICAL APPLICATIONS

- Microprocessor clocks
- Ethernet
- SONET
- SDH

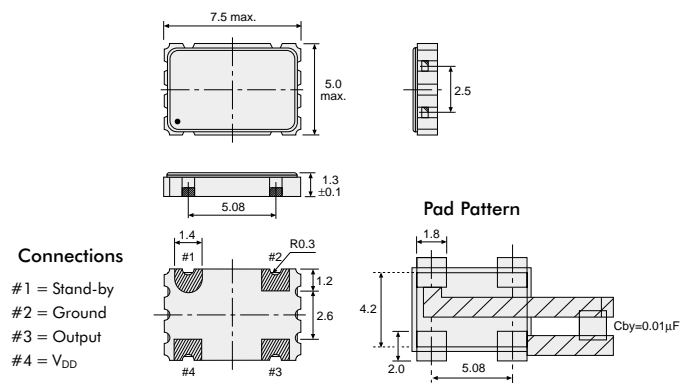
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	1.8 to 32.0MHz	>32.0 to 50.0MHz	>50.0 to 67.0MHz
Frequency Stability	±50ppm (or ±15ppm, ±20ppm)		
Operating Temperature Range	-10°C to +70°C (or 0°C to +70°C, -40°C to +85°C)		
Storage Temperature Range	-55°C to +125°C		
Supply Voltage (V <sub>DD</sub> )	3.3V ±10%		
Current Consumption (max.)	10mA	15mA	18mA
Output Symmetry at 1/2V <sub>DD</sub>	45 to 55%		40 to 60%
Output Load	15pF CMOS		
Output Level "L" (max.)	10% V <sub>DD</sub>		
Output Level "H" (min.)	90% V <sub>DD</sub>		
Rise/Fall Time (10% -90% V <sub>DD</sub> ) (max.)	6ns		
Stand-by Function	Tri-state		

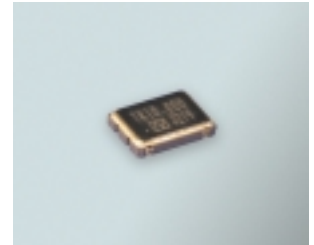
## DIMENSIONS (mm)



# CLOCK OSCILLATORS

2560TK

SMT



## PART NUMBERS

The following table lists a selection of the most popular frequencies that forms our profiled range. Other frequencies are available to special order subject to the limits defined within the Specification section on the previous page.

Frequency MHz	Frequency Stability ppm	Operating Temperature Range (°C)	Manf. Part No. & anglia Order Code
2.8	±50	-40 to +85	2560TKD028
3.579545	±50	-10 to +70	2560TKC035
3.6864	±50	-10 to +70	2560TKC037
4.0	±50	-10 to +70	2560TKC040
4.096	±50	-10 to +70	2560TKC0409
4.9152	±50	-10 to +70	2560TKC049
7.3728	±50	-10 to +70	2560TKC073
7.68	±50	-10 to +70	2560TKC076
8.0	±50	-10 to +70	2560TKC080
8.192	±50	-10 to +70	2560TKC081
9.8304	±50	-10 to +70	2560TKC098
10.0	±50	-10 to +70	2560TKC100
11.0592	±50	-10 to +70	2560TKC111
12.0	±50	-10 to +70	2560TKC120
12.288	±50	-10 to +70	2560TKC122
12.8	±50	-10 to +70	2560TKC128
13.0	±50	-10 to +70	2560TKC130
14.31818	±50	-10 to +70	2560TKC143
14.7456	±50	-10 to +70	2560TKC147
16.0	±50	-10 to +70	2560TKC160
16.384	±50	-10 to +70	2560TKC163
17.734475	±50	-10 to +70	2560TKC177
18.432	±50	-10 to +70	2560TKC184
19.44	±50	-10 to +70	2560TKC194
20.0	±50	-10 to +70	2560TKC200
24.0	±50	-10 to +70	2560TKC240
24.576	±50	-10 to +70	2560TKC245
24.576	±15	0 to +70	2560TKH245
25.0	±50	-10 to +70	2560TKC250
25.0	±50	-40 to +85	2560TKD250
26.0	±50	-10 to +70	2560TKC260
27.0	±50	-10 to +70	2560TKC270
28.0	±50	-10 to +70	2560TKC280
28.244	±50	-10 to +70	2560TKC282
28.63636	±50	-10 to +70	2560TKC286
32.0	±50	-10 to +70	2560TKC320
32.768	±50	-10 to +70	2560TKC327
33.0	±50	-10 to +70	2560TKC330
33.333	±50	-10 to +70	2560TKC333
35.328	±20	0 to +70	2560TKF353
35.46895	±50	-10 to +70	2560TKC354
40.0	±50	-10 to +70	2560TKC400
40.0	±50	-40 to +85	2560TKD400
45.0	±50	-10 to +70	2560TKC450
48.0	±50	-10 to +70	2560TKC480
48.0	±50	-40 to +85	2560TKD480
50.0	±50	-10 to +70	2560TKC500
50.0	±50	-40 to +85	2560TKD500
53.125	±50	-10 to +70	2560TKC531
54.0	±50	-10 to +70	2560TKC540
62.5	±50	-10 to +70	2560TKC625
64.0	±50	-10 to +70	2560TKC640
66.0	±50	-10 to +70	2560TKC660

# CLOCK OSCILLATORS

2560NK

SMT

## INTRODUCTION

High reliability surface mount quartz crystal oscillators, housed in a small 4 terminal ceramic package offering superior heat resistance and environmental characteristics. Compatible with industry package types IQXO-71 and SG-710. Operating from a 5V supply they will directly drive CMOS. A stand-by function provides a tri-state output.

## FEATURES

- Surface mount
- 5V supply voltage
- CMOS output

## TYPICAL APPLICATIONS

- Microprocessor clocks
- Ethernet
- SONET
- SDH

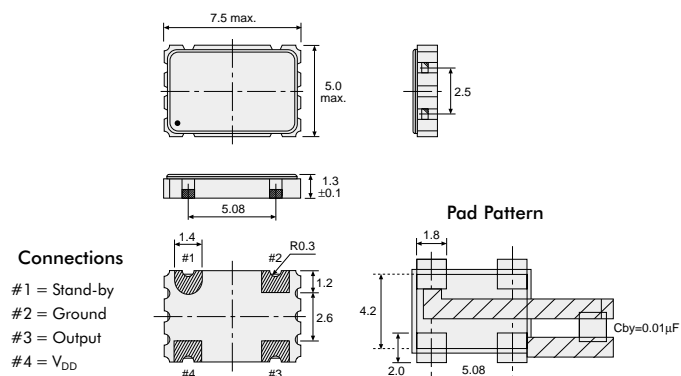
## PACKAGING

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## SPECIFICATION

Nominal Frequency Range	1.8 to 25.0MHz	>25.0 to 50.0MHz	>50.0 to 67.0MHz	>67.0 to 80.0MHz
Frequency Stability	±100ppm			
Operating Temperature Range	-10°C to +70°C			
Storage Temperature Range	-55°C to +125°C			
Supply Voltage (V <sub>DD</sub> )	5V ±10%			
Current Consumption (max.)	25mA	40mA	60mA	73mA
Output Symmetry at 1/2V <sub>DD</sub>	45 to 55%			
Output Load	50pF CMOS			
Output Level "L" (max.)	10% V <sub>DD</sub>			
Output Level "H" (min.)	90% V <sub>DD</sub>			
Rise/Fall Time (10% -90% V <sub>DD</sub> ) (max.)	5ns			
Stand-by Function	Tri-state			

## DIMENSIONS (mm)

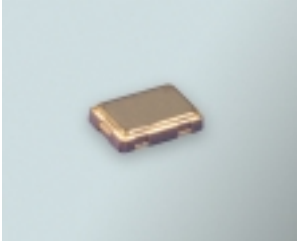


## PART NUMBERS

The following table lists a selection of the most popular frequencies that forms our profiled range. Other frequencies are available to special order subject to the limits defined within the Specification section above.

Frequency MHz	Manf. Part No. & anglia Order Code
10.0	2560NKW100
16.0	2560NKC160
18.432	2560NKC184
24.576	2560NKC245
36.0	2560NKC360

# CLOCK OSCILLATORS



DXO-57

SMT

**INTRODUCTION**

Very competitively priced surface mount quartz crystal oscillators housed a small 5.0 x 7.0mm size package. Choice of 3.3V and 5V supply versions.

**FEATURES**

- Cost effective
- Surface mount
- HCMOS/TTL output
- Tri-state option

**TYPICAL APPLICATIONS**

- General
- Microprocessor

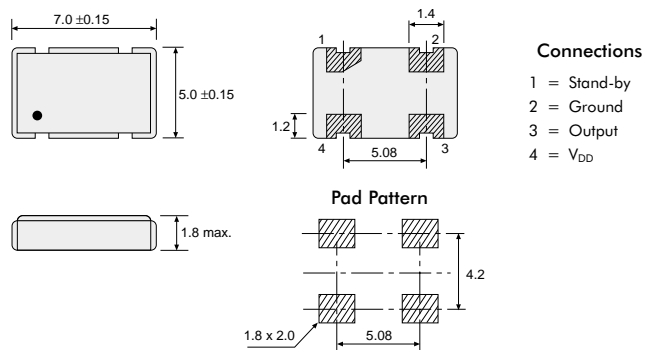
**PACKAGING**

Supplied taped & reeled.

**SPECIFICATION**

Nominal Frequency Range	1.5 to 23.99MHz	24.0 to 49.99MHz	50.0 to 80.0MHz
Frequency Tolerance	±50ppm (Options: ±25, ±100ppm)		
Operating Temperature Range	0°C to +70°C		
Storage Temperature Range	-40°C to +85°C		
Supply Voltage (V <sub>DD</sub> )	3.3V or 5V ±10%		
Current Consumption (max.)	25mA	40mA	50mA
Output Symmetry at 1/2V <sub>DD</sub>	40% to 60% (standard), 45% to 55% (tight)		
Output Load	15pF HCMOS or 10TTL		
Output Level "L" (max.)	10% V <sub>DD</sub> HCMOS or +0.4VDC TTL		
Output Level "H" (min.)	90% V <sub>DD</sub> HCMOS or +2.4VDC TTL		
Rise/Fall Time (10% - 90% V <sub>DD</sub> ) (max.)	10ns		
Start up Time (max.)	10ms		
Stand-by Function	Tri-state		

**DIMENSIONS (mm)**



**PART NUMBERS**

The following table lists a selection of the most popular frequencies with standard symmetry that forms our profiled range. Other frequencies and specification characteristics are available to special order subject to the limits defined within the Specification section above.

3.3V		5V	
Frequency MHz	Manf. Part No. & anglia Order Code	Frequency MHz	Manf. Part No. & anglia Order Code
4.0	XT709L	4.0	XT709
8.0	XT715L	8.0	XT715
10.0	XT717L	10.0	XT717
12.0	XT719L	12.0	XT719
16.0	XT722L	14.31818	XT763
20.0	XT725L	16.0	XT722
24.0	XT727L	20.0	XT725
48.0	XT770L	24.0	XT727
60.0	XT743L	48.0	XT770

# CLOCK OSCILLATORS

7311S Series

SMT

## INTRODUCTION

Application specific, surface mount quartz crystal oscillators housed in a small 7.0 x 5.0mm size package and designed to operate from a 3.3V supply. Optimised for optical networks.

## FEATURES

- Surface mount
- Low current stand-by
- 3.3V supply
- PECL output level (tri-state)

## TYPICAL APPLICATIONS

- SONET
- SDH
- Gb Ethernet

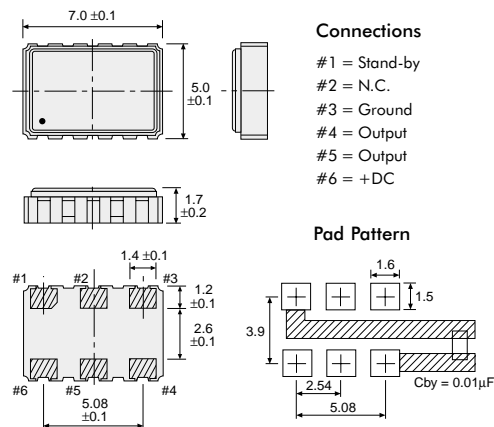
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	100 to 170MHz	
Frequency Stability (max.)	±25ppm	±50ppm (standard)
Operating Temperature Range	0°C to +70°C	0°C to +85°C
Supply Voltage (V <sub>DD</sub> )	3.3V ±10%	
Current Consumption (max.)	90mA	
Current Consumption Stand-by (max.)	30µA	
Output Symmetry at 1/2V <sub>DD</sub>	45 to 55%	
Output Load	50Ω PECC level (Complementary)	
Stand-by Function	Tri-state	

## DIMENSIONS (mm)



## PART NUMBERS

The following table lists a selection of the most popular frequencies with standard stability that forms our profiled range. Other frequencies and specification characteristics are available to special order subject to the limits defined within the Specification section above.

Frequency MHz	Applications	Manf. Part No. & Anglia Order Code
155.52	SONET OC-3 & SDH	7311SX15552
156.25	Ethernet & F.E.C. for SONET OC-3	7311SX15625
161.1328	F.E.C. for SONET OC-3	7311SX1611328

# CLOCK OSCILLATORS



2725T Standard

SMT

## INTRODUCTION

Application specific, surface mount quartz crystal oscillators housed in a very small 5.0 x 3.2mm size package and designed to operate from a 3.3V supply.

## FEATURES

- Surface mount
- Low current stand-by
- 3.3V supply
- Tri-state output
- Very small
- Low profile package

## TYPICAL APPLICATIONS

- Portable PC
- PDA
- PC cards

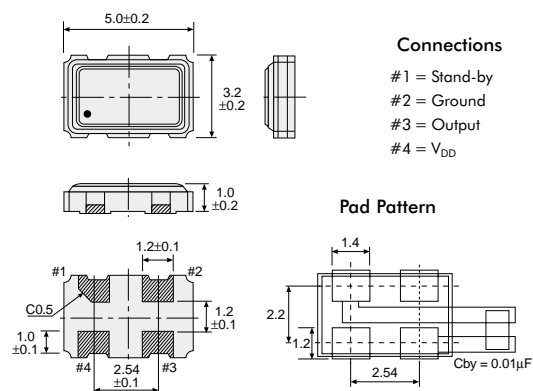
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Frequency Range	2.5 to <20.0MHz	20.0 to <40.0MHz	40.0 to <60.0MHz	60.0 to <75.0MHz	75.0 to <100.0MHz	100.0 to <125.0MHz
Frequency Stability	±100ppm (Option: ±50ppm)					
Operating Temperature Range	-20°C to +70°C (Option: -10°C to +70°C)					
Supply Voltage (V <sub>DD</sub> )	3.3V ±0.3V					
Current Consumption (max.)	8mA	15mA	22mA	25mA	35mA	40mA
Current Consumption stand-by (max.)	10µA					
Output Symmetry at 1/2V <sub>DD</sub>	45 to 55%					
Output Load	15pF CMOS					
Output Level "L" (max.)	10% V <sub>DD</sub>				20% V <sub>DD</sub>	
Output Level "H" (min.)	90% V <sub>DD</sub>				80% V <sub>DD</sub>	
Rise/Fall Time (10% -90% V <sub>DD</sub> ) (max.)	5ns				3ns	
Start up time (max.)	10ms					
Stand-by Function	Tri-state					

## DIMENSIONS (mm)



## PART NUMBERS

The following table lists a selection of the most popular frequencies that forms our profiled range. Other frequencies and specification characteristics are available to special order subject to the limits defined within the Specification section above.

Frequency MHz	Frequency Stability	Operating Temp. Range	Manf. Part No. & anglia Order Code
4.0	±100ppm	-20 to +70°C	2725TG040
20.0	±100ppm	-20 to +70°C	2725TG200
25.0	±100ppm	-20 to +70°C	2725TG250
33.0	±100ppm	-20 to +70°C	2725TG330

# CLOCK OSCILLATORS

2725T for Wireless LAN

SMT

## INTRODUCTION

Application specific, surface mount quartz crystal oscillators housed in a very small 5.0 x 3.2mm size package and designed to operate from a 3.3V supply. Optimised for Wireless LAN applications.

## FEATURES

- Surface mount
- Low current stand-by
- 3.3V supply
- Tri-state output
- High precision (25ppm)
- Very small
- Low profile package

## TYPICAL APPLICATIONS

- Wireless LAN

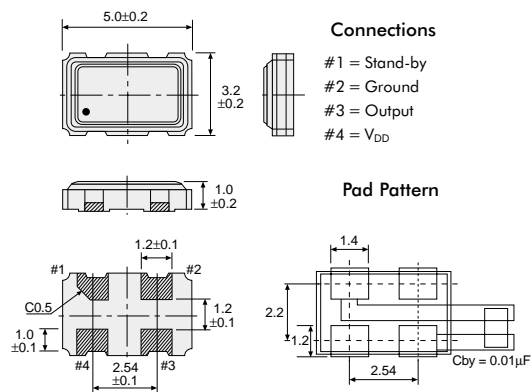
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency	22.0MHz	40.0MHz	44.0MHz
Frequency Stability (max.)	±25ppm	±20ppm	±25ppm
Operating Temperature Range	-10°C to +70°C	0°C to +70°C	-10°C to +70°C
Supply Voltage (V <sub>DD</sub> )	3.3V ±0.1V		
Current Consumption (max.)	15mA	22mA	22mA
Current Consumption Stand-by (max.)	10µA		6mA
Output Symmetry at 1/2V <sub>DD</sub>	45 to 55%		
Output Load	15pF CMOS		
Output Level "L" (max.)	10% V <sub>DD</sub>		
Output Level "H" (min.)	90% V <sub>DD</sub>		
Rise/Fall Time (10% -90% V <sub>DD</sub> ) (max.)	5ns		
Start up time (max.)	10ms		
Stand-by Function	Tri-state		

## DIMENSIONS (mm)



## PART NUMBERS

Frequency MHz	Manf. Part No. & Anglia Order Code
22.0	2725TW220
40.0	2725TZ400
44.0	2725TW440



# CLOCK OSCILLATORS



2725Q

SMT

## INTRODUCTION

Application specific, surface mount quartz crystal oscillators housed in a very small 5.0 x 3.2mm size package and designed to operate from a 2.5V supply.

## FEATURES

- Surface mount
- Low current stand-by
- Power saving 2.5V supply
- Very small
- Low profile package

## TYPICAL APPLICATIONS

- Portable PC
- PDA
- DVC
- DSC
- Audio visual equipment

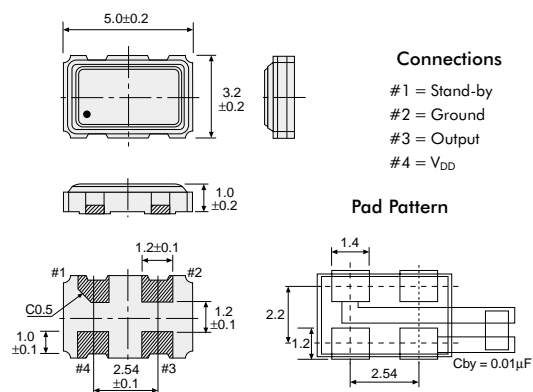
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Frequency Range	2.5 to <5MHz	5 to <10MHz	10 to <20MHz	20 to <40MHz	40 to <75MHz	75 to <125MHz
Frequency Stability	±100ppm (Option: ±50ppm)					
Operating Temperature Range	-20°C to +70°C (Option: -10°C to +70°C)					
Supply Voltage (V <sub>DD</sub> )	2.5V ±0.1%					
Current Consumption (max.)	2mA	3mA	4mA	6mA	16mA	24mA
Current Consumption Stand-by (max.)	10µA					
Output Symmetry at 1/2V <sub>DD</sub>	40% to 60%					
Output Load	15pF CMOS					
Output Level "L" (max.)	20% V <sub>DD</sub>					
Output Level "H" (min.)	80% V <sub>DD</sub>					
Rise/Fall Time (20% - 80% V <sub>DD</sub> ) (max.)	4ns					
Start up Time (max.)	10ms					
Stand-by Function	Tri-state					

## DIMENSIONS (mm)



## PART NUMBERS

Please contact Anglia to discuss your specific requirements.

# CLOCK OSCILLATORS

2725Z

SMT

## INTRODUCTION

Application specific, surface mount quartz crystal oscillators housed in a very small 5.0 x 3.2mm size package and designed to operate from a 1.8V supply.

## FEATURES

- Surface mount
- Low current stand-by (3 $\mu$ A)
- Power saving 1.8V supply
- Very small
- Low profile package

## TYPICAL APPLICATIONS

- Portable PC
- PDA
- PC cards
- DVC
- DSC
- Audio visual equipment

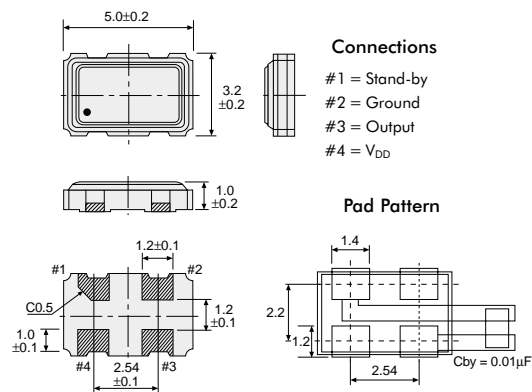
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Frequency Range	2.5 to 55.0MHz		
Frequency Stability	$\pm 30$ ppm	$\pm 50$ ppm	$\pm 100$ ppm (standard)
Operating Temperature Range	-10°C to +60°C	-10°C to +70°C	-20°C to +70°C
Supply Voltage (V <sub>DD</sub> )	1.8V $\pm$ 0.1V		
Current Consumption (max.)	2mA		
Current Consumption standby (max.)	3 $\mu$ A		
Output Symmetry at 1/2V <sub>DD</sub>	40 to 60%		
Output Load	5pF CMOS		
Output Level "L" (max.)	10% V <sub>DD</sub>		
Output Level "H" (min.)	90% V <sub>DD</sub>		
Rise/Fall Time (10% -90% V <sub>DD</sub> ) (max.)	6ns		
Start up time (max.)	10ms		
Stand-by Function	Tri-state		

## DIMENSIONS (mm)



## PART NUMBERS

Please contact Anglia to discuss your specific requirements.

# CLOCK OSCILLATORS

2765E

SMT



## INTRODUCTION

Low noise surface mount quartz crystal oscillators housed in a very small 5.0 x 3.2mm size package designed to operate from a 3.3V supply. Choice of spectrum spread.

## FEATURES

- Surface mount
- Low EMI noise
- Low current stand-by
- 3.3V supply
- Very small
- Low profile package

## TYPICAL APPLICATIONS

- Computer peripherals
- PDA's
- Audio visual equipment

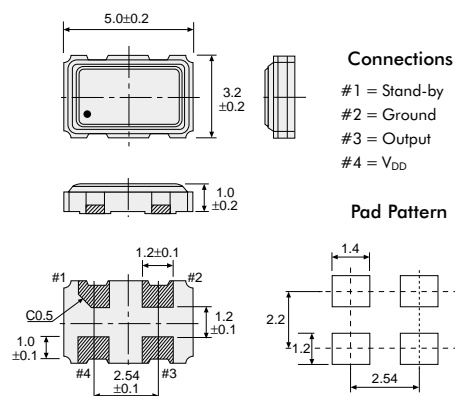
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Frequency Range	20.0 to 80.0MHz
Frequency Stability (max.)	±100ppm
Operating Temperature Range	-20°C to +70°C
Supply Voltage (V <sub>DD</sub> )	3.3V ±0.3V
Current Consumption (max.)	30mA
Current Consumption Stand-by (max.)	30µA
Output Symmetry at 1/2V <sub>DD</sub>	40 to 60%
Output Load	15pF CMOS
Output Level "L" (max.)	20% V <sub>DD</sub>
Output Level "H" (min.)	80% V <sub>DD</sub>
Rise/Fall Time (10% - 90% V <sub>DD</sub> )	5ns
Start up time	10ms
Stand-by Function	Tri-state

## DIMENSIONS (mm)



## PART NUMBERS

Please contact Anglia to discuss your specific requirements.

# CLOCK OSCILLATORS

NZ2520SA

SMT

## INTRODUCTION

Surface mount quartz crystal oscillators housed in an ultra small 2.5 x 2.0mm size package designed to operate from either a 2.5V or 3V supply.

## FEATURES

- Surface mount
- Ultra small
- Ultra-light
- 2.5V or 3V supply

## TYPICAL APPLICATIONS

- Portable PC
- PDA
- DVC
- DSC

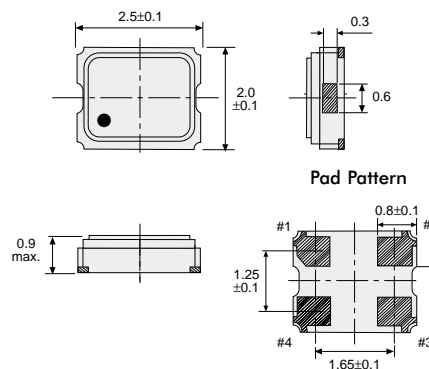
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Frequency Range	1.5 to <10MHz	10 to <20MHz	20 to <30MHz	30 to <40MHz	40 to <50MHz	50 to <60MHz	60 to <67.5MHz
Frequency Stability	±100ppm (Options: ±30, ±50ppm)						
Operating Temperature Range	-20°C to +70°C (Options: -10°C to +60°C, -10°C to +70°C)						
Supply Voltage (V <sub>DD</sub> )	2.5V ±0.1V or 3.0 ±0.1V						
Current Consumption (max.) 2.5V	3.5mA	4.5mA	6.0mA	7.0mA	8.0mA	9.5mA	10.5mA
Current Consumption (max.) 3.0V	5.0mA	6.0mA	8.0mA	9.0mA	10.5mA	12.0mA	13.5mA
Current Consumption Stand-by (max.)	10µA						
Output Symmetry at 1/2V <sub>DD</sub>	45 to 55%						
Output Load	15pF CMOS						
Output Level "L" (max.)	10% V <sub>DD</sub>						
Output Level "H" (min.)	90% V <sub>DD</sub>						
Rise/Fall Time (10% - 90% V <sub>DD</sub> ) (max.)	5ns						
Start up time (max.)	10ms						
Stand-by Function	Tri-state						

## DIMENSIONS (mm)



### Connections

- #1 = Stand-by
- #2 = Ground
- #3 = Output
- #4 = V<sub>DD</sub>

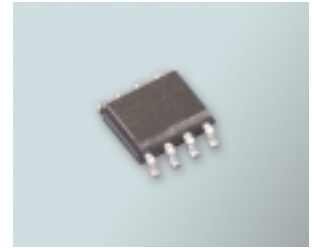
## PART NUMBERS

Please contact Anglia to discuss your specific requirements.

# FEMTO CLOCKS

ICS840011

SMT



## INTRODUCTION

Application specific, surface mount clock generator IC designed for fibre channel (FC1 and FC4) applications. LVCMOS/LVTTL output.

## FEATURES

- Surface mount
- LVCMOS/LVTTL output
- Excellent phase jitter performance
- TSSOP package

## TYPICAL APPLICATIONS

- Fibre channel (FC1 and FC4)

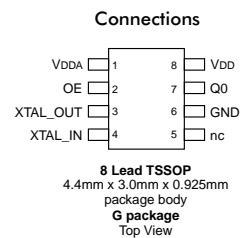
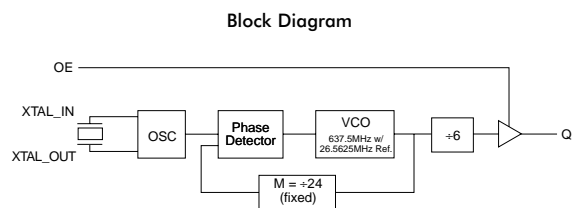
## PACKAGING

Supplied in tubes or taped & reeled.

## SPECIFICATION

Output Frequency	100.0MHz or 106.25MHz	
Operating Temperature Range	-30°C to +85°C	
Supply Voltage (V <sub>DD</sub> /V <sub>DDA</sub> )	3.3V ±5%	
Output Level	LVCMOS/LVTTL	
Output Impedance	7Ω	
VCO Range	560 to 680MHz	
RMS Phase Jitter at 106.25MHz (typ.)	0.78ps	
RMS Phase Noise at 106.25MHz (typ.)	Offset	Noise Power
	100Hz	-95.7dBc/Hz
	1kHz	-121dBc/Hz
	10kHz	-129dBc/Hz
	100kHz	-129.6dBc/Hz

## SCHEMATIC, PACKAGE & CRYSTALS



Marking: 011AN

FREQUENCY TABLE

Crystal Frequency MHz	Output Frequency MHz
25.0	100.0
26.5625	106.25

CRYSTAL TABLE

Crystal Frequency MHz	Suitable Crystal		
	Package	Order Code	Pages
25.0	HC-49/4SMX	<b>XT460</b>	<b>28-29</b>
	DX-57	<b>XT660</b>	<b>36-37</b>
26.5625	HC-49/4SMX	<b>XT410</b>	<b>28-29</b>
	DX-57	<b>XT610</b>	<b>36-37</b>

## PART NUMBERS

Manf. Part No. & <b>anglia</b> Order Code	
TUBE	TAPED & REELED
ICS840011AGLN	ICS840011AGLNT

# FEMTO CLOCKS

ICS840001

SMT

## INTRODUCTION

Application specific, surface mount clock generator IC designed for fibre channel (FCI and FC4) and 12Gb Ethernet applications. LVCMOS/LVTTL output.

## FEATURES

- Surface mount
- LVCMOS/LVTTL output
- Output frequency selectable
- Excellent phase jitter performance
- TSSOP package

## TYPICAL APPLICATIONS

- Fibre channel (FCI and FC4)
- 12Gb Ethernet

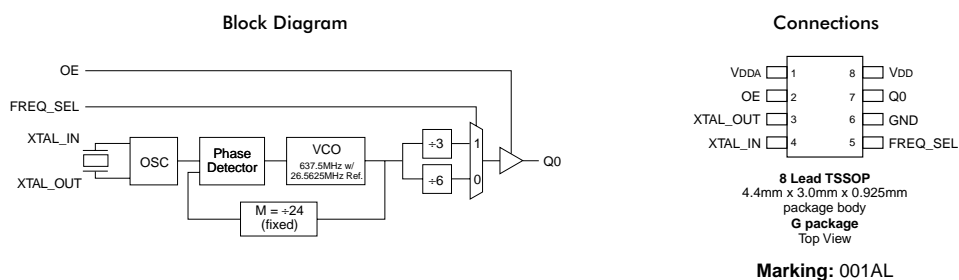
## PACKAGING

Supplied in tubes or taped & reeled.

## SPECIFICATION

Output Frequency	106.25MHz or 212.5MHz	
Operating Temperature Range	-30°C to +85°C	
Supply Voltage (V <sub>DD</sub> /V <sub>DDA</sub> )	3.3V ±5%	
Output Level	LVCMOS/LVTTL	
Output Impedance	7Ω	
VCO Range	560 to 680MHz	
RMS Phase Jitter at 106.25MHz (typ.)	0.696ps	
RMS Phase Noise at 106.25MHz (typ.)	Offset	Noise Power
	100Hz	-94.4dBc/Hz
	1kHz	-119.9dBc/Hz
	10kHz	-130.2dBc/Hz
	100kHz	-131.5dBc/Hz

## SCHEMATIC, PACKAGE & CRYSTALS



FUNCTION TABLE

Crystal Frequency MHz	FREQ_SEL	Output Frequency MHz
26.5625	0	106.25 (Default)
	1	212.5

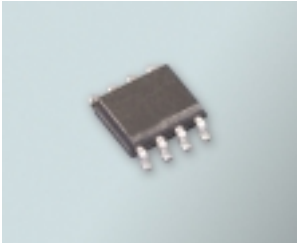
CRYSTAL TABLE

Crystal Frequency MHz	Suitable Crystal		
	Package	Order Code	Pages
26.5625	HC-49/4SMX	<b>XT410</b>	<b>28-29</b>
	DX-57	<b>XT610</b>	<b>36-37</b>

## PART NUMBERS

Manf. Part No. & <b>anglia</b> Order Code	
TUBE	TAPED & REELED
ICS840001AG-25LF	ICS840001AG-25LFT

# FEMTO CLOCKS



ICS840021

SMT

**INTRODUCTION**

Application specific, surface mount clock generator IC designed for 10Gb Ethernet and Infiniband applications. LVCMOS/LVTTL output.

**FEATURES**

- Surface mount
- LVCMOS/LVTTL output
- Excellent phase jitter performance
- TTSOP package

**TYPICAL APPLICATIONS**

- 10Gb Ethernet
- Infiniband

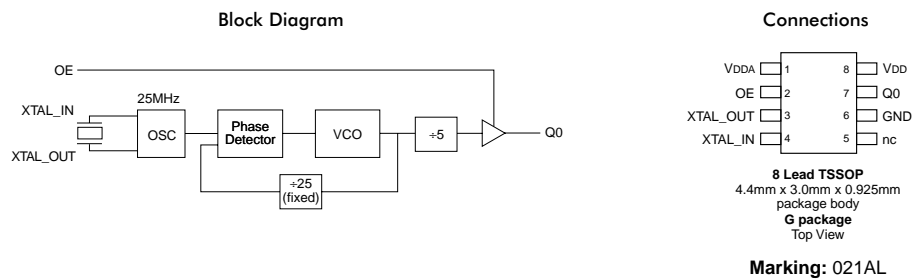
**PACKAGING**

Supplied in tubes or taped & reeled.

**SPECIFICATION**

Output Frequency	125.0MHz	
Operating Temperature Range	0°C to +70°C	
Supply Voltage (V <sub>DD</sub> /V <sub>DDA</sub> )	3.3V ±5%	
Output Level	LVCMOS/LVTTL	
Output Impedance	7Ω	
VCO Range	560 to 680MHz	
RMS Phase Jitter at 125MHz (typ.)	0.34ps	
RMS Phase Noise at 125MHz (typ.)	Offset	Noise Power
	100Hz	-96.9dBc/Hz
	1kHz	-122.2dBc/Hz
	10kHz	-131.1dBc/Hz
	100kHz	-129.5dBc/Hz

**SCHEMATIC, PACKAGE & CRYSTALS**



**CRYSTAL TABLE**

Crystal Frequency MHz	Suitable Crystal		
	Package	Order Code	Pages
25.0	HC-49/4SMX	<b>XT460</b>	<b>28-29</b>
	DX-57	<b>XT660</b>	<b>36-37</b>

**PART NUMBERS**

Manf. Part No. & <b>anglia</b> Order Code	
TUBE	TAPED & REELED
ICS840021AGLF	ICS840021AGLFT

# FEMTO CLOCKS

ICS840051

SMT

## INTRODUCTION

Application specific, surface mount clock generator IC designed for 10Gb Ethernet, 10Gb fibre channel, SATA and SONET applications. LVCMOS/LVTTL output.

## FEATURES

- Surface mount
- LVCMOS/LVTTL output
- Output frequency selectable
- Excellent phase jitter performance
- TSSOP package

## TYPICAL APPLICATIONS

- 10Gb Ethernet
- 10Gb fibre channel
- SATA
- SONET

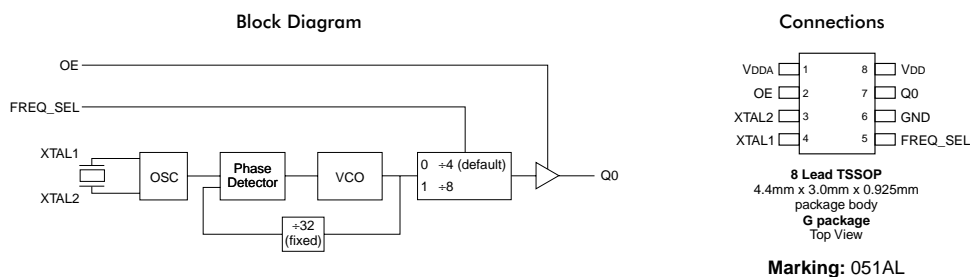
## PACKAGING

Supplied in tubes or taped & reeled.

## SPECIFICATION

Output Frequency Range	75.0MHz to 161.132812MHz	
Operating Temperature Range	0°C to +70°C	
Supply Voltage (V <sub>DD</sub> /V <sub>DDA</sub> )	3.3V ±5%	
Output Level	LVCMOS/LVTTL	
Output Impedance	7Ω	
VCO Range	560 to 680MHz	
RMS Phase Jitter at 1.875-20MHz (typ.)	0.5ps	
RMS Phase Noise at 155.52MHz	Offset	Noise Power
	100Hz	-99.7dBc/Hz
	1kHz	-120dBc/Hz
	10kHz	-128dBc/Hz
	100kHz	-127dBc/Hz

## SCHEMATIC, PACKAGE & CRYSTALS



FREQUENCY TABLE

Crystal Frequency MHz	FREQ_SEL	Output Frequency MHz
18.75	0	150
	1	75
19.44	0	155.52
	1	77.76
19.53125	0	156.25
	1	78.125
20.141601	0	161.132812
	1	80.566406

CRYSTAL TABLE

Crystal Frequency MHz	Suitable Crystal		
	Package	Order Code	Pages
18.75	HC-49/4SMX	<b>XT405</b>	<b>28-29</b>
	DX-57	<b>XT605</b>	<b>36-37</b>
19.44	HC-49/4SMX	<b>XT468</b>	<b>28-29</b>
	DX-57	<b>XT668</b>	<b>36-37</b>
19.53125	HC-49/4SMX	<b>XT406</b>	<b>28-29</b>
	DX-57	<b>XT606</b>	<b>36-37</b>
20.141601	HC-49/4SMX	<b>XT452</b>	<b>28-29</b>
	DX-57	<b>XT652</b>	<b>36-37</b>

## PART NUMBERS

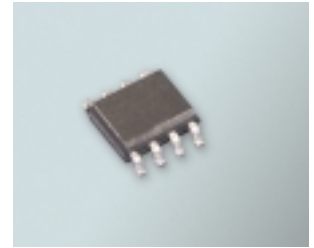
Manf. Part No. & <b>anglia</b> Order Code	
TUBE	TAPED & REELED
ICS840051AGLF	ICS840051AGLFT



# FEMTO CLOCKS

ICS843011

SMT



## INTRODUCTION

Application specific, surface mount clock generator IC designed for fibre channel (FCI and FC4) applications. LVPECL output.

## FEATURES

- Surface mount
- LVPECL output
- Excellent phase jitter performance
- TSSOP package

## TYPICAL APPLICATIONS

- Fibre channel (FCI and FC4)

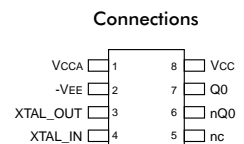
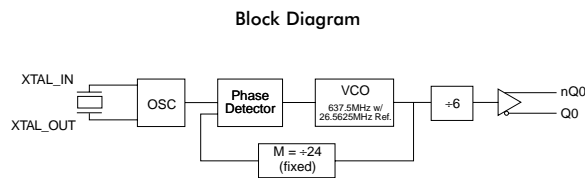
## PACKAGING

Supplied in tubes or taped & reeled.

## SPECIFICATION

Output Frequency	100MHz or 106.25MHz	
Operating Temperature Range	-30°C to +85°C	
Supply Voltage (V <sub>CC</sub> /V <sub>CCA</sub> )	3.3V ±5%	
Output Level	LVPECL	
VCO Range	560 to 680MHz	
RMS Phase Jitter at 100MHz (typ.)	0.8ps	
RMS Phase Noise at 106.25MHz	Offset	Noise Power
	100Hz	-92.8dBc/Hz
	1kHz	-119.6dBc/Hz
	10kHz	-129.5dBc/Hz
	100kHz	-130.5dBc/Hz

## SCHEMATIC, PACKAGE & CRYSTALS



**8 Lead TSSOP**  
4.4mm x 3.0mm x 0.925mm package body  
**G package**  
Top View  
**Marking: 011AL**

FREQUENCY TABLE

Crystal Frequency MHz	Output Frequency MHz
25.0	100.0
26.5625	106.25

CRYSTAL TABLE

Crystal Frequency MHz	Suitable Crystal		
	Package	Order Code	Pages
25.0	HC-49/4SMX	<b>XT460</b>	<b>28-29</b>
	DX-57	<b>XT660</b>	<b>36-37</b>
26.5625	HC-49/4SMX	<b>XT410</b>	<b>28-29</b>
	DX-57	<b>XT610</b>	<b>36-37</b>

## PART NUMBERS

Manf. Part No. & <b>anglia</b> Order Code	
TUBE	TAPED & REELED
ICS843011AGLF	ICS843011AGLFT

# FEMTO CLOCKS

ICS843001

SMT

## INTRODUCTION

Application specific, surface mount clock generator IC designed for fibre channel (FCI and FC4) and 12Gb Ethernet applications. LVPECL output.

## FEATURES

- Surface mount
- LVPECL output
- Output frequency selectable
- Excellent phase jitter performance
- TSSOP package

## TYPICAL APPLICATIONS

- Fibre channel (FCI and FC4)
- 12Gb Ethernet

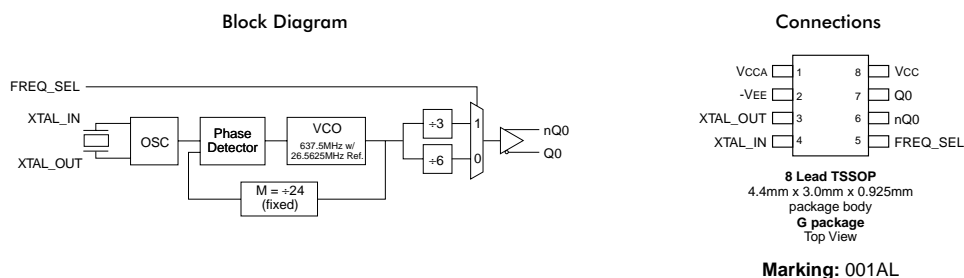
## PACKAGING

Supplied in tubes or taped & reeled.

## SPECIFICATION

Output Frequency	106.25MHz, 187.5MHz or 212.5MHz	
Operating Temperature Range	-30°C to +85°C	
Supply Voltage (V <sub>CC</sub> /V <sub>CCA</sub> )	3.3V ±5%	
Output Level	LVPECL	
VCO Range	560 to 680MHz	
RMS Phase Jitter at 106.25MHz (typ.)	0.74ps	
RMS Phase Noise at 106.25MHz	Offset	Noise Power
	100Hz	-95.2dBc/Hz
	1kHz	-118.7dBc/Hz
	10kHz	-129.1dBc/Hz
	100kHz	-129.6dBc/Hz

## SCHEMATIC, PACKAGE & CRYSTALS



FUNCTION TABLE

Crystal Frequency MHz	FREQ_SEL	Output Frequency MHz
23.4375	1	187.5
26.5625	0	106.25 (Default)
	1	212.5

CRYSTAL TABLE

Crystal Frequency MHz	Suitable Crystal		
	Package	Order Code	Pages
23.4375	HC-49/4SMX	<b>XT471</b>	<b>28-29</b>
	DX-57	<b>XT671</b>	<b>36-37</b>
26.5625	HC-49/4SMX	<b>XT410</b>	<b>28-29</b>
	DX-57	<b>XT610</b>	<b>36-37</b>

## PART NUMBERS

Manf. Part No. & <b>anglia</b> Order Code	
TUBE	TAPED & REELED
ICS843001AGLF	ICS843001AGLFT

# FEMTO CLOCKS



ICS843021

SMT

## INTRODUCTION

Application specific, surface mount clock generator IC designed for 10Gb Ethernet and Infiniband applications. LVPECL output.

## FEATURES

- Surface mount
- LVPECL output
- Excellent phase jitter performance
- TTSOP package

## TYPICAL APPLICATIONS

- 10Gb Ethernet
- Infiniband

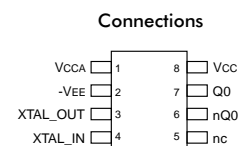
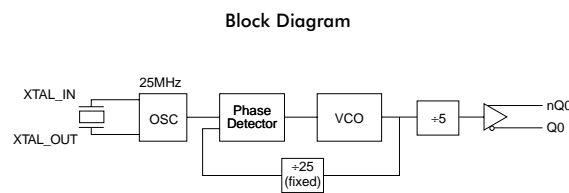
## PACKAGING

Supplied in tubes or taped & reeled.

## SPECIFICATION

Output Frequency	125.0MHz	
Operating Temperature Range	0°C to +70°C	
Supply Voltage (V <sub>CC</sub> /V <sub>CCA</sub> )	3.3V ±5%	
Output Level	LVPECL	
VCO Range	560 to 700MHz	
RMS Phase Jitter at 125MHz (typ.)	0.37ps	
RMS Phase Noise at 125MHz (typ.)	Offset	Noise Power
	100Hz	-94.2dBc/Hz
	1kHz	-122.8dBc/Hz
	10kHz	-132.2dBc/Hz
	100kHz	-131.3dBc/Hz

## SCHEMATIC, PACKAGE & CRYSTALS



**8 Lead TSSOP**  
4.4mm x 3.0mm x 0.925mm  
package body  
**G package**  
Top View

**Marking: 021AL**

### CRYSTAL TABLE

Crystal Frequency MHz	Suitable Crystal		
	Package	Order Code	Pages
25.0	HC-49/4SMX	<b>XT460</b>	<b>28-29</b>
	DX-57	<b>XT660</b>	<b>36-37</b>

## PART NUMBERS

Manf. Part No. & <b>anglia</b> Order Code	
TUBE	TAPED & REELED
ICS843021AGLF	ICS843021AGLFT

# FEMTO CLOCKS

ICS843051

SMT

## INTRODUCTION

Application specific, surface mount clock generator IC designed for 10Gb Ethernet, 10Gb fibre channel, SATA and SONET applications. LVPECL output.

## FEATURES

- Surface mount
- LVPECL output
- Output frequency selectable
- Excellent phase jitter performance
- TSSOP package

## TYPICAL APPLICATIONS

- 10Gb Ethernet
- 10Gb fibre channel
- SATA
- SONET

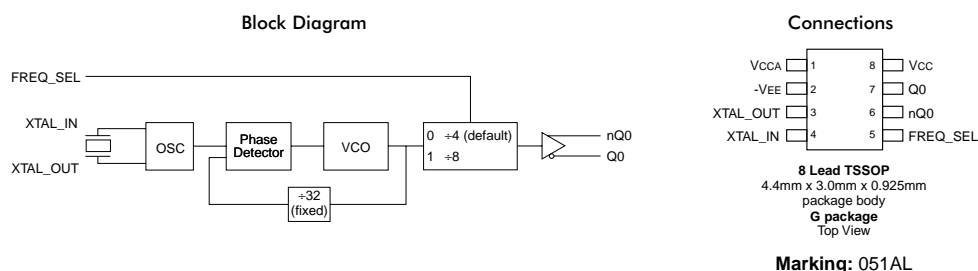
## PACKAGING

Supplied in tubes or taped & reeled.

## SPECIFICATION

Output Frequency Range	75.0MHz to 161.132812MHz	
Operating Temperature Range	0°C to +70°C	
Supply Voltage (Vcc/Vcca)	3.3V ±5%	
Output Level	LVPECL	
RMS Phase Jitter at 1.875-20MHz (typ.)	0.5ps	
RMS Phase Noise at 156.25MHz	Offset	Noise Power
	100Hz	-95dBc/Hz
	1kHz	-110dBc/Hz
	10kHz	-125dBc/Hz
	100kHz	-125dBc/Hz

## SCHEMATIC, PACKAGE & CRYSTALS



FREQUENCY TABLE

Crystal Frequency MHz	FREQ_SEL	Output Frequency MHz
18.75	0	150
	1	75
19.44	0	155.52
	1	77.76
19.53125	0	156.25
	1	78.125
20.141601	0	161.132812
	1	80.566406

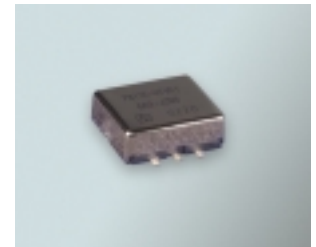
CRYSTAL TABLE

Crystal Frequency MHz	Suitable Crystal		
	Package	Order Code	Pages
18.75	HC-49/4SMX	<b>XT405</b>	<b>28-29</b>
	DX-57	<b>XT605</b>	<b>36-37</b>
19.44	HC-49/4SMX	<b>XT468</b>	<b>28-29</b>
	DX-57	<b>XT668</b>	<b>36-37</b>
19.53125	HC-49/4SMX	<b>XT406</b>	<b>28-29</b>
	DX-57	<b>XT606</b>	<b>36-37</b>
20.141601	HC-49/4SMX	<b>XT452</b>	<b>28-29</b>
	DX-57	<b>XT652</b>	<b>36-37</b>

## PART NUMBERS

Manf. Part No. & <b>anglia</b> Order Code	
TUBE	TAPED & REELED
ICS843051AGLF	ICS843051AGLFT

# VOLTAGE CONTROLLED CRYSTAL OSCILLATORS (VCXO)



7311E

SMT

## INTRODUCTION

Application specific, voltage controlled quartz crystal oscillators with AFC housed in a 6 terminal surface mount package. Ultra high frequency output.

## FEATURES

- Surface mount
- Ultra high frequency
- AFC
- 3.3V supply

## TYPICAL APPLICATIONS

- SONET
- SDH
- Gb Ethernet

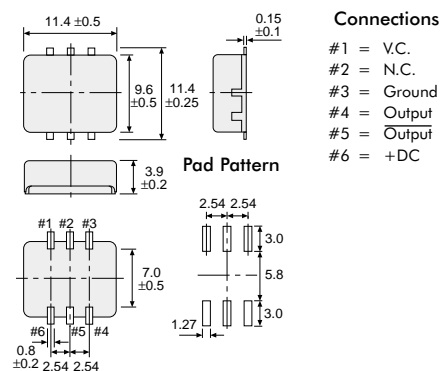
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	622.08, 625.0, 644.5313, 666.5143 or 669.3266MHz
Frequency Stability (max.)	±50ppm
Operating Temperature Range	-10°C to +70°C
Supply Voltage	3.3V ±5%
Current Consumption (max.)	100mA
Output Symmetry at 2V	40 to 60%
Output Level	PECL Level (Complementary)
Output Impedance	50Ω
Control Voltage	+0.05 to 3.05V
AFC Characteristic (min.)	±100ppm

## DIMENSIONS (mm)



## PART NUMBERS

Frequency MHz	Manf. Part No. & anglia Order Code
622.08*	7311ECF505VBA6220
625.0	7311ECF505VBA6250
644.5313	7311ECF505VBA6445
666.5143	7311ECF505VBA6665
669.3266	7311ECF505VBA6693

\* Compatible frequency with MAX3892/3882/3670

# VOLTAGE CONTROLLED CRYSTAL OSCILLATORS (VCXO)

7311L

SMT

## INTRODUCTION

Application specific, voltage controlled quartz crystal oscillators with AFC housed in a 6 terminal surface mount package. High frequency output.

## FEATURES

- Surface mount
- High frequency
- AFC
- 3.3V supply

## TYPICAL APPLICATIONS

- SONET
- SDH
- Gb Ethernet
- Optical networks

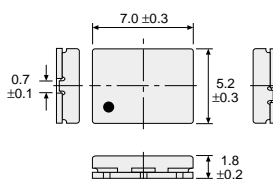
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

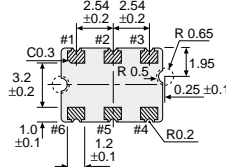
Nominal Frequency Range	155.52, 156.25, 161.1328, 166.6286 or 167.3316MHz
Frequency Stability (max.)	±50ppm
Operating Temperature Range	0°C to +70°C
Supply Voltage	3.3V ±5%
Current Consumption (max.)	60mA
Output Symmetry at 2V	40 to 60%
Output Level	PECL Level (Complementary)
Output Impedance	50Ω
Control Voltage	+0.05 to 3.05V
AFC Characteristic (min.)	±100ppm

## DIMENSIONS (mm)

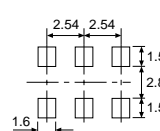


### Connections

- #1 = V.C.
- #2 = N.C.
- #3 = Ground
- #4 = Output
- #5 = Output
- #6 = +DC



### Pad Pattern



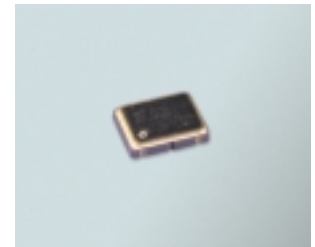
## PART NUMBERS

Frequency MHz	Manf. Part No. & anglia Order Code
155.52*	7311LY15552
156.25	7311LY15625
161.1328	7311LY1611328
166.6286	7311LY1666286
167.3316	7311LY1673316

\* Compatible frequency with MAX3892/3882/3670

# VOLTAGE CONTROLLED CRYSTAL OSCILLATORS (VCXO)

HUDSON



DVC-74, DVC-76

SMT

## INTRODUCTION

Very competitively priced surface mount voltage controlled quartz crystal oscillators with AFC, housed in small 7.0 x 5.0mm packages. Choice of 4 terminal (DVC-74) or 6 terminal with enable/disable function (DVC-76). Available in 3.3V or 5.0V supply voltage versions.

## FEATURES

- Cost effective
- Surface mount
- AFC
- Output Enable/Disable (DVC76)
- 3.3V or 5.0V supply

## TYPICAL APPLICATIONS

- Telecoms
- MPEG
- ADSL
- Multimedia

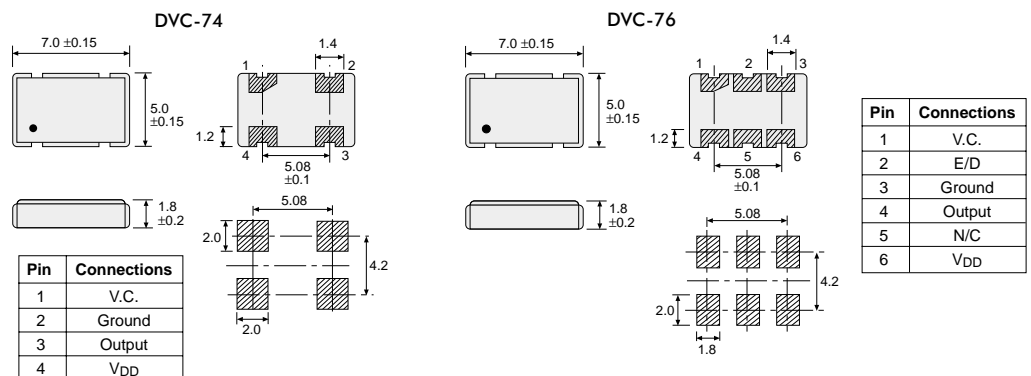
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

	3.3V	5.0V
Nominal Frequency Range	1.0MHz to 50.0MHz	
Frequency Tolerance	Options: $\pm 50$ ppm, $\pm 100$ ppm	
Operating Temperature Range	0°C to +70°C	
Storage Temperature Range	-40°C to +85°C	
Supply Voltage	3.3V $\pm 10\%$	5.0V $\pm 10\%$
Linearity	$\pm 10\%$	
Supply Current	25mA max. (1.544 to 23.999MHz), 30mA max. (24.0 to 44.999MHz) 60mA max. (45.0 to 69.999MHz), 80mA max. (70.0 to 120.0MHz)	
Output Symmetry at $1/2V_{DD}$	Options: 40% to 60% (standard), 45% to 55% (tight)	
Output '0' Level ( $V_{OL}$ ) (max.)	+0.3V	+0.5V
Output '1' Level ( $V_{OH}$ ) (min.)	+3.0V	+4.5V
Rise/Fall Time (10% – 90% $V_{DD}$ ) (max.)	10ns	
Start up Time (max.)	10ms	
Output Load	15pF	15pF or 2TTL
Control Voltage	+1.65 $\pm 1.35$ V	+2.5V $\pm 2.0$ V
AFC Characteristics	Options: $\pm 50$ , $\pm 100$ , $\pm 150$ , $\pm 200$ ppm	

## DIMENSIONS (mm)



## PART NUMBERS

Please contact Anglia to discuss your specific requirements.



# VOLTAGE CONTROLLED CRYSTAL OSCILLATORS (VCXO)



MK2727S

SMT

## INTRODUCTION

A low cost, low jitter, high performance VCXO and PLL IC with AFC designed to replace expensive complete 27MHz VCXO modules. Housed in an 8 pin SOIC surface mount package.

## FEATURES

- Surface mount
- SOIC package
- External crystal
- AFC
- Low jitter
- 25mA TTL output
- 5V supply

## TYPICAL APPLICATIONS

- STB
- DVD
- Multimedia

## PACKAGING

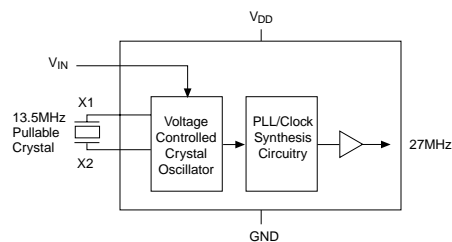
Supplied in tubes or taped & reeled.

## SPECIFICATION

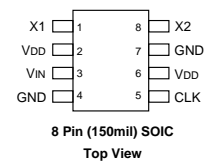
Nominal Frequency	27.0MHz
Operating Temperature Range	0°C to +70°C
Supply Voltage	5V ±5%
Current Consumption (No Load)	20mA
Output Symmetry at 1.4V	40 to 60%
Output Load	TTL
Output Level "L" (max.) at 25mA	0.4V
Output Level "H" (min.) at 25mA	2.4V (V <sub>DD</sub> -0.4V CMOS)
Control Voltage	0 to 3.3V
AFC Characteristic	±100ppm

## SCHEMATIC, PACKAGE & CRYSTALS

### Block Diagram



### Connections



### CRYSTAL TABLE

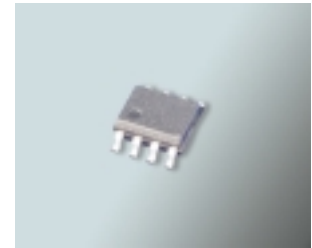
Crystal Frequency MHz	Suitable Crystal		
	Package	Order Code	Pages
13.5	HC-49/4SMX	<b>XT472</b>	<b>28-29</b>
	DX-57	<b>XT672</b>	<b>36-37</b>

## PART NUMBERS

Manf. Part No. & <b>anglia</b> Order Code	
TUBE	TAPED & REELED
<b>MK2727SLF</b>	<b>MK2727SLFTR</b>



# VOLTAGE CONTROLLED CRYSTAL OSCILLATORS (VCXO)



MK3754D

SMT

## INTRODUCTION

A low cost, low jitter, high performance VCXO and PLL IC with AFC designed to replace expensive complete 54MHz VCXO modules. Housed in an 8 pin SOIC surface mount package.

## FEATURES

- Surface mount
- SOIC package
- External crystal
- AFC
- Low jitter
- 12mA TTL output
- 3.3V supply

## TYPICAL APPLICATIONS

- STB
- DVD
- Multimedia

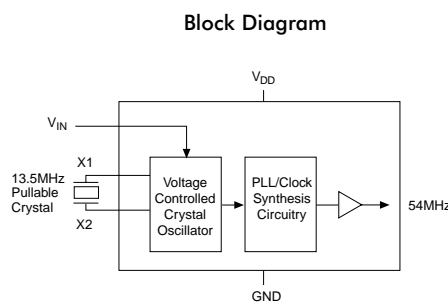
## PACKAGING

Supplied in tubes or taped & reeled.

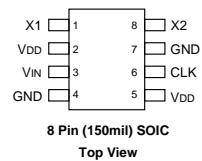
## SPECIFICATION

Nominal Frequency	54.0MHz
Operating Temperature Range	0°C to +70°C
Supply Voltage	3.3V ±5%
Current Consumption (max.)	9mA
Output Symmetry at 1.4V	45 to 55%
Output Load	TTL
Output Level "L" (max.) at 12mA	0.4V
Output Level "H" (min.) at 12mA	2.4V (V <sub>DD</sub> -0.4V CMOS)
Control Voltage	0 to 3.3V
AFC Characteristic	±115ppm

## SCHEMATIC, PACKAGE & CRYSTALS



## Connections



## CRYSTAL TABLE

Crystal Frequency MHz	Suitable Crystal		
	Package	Order Code	Pages
13.5	HC-49/4SMX	<b>XT472</b>	<b>28-29</b>
	DX-57	<b>XT672</b>	<b>36-37</b>

## PART NUMBERS

Manf. Part No. & <b>anglia</b> Order Code	
TUBE	TAPED & REELED
<b>MK3754DLF</b>	<b>MK3754DLFTR</b>



# VOLTAGE CONTROLLED SAW OSCILLATORS (VCSO)

M672

SMT

## INTRODUCTION

Voltage controlled SAW oscillators with AFC and a selectable output frequency divider, housed in a small surface mount package.

## FEATURES

- Surface mount
- AFC
- Selectable output
- Low phase jitter
- 3.3V supply

## TYPICAL APPLICATIONS

- PLL
- Clock and data recovery
- Fibre channel
- Ethernet
- SONET
- SDH

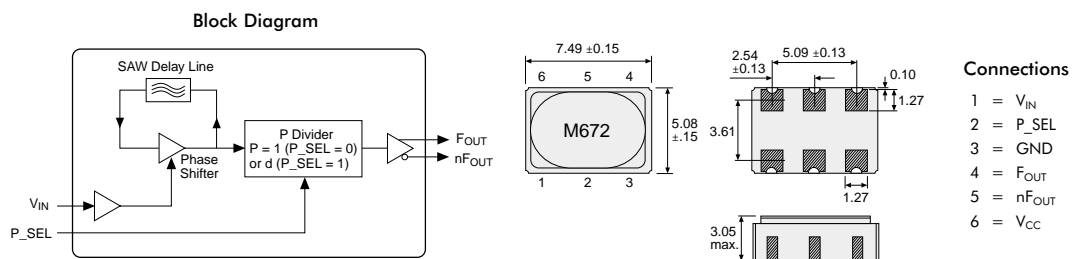
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	60 to 700MHz
Frequency Stability	±100ppm
Operating Temperature Range	-40°C to +85°C
Supply Voltage	3.3V ±10%
Current Consumption (max.)	125mA
Duty Cycle	45 to 55%
Output Level	LVPECL
Control Voltage	+0.3V to 3.0V
AFC Characteristic	±100ppm

## SCHEMATIC & DIMENSIONS (mm)



## PART NUMBERS

The following table lists a selection of the most popular frequencies that forms our profiled range. Other frequencies are available to special order subject to the limits defined within the Specification section above.

Centre Fundamental Frequency (MHz)	Divided Frequency (MHz)	P Divider (d)	Manf. Part No. & anglia Order Code
155.52	77.76	2	M672-2-BA
311.04	155.52	2	M672-2-AZ
622.08	77.76	8	M672-8-AA
622.08	155.52	4	M672-4-AA

# VOLTAGE CONTROLLED SAW OSCILLATORS (VCSO)



M675 Series

SMT

## INTRODUCTION

A series of voltage controlled, single output, SAW oscillators with AFC housed in a small surface mount package.

## FEATURES

- Surface mount
- AFC
- Low phase jitter
- 3.3V supply

## TYPICAL APPLICATIONS

- PLL
- Clock and data recovery
- Fibre channel
- Ethernet
- SONET
- SDH

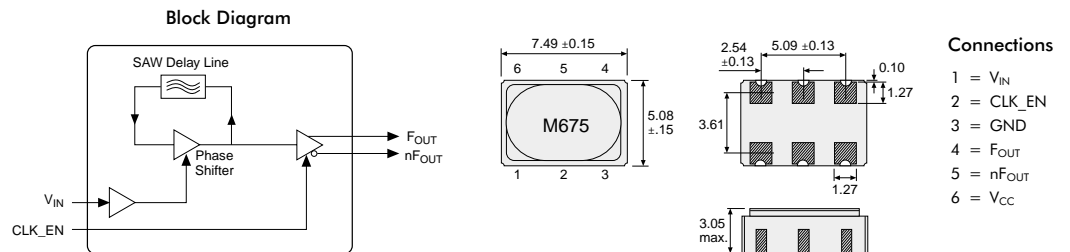
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

	M675-01	M675-02
Nominal Frequency Range	125 to 175MHz	500 to 700MHz
Frequency Stability	±100ppm	
Operating Temperature Range	-40°C to +85°C	
Supply Voltage	3.3V ±10%	
Current Consumption (max.)	125mA	
Duty Cycle	45 to 55%	
Output Level	LVPECL	
Control Voltage	+0.3V to 3.0V	
AFC Characteristic	±100ppm	

## SCHEMATIC & DIMENSIONS (mm)



## PART NUMBERS

The following tables provide examples of the standard output frequencies available. Please contact Anglia to discuss your specific requirements.

Guide to Part Number Scheme	M675-01		M675-02	
	Standard Output Frequency (MHz)	Output Frequency Code	Standard Output Frequency (MHz)	Output Frequency Code
Device Number _____	153.6	<b>BO</b>	614.4	<b>AO</b>
Variant _____	155.52	<b>BA</b>	622.08	<b>AA</b>
-01 = Output Freq. 125 - 175MHz	156.25	<b>BB</b>	625.0	<b>AB</b>
-02 = Output Freq. 500 - 700MHz	156.8324	<b>BC</b>	627.3296	<b>AC</b>
Output Frequency Code _____	161.1328	<b>BD</b>	644.5313	<b>AD</b>
	164.3555	<b>BM</b>	657.4219	<b>AM</b>
	166.6286	<b>BE</b>	666.5143	<b>AE</b>
	167.282	<b>BF</b>	669.1281	<b>AF</b>
	167.328	<b>BG</b>	669.312	<b>AG</b>
	167.3316	<b>BH</b>	669.3266	<b>AH</b>
	167.7097	<b>BI</b>	670.8386	<b>AI</b>
	168.04	<b>BJ</b>	672.16	<b>AJ</b>
	172.6423	<b>BK</b>	690.5692	<b>AK</b>
	173.3708	<b>BL</b>	693.483	<b>AL</b>



# VOLTAGE CONTROLLED SAW OSCILLATORS (VCSO)

M685 Series

SMT

## INTRODUCTION

A series of voltage controlled, dual frequency, selectable output SAW oscillators with AFC housed in a small surface mount package.

## FEATURES

- Surface mount
- Dual frequency selectable
- AFC
- Low phase jitter
- 3.3V supply

## TYPICAL APPLICATIONS

- PLL
- Clock and data recovery
- Fibre channel
- Ethernet
- SONET
- Sbit

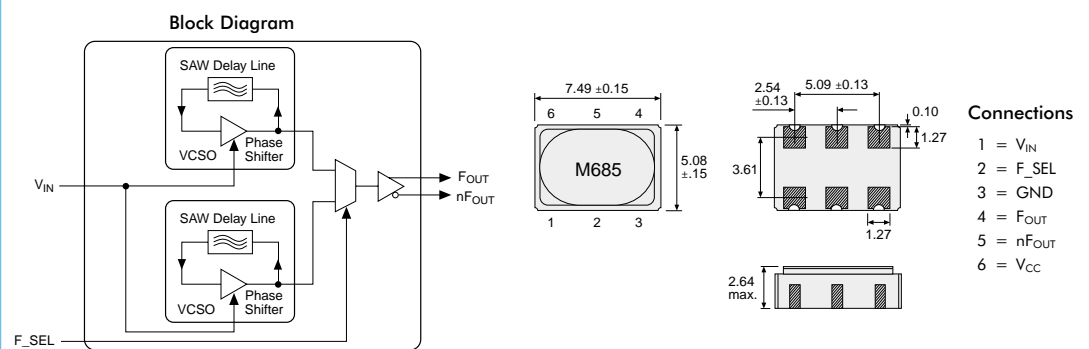
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

	M685-01	M685-02
Nominal Frequency Range	125 to 175MHz	500 to 700MHz
Frequency Stability	±100ppm	
Operating Temperature Range	-40°C to +85°C	
Supply Voltage	3.3V ±10%	
Current Consumption (max.)	125mA	
Duty Cycle	45 to 55%	
Output Level	LVPECL	
Control Voltage	+0.3V to 3.0V	
AFC Characteristic	±120ppm	

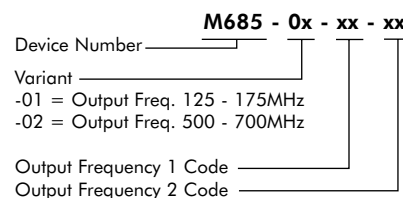
## SCHEMATIC & DIMENSIONS (mm)



## PART NUMBERS

The following tables provide examples of the standard output frequencies available. Please contact Anglia to discuss your specific requirements.

### Guide to Part Number Scheme



### Part Number Examples

Output Frequency (MHz)		Part Number
Freq. 1	Freq. 2	
155.52	167.3316	<b>M685-01-BA-BH</b>
156.25	161.1328	<b>M685-01-BB-BD</b>
622.08	669.3266	<b>M685-02-AA-AH</b>
625.0	644.5313	<b>M685-02-AB-AD</b>

### M685-01

Standard Output Frequency (MHz)	Output Frequency Code
153.6	<b>BO</b>
155.52	<b>BA</b>
156.25	<b>BB</b>
156.8324	<b>BC</b>
161.1328	<b>BD</b>
164.3555	<b>BM</b>
166.6286	<b>BE</b>
167.282	<b>BF</b>
167.328	<b>BG</b>
167.3316	<b>BH</b>
167.7097	<b>BI</b>
168.04	<b>BJ</b>
172.6423	<b>BK</b>
173.3708	<b>BL</b>

### M685-02

Standard Output Frequency (MHz)	Output Frequency Code
614.4	<b>AO</b>
622.08	<b>AA</b>
625.0	<b>AB</b>
627.3296	<b>AC</b>
644.5313	<b>AD</b>
657.4219	<b>AM</b>
666.5143	<b>AE</b>
669.1281	<b>AF</b>
669.312	<b>AG</b>
669.3266	<b>AH</b>
670.8386	<b>AI</b>
672.16	<b>AJ</b>
690.5692	<b>AK</b>
693.483	<b>AL</b>

# TEMPERATURE COMPENSATED CRYSTAL OSCILLATORS (TCXO)



NT5032SC

SMT

## INTRODUCTION

Temperature compensated quartz crystal oscillators with AFC, housed in a very small 4 terminal surface mount package. Offer a high level of frequency stability (2.5ppm) over the temperature range -30°C to +75°C.

## FEATURES

- Surface mount
- Temperature compensated
- High stability
- AFC
- Low voltage supply (3V)
- 5.0 x 3.2mm package

## TYPICAL APPLICATIONS

- Communications
- GSM
- Bluetooth

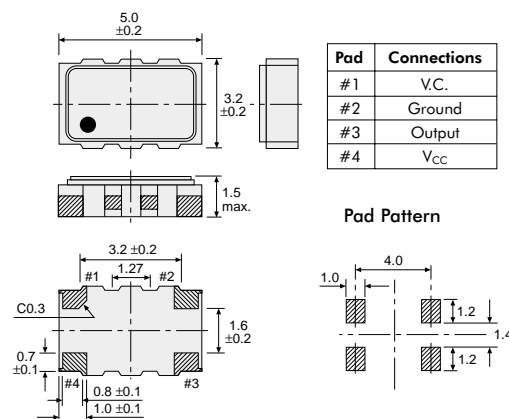
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	12.8, 13.0, 14.4, 19.2, 19.68, 19.8 or 26.0MHz
Frequency Stability	±2.5ppm
Operating Temperature Range	-30°C to +75°C
Supply Voltage	3.0V (2.4V min.)
Current Consumption (max.)	1.5mA
Supply Voltage Change	±0.3ppm/3.0V ±5%
Output Level (min.)	0.8V (P-P) (DC coupled)
Output Load	10kΩ//10pF
Control Voltage	+1.5V ±1V
AFC Characteristic	9ppm to 15ppm
Aging over 1 year (max.)	±1ppm

## DIMENSIONS (mm)



## PART NUMBERS

Frequency MHz	Manf. Part No. & anglia Order Code
12.8	NT5032SC128
13.0	NT5032SC130
14.4	NT5032SC144
19.2	NT5032SC192
19.68	NT5032SC1968
19.8	NT5032SC198
26.0	NT5032SC260

# TEMPERATURE COMPENSATED CRYSTAL OSCILLATORS (TCXO)

NT3225SA

SMT

## INTRODUCTION

Temperature compensated quartz crystal oscillators with AFC, housed in an ultra small 4 terminal surface mount package. Offer a high level of frequency stability (2.5ppm) over the temperature range -30°C to +75°C.

## FEATURES

- Surface mount
- Temperature compensated
- High stability
- AFC
- Low voltage supply (3V)
- 3.2 x 2.5mm package

## TYPICAL APPLICATIONS

- Communications
- GSM
- Bluetooth

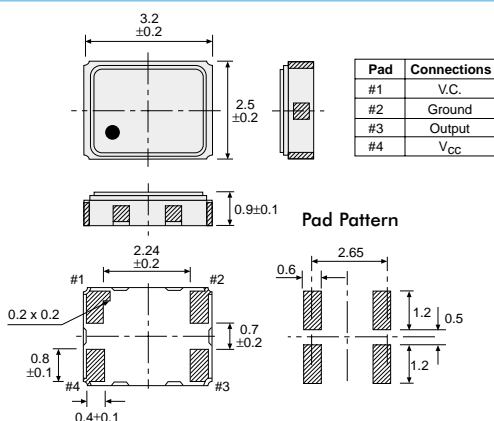
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	13.0, 19.2, 19.68, 19.8 or 26.0MHz
Frequency Stability	±2.5ppm
Operating Temperature Range	-30°C to +75°C
Supply Voltage	3.0V (2.4V min.)
Current Consumption (max.)	1.5mA
Supply Voltage Change	±0.3ppm/3.0V ±5%
Output Level (min.)	0.8V (P-P) (DC coupled)
Output Load	10kΩ//10pF
Control Voltage	+1.5V ±1V
AFC Characteristic	9ppm to 15ppm
Aging over 1 year (max.)	±1ppm

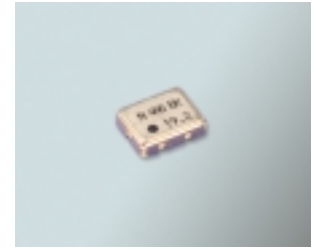
## DIMENSIONS (mm)



## PART NUMBERS

Frequency MHz	Manf. Part No. & anglia Order Code
13.0	NT3225SA130
19.2	NT3225SA192
19.68	NT3225SA1968
19.8	NT3225SA198
26.0	NT3225SA260

# TEMPERATURE COMPENSATED CRYSTAL OSCILLATORS (TCXO)



NT3225SC

SMT

## INTRODUCTION

Temperature compensated quartz crystal oscillators with AFC, housed in an ultra small 4 terminal surface mount package. Offer a high level of frequency stability (2.5ppm) over the temperature range -30°C to +75°C. Optimised for GPS.

## FEATURES

- Surface mount
- Temperature compensated
- High stability
- AFC
- Low voltage supply (3V)
- 3.2 x 2.5mm package

## TYPICAL APPLICATIONS

- GPS

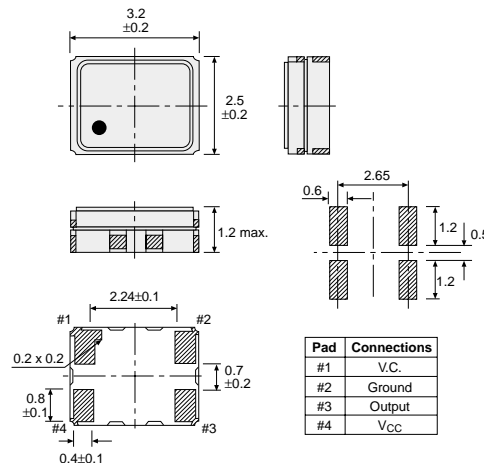
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Nominal Frequency Range	16.32, 16.3676, 16.368, 16.8, 19.2, 23.104, 24.5535, 26.0, 27.456 or 33.6MHz
Frequency Stability	±2.5ppm
Operating Temperature Range	-30°C to +85°C
Supply Voltage	3.0V
Current Consumption (max.)	1.5mA
Supply Voltage Change	±0.2ppm/3.0V ±5%
Output Level (min.)	0.8V (P-P) (DC coupled)
Output Load	10kΩ//10pF
Control Voltage	+0.5V to 2.5V
AFC Characteristic	9ppm to 15ppm
Aging over 1 year (max.)	±1ppm

## DIMENSIONS (mm)



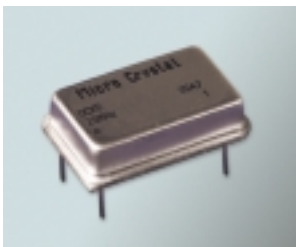
## PART NUMBERS

Please contact Anglia to discuss your specific requirements.

# OVEN CONTROLLED CRYSTAL OSCILLATORS (OCXO)

OCXO

LEADED & SMT



## INTRODUCTION

An oven controlled crystal oscillator with AFC available in a range of operating temperature specifications and offering the choice of leaded or surface mount package. 12V supply voltage.

## FEATURES

- 12V operation
- Oven controlled
- AFC
- Commercial, Industrial and Automotive specification

## TYPICAL APPLICATIONS

- GPS base stations
- Telecom timing
- GSM
- Bluetooth

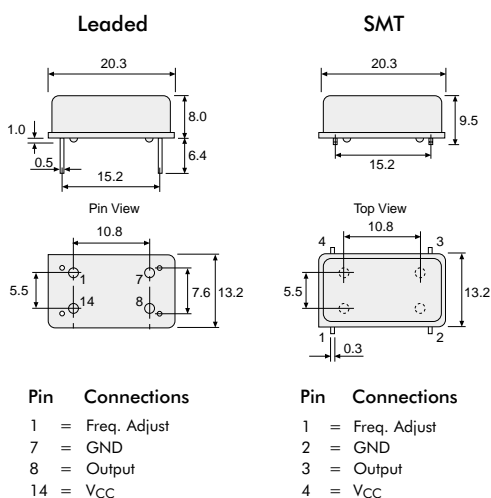
## PACKAGING

Supplied in trays.

## SPECIFICATION

Part Number Suffix	-AR1	-AV5	-BR1	-BV5	-CR1	-CV5
Nominal Frequency Range	10 to 40.0MHz					
Freq. Stability (Long Term 10 years)	±4.0ppm					
Operating Temperature Range	0°C to +60°C		-20°C to +70°C		-40°C to +85°C	
Supply Voltage (V <sub>CC</sub> )	12V ±0.5V					
Current Consumption (max.)	25mA at +30°C, 40mA at -20°C					
Supply Voltage Change	±0.1 ppm/±0.5V					
Output Symmetry at 1/2V <sub>CC</sub>	40 to 60%					
Output Load	10LS					
Output Level 'L' (max.)	0.4V					
Output Level 'H' (min.)	V <sub>CC</sub> - 0.5V					
Control Resistance or Voltage	0-10kΩ	0 to 5V	0-10kΩ	0 to 5V	0-10kΩ	0 to 5V
AFC Characteristics	±4ppm					

## DIMENSIONS (mm)

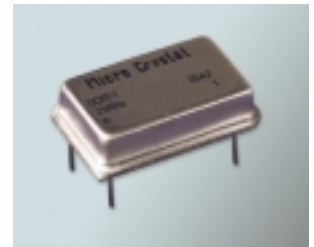


## PART NUMBERS

Please contact Anglia to discuss your specific requirements.



# OVEN CONTROLLED CRYSTAL OSCILLATORS (OCXO)



OCXOV

LEADED & SMT

## INTRODUCTION

An oven controlled crystal oscillator with AFC available in a range of operating temperature specifications and offering the choice of leaded or surface mount package. 5V supply voltage.

## FEATURES

- 5V operation
- Oven controlled
- AFC
- Commercial, Industrial and Automotive specification

## TYPICAL APPLICATIONS

- GPS base stations
- Telecom timing
- GSM
- Bluetooth

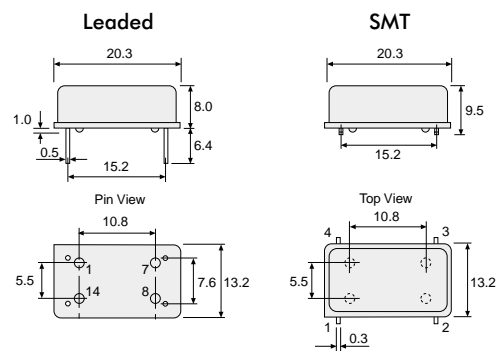
## PACKAGING

Supplied in trays.

## SPECIFICATION

Part Number Suffix	-AR1	-AV5	-BR1	-BV5	-CR1	-CV5
Nominal Frequency Range	10.0 to 40.0MHz					
Freq. Stability (Long Term 10 years)	±4.0ppm					
Operating Temperature Range	0°C to +60°C		-20°C to +70°C		-40°C to +85°C	
Supply Voltage (V <sub>CC</sub> )	5V ±0.2V					
Current Consumption (max.)	70mA at +30°C, 110mA at -20°C					
Supply Voltage Change	±0.1ppm/±0.2V					
Output Symmetry at 1/2V <sub>CC</sub>	40 to 60%					
Output Load	10LS					
Output Level 'L' (max.)	0.4V					
Output Level 'H' (min.)	V <sub>CC</sub> - 0.5V					
Control Resistance or Voltage	0-10kΩ	0 to 5V	0-10kΩ	0 to 5V	0-10kΩ	0 to 5V
AFC Characteristics	±4ppm					

## DIMENSIONS (mm)



**Pin Connections**  
 1 = Freq. Adjust  
 7 = GND  
 8 = Output  
 14 = V<sub>CC</sub>

**Pin Connections**  
 1 = Freq. Adjust  
 2 = GND  
 3 = Output  
 4 = V<sub>CC</sub>

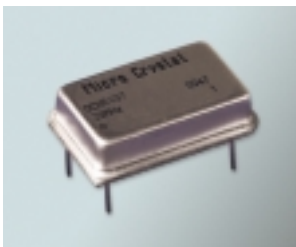
## PART NUMBERS

Please contact Anglia to discuss your specific requirements.

# OVEN CONTROLLED CRYSTAL OSCILLATORS (OCXO)

OCXOVST

LEADED & SMT



## INTRODUCTION

An oven controlled crystal oscillator with an option of operating temperature specifications and offering the choice of leaded or surface mount package. 5V supply voltage.

## FEATURES

- 5V operation
- Oven controlled
- Commercial and Automotive specification

## TYPICAL APPLICATIONS

- Telecoms
- Stratum 3

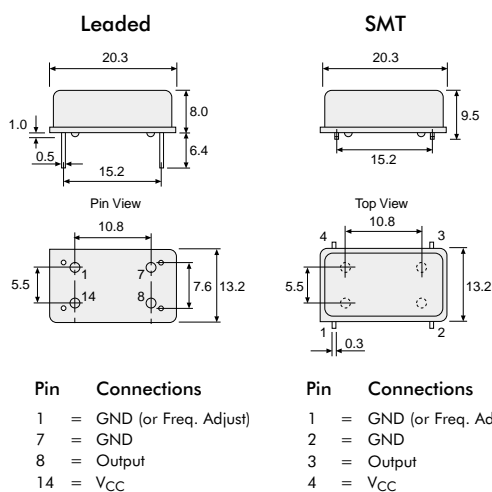
## PACKAGING

Supplied in trays.

## SPECIFICATION

Part Number Suffix	-C	-D
Nominal Frequency Range	12.8 to 40.0MHz	
Freq. Stability (Long Term 15 years)	±4.6ppm	
Operating Temperature Range	0°C to +70°C	-40°C to +85°C
Supply Voltage (V <sub>CC</sub> )	5V ±0.2V	
Current Consumption (max.)	70mA at +30°C, 110mA at -20°C	
Output Symmetry at 1/2V <sub>CC</sub>	45 to 55%	
Output Load (max.)	10LS or 47pF	
Output Level 'L' (max.)	0.4V	
Output Level 'H' (min.)	V <sub>CC</sub> - 0.5V	
Control Resistance or Voltage	None (or to special order)	

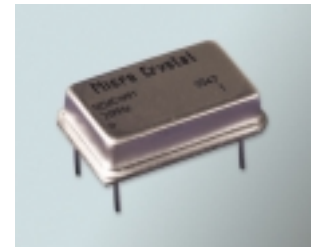
## DIMENSIONS (mm)



## PART NUMBERS

Please contact Anglia to discuss your specific requirements.

# OVEN CONTROLLED CRYSTAL OSCILLATORS (OCXO)



OCXOWST

LEADED & SMT

## INTRODUCTION

An oven controlled crystal oscillator with an option of operating temperature specifications and offering the choice of leaded or surface mount package. 3.3V supply voltage.

## FEATURES

- 3.3V operation
- Oven controlled
- Commercial and Automotive specification

## TYPICAL APPLICATIONS

- Telecoms
- Stratum 3

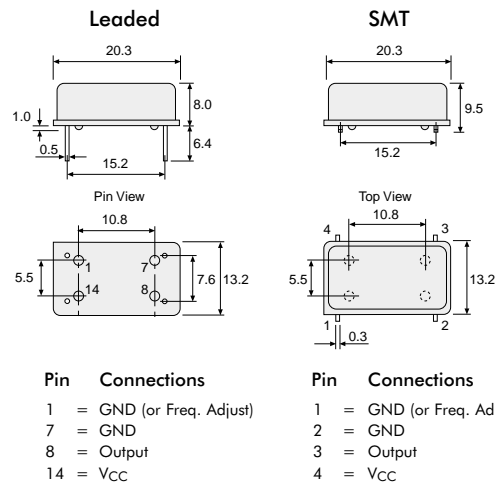
## PACKAGING

Supplied in taped.

## SPECIFICATION

Part Number Suffix	-C	-D
Nominal Frequency Range	12.8 to 20.0MHz	
Freq. Stability (Long Term 15 years)	±4.6ppm	
Operating Temperature Range	0°C to +70°C	-40°C to +85°C
Supply Voltage (V <sub>CC</sub> )	3.3V ±0.2V	
Current Consumption (max.)	110mA at +30°C, 160mA at -20°C	
Output Symmetry at 1/2V <sub>CC</sub>	45 to 55%	
Output Load (max.)	10LS or 47pF	
Output Level 'L' (max.)	0.4V	
Output Level 'H' (min.)	V <sub>CC</sub> - 0.5V	
Control Resistance or Voltage	None (or to special order)	

## DIMENSIONS (mm)



## PART NUMBERS

Please contact Anglia to discuss your specific requirements.

# REAL TIME CLOCK MODULE (RTC)

RV-8564-C2

SMT

## INTRODUCTION

The RV-8564-C2 is a real time clock calendar module complete with oscillator. The calendar function tracks year, month, date and day-of-the-week with built in century and leap-year flags. The clock function tracks minute and second in 24-hour format. Programmable alarm setting and universal timer functions increase flexibility.

## FEATURES

- Internal oscillator
- I<sup>2</sup>C Bus
- Programmable clock output

## TYPICAL APPLICATIONS

- General calendar/clock functions

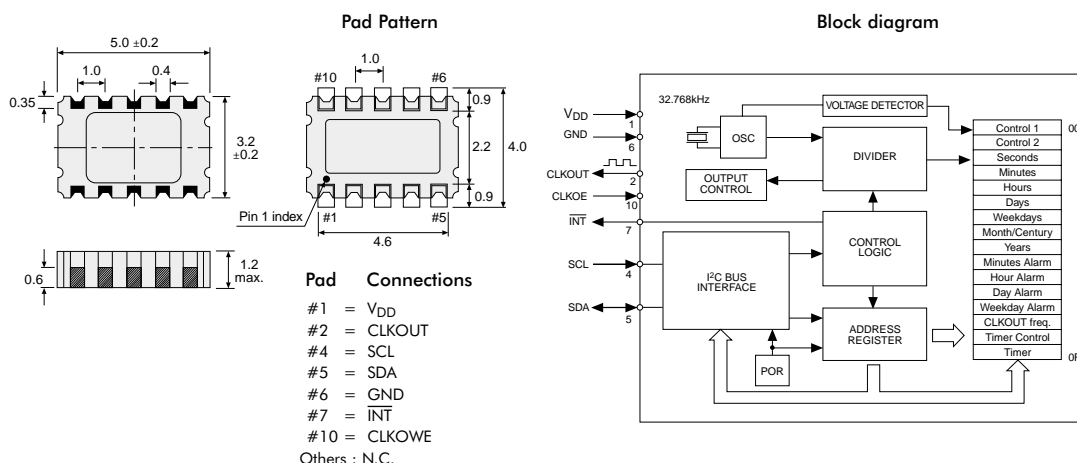
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Selectable Output Frequencies	32768, 1024, 32 and 1Hz
Frequency Tolerance	±10ppm (Option: ±20ppm)
Operating Temperature Range	-40°C to +85°C
Supply Voltage (active)	1.8V min., 5.5V max.
Supply Voltage (Time keeping mode)	1.2V min., 5.5V max.
Current Consumption	
(active - 400kHz)	800µA
(active - 100kHz)	200µA
Current Consumption (max.)	
(Time keeping mode)	3V - 500nA, 2V - 450nA

## DIMENSIONS (mm)

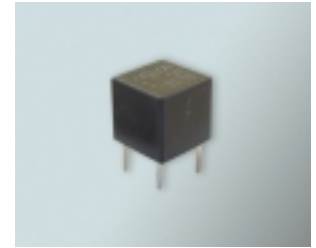


## PART NUMBER

The following table lists an RTC module with a standard frequency tolerance that forms our profiled range. An alternative tolerance of ±20ppm is available to special order.

Frequency Tolerance	Manf. Part No. & anglia Order Code
±10ppm	<b>RV8564C232768A</b>

# CERAMIC FILTERS



CFULB Series

LEADED

## INTRODUCTION

Ultra small 455kHz ceramic filters which use four elements in ladder form for high performance.

## FEATURES

- Ultra small 'cube' package
- 4 Element
- High performance

## TYPICAL APPLICATIONS

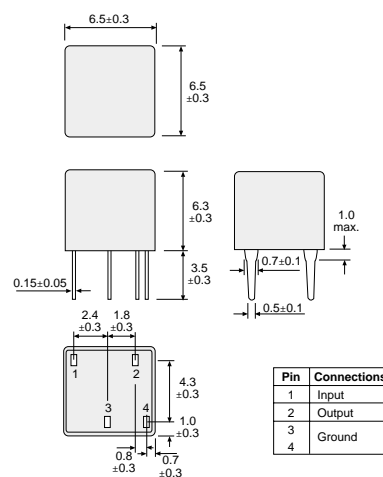
- Pagers
- Cordless phones
- Mobile radio
- Telemetry

## SPECIFICATION

Manf. Part No. & anglia Order Code	Centre Frequency (fo) (kHz)	6dB Bandwidth (kHz)	Stop Bandwidth (kHz)	Stop Band Attenuation (dB)	Insertion Loss (dB)	Input/Output Impedance (ohm)
CFULB455KB2A-B0	455 ±2.0kHz	fn ± 15 min.	fn ± 30 max. [within 40dB]	27 min. [within fn ± 100kHz]	4 max. [at min. loss point]	1500
CFULB455KC2A-B0	455 ±2.0kHz	fn ± 12.5 min.	fn ± 24 max. [within 40dB]	27 min. [within fn ± 100kHz]	4 max. [at min. loss point]	1500
CFULB455KD4A-B0	455 ±1.5kHz	fn ± 10.0 min.	fn ± 20 max. [within 40dB]	27 min. [within fn ± 100kHz]	4 max. [at min. loss point]	1500
CFULB455KE4A-B0	455 ±1.5kHz	fn ± 7.5 min.	fn ± 15 max. [within 40dB]	27 min. [within fn ± 100kHz]	6 max. [at min. loss point]	1500
CFULB455KF4A-B0	455 ±1.5kHz	fn ± 6 min.	fn ± 12.5 max. [within 40dB]	27 min. [within fn ± 100kHz]	6 max. [at min. loss point]	2000
CFULB455KG1A-B0	455 ±1.0kHz	fn ± 4.5 min.	fn ± 10.0 max. [within 40dB]	25 min. [within fn ± 100kHz]	6 max. [at min. loss point]	2000
CFULB455KH1A-B0	455 ±1.0kHz	fn ± 3 min.	fn ± 9 max. [within 40dB]	35 min. [within fn ± 100kHz]	6 max. [at min. loss point]	2000
CFULB455KJ1A-B0	455 ±1.0kHz	fn ± 2 min.	fn ± 7.5 max. [within 40dB]	35 min. [within fn ± 100kHz]	6 max. [at min. loss point]	2000

Centre frequency (fo) defined by the centre of 6dB bandwidth. fn means nominal centre frequency 455kHz

## DIMENSIONS (mm) & CHARACTERISTICS



### Test Circuit

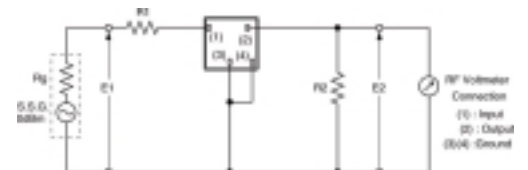
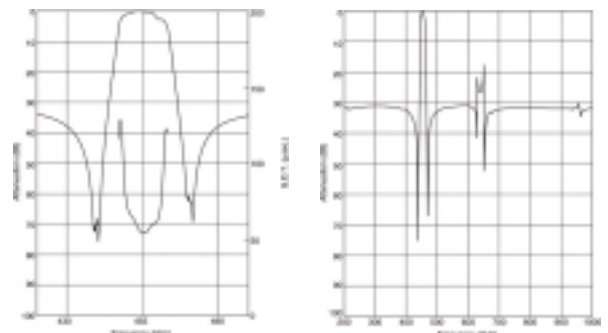


Fig. 11-1-1 Input/Output impedances

For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor

### Frequency Characteristics - CFULB455KE4A-B0



## PART NUMBERS

Please refer to table in Specification section above.

# CERAMIC FILTERS

CFWLA Series

LEADED

## INTRODUCTION

Low profile 455kHz ceramic filters which use six elements in ladder form to provide high selectivity.

## FEATURES

- Low profile
- 6 Element
- High selectivity

## TYPICAL APPLICATIONS

- Cordless phones
- Amateur radio
- Telemetry

## SPECIFICATION

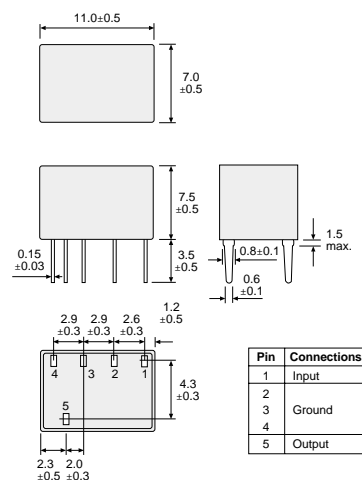
Operating Temperature Range -20°C to +80°C

Storage Temperature Range -40°C to +85°C

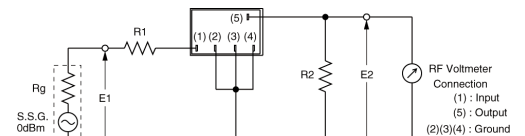
Manf. Part No. & anglia Order Code	Nominal Frequency (fn) (kHz)	6dB Bandwidth (kHz)	Stop Bandwidth (kHz)	Stop Band Attenuation (dB)	Insertion Loss (dB)	Ripple (dB)	Input/Output Impedance (ohm)
CFWLA455KBFA-B0	455	fn ± 15 min.	fn ± 30 max. [within 50dB]	35 min. [within fn ± 100kHz]	4 max. [at min. loss point]	3 max. [within fn ± 10kHz]	1500
CFWLA455KCFA-B0	455	fn ± 12.5 min.	fn ± 24 max. [within 50dB]	35 min. [within fn ± 100kHz]	4 max. [at min. loss point]	3 max. [within fn ± 8kHz]	1500
CFWLA455KDFA-B0	455	fn ± 10.0 min.	fn ± 20 max. [within 50dB]	35 min. [within fn ± 100kHz]	4 max. [at min. loss point]	3 max. [within fn ± 7kHz]	1500
CFWLA455KEFA-B0	455	fn ± 7.5 min.	fn ± 15 max. [within 50dB]	35 min. [within fn ± 100kHz]	6 max. [at min. loss point]	3 max. [within fn ± 5kHz]	1500
CFWLA455KFFA-B0	455	fn ± 6 min.	fn ± 12.5 max. [within 50dB]	35 min. [within fn ± 100kHz]	6 max. [at min. loss point]	3 max. [within fn ± 4kHz]	2000
CFWLA455KGFA-B0	455	fn ± 4.5 min.	fn ± 10.0 max. [within 50dB]	35 min. [within fn ± 100kHz]	6 max. [at min. loss point]	2 max. [within fn ± 3kHz]	2000
CFWLA455KHFA-B0	455	fn ± 3 min.	fn ± 9 max. [within 50dB]	60 min. [within fn ± 100kHz]	6 max. [at min. loss point]	2 max. [within fn ± 2kHz]	2000
CFWLA455KJFA-B0	455	fn ± 2 min.	fn ± 7.5 max. [within 50dB]	60 min. [within fn ± 100kHz]	7 max. [at min. loss point]	2 max. [within fn ± 1.5kHz]	2000

fn means nominal centre frequency 455kHz

## DIMENSIONS (mm) & CHARACTERISTICS



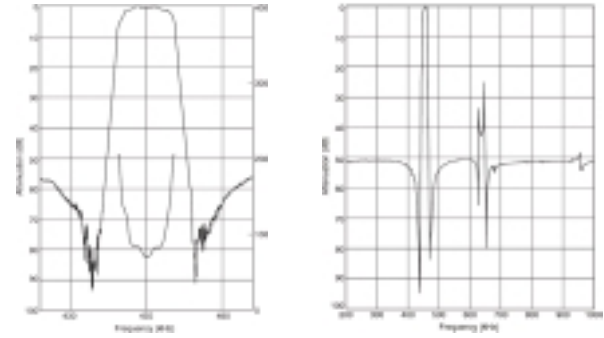
### Test Circuit



Rg=R1=R2=Input/Output Impedance

For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor

### Frequency Characteristics - CFWLA455KEFA-B0



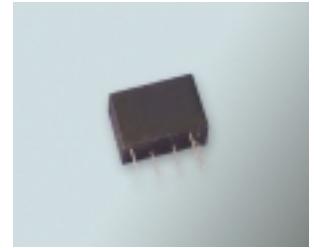
## PART NUMBERS

Please refer to table in Specification section above.

# CERAMIC FILTERS

CFWLB Series

LEADED



## INTRODUCTION

Miniaturised 455kHz ceramic filters which use six elements in ladder form to provide high selectivity.

## FEATURES

- Miniature
- 6 Element
- High selectivity

## TYPICAL APPLICATIONS

- Pagers
- Cordless phones
- Mobile radio
- Telemetry

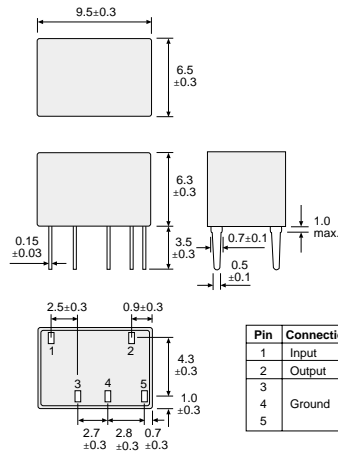
## SPECIFICATION

Operating Temperature Range	-20°C to +80°C
Storage Temperature Range	-40°C to +85°C

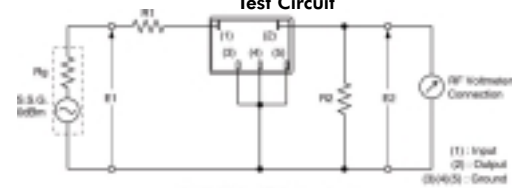
Manf. Part No. & anglia Order Code	Nominal Frequency (fn) (kHz)	6dB Bandwidth (kHz)	Stop Bandwidth (kHz)	Stop Band Attenuation (dB)	Insertion Loss (dB)	Input/Output Impedance (ohm)
CFWLB455KBFA-B0	455	fn ± 15 min.	fn ± 30 max. [within 50dB]	35 min. [within fn ± 100kHz]	4 max. [at min. loss point]	1500
CFWLB455KCFA-B0	455	fn ± 12.5 min.	fn ± 24 max. [within 50dB]	35 min. [within fn ± 100kHz]	4 max. [at min. loss point]	1500
CFWLB455KDFA-B0	455	fn ± 10.0 min.	fn ± 20 max. [within 50dB]	35 min. [within fn ± 100kHz]	4 max. [at min. loss point]	1500
CFWLB455KEFA-B0	455	fn ± 7.5 min.	fn ± 15 max. [within 50dB]	35 min. [within fn ± 100kHz]	6 max. [at min. loss point]	1500
CFWLB455KEFA004-B0	455	fn ± 7.5 min.	fn ± 15 max. [within 60dB]	60 min. [within fn ± 15kHz to 30kHz]	5 max. [at fn]	1500
CFWLB455KFFA-B0	455	fn ± 6 min.	fn ± 12.5 max. [within 50dB]	35 min. [within fn ± 100kHz]	6 max. [at min. loss point]	2000
CFWLB455KGFA-B0	455	fn ± 4.5 min.	fn ± 10.0 max. [within 50dB]	35 min. [within fn ± 100kHz]	6 max. [at min. loss point]	2000
CFWLB455KHFA-B0	455	fn ± 3 min.	fn ± 9 max. [within 50dB]	55 min. [within fn ± 100kHz]	6 max. [at min. loss point]	2000
CFWLB455KJFA-B0	455	fn ± 2 min.	fn ± 7 max. [within 50dB]	55 min. [within fn ± 100kHz]	7 max. [at min. loss point]	2000

fn means nominal centre frequency 455kHz

## DIMENSIONS (mm) & CHARACTERISTICS

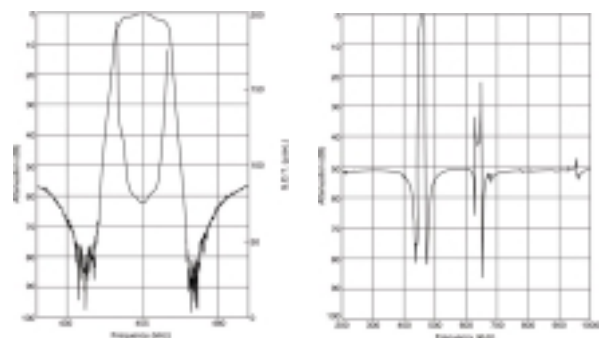


## Test Circuit



For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor

## Frequency Characteristics - CFWLB455KEFA-B0



## PART NUMBERS

Please refer to table in Specification section above.

# CERAMIC FILTERS

SFPKA Series

SMT

## INTRODUCTION

High performance, 4 element, 455kHz ceramic filters housed in a slim surface mount package.

## FEATURES

- Surface mount
- Slim package (5mm)
- 4 element
- High performance

## TYPICAL APPLICATIONS

- Pagers
- Cordless phones
- Transceivers

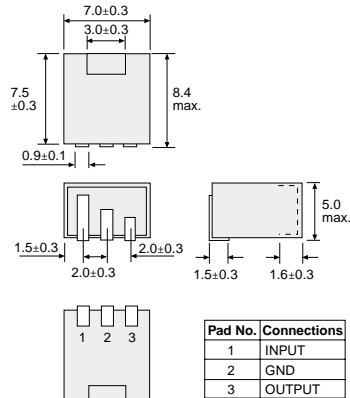
## SPECIFICATION

Operating Temperature Range	-20°C to +80°C
Storage Temperature Range	-40°C to +85°C

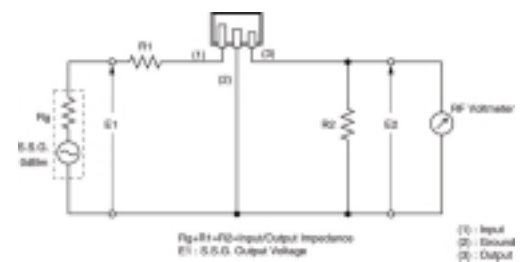
Manf. Part No. & anglia Order Code	Centre Frequency (fo) (kHz)	6dB Bandwidth (kHz)	Stop Bandwidth (kHz)	Stop Band Attenuation (dB)	Insertion Loss (dB)	Ripple (dB)	Input/Output Impedance (ohm)
SFPKA455KD4A-R1	455 ±1.5kHz	fn±10.0 min.	fn±20 max. [within 40dB]	27 min. [within fn±100kHz]	4 max. [at min. loss point]	2 max. [within fn±7kHz]	1500
SFPKA455KE4A-R1	455 ±1.5kHz	fn±7.5 min.	fn±15 max. [within 40dB]	27 min. [within fn±100kHz]	6 max. [at min. loss point]	1.5 max. [within fn±5kHz]	1500
SFPKA455KF4A-R1	455 ±1.5kHz	fn±6 min.	fn±12.5 max. [within 40dB]	27 min. [within fn±100kHz]	6 max. [at min. loss point]	1.5 max. [within fn±4kHz]	1500
SFPKA455KG1A-R1	455 ±1.0kHz	fn±4.5 min.	fn±10.0 max. [within 40dB]	25 min. [within fn±100kHz]	6 max. [at min. loss point]	1.5 max. [within fn±3kHz]	1500
SFPKA455KH1A-R1	455 ±1.0kHz	fn±3 min.	fn±9 max. [within 40dB]	35 min. [within fn±100kHz]	6 max. [at min. loss point]	1.5 max. [within fn±2kHz]	2000

Centre frequency (fo) defined by the centre of 6dB bandwidth. fn means nominal centre frequency 455kHz

## DIMENSIONS (mm) & CHARACTERISTICS

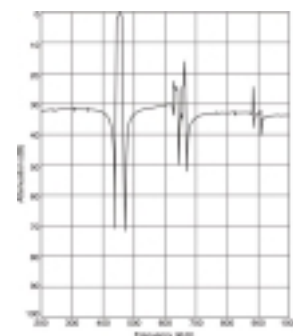
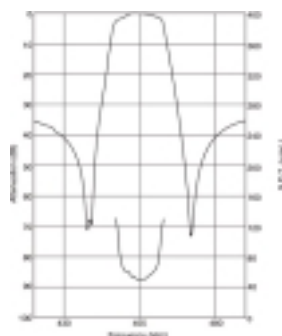


### Test Circuit



For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor

### Frequency Characteristics - SFPKA455KE4A-R1



## PART NUMBERS

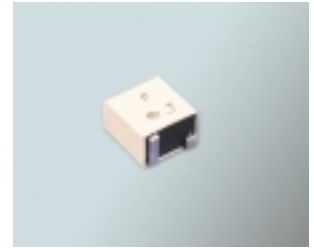
Please refer to table in Specification section above.



# CERAMIC FILTERS

CFUKG Series

SMT



## INTRODUCTION

High performance, 4 element, 455kHz ceramic filters housed in a compact and slim surface mount package.

## FEATURES

- Surface mount
- Compact size
- Slim package (4mm)
- 4 element
- High performance

## TYPICAL APPLICATIONS

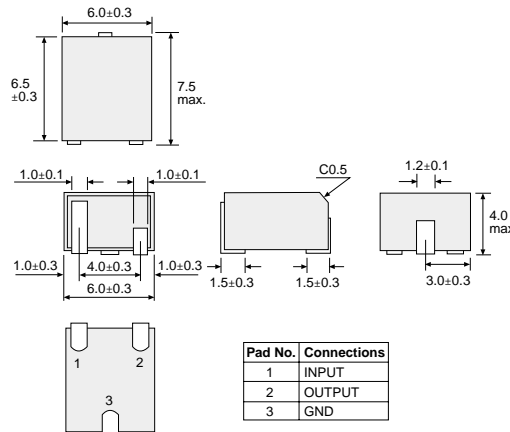
- Pagers
- Cordless phones
- Transceivers

## SPECIFICATION

Operating Temperature Range	-20°C to +80°C						
Storage Temperature Range	-40°C to +85°C						
Manf. Part No. & Anglia Order Code	Centre Frequency (fo) (kHz)	6dB Bandwidth (kHz)	Stop Bandwidth (kHz)	Stop Band Attenuation (dB)	Insertion Loss (dB)	Ripple (dB)	Input/Output Impedance (ohm)
CFUKG455KD4A-R0	455 ± 1.5kHz	fn ± 10.0 min.	fn ± 20 max. [within 40dB]	27 min. [within fn ± 100kHz]	4 max. [at min. loss point]	2 max. [within fn ± 7kHz]	1500
CFUKG455KE4A-R0	455 ± 1.5kHz	fn ± 7.5 min.	fn ± 15 max. [within 40dB]	27 min. [within fn ± 100kHz]	6 max. [at min. loss point]	1.5 max. [within fn ± 5kHz]	1500
CFUKG455KF4A-R0	455 ± 1.5kHz	fn ± 6 min.	fn ± 12.5 max. [within 40dB]	27 min. [within fn ± 100kHz]	6 max. [at min. loss point]	1.5 max. [within fn ± 4kHz]	1500
CFUKG455KG1A-R0	455 ± 1.0kHz	fn ± 4.5 min.	fn ± 10.0 max. [within 40dB]	25 min. [within fn ± 100kHz]	6 max. [at min. loss point]	1.5 max. [within fn ± 3kHz]	1500

Centre frequency (fo) defined by the centre of 6dB bandwidth. fn means nominal centre frequency 455kHz

## DIMENSIONS (mm) & CHARACTERISTICS



## Test Circuit

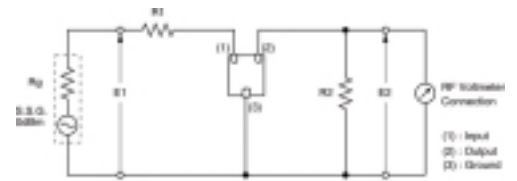
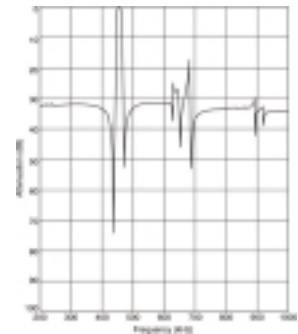
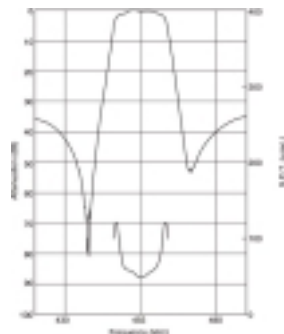


Fig. P11-RF Input/Output Impedance

For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor

## Frequency Characteristics - CFUKG455KE4A-R0



## PART NUMBERS

Please refer to table in Specification section above.

# CERAMIC FILTERS

CFUKF Series

SMT

## INTRODUCTION

High performance, 4 element, 455kHz ceramic filters housed in a compact and slim surface mount package. Optimised for digital communications.

## FEATURES

- Surface mount
- Compact size
- Slim package (4mm)
- 4 Element
- High performance
- Flat GDT characteristics

## TYPICAL APPLICATIONS

- Digital communications

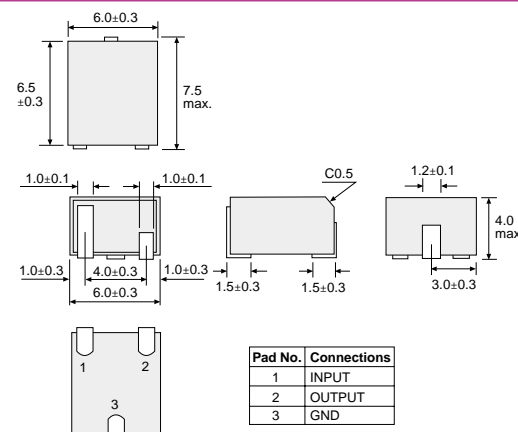
## SPECIFICATION

Operating Temperature Range	-20°C to +80°C
Storage Temperature Range	-40°C to +85°C

Manf. Part No. & Anglia Order Code	Centre Frequency (fo) (kHz)	6dB Bandwidth (kHz)	Stop Bandwidth (kHz)	Stop Band Attenuation (dB)	Insertion Loss (dB)	Ripple (dB)	GDT Deviation (µs)	Input/Output Impedance (ohm)
CFUKF455KA2X-R0	455 ±2.0kHz	fn ±17.5 min.	fn ±40 max. [within 40dB]	25 min. [within fn ±100kHz]	4 max. [at min. loss point]	1.0 max. [within fn ±12kHz]	15 max. [within fn ±12kHz]	1000
CFUKF455KB4X-R0	455 ±1.5kHz	fn ±15 min.	fn ±35 max. [within 40dB]	25 min. [within fn ±100kHz]	5 max. [at min. loss point]	1.0 max. [within fn ±10kHz]	15 max. [within fn ±10kHz]	1000
CFUKF455KC4X-R0	455 ±1.5kHz	fn ±12.5 min.	fn ±30 max. [within 40dB]	25 min. [within fn ±100kHz]	6 max. [at min. loss point]	1.0 max. [within fn ±8kHz]	15 max. [within fn ±8kHz]	1000
CFUKF455KD1X-R0	455 ±1.0kHz	fn ±10.0 min.	fn ±25 max. [within 40dB]	23 min. [within fn ±100kHz]	7 max. [at min. loss point]	1.0 max. [within fn ±7kHz]	20 max. [within fn ±7kHz]	1500
CFUKF455KE1X-R0	455 ±1.0kHz	fn ±7.5 min.	fn ±20 max. [within 40dB]	23 min. [within fn ±100kHz]	8 max. [at min. loss point]	1.0 max. [within fn ±5kHz]	20 max. [within fn ±5kHz]	1500

Centre frequency (fo) defined by the centre of 6dB bandwidth. fn means nominal centre frequency 455kHz

## DIMENSIONS (mm) & CHARACTERISTICS



## Test Circuit

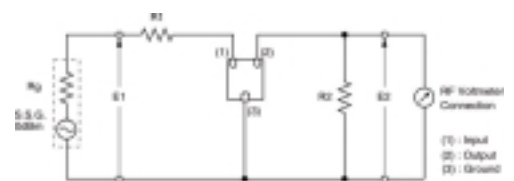
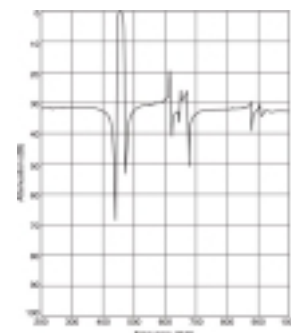
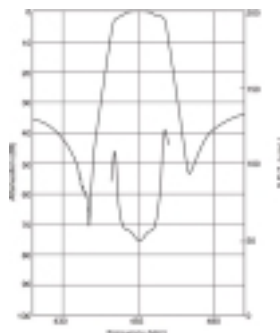


Fig.01 - RF Input/Output Impedance

For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor

## Frequency Characteristics - CFUKF455KE1X-R0



## PART NUMBERS

Please refer to table in Specification section above.

# CERAMIC FILTERS



SFSCE Series

SMT

## INTRODUCTION

High performance 10.7MHz ceramic filters housed in an ultra slim surface mount package. Optimised for digital receivers.

## FEATURES

- Surface mount
- Ultra slim package
- High performance
- Flat GDT characteristics
- Wide bandwidth

## TYPICAL APPLICATIONS

- Digital communications
- RFID
- R.K.E. systems

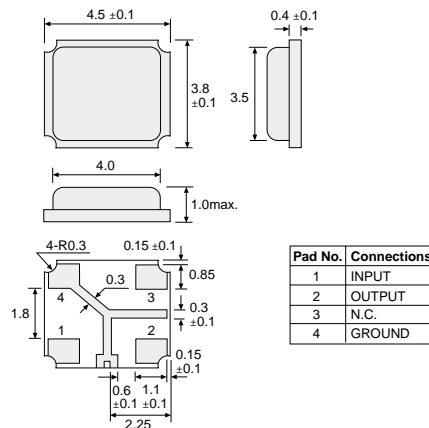
## SPECIFICATION

Operating Temperature Range	-20°C to +80°C
Storage Temperature Range	-40°C to +85°C

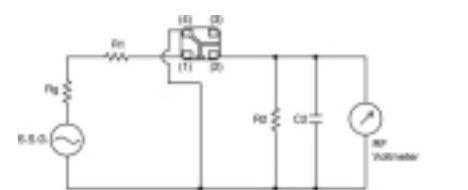
Manf. Part No. & anglia Order Code	Nominal Frequency (fn) (MHz)	3dB Bandwidth (kHz)	Stop Bandwidth (MHz)	Insertion Loss (dB)	Ripple (dB)	Spurious Response (dB)	GDT Deviation (µs)	Input/Output Impedance (ohm)
SFSCE10M7WF03-R0	10.7	fn±500 min.	2.2 max. (Total) [within 20dB]	6 max. [at min. loss point]	2 max. [within 3dB B/W]	30/25 min. [within 5.7MHz to fn/fn to 15.7MHz]	0.6 max. [within fn±400kHz]	470
SFSCE10M7WF04-R0	10.7	fn±400 min.	1.8 max. (Total) [within 20dB]	6 max. [at min. loss point]	1.5 max. [within 3dB B/W]	35/25 min. [within 5.7MHz to fn/fn to 15.7MHz]	0.6 max. [within fn±325kHz]	470
SFSCE10M7WF05-R0	10.7	fn±325 min.	1.7 max. (Total) [within 20dB]	6 max. [at min. loss point]	1.5 max. [within 3dB B/W]	40/30 min. [within 5.7MHz to fn/fn to 15.7MHz]	0.6 max. [within fn±250kHz]	470

fn means nominal centre frequency 10.7kHz

## DIMENSIONS (mm) & CHARACTERISTICS



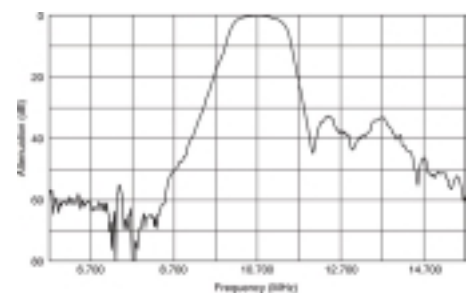
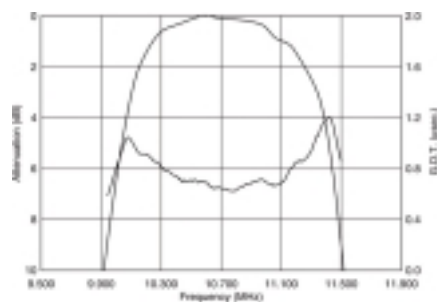
## Test Circuit



R<sub>g</sub> = R<sub>g</sub> - Input/Output Impedance, R<sub>g</sub> - 50Ω  
C<sub>2</sub> = 100F (including stray capacitance and input capacitance of AC Voltmeter)  
E1 - 5.5-G, Output Voltage

For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor

## Frequency Characteristics - SFSCE10M7WF03-R0



## PART NUMBERS

Please refer to table in Specification section above.

# CERAMIC FILTERS

SFECF Series

SMT

## INTRODUCTION

High performance 10.7MHz ceramic filters housed in a small footprint, ultra slim surface mount package.

## FEATURES

- Surface mount
- Small ultra slim package
- High performance

## TYPICAL APPLICATIONS

- FM receivers

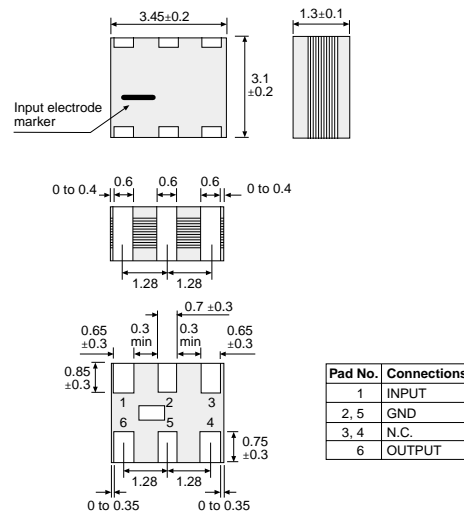
## SPECIFICATION

Operating Temperature Range	-20°C to +80°C
Storage Temperature Range	-40°C to +85°C

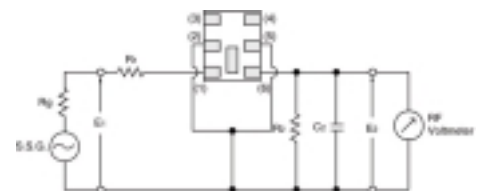
Manf. Part No. & Anglia Order Code	Centre Frequency (fo) (MHz)	Nominal Frequency (fn) (MHz)	3dB Bandwidth (kHz)	Attenuation (kHz)	Insertion Loss (dB)	Ripple (dB)	Spurious Attenuation (μs)	Input/Output Impedance (ohm)
SFECF10M7HA00-R0	10.7 ±30kHz	-	180 ±40	470 max.	4 ±2.0	1.0 max.	30 min.	330
SFECF10M7GA00-R0	10.7 ±30kHz	-	230 ±50	510 max.	3.5 ±2.0	1.0 max.	30 min.	330
SFECF10M7FA00-R0	10.7 ±30kHz	-	280 ±50	590 max.	3 ±2.0	1.0 max.	30 min.	330
SFECF10M7EA00-R0	10.7 ±30kHz	-	330 ±50	700 max.	3 ±2.0	1.0 max.	30 min.	330
SFECF10M7DF00-R0	-	10.7	fn±150 min.	990 max.	6 max. [at fn]	3 max.	20 min.	330

Centre frequency (fo) defined by the centre of 6dB bandwidth. fn means nominal centre frequency 10.7MHz

## DIMENSIONS (mm) & CHARACTERISTICS



## Test Circuit

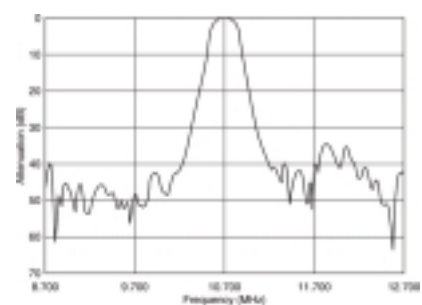
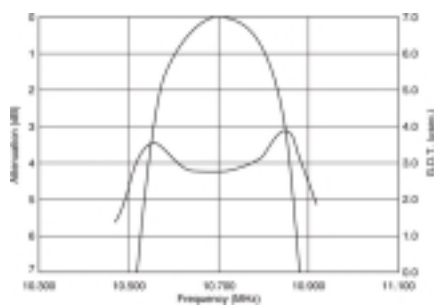


R<sub>1</sub> = 50Ω R<sub>2</sub> = 250Ω ±5% R<sub>3</sub> = 300Ω ±5%  
 C<sub>1</sub> = 10 ±2 pF (including stray capacitance and input capacitance of RF Volt Meter)  
 S.S.G. : S.S.G. Output Voltage

(1) - Input  
 (2)(5) - Ground  
 (3)(4) - No connect  
 (6) - Output

For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor

## Frequency Characteristics - SFECF10M7FA00-R0



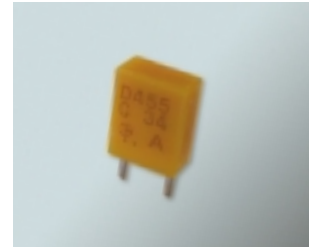
## PART NUMBERS

Please refer to table in Specification section above.

# CERAMIC DISCRIMINATORS

CDBLA Series

LEADED



## INTRODUCTION

A series of 455kHz ceramic discriminators that provides adjustment free, stable demodulation of IF signals over a wide bandwidth. Each part in the range has been optimised to operate with a specific IC.

## FEATURES

- 455kHz
- High sensitivity
- High stability
- Adjustment free

## TYPICAL APPLICATIONS

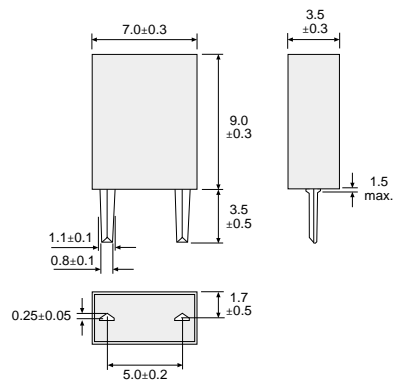
- Mobile communications
- Cordless phones
- Cellular

## SPECIFICATION

The CDBLA series has been optimised to operate with the following IC's as listed below.

Manf. Part No & anglia Order Code	IC	Manf. Part No & anglia Order Code	IC
CDBLA455KCAY03-B0	CXA1184	CDBLA455KCAY24-B0	TA31136
CDBLA455KCAY07-B0	MC3357	CDBLA455KCAY28-B0	TA31142
CDBLA455KCAY09-B0	SA604N	CDBLA455KCAY34-B0	MC13136
CDBLA455KCAY13A-B0	CXA1003BM	CDBLA455KCLY09-B0	SA604N
CDBLA455KCAY16-B0	MC3372	CDBLA455KCLY13-B0	CXA1003BM

## DIMENSIONS (mm)



## PART NUMBERS

Please refer to table in Specification section above.

# CERAMIC DISCRIMINATORS

CDBLB Series

LEADED

## INTRODUCTION

A miniature series of 455kHz ceramic discriminators that provides adjustment free, stable demodulation of IF signals over a wide bandwidth. Each part in the range has been optimised to operate with a specific IC.

## FEATURES

- 455kHz
- Small & light package
- High sensitivity
- High stability
- Adjustment free

## TYPICAL APPLICATIONS

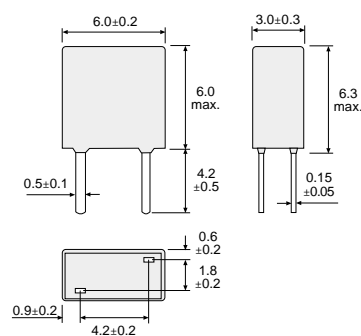
- Mobile communications
- Cordless phones
- Cellular

## SPECIFICATION

The CDBLB series has been optimised to operate with the following IC's as listed below.

Manf. Part No & anglia Order Code	IC	Manf. Part No & anglia Order Code	IC
<b>CDBLB455KCAX15-B0</b>	CXA1183M	<b>CDBLB455KCAY24-B0</b>	TA3116
<b>CDBLB455KCAX16-B0</b>	MC3372	<b>CDBLB455KCAY28-B0</b>	TA31142FN
<b>CDBLB455KCAX18-B0</b>	MC3371	<b>CDBLB455KCAY34-B0</b>	MC13136
<b>CDBLB455KCAX25-B0</b>	CXA1484	<b>CDBLB455KCAY40-B0</b>	TA31145
<b>CDBLB455KCAX33-B0</b>	CXA1474	<b>CDBLB455KCAY42-B0</b>	TK14590/TK14591
<b>CDBLB455KCAX36-B0</b>	SA606/616	<b>CDBLB455KCAY49-B0</b>	MC3361
<b>CDBLB455KCAY03-B0</b>	CXA1184M	<b>CDBLB455KCAY50-B0</b>	CXA3117N
<b>CDBLB455KCAY07-B0</b>	MC3357	<b>CDBLB455KCLY09-B0</b>	SA604N
<b>CDBLB455KCAY13A-B0</b>	CXA1003BM	<b>CDBLB455KCLY13-B0</b>	CXA1003BM

## DIMENSIONS (mm)



## PART NUMBERS

Please refer to table in Specification section above.

# CERAMIC DISCRIMINATORS

CDBKB Series

SMT



## INTRODUCTION

A series of 455kHz surface mount ceramic discriminators that provides adjustment free, stable demodulation of IF signals over a wide bandwidth. Each part in the range has been optimised to operate with a specific IC.

## FEATURES

- Surface mount
- 455kHz
- Slim package
- High sensitivity
- High stability
- Adjustment free

## TYPICAL APPLICATIONS

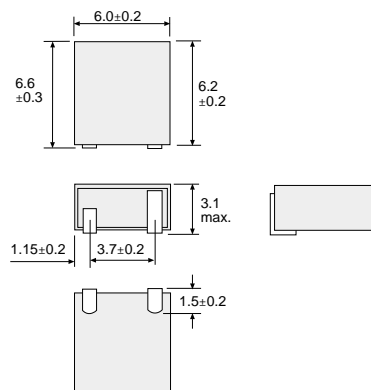
- Mobile communications
- Cordless phones
- Cellular

## SPECIFICATION

The CDBKB series has been optimised to operate with the following IC's as listed below.

Manf. Part No & anglia Order Code	IC	Manf. Part No & anglia Order Code	IC
CDBKB455KCAX33-R0	CXA1474	CDBKB455KCAY35-R0	TK10930
CDBKB455KCAY07-R0	MC3357	CDBKB455KCAY40-R0	TA31145
CDBKB455KCAY09-R0	SA604N	CDBKB455KCAY49-R0	MC3361
CDBKB455KCAY13-R0	CXA1003BM	CDBKB455KCAY50-R0	CXA3117N
CDBKB455KCAY16-R0	MC3372	CDBKB455KCAY66-R0	NJM2590
CDBKB455KCAY24-R0	TA31136	CDBKB455KCLX36-R0	SA606/616
CDBKB455KCAY27-R0	TK10487	CDBKB455KCLX39-R0	SA607/617
CDBKB455KCAY28-R0	TA31142F	CDBKB455KCLY13-R0	CXA1003BM
CDBKB455KCAY29-R0	SA605		

## DIMENSIONS (mm)



## PART NUMBERS

Please refer to table in Specification section above.

# CERAMIC DISCRIMINATORS

CDSCB10M7 Series

SMT

## INTRODUCTION

A series of 10.7MHz surface mount ceramic discriminators that provides adjustment free, stable demodulation of IF signals over a wide bandwidth. Each part in the range has been optimised to operate with a specific IC.

## FEATURES

- Surface mount
- 10.7MHz
- Slim package
- High sensitivity
- High stability
- Adjustment free

## TYPICAL APPLICATIONS

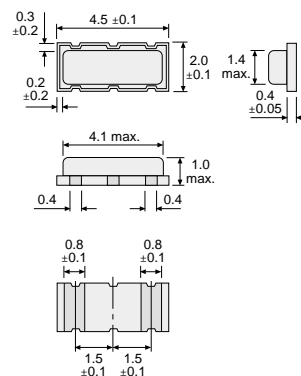
- Mobile communications
- Cordless phones

## SPECIFICATION

The CDSCB series has been optimised to operate with the following IC's as listed below.

Manf. Part No & anglia Order Code	IC	Manf. Part No & anglia Order Code	IC
CDSCB10M7GA105A-R0	TEA5757HL	CDSCB10M7GA136-R0	TH7122
CDSCB10M7GA113-R0	TA2154FN	CDSCB10M7GF072-R0	TA31161
CDSCB10M7GA119-R0	TRF6901	CDSCB10M7GF109-R0	TK14588V
CDSCB10M7GA121-R0	LV23100V	CDSCB10M7GF123-R0	TA31275FN
CDSCB10M7GA135-R0	TH71101/2/TH71111/2	CDSCB10M7GF126-R0	NJM2295AV

## DIMENSIONS (mm)



## PART NUMBERS

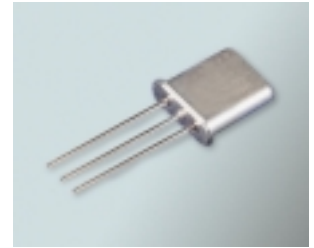
Please refer to table in Specification section above.



# MONOLITHIC CRYSTAL FILTERS

10.7MHz Series (2 and 4 POLE)

LEADED



## INTRODUCTION

A range of stable and high Q 10.7MHz crystal filters available in 2 and 4 pole and offering the choice of bandwidth.

## FEATURES

- 2 and 4 pole
- Stable characteristics
- High Q
- Fundamental frequency
- Bandwidth option

## TYPICAL APPLICATIONS

- Radio communications
- Telemetry

## PACKAGING

Supplied loose.

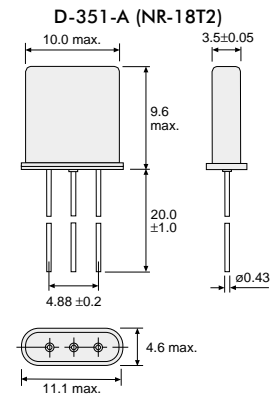
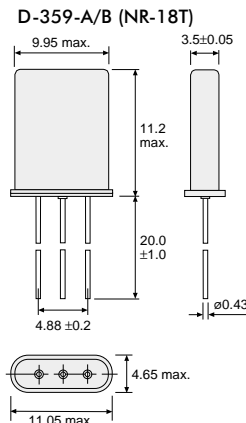
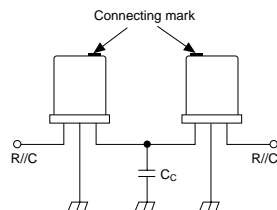
## SPECIFICATION

Manf. Part No. & Anglia Order Code	Nominal Frequency (MHz)	Pole	Pass Bandwidth		Attenuation Bandwidth		Ripple (dB)	Insertion Loss (dB)	Terminating Impedance (kΩ//pF)	Operating Temp. Range * (°C)	Package
			(dB)	(kHz)	(dB)	(kHz)					
10F7.5A	10.7	2	3	±3.75	18	±15	0.7	2	1.5//5	-20 to +70	D-359-A
10T7.5BH	10.7	4	3	±3.75	40	±12.5	1	2.5	1.5//4.5 C <sub>C</sub> =17pF	-20 to +70	D-359-B
10F12A	10.7	2	3	±6	18	±22	0.5	2	2.3//3	-20 to +70	D-359-A
10F12B	10.7	4	3	±6	40	±20	1	2.5	3//1.5 C <sub>C</sub> =8.5pF	-20 to +70	D-359-B
10T15AN	10.7	2	3	±7.5	18	±25	0.5	2	3//2.5	-20 to +70	D-359-A
10T15BK	10.7	4	3	±7.5	40	±25	1	2.5	3//1.5 C <sub>C</sub> =5pF	-20 to +70	D-359-B
10T20AL	10.7	2	3	±10	18	±34	0.5	2	3.9//1	-20 to +70	D-359-A
10T20BA	10.7	4	3	±10	40	±34	1	2.5	3.9//0 C <sub>C</sub> =2.0pF	-20 to +70	D-359-B
10F30A	10.7	2	3	±15	18	±50	0.5	2	5//1	-20 to +70	D-359-A
10F30B	10.7	4	3	±15	40	±50	1	2.5	5//1.8 C <sub>C</sub> =1pF	-20 to +70	D-359-B
10U7.5A	10.7	2	3	±3.75	18	±18	1	2	1.8//4	-20 to +70	D-351-A
10U12AA	10.7	2	3	±6	18	±22	1	2	2.3//3	-20 to +70	D-351-A

\* -40°C to +85°C available to special order.

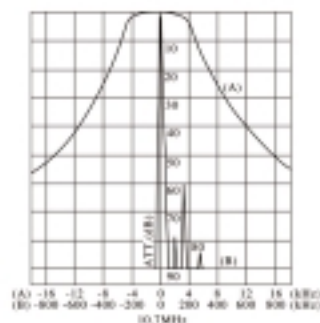
## DIMENSIONS (mm) & TERMINATION

N.B. Package D-359-B comprises of a matched pair of D-359-A which require a coupling capacitor. C<sub>C</sub> includes stray capacitance.



## FREQUENCY CHARACTERISTICS

10T7.5BH



## PART NUMBERS

Please refer to table in Specification section above.

# MONOLITHIC CRYSTAL FILTERS

45.0 MHz Series (2 and 4 POLE)

LEADED



## INTRODUCTION

A range of stable and high Q 45.0MHz crystal filters available in 2 and 4 pole and offering the choice of bandwidth.

## FEATURES

- 2 and 4 pole
- Stable characteristics
- High Q
- Fundamental frequency
- Bandwidth option

## TYPICAL APPLICATIONS

- Radio communications

## PACKAGING

Supplied loose.

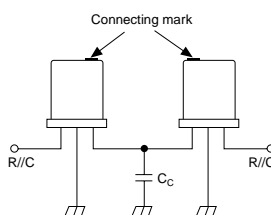
## SPECIFICATION

Manf. Part No & Anglia Order Code	Nominal Frequency (MHz)	Pole	Pass Bandwidth		Attenuation Bandwidth		Ripple (dB)	Insertion Loss (dB)	Guaranteed Attenuation (Fo-910kHz)	Terminating Impedance (Ω/pF)	Operating Temp. Range (°C)	Package
			(dB)	(kHz)	(dB)	(kHz)						
45S7.5AA	45	2	3	±3.75	10	±12.5	1.0	2.0	65dB	200//4	-20 to +70	D-361-A
45S15BU	45	4	3	±7.5	25	±22	1.0	4.0	80dB	650//3 C <sub>C</sub> =9pF	-20 to +70	D-361-B
45S20BJ	45	4	3	±10	25	±25	1.0	3.0	80dB	800//2 C <sub>C</sub> =6.5pF	-20 to +70	D-361-B
45S30AJ	45	2	3	±15	15	±50	1.0	2.0	40dB	1200//1.5	-20 to +70	D-361-A
45S30BN	45	4	3	±15	35	±50	1.0	4.0	80dB	800//1.8 C <sub>C</sub> =6.5pF	-20 to +70	D-361-B
45S34AD	45	2	3	±17	15	±60	1.0	2.5	65dB	870//0.2	-30 to +80	D-361-A

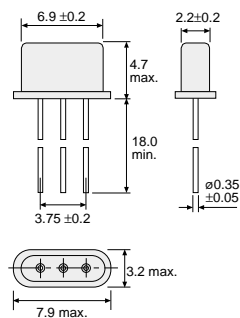
F<sub>0</sub> : Centre frequency of filter

## DIMENSIONS (mm) & TERMINATION

N.B. Package D-361-B comprises of a matched pair of D-361-A which require a coupling capacitor. C<sub>C</sub> includes stray capacitance.

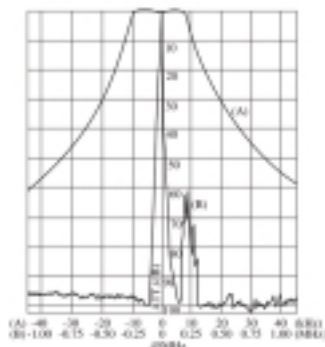


### D-361-A/B (NR-2D)



## FREQUENCY CHARACTERISTICS

### 45S15BU



## PART NUMBERS

Please refer to table in Specification section above.

## MONOLITHIC CRYSTAL FILTERS

21.4MHz to 55.845MHz (2 POLE)

LEADED



### INTRODUCTION

Very competitively priced 2 pole quartz crystal filters designed for selective narrow band filtering and offering a choice of frequency, bandwidth and package style.

### FEATURES

- Cost effective
- 2 pole
- Low insertion losses
- High selectivity
- Bandwidth option

### TYPICAL APPLICATIONS

- Wireless telemetry
- Wireless LAN

### PACKAGING

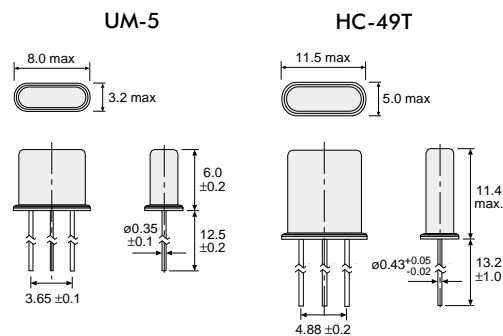
Supplied loose as standard.

### SPECIFICATION

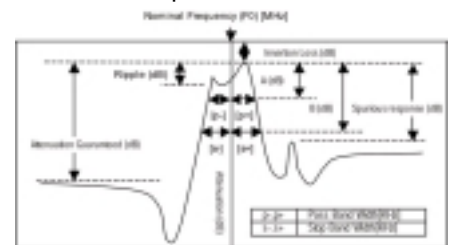
Nominal Frequency Range	21.4 to 55.845MHz
Vibration Mode	Fundamental (AT)
Operating Temperature Range	-20°C to +70°C

Type	Nominal Freq. (MHz)	Pass Bandwidth		Stop Bandwidth		Ripple (dB)	Insertion Loss (dB)	Terminal Impedance (Rt//Ct)
		(kHz)	(dB)	(kHz)	(dB)			
21M7.5A	21.4	±3.75	3	±14.0	18	0.5	1.5	850Ω//5pF
21M09A	21.4	±4.5	3	±12.5	14	0.5	1.5	1500Ω//4pF
21M12A	21.4	±6.0	3	±20.0	15	0.5	1.5	1200Ω//2.5pF
21M15A	21.4	±7.5	3	±25.0	18	0.5	1.5	1500Ω//3pF
21M20A	21.4	±10.0	3	±25.0	10	0.5	1.5	1800Ω//1.5pF
21M30A	21.4	±15.0	3	±45.0	15	0.5	1.5	3000Ω//0.5pF
21P7.5A	21.6	±3.75	3	±14.0	18	0.5	1.5	850Ω//5pF
21P12A	21.6	±6.0	3	±20.0	15	0.5	1.5	1200Ω//2.5pF
21P15A	21.6	±7.5	3	±25.0	18	0.5	1.5	1500Ω//3pF
21T7.5A	21.7	±3.75	3	±14.0	18	0.5	1.5	850Ω//5pF
21T09A	21.7	±4.50	3	±12.5	14	0.5	1.5	1500Ω//5pF
21T12A	21.7	±6.0	3	±20.0	15	0.5	1.5	1200Ω//2.5pF
21T15A	21.7	±7.5	3	±25.0	18	0.5	1.5	1500Ω//3pF
21T20A	21.7	±10.0	3	±25.0	10	0.5	1.5	1800Ω//1.5pF
21T30A	21.7	±15.0	3	±45.0	15	0.5	1.5	3000Ω//0.5pF
23M7.5A	23.05	±3.75	3	±12.5	16	0.5	1.5	1600Ω//5pF
23M15A	23.05	±7.5	3	±25.0	18	0.5	1.5	1500Ω//3.5pF
30M15A	30.875	±7.5	3	±25.0	15	0.5	1.5	800Ω//6pF
45M07A	45.0	±3.5	3	±12.5	10	0.5	1.5	510Ω//5.5pF
45M15A	45.0	±7.5	3	±25.0	14	0.5	1.5	550Ω//3pF
45M30A	45.0	±15.0	3	±50.0	10	0.5	1.5	800Ω//1.5pF
55M20A	55.845	±10.0	3	±40.0	20	0.5	1.5	3600Ω//0.8pF

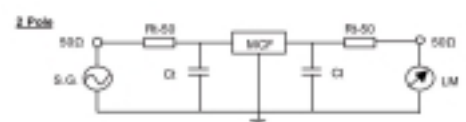
### DIMENSIONS (mm) & FREQUENCY CHARACTERISTICS



### Output Waveform



### Test Circuit



### PART NUMBERS

Please contact Anglia to discuss your specific requirements.

# MONOLITHIC CRYSTAL FILTERS

21.4MHz to 55.0MHz (4 POLE)

**LEADED**

**INTRODUCTION**

Very competitively priced 4 pole quartz crystal filters designed for selective narrow band filtering and offering a choice of frequency bandwidth and package style

**FEATURES**

- Cost effective
- 4 pole
- Low insertion losses
- High selectivity
- Bandwidth option

**TYPICAL APPLICATIONS**

- Wireless telemetry
- Wireless LAN

**PACKAGING**

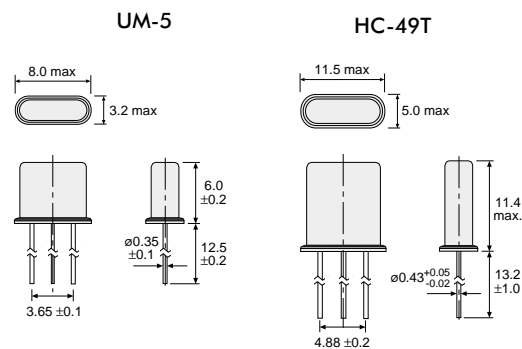
Supplied loose as standard.

**SPECIFICATION**

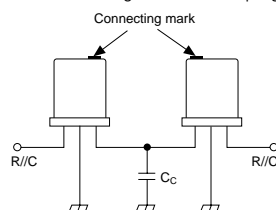
Nominal Frequency Range	21.4 to 55.845MHz
Vibration Mode	Fundamental (AT)
Operating Temperature Range	-20°C to +70°C

Part Number	Nominal Freq. (MHz)	Pass Bandwidth (kHz)	Pass Bandwidth (dB)	Stop Bandwidth (kHz)	Stop Bandwidth (dB)	Ripple (dB)	Insertion Loss (dB)	Terminal Impedance (Rt//Ct//Cc)
21M7.5B	21.4	±3.75	3	±14.0	40	1.0	2.0	850Ω//5//16pF
21M08B	21.4	±6.0	3	±20.0	40	1.0	2.0	1200Ω//2.5//10.5pF
21M12B	21.4	±6.0	3	±20.0	40	1.0	2.0	1200Ω//2.5//10.5pF
21M15B	21.4	±7.5	3	±25.0	40	1.0	2.0	1500Ω//2//8pF
21M30B	21.4	±15.0	3	±50.0	40	1.0	2.0	3300Ω//0.5//3pF
21P07B	21.6	±3.75	3	±14.0	40	1.0	2.0	850Ω//5//16pF
21P12B	21.6	±6.0	3	±20.0	40	1.0	2.0	1200Ω//2.5//10.5pF
21P15B	21.6	±7.5	3	±25.0	40	1.0	2.0	1500Ω//2//8pF
21T07B	21.7	±3.75	3	±14.0	40	1.0	2.0	850Ω//5//16pF
21T12B	21.7	±6.0	3	±20.0	40	1.0	2.0	1200Ω//2.5//10.5pF
21T15B	21.7	±7.5	3	±25.0	40	1.0	2.0	1500Ω//2//8pF
21T30B	21.7	±15.0	3	±50.0	40	1.0	2.5	3300Ω//0.5//3pF
30M15B	30.875	±7.5	3	±25.0	40	1.0	2.5	800Ω//4//12pF
45M15B	45.0	±7.5	3	±25.0	40	1.0	2.5	650Ω//3//10pF
45M30B	45.0	±15.0	3	±40.0	40	1.0	2.5	800Ω//1.5//7pF
55M09B	55.0	±4.5	3	±25.0	50	1.0	3.5	220Ω//7//23pF

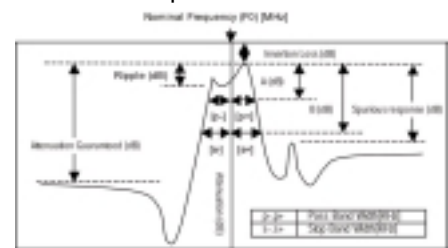
**DIMENSIONS (mm) & FREQUENCY CHARACTERISTICS**



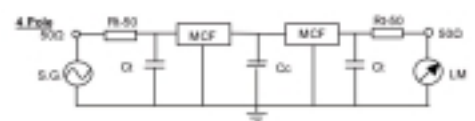
The 4 pole filters comprise of a matched pair of 2 pole filters to be connected as below together with a coupling capacitor C<sub>c</sub>.



**Output Waveform**



**Test Circuit**



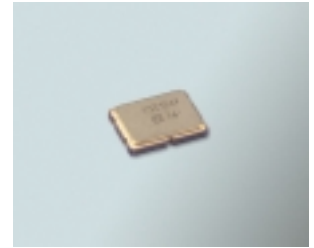
**PART NUMBERS**

Please contact Anglia to discuss your specific requirements.

# MONOLITHIC CRYSTAL FILTERS

NM7050SA (2 POLE)

SMT



## INTRODUCTION

2 pole crystal filters housed in a ceramic surface mount package covering nominal frequencies of 21.7, 45.0 and 90.0MHz.

## FEATURES

- Surface mount
- Small & thin
- High Q
- Fundamental frequencies

## TYPICAL APPLICATIONS

- Radio communications

## PACKAGING

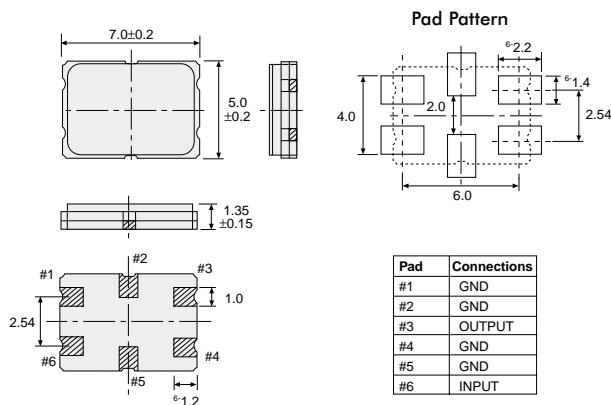
Supplied taped & reeled.

## SPECIFICATION

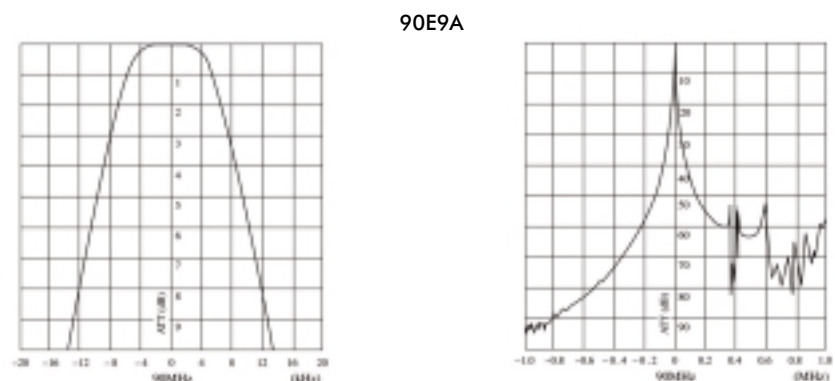
Manf. Part No. & anglia Order Code	Nominal Frequency (MHz)	3dB Pass Bandwidth (min.)	Attenuation Bandwidth (kHz)	Ripple (dB)	Insertion Loss (dB)	Guaranteed Attenuation (F <sub>0</sub> -910kHz)	Spurious (dB)	Terminating Impedance	Operating Temp. Range (°C)
21E15AA	21.7	±7.5kHz	±25 max. at 15dB	1.0 max.	1.5 max (min. loss)	60dB min.	15.0 min.	1.5kΩ//1.0pF	-20 to +70
45E15A	45.0	±7.5kHz	±25 max. at 13dB	1.0 max.	3.0 max (min. loss)	70dB min.	10.0 min.	1kΩ//4pF	-30 to +70
90E9A	90.0	±4.5kHz	±50 max. at 25dB	0.5 max.	5.0 max (min. loss)	70dB min.	20.0 min.	200Ω//8pF	-20 to +70

F<sub>0</sub> : Centre frequency of filter

## DIMENSIONS (mm)



## FREQUENCY CHARACTERISTICS



## PART NUMBERS

Please refer to table in Specification section above.

# MONOLITHIC CRYSTAL FILTERS

NM1170BA (4 POLE)

SMT

## INTRODUCTION

4 pole crystal filters housed in a ceramic surface mount package covering nominal frequencies of 45.0, 70.05 and 90.0MHz.

## FEATURES

- Surface mount
- Low profile
- High Q

## TYPICAL APPLICATIONS

- Radio communications

## PACKAGING

Supplied taped & reeled.

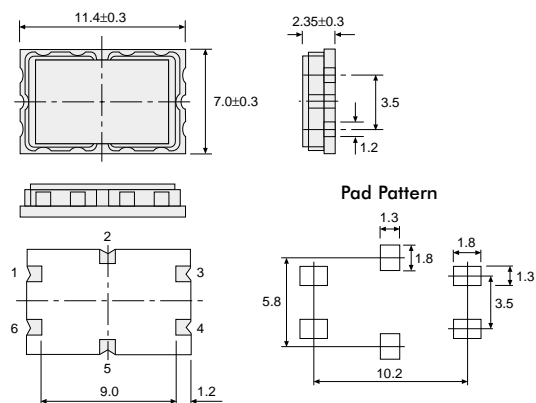
## SPECIFICATION

Manf. Part No. & anglia Order Code	Nominal Frequency (MHz)	3dB Pass Bandwidth (min.)	Attenuation Bandwidth (kHz)	Ripple (dB)	Insertion Loss (dB)	Guaranteed Attenuation (F <sub>0</sub> -910kHz)	Spurious (dB)	Terminating Impedance (dB)	Operating Temp. Range (°C)
45SC15BE	45.0	±7.5kHz	±25 max. at 35dB	2.0 max	5.0 max (min. loss)	80dB	50.0 min.	650Ω//2pF	-20 to +70
70SC20BA	70.05	±10kHz	±25 max at 20dB	1.0 max	4.5 max (min. loss)	70dB	35.0 min.	300Ω//2pF	-20 to +60
90SC15B	90.0	±7.5kHz	±25 max at 25dB	2.0 max	8.0 max (min. loss)	75dB	40.0 min.	310Ω//2pF	-20 to +70

F<sub>0</sub> : Centre frequency of filter

## DIMENSIONS (mm)

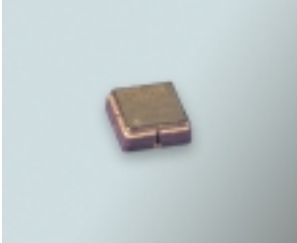
Pad No.	Connections
1	GND
2	GND
3	OUTPUT
4	GND
5	GND
6	INPUT



## PART NUMBERS

Please refer to table in Specification section above.

# SAW RESONATORS



315.0MHz

SMT

## INTRODUCTION

Two SAW resonators which provide a fundamental mode, quartz stable final frequency source of 315.0MHz over a wide operating temperature range. Offer a choice of specification and package style.

## FEATURES

- Surface mount
- Stable frequency
- Single port
- Automotive specification

## TYPICAL APPLICATIONS

- R.K.E. systems

## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Operating Temperature Range	-40°C to +125°C
Storage Temperature Range	-40°C to +125°C
DC Voltage (max.) between any terminals	12V
Source Power (max.)	0dBm

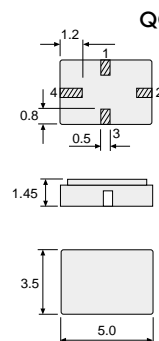
Characteristics		R821 (QCC4A package)			R901 (DCC6E package)			
		min.	typ.	max.	min.	typ.	max.	
Centre Frequency (1)	$f_c$	314.925	315.00	315.075	314.925	315.00	315.075	MHz
Minimum Insertion Attenuation	$\alpha_{min.}$	-	1.5	1.9	-	1.5	1.9	dB
Unloaded Quality Factor	$Q_U$	9400	13000	-	7600	11000	-	
Aging of $f_c$		-	-	-50/+50	-	-	-50/+50	ppm
Equivalent Circuit Elements								
Motional Capacitance	$C_1$	-	2.136	-	-	2.268	-	fF
Motional Inductance	$L_1$	-	119.5	-	-	112.5	-	$\mu$ H
Motional Resistance	$R_1$	-	18	25	-	20	28	$\Omega$
Parallel Capacitance (2)	$C_0$	-	2.8	-	-	3.3	-	pF
Temp. Coefficient of Freq. (3)	$TC_f$	-	-0.032	-	-	-0.032	-	ppm/K <sup>2</sup>
Turnover Temperature	$T_0$	20	-	50	15	-	35	°C

- (1) Centre frequency is defined as maximum of the real part of the admittance.  
 (2) If used in two port configuration (pin 1-input, pin 3-output)  $C_0$  is reduced by approx. 0.3pF.  
 (3) Temperature dependence of  $f_c$  :  
 $f_c(T_A) = f_c(T_0) (1 + TC_f (T_A - T_0)^2)$

### Characteristics

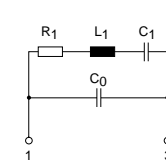
Reference Temperature  $T_A = 25^\circ\text{C}$   
 Terminating Source Impedance  $Z_S = 50\Omega$   
 Terminating Load Impedance  $Z_L = 50\Omega$

## DIMENSIONS (mm)

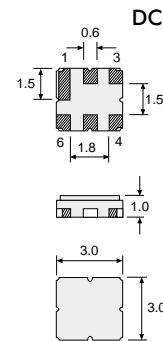


### QCC4A Package

#### Schematic

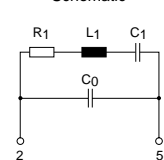


**Pad Connections**  
 1 INPUT  
 3 OUTPUT, grounded in 1-port conf.  
 2,4 GND (case)



### DCC6E Package

#### Schematic



**Pad Connections**  
 2 INPUT  
 5 OUTPUT, grounded in 1-port conf.  
 1,3,4,6 GND (case)

## PART NUMBERS

Type	Package	Manf. Part No. & Anglia Order Code
R821	QCC4A	<b>B39321R0821H210</b>
R901	DCC6E	<b>B39321R0901H110</b>

# SAW RESONATORS

315.0MHz

SMT

## INTRODUCTION

A SAW resonator which provides a fundamental mode, quartz stable final frequency source of 315.0MHz over a wide operating temperature range. DCC6E package.

## FEATURES

- Surface mount
- Stable frequency
- Single port
- Automotive specification

## TYPICAL APPLICATIONS

- R.K.E. systems

## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Operating Temperature Range	-40°C to +125°C
Storage Temperature Range	-40°C to +125°C
DC Voltage (max.) between any terminals	12V
Source Power (max.)	0dBm

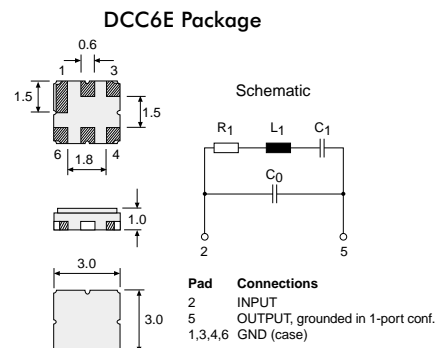
Characteristics	R961 (DCC6E package)			
	min.	typ.	max.	
Centre Frequency (1) $f_c$	314.95	315.00	315.05	MHz
Minimum Insertion Attenuation $\alpha_{min.}$	-	1.4	1.9	dB
Unloaded Quality Factor $Q_U$	7500	10700	-	
Aging of $f_c$	-	-	-50/+50	ppm
Equivalent Circuit Elements				
Motional Capacitance $C_1$	-	2.47	-	fF
Motional Inductance $L_1$	-	103.6	-	$\mu$ H
Motional Resistance $R_1$	-	19	27	$\Omega$
Parallel Capacitance (2) $C_0$	-	3.2	-	pF
Temp. Coefficient of Freq. (3) $TC_f$	-	-0.032	-	ppm/K <sup>2</sup>
Turnover Temperature $T_0$	15	-	35	°C

- (1) Centre frequency is defined as maximum of the real part of the admittance.  
 (2) If used in two port configuration (pin 1-input, pin 3-output)  $C_0$  is reduced by approx. 0.3pF.  
 (3) Temperature dependence of  $f_c$ :  
 $f_c(T_A) = f_c(T_0) (1 + TC_f(T_A - T_0)^2)$

### Characteristics

Reference Temperature  $T_A = 25^\circ\text{C}$   
 Terminating Source Impedance  $Z_S = 50\Omega$   
 Terminating Load Impedance  $Z_L = 50\Omega$

## DIMENSIONS (mm)

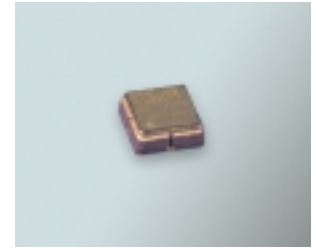


## PART NUMBERS

Type	Package	Manf. Part No. & Anglia Order Code
R961	DCC6E	B39321R0961H110



# SAW RESONATORS



433.92MHz

SMT

## INTRODUCTION

Two SAW resonators which provide a fundamental mode, quartz stable final frequency source of 433.92MHz over a wide operating temperature range. Offer a choice of specification and package style.

## FEATURES

- Surface mount
- Stable frequency
- Single port
- Automotive specification

## TYPICAL APPLICATIONS

- R.K.E. systems
- T.P.M.S.

## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

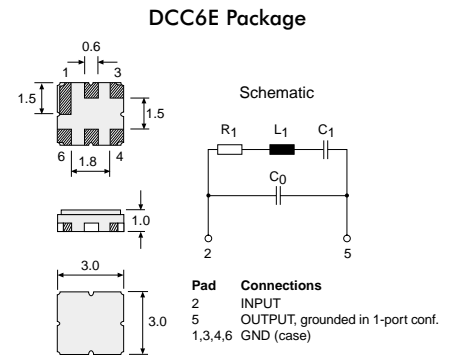
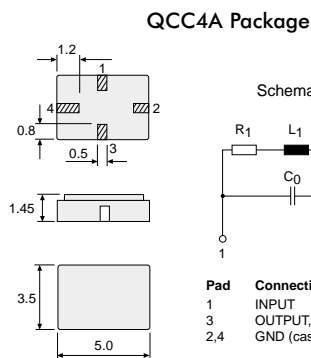
Operating Temperature Range	-40°C to +125°C
Storage Temperature Range	-40°C to +125°C
DC Voltage (max.) between any terminals	12V
Source Power (max.)	0dBm

Characteristics		R820 (QCC4A package)			R920 (DCC6E package)			
		min.	typ.	max.	min.	typ.	max.	
Centre Frequency (1)	$f_c$	433.845	433.920	433.995	433.845	433.920	433.995	MHz
Minimum Insertion Attenuation	$\alpha_{min.}$	-	1.2	1.7	-	1.4	1.8	dB
Unloaded Quality Factor	$Q_U$	7500	11500	-	8500	12500	-	
Aging of $f_c$		-	-	-50/+50	-	-	-50/+50	ppm
Equivalent Circuit Elements								
Motional Capacitance	$C_1$	-	2.13	-	-	1.68	-	fF
Motional Inductance	$L_1$	-	63.16	-	-	79.86	-	$\mu$ H
Motional Resistance	$R_1$	-	14	22	-	17	25	$\Omega$
Parallel Capacitance (2)	$C_0$	-	2.5	-	-	2.4	-	pF
Temp. Coefficient of Freq. (3)	$TC_f$	-	-0.032	-	-	-0.032	-	ppm/K <sup>2</sup>
Turnover Temperature	$T_0$	10	-	40	10	-	30	°C

- (1) Centre frequency is defined as maximum of the real part of the admittance.  
 (2) If used in two port configuration (pin 1-input, pin 3-output)  $C_0$  is reduced by approx. 0.3pF.  
 (3) Temperature dependence of  $f_c$  :  
 $f_c(T_A) = f_c(T_0) (1 + TC_f(T_A - T_0)^2)$

**Characteristics**  
 Reference Temperature  $T_A = 25^\circ\text{C}$   
 Terminating Source Impedance  $Z_S = 50\Omega$   
 Terminating Load Impedance  $Z_L = 50\Omega$

## DIMENSIONS (mm)



## PART NUMBERS

Type	Package	Manf. Part No. & anglia Order Code
R820	QCC4A	<b>B39431R0820H210</b>
R920	DCC6E	<b>B39431R0920H110</b>

# SAW RESONATORS

433.92MHz

SMT

## INTRODUCTION

A SAW resonator which provides a fundamental mode, quartz stable final frequency source of 433.92MHz over a wide operating temperature range. DCC6E package.

## FEATURES

- Surface mount
- Stable frequency
- Single port
- Automotive specification

## TYPICAL APPLICATIONS

- R.K.E. systems
- T.P.M.S.

## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

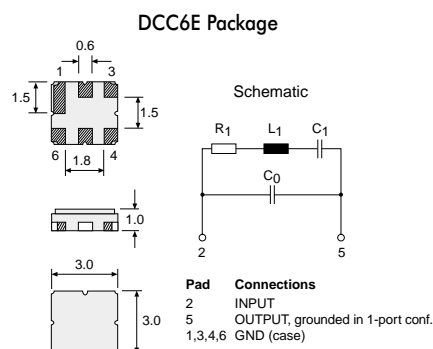
Operating Temperature Range	-40°C to +125°C
Storage Temperature Range	-40°C to +125°C
DC Voltage (max.) between any terminals	12V
Source Power (max.)	0dBm

Characteristics		R960 (DCC6E package)			
		min.	typ.	max.	
Centre Frequency (1)	$f_c$	433.87	433.92	433.97	MHz
Minimum Insertion Attenuation	$\alpha_{min.}$	-	1.3	1.8	dB
Unloaded Quality Factor	$Q_U$	8400	12400	-	
Aging of $f_c$		-	-	-50/+50	ppm
Equivalent Circuit Elements					
Motional Capacitance	$C_1$	-	1.72	-	fF
Motional Inductance	$L_1$	-	77.9	-	$\mu$ H
Motional Resistance	$R_1$	-	17	25	$\Omega$
Parallel Capacitance (2)	$C_0$	-	2.3	-	pF
Temp. Coefficient of Freq. (3)	$TC_f$	-	-0.032	-	ppm/K <sup>2</sup>
Turnover Temperature	$T_0$	10	-	30	°C

- (1) Centre frequency is defined as maximum of the real part of the admittance.  
 (2) If used in two port configuration (pin 1-input, pin 3-output)  $C_0$  is reduced by approx. 0.3pF.  
 (3) Temperature dependence of  $f_c$  :  
 $f_c(T_A) = f_c(T_0) (1 + TC_f(T_A - T_0)^2)$

**Characteristics**  
 Reference Temperature  $T_A = 25^\circ\text{C}$   
 Terminating Source Impedance  $Z_S = 50\Omega$   
 Terminating Load Impedance  $Z_L = 50\Omega$

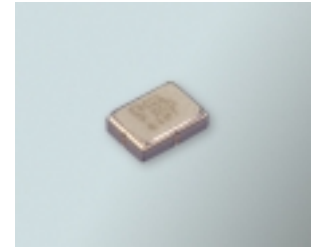
## DIMENSIONS (mm)



## PART NUMBERS

Type	Package	Manf. Part No. & Anglia Order Code
R960	DCC6E	B39431R0960H110

# SAW RESONATORS



868.3MHz

SMT

## INTRODUCTION

A SAW resonator which provides a fundamental mode, quartz stable final frequency source of 868.3MHz over a wide operating temperature range. QCC4A package.

## FEATURES

- Surface mount
- Stable frequency
- Single port
- Automotive specification

## TYPICAL APPLICATIONS

- R.K.E. systems
- T.P.M.S

## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

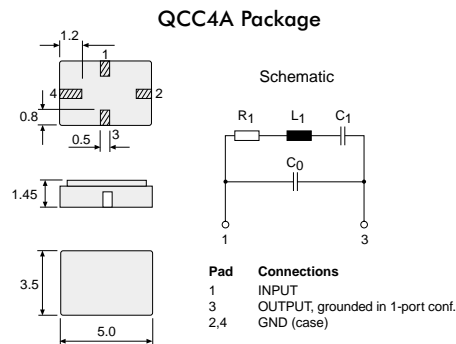
Operating Temperature Range	-40°C to +125°C
Storage Temperature Range	-40°C to +125°C
DC Voltage (max.) between any terminals	12V
Source Power (max.)	0dBm

Characteristics		R808 (QCC4A package)			
		min.	typ.	max.	
Centre Frequency (1)	$f_c$	868.175	868.350	868.525	MHz
Minimum Insertion Attenuation	$\alpha_{min.}$	-	1.1	1.6	dB
Unloaded Quality Factor	$Q_U$	4200	7000	-	
Aging of $f_c$		-	-	-50/+50	ppm
Equivalent Circuit Elements					
Motional Capacitance	$C_1$	-	2.16	-	fF
Motional Inductance	$L_1$	-	15.6	-	$\mu$ H
Motional Resistance	$R_1$	-	12	20	$\Omega$
Parallel Capacitance (2)	$C_0$	-	1.8	-	pF
Temp. Coefficient of Freq. (3)	$TC_f$	-	-0.032	-	ppm/K <sup>2</sup>
Turnover Temperature	$T_0$	20	-	50	°C

- (1) Centre frequency is defined as maximum of the real part of the admittance.  
 (2) If used in two port configuration (pin 1-input, pin 3-output)  $C_0$  is reduced by approx. 0.3pF.  
 (3) Temperature dependence of  $f_c$  :  
 $f_c(T_A) = f_c(T_0) (1 + TC_f(T_A - T_0)^2)$

**Characteristics**  
 Reference Temperature  $T_A = 25^\circ\text{C}$   
 Terminating Source Impedance  $Z_S = 50\Omega$   
 Terminating Load Impedance  $Z_L = 50\Omega$

## DIMENSIONS (mm)



## PARTS NUMBERS

Type	Package	Manf. Part No. & anglia Order Code
R808	QCC4A	B39871R0808H210

# SAW FILTERS

110.0, 433.92, 869.0, 1575.5MHz

SMT

## INTRODUCTION

A range of surface mount SAW filters designed specifically for G.P.S., R.K.E. and R.F.I.D. applications.

## FEATURES

- Surface mount
- Application specific

## TYPICAL APPLICATIONS

- G.P.S.
- R.K.E.
- R.F.I.D.

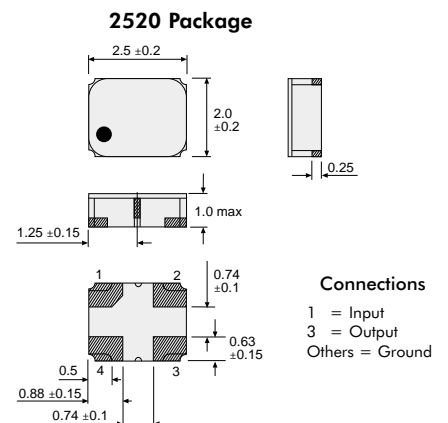
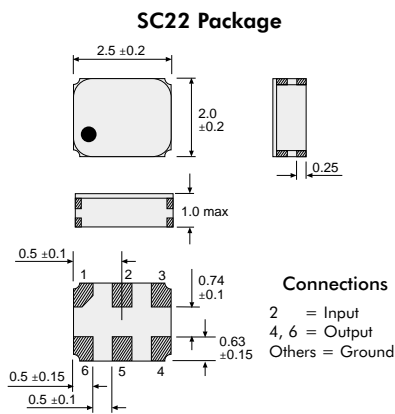
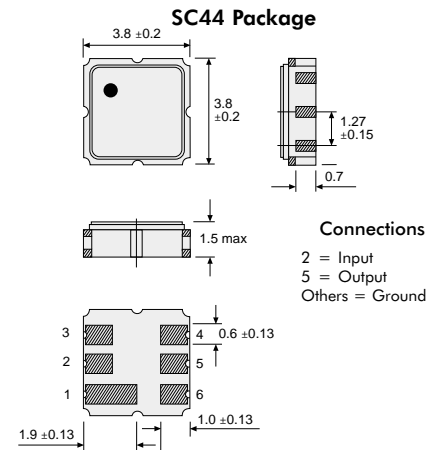
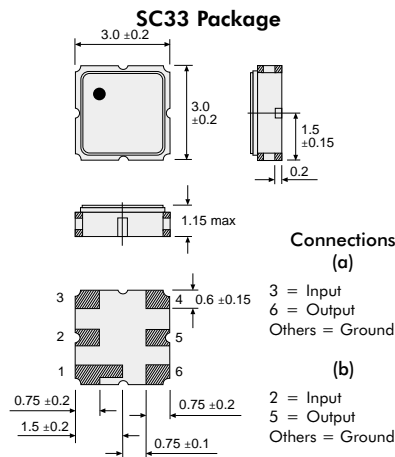
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Frequency (MHz)	3dB Bandwidth (MHz) min.	Insertion Loss (dB) max.	Temperature Range (°C)	Application	Manf. Part No & anglia Order Code	Package
110.0	±1.023	3.7	-30 to +85	G.P.S.	<b>SAFCC110MCA1T00</b>	SC33(a)
433.92	±0.25	3.8	-40 to +85	R.K.E.	<b>SAFCC433MBL0X00</b>	SC33(b)
433.92	N/A	3.0	-40 to +85	R.K.E.	<b>SAFCC433MBM0T00</b>	SC33(b)
869.0	N/A	4.5	-10 to +60	R.F.I.D.	<b>SAFCH869MAM0T00</b>	SC44
1575.5	N/A	1.6	-30 to +85	G.P.S.	<b>SAFSE1G57KA0T05</b>	SC22
1575.5	N/A	1.6	-30 to +85	G.P.S.	<b>SAFSD1G57FA0T00</b>	2520

## DIMENSIONS (mm)



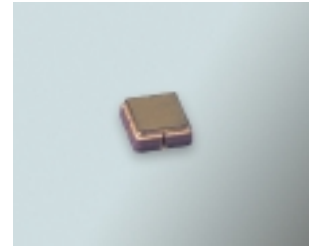
## PART NUMBERS

Please refer to table in Specification section above.

# SAW FILTERS

315.0, 433.92, 869.0MHz

SMT



## INTRODUCTION

A range of low loss surface mount SAW filters designed specifically for R.K.E. and R.F.I.D. applications.

## FEATURES

- Surface mount
- Low loss
- Application specific

## TYPICAL APPLICATIONS

- R.K.E. systems
- R.F.I.D.

## PACKAGING

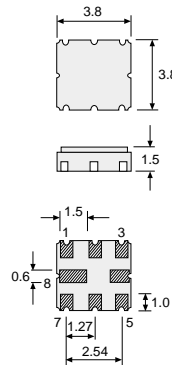
Supplied taped & reeled.

## SPECIFICATION

Type	Frequency (MHz)	3dB Bandwidth (MHz) min.	Insertion Loss (dB) max.	Reference Temp. Range (°C)	Application	Manf. Part No & anglia Order Code	Package
B3731	315.0	0.57	3.2	-45 to +95	R.K.E. N BAND	<b>B39321B3731H110</b>	DCC6E
B3761	315.0	0.54	2.6	-45 to +95	R.K.E. N BAND	<b>B39321B3761Z810</b>	QCC8B
B3711	315.0	4.80	2.5	-45 to +85	R.K.E. W BAND	<b>B39321B3711U410</b>	DCC6C
B3730	433.92	0.65	3.1	-45 to +95	R.K.E. N BAND	<b>B39431B3730H110</b>	DCC6E
B3760	433.92	0.62	2.6	-45 to +95	R.K.E. N BAND	<b>B39431B3760Z810</b>	QCC8B
B3710	433.92	7.20	2.7	-45 to +85	R.K.E. W BAND	<b>B39431B3710U410</b>	DCC6C
B3715	869.0	14.0	3.3	-45 to +85	R.F.I.D.	<b>B39871B3715U410</b>	DCC6C

## DIMENSIONS (mm)

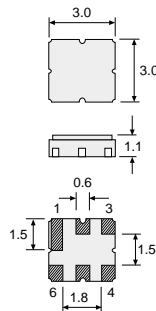
### QCC8B Package



#### Pad Connections

- 1 INPUT Ground
- 2 INPUT
- 5 OUTPUT
- 6 OUTPUT Ground
- 3,7 To be Grounded
- 4,8 Case - Ground

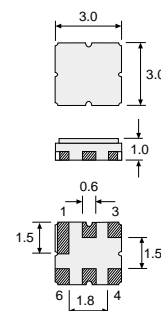
### DCC6C Package



#### Pad Connections

- 1 INPUT
- 2 INPUT Ground
- 5 OUTPUT
- 1,3,4,6 Ground

### DCC6E Package



#### Pad Connections

- 1 INPUT
- 2 INPUT Ground
- 4 OUTPUT
- 5 OUTPUT Ground
- 3,6 To be Grounded

## PART NUMBERS

Please refer to table in Specification section above.

# SAW FILTERS

570.0, 1000.0MHz

SMT

## INTRODUCTION

Two surface mount SAW filters designed specifically for 5GHz Wireless LAN applications.

## FEATURES

- Surface mount
- Low insertion loss
- Excellent group delay characteristics
- Application specific

## TYPICAL APPLICATIONS

- 5GHz Wireless LAN

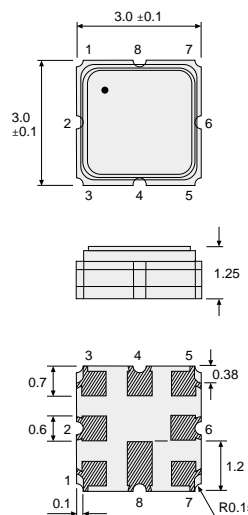
## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Frequency (MHz)	1.5dB Bandwidth (MHz) (typ.)	Insertion Loss (dB) max.	Operating Temp. Range (°C)	Application	Manf. Part No & anglia Order Code	Package
570.0	±10.5	4.5	-20 to +75	5GHz WLAN	<b>WF787A0570CE</b>	3 x 3
1000.0	+11.5/-10.5	6	-20 to +75	5GHz WLAN	<b>WF843A1000CE</b>	3 x 3

## DIMENSIONS (mm)



**Pad Connections**  
 1, 7 = Input  
 3, 5 = Output  
 Others = Ground

## PART NUMBERS

Please refer to table in Specification section above.

# ICS SAW FILTERS



70.0MHz, 140.0MHz

SMT

## INTRODUCTION

A range of surface mount SAW filters designed specifically for high performance IF filter applications.

## FEATURES

- Surface mount
- Low loss
- Application specific

## TYPICAL APPLICATIONS

- High performance radio communications

## PACKAGING

Supplied taped & reeled.

## SPECIFICATION

Frequency (MHz)	3dB Bandwidth (MHz) min.	Insertion Loss (dB) max.	Manf. Part No & anglia Order Code	Package
70.0	0.5	9.5	SF0070BA03046S	3
	1.0	8.5	SF0070BA03047S	2
	1.5	8.8	SF0070BA03048S	2
	2.0	9.0	SF0070BA03049S	2
	2.5	10.0	SF0070BA03050S	2
	3.0	7.5	SF0070BA03051S	1
	3.5	7.7	SF0070BA03052S	1
	4.0	8.0	SF0070BA03053S	1
	4.5	7.7	SF0070BA03054S	1
	5.0	8.0	SF0070BA03055S	1
	6.0	9.0	SF0070BA03056S	1
	7.0	10.0	SF0070BA03057S	1
	8.0	11.0	SF0070BA03028S	1
	9.0	12.0	SF0070BA03031S	1
	10.0	11.0	SF0070BA03058S	1
	12.0	12.5	SF0070BA03059S	1
	14.0	13.5	SF0070BA03060S	1
	16.0	14.0	SF0070BA03061S	1
	18.0	14.5	SF0070BA03062S	1
	20.0	15.0	SF0070BA03039S	1
22.0	16.0	SF0070BA03063S	1	
24.0	17.0	SF0070BA03064S	1	
26.0	18.0	SF0070BA03065S	1	
28.0	19.0	SF0070BA03045S	1	
30.0	19.0	SF0070BA03066S	1	
34.0	20.0	SF0070BA02371S	1	
35.0	21.5	SF0070BA03042S	1	
40.0	23.0	SF0070BA03067S	1	
140.0	4.0	12.5	SF0140BA03068S	1
	7.0	8.0	SF0140BA03069S	1
	10.0	11.0	SF0140BA03070S	1
	12.0	12.5	SF0140BA03071S	1
	16.0	10.7	SF0140BA03072S	1
	18.0	12.0	SF0140BA03073S	1
	23.9	13.0	SF0140BA01990S	1
	34.0	13.0	SF0140BA03074S	1
72.0	22.5	SF0140BA02393S	4	

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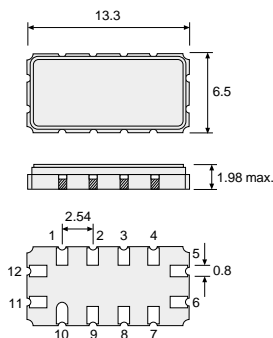
# ICS SAW FILTERS

70.0MHz, 140.0MHz

SMT

## DIMENSIONS (mm)

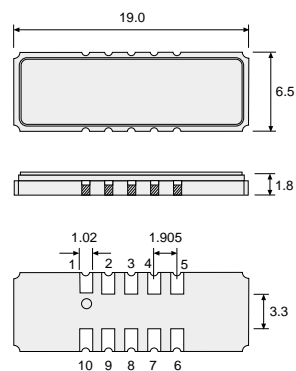
**Package 1**



**Pad Connections**

- 5 = OUTPUT
- 6 = OUTPUT GROUND
- 11 = INPUT
- 12 = INPUT GROUND
- Others = GROUND

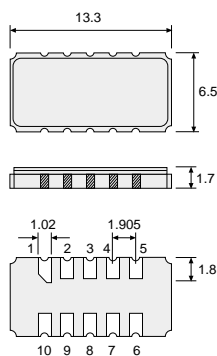
**Package 2**



**Pad Connections**

- 1 = INPUT GROUND
- 5 = OUTPUT
- 6 = OUTPUT GROUND
- 10 = INPUT
- Others = GROUND

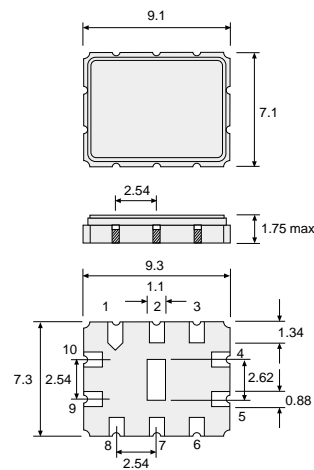
**Package 3**



**Pad Connections**

- 1 = INPUT GROUND
- 5 = OUTPUT
- 6 = OUTPUT GROUND
- 10 = INPUT
- Others = GROUND

**Package 4**



**Pad Connections**

- 4 = OUTPUT
- 5 = OUTPUT GROUND
- 9 = INPUT
- 10 = INPUT GROUND
- Others = GROUND

## PART NUMBERS

Please refer to table in Specification section shown on previous page.



# INDEX

The following index lists all manufacturer's part numbers and Anglia order codes shown in this data book together with their series headings.

Number/Code	Page No.	Number/Code	Page No.	Number/Code	Page No.	Number/Code	Page No.	Number/Code	Page No.
10F12A	95	2560TKC327	48-49	607030	22-23	B39321B3761Z810	107	CDSCB10M7GF109-R0	94
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10F30A	95	2560TKC333	48-49	607032	22-23	B39321R0901H110	101	CDSCB10M7GF126-R0	94
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ICS843001AGLF	64	NX3225SA390HU	42	SF0140BA01990S	109-110	XT625	36-37	ZTT4M19MG	10
ICS843001AGLFT	64	NX3225SA400BFA	42	SF0140BA02393S	109-110	XT627	36-37	ZTT4M91MG	10
ICS843011	63	NX5032GA	38	SF0140BA03068S	109-110	XT631	36-37	ZTT5M00MG	10
ICS843011AGLF	63	NX5032GA Automotive	39	SF0140BA03069S	109-110	XT645	36-37	ZTT6M00MG	10
ICS843011AGLFT	63	NX5032GA100CRB	38	SF0140BA03070S	109-110	XT652	36-37	ZTT7M37MG	10
ICS843021	65	NX5032GA120CAA	38	SF0140BA03071S	109-110	XT659	36-37	ZTT8M00MG	10
ICS843021AGLF	65	NX5032GA122CAA	38	SF0140BA03072S	109-110	XT660	36-37	ZTTC Series	14
ICS843021AGLFT	65	NX5032GA143DR	38	SF0140BA03073S	109-110	XT660	36-37		
ICS843051	66	NX5032GA147AR	38	SF0140BA03074S	109-110	XT663	36-37		