0.6um BICMOS Vanguard Qualification Summary

Table	1A: LTC4270 QUALIFICATION	ON RESULTS	
TEST	SPECIFICATION	SAMPLE SIZE (LOTS X SAMPLE)	RESULTS
High Temperature Operating Life (HTOL)	JEDEC JESD22-A108	3 x 77	Pass
Highly Accelerated Stress Test (HAST)**	JEDEC JESD22-A110	3 x 77	Pass
Temperature Cycle (TC)**	JEDEC JESD22-A104	3 x 77	Pass
Autoclave (AC)**	JEDEC JESD22-A102	3 x 77	Pass
High Temperature Storage Life (HTSL)	JEDEC JESD22-A103	3 x 45	Pass
Early Life Failure Rate (ELFR)	MIL-STD-883, M1015	3 x 800	Pass

Table	1B: LTC3850 QUALIFICATION	ON RESULTS	
TEST	SPECIFICATION	SAMPLE SIZE (LOTS X SAMPLE)	RESULTS
High Temperature Operating Life (HTOL)	JEDEC JESD22-A108	3 x 77	Pass
Highly Accelerated Stress Test (HAST)**	JEDEC JESD22-A110	3 x 77	Pass
Temperature Cycle (TC)**	JEDEC JESD22-A104	3 x 77	Pass
Autoclave (AC)**	JEDEC JESD22-A102	3 x 77	Pass
High Temperature Storage Life (HTSL)	JEDEC JESD22-A103	3 x 45	Pass
Early Life Failure Rate (ELFR)	MIL-STD-883, M1015	3 x 800	Pass

TABLE	1C: LTC3112 QUALIFICATION	ON RESULTS	
TEST	SPECIFICATION	SAMPLE SIZE (LOTS X SAMPLE)	RESULTS
High Temperature Operating Life (HTOL)	JEDEC JESD22-A108	3 x 77	Pass
Highly Accelerated Stress Test (HAST)*	JEDEC JESD22-A110	3 x 77	Pass
Temperature Cycle (TC)*	JEDEC JESD22-A104	3 x 77	Pass
Autoclave (AC)*	JEDEC JESD22-A102	3 x 77	Pass
High Temperature Storage Life (HTSL)	JEDEC JESD22-A103	3 x 45	Pass
Early Life Failure Rate (ELFR)	MIL-STD-883, M1015	3 x 800	Pass



Vanguard International Semiconductor Summary

· Plant Address

123, Park Ave-3rd, Science-Based Industrial Park, Hsinchu, Taiwan 30077, R.O.C.

Headcount

5,200

· Total Building size in sq. ft. and fab size in sq. meters

880,543.3 sq. feet (Building 1)

· Clean room floor space in sq. meters

12,600 sq. meters (Building 1)

· Fab utilization in percent

Fab 1: 100%

· Land Area in sq. meters

41,925 sq. meters

· Wafer capacity for each facility

Fab 1: 87K wafers per month (ADI's material is scheduled to run in Fab 1)

- A list of certifications (i.e. TS16949, ISO-14001, etc.)
 - ISO 9001 Quality Management System (since 1996)
 - ISO 14001 Environment Management System (since 1997)
 - OHSAS 18001 Health & Safety Management System (since 2003)
 - QC 080000 Hazardous Substance Management System (since 2007)
 - ISO 27001 Information Security Management System (since 2015)
 - IATF 16949 Automotive Quality Management System (since 2018)

DeltaQualifikationsMatrix

Allgemeines

prozeß- und werkstofftechnischen Änderungen an Bauelementen, Leiterplatten, Verbindungstechnik und Schaltung, welche evaluiert werden müssen. Eine geeignete Methodik zur Handhabung von Änderungen an elektronischen Bauelementen beschreibt die ZVEI "Guideline for Customer Notifications of Product and /or Process Changes (PCN) of Electronic Components specified for Automotive Applications". Ein wesentlicher Teil dieser Guideline sind die hier vorliegenden Matrizen, welche sich als Empfehlungen für die Evaluierung von typischen Änderungen an elektronischen Bauelementen verstehen. Dies sollte Teil des offenen und risikobewussten Dialoges zwischen Lieferant und Kunden sein.

Diese DeltaQualifikationsMatrizen wurden durch den Industriearbeitskreis "PCN DeltaQualifikationsMatrix" und den Bauteilexperten des ZVEI Arbeitskreis "PCN-Methodik" erarbeitet. Der Inhalt wurde basierend auf dem aktuellen Stand der Technik erstellt und erhebt keinen Anspruch auf Vollständigkeit. Im Einzelfall ist ggf. ein abweichendes Vorgehen abzustimmen, da kundenspezifische Vereinbarungen zur Qualifikation zu berücksichtigen sind.

Anwendung der DeltaQualifikationsMatrix (auszufüllen durch den Bauelementehersteller)

- a) Diese Tabelle ist nur bei Änderungen anzuwenden. Neugualifikationen und Sondergualifikation (z.B. Verguß von Modulen) sowie Information Notes bleiben von diesen Matrizen unberührt.
- b) Ist eine Änderung in dieser Tabelle nicht aufgeführt, so ist der Qualifikationsumfang zwischen Kunde und Lieferant abzustimmen.
- c) Die Matrix der Aktiven Bauelemente ist so aufgebaut, dass zwischen integrierten Halbleitern (AEC-Q100 Rev. H) und diskreten Halbleitern (AEC-Q101 Rev. D1) auszuwählen ist (Zelle D4). Für passive Bauelemente gilt die AEC-Q200. Für LED's gilt die AEC-Q102. Für Multi-Chip-Module ailt die AEC-Q104.
- d) Alle Änderungen in der PCN sind in der Spalte B durch ein Kreuz (x) zu markieren und werden dadurch farblich hervorgehoben. Sofern dies geschehen ist, werden im Feld "Tests, which should be considered for the appropriate process change" alle in Betracht zu ziehenden Zuverlässigkeitstests angezeigt.
- e) In "Tests, which should be considered for the appropriate process change after selection of condition table" wird die Anpassung der in Betracht zu ziehenden Tests in Folge der Relevanz bezüglich der Änderung berücksichtigt
- Dazu ist die Tabelle "Conditions" entsprechend der Auswahl (A/B/C) mit einem (x) zu bewerten. f) In "Suppliers performed tests" dokumentiert der Bauelementehersteller die durchgeführten bzw.
- g) Falls von der Testempfehlung abgewichen wird, so sollten diese Abweichungen vom Bauelementehersteller angezeigt und kommentiert werden. Hierzu ist der Bereich "Reason for exception of tests" zu verwenden. Werden die in Betracht zu ziehenden Tests durch generische Daten (G) belegt. ist dies ebenfalls hier anzuzeigen und zu begründen.

Die Einstufung des Untersuchungslevel erfolgt in folgende Kategorien

- "C: Component level": Die Evaluierung der Änderung am Bauelement ist durch Untersuchungen ausschließlich am Bauelement beim Bauelementehersteller durchführbar. Zur Evaluierung der Änderung dürfen Ergebnisse aus bereits durchgeführten Untersuchungen herangezogen werden, wenn diese zu einem ähnlichen Bauelement hereits vorliegen (Generische Daten)
- "B: Board level": Die beschriebene Änderung hat möglicherweise Einfluss auf die Verarbeitbarkei des Bauelementes im Steuergerät. Die Evaluierung der Änderung wird wie unter C beim Bauelementehersteller durchgeführt. Zusätzlich ist durch den Kunden/Steuergerätehersteller die Verarbeitbarkeit zu prüfen, die z.B. abhängig von der Änderung, Zuverlässigkeitsuntersuchungen auf applikationsrelevanten Testbords erfordert.
- "A: Application level": Die beschriebene Änderung hat möglicherweise Einfluss auf die Applikation/ das Steuergerät. Die Evaluierung der Änderung wird wie unter C oder B durchgeführt. Zusätzlich ist vom Kunden/Steuergerätehersteller der Einfluss der Änderung im Steuergerät durch geeignete Untersuchungen zu bewerten. Dieses Vorgehen ist mit dem OEM abzustimmen. Hierbei ist zu berücksichtigen, ob die Steuergeräte- / Baugruppenanforderungen durch andere Qualifikationen bereits hinreichend abgesichert sind (applikationsspezifische Risikobetrachtung).
- " *: Not relevant for qualification matrix": Änderung(en), die nicht in A, B oder C eingestuft werden können und somit nicht relevant für die DeQuMa sind

Änderungen die nur eine Information Note benötigen (bei der Bewertung Risk on Supply Chain als "I" gekennzeichnet), dürfen nicht in der DeQuMa angekreuzt werden, da Sie ansonsten den erforderlichen Evaluierungslevel verfälschen. Für als "I" bewertete Änderungen ist das Information Note Formblatt zu

Wichtige Hinweise

- Zur formgerechten Anwendung der DeltaQualifikationsMatrizen steht auf der Homepage des ZVEI AK ein Tutorial bereit (ZVEI-Tutorial).
- ID Nummer: ist eine eindeutige Identifikationsnummer für jede angegebene Änderung, die in den ZVEI PCN DeltaQualifikatiosMatrizen identifiziert ist. Die gleiche ID Nummer wird zur Identifizierung der Änderung im PCN Form Sheet verwendet.
- Die mittels Matrix identifizierten Tests sind in Betracht zu ziehen, d.h. es ist zu pr
 üfen, ob der ieweilige Test für die spezifische Änderung in dieser Form notwendig ist. Abweichungen ode generische Daten sind im Detail zu begründen.
- Die Spalte "Further applicable conditions". Bemerkungen und Fußnoten sind unbedingt zu beachten, da sie wichtige Hinweise und Einschränkungen enthalten.
- Zur Nutzung aller Funktionen muss in Excel die Anwendung von Makros freigegeben sein

DeltaQualificationMatrix

General

Kurze Produkt- und Technologiezyklen elektronischer Bauelemente sowie neue Umweltauflagen führen häufig zu Short product and technology cycles as well as new environmental regulations frequently result in process and material changes of components, printed circuit boards, assembly techniques and circuit layout which have to be evaluated. The ZVEI "Guideline for Customer Notifications of Product and /or Process Changes (PCN) of Electronic Components specified for Automotive Applications" describes an appropriate methodology for dealing with changed electronic components. The qualification matrices in this quideline are recommendations for how to assess typical changes of electronic components. These recommendations promote an open risk-based discussion between supplier and customer regarding

> The DeltaQualificationMatrices were developed by the Industry Task Force Team "PCN DeltaQualificationMatrix" together with component experts from the ZVEI Working Group "PCN-Methodology", Actual content represents state-of-the-art technology and does not claim to be comprehensive. Deviation from proposed guideline should be mutually agreed as customer specific requirements have to be considered

<u>DeltaQualificationMatrix Application</u> (completion by component manufacturer)

- a) This table has to be used for changes only. The matrices are not applicable for new product. special qualifications (for instance for encapsulation of module) or Information Notes.
- b) If a change is not listed in this table, the qualification plan has to be defined and agreed between customer and supplier.
- c) The matrix for Active Components requires the user to choose between integrated circuits (AEC-Q100 Rev. H) and discrete semiconductors (AEC-Q101 Rev. D1) (cell D4) For Passive Components AEC-Q200 is used. For LED'S the AEC-Q102 is used For Multi-Chin-Modules the AFC-Q104 is used
- d) All changes as listed in the PCN have to be marked, by a cross (x) in column B and will appear colored. The relevant reliability tests are then shown in "Tests, which should be considered for the appropriate process change".
- e) In "Tests, which should be considered for the appropriate process change after selection of condition table" is for modification of the found relevant tests under consideration of the weight of change
- Related table "Conditions" has to be assessed per proposed letters with an (x).
- f) In "Suppliers performed tests" the component manufacturer documents the planned and performed tests.
- g) In case of deviations from tests, which should be considered this should be notified and commented by the component manufacturer in the area "Reason for exception of tests". Test results in form of generic data (G) are allowed when notified and justified.

Evaluation Levels are categorized as follows

- "C: Component level": The evaluation of a change at component level by the component manufacturer is sufficient. Generic data from other relevant evaluations can be used.
- "B: Roard level": The intended change described in the PCN may influence processability / manufacturability of the component at board level. Therefore additional evaluation by customer may be necessary, for example reliability tests on application relevant testboards depending on change
- "A: Application level": The intended change described in the PCN may influence the properties of the application (e.g. Electronic Control Unit). In addition to the evaluation under C or B the influence of the change in the application is evaluated by suitable investigations by the customer. The scope of the evaluation has to be aligned with the OFM. It has to be considered whether the application / assembly requirements are already sufficiently safeguarded by other qualifications (application specific risk assessment).
- " *: Not relevant for qualification matrix": Changes which fulfill neither A,B nor C definitions

Changes indicated as "I" shall not be marked in the DeQuMa. For those changes the Information Note sheet shall be used. As the DeQuMa is desired for PCN only, a marking of "I"-changes would automatically influence evaluation level and test effort.

Important Notes

- To use the matrices in the right form the ZVEI working group provides a Tutorial on its homepage (ZVEI-Tutorial)
- ID number: is a unique identification number for each indicated change defined in the ZVEI PCN DeltaQualificationMatrices. The same ID number is used in the PCN Form sheet to identify the
- Tests identified by the matrix have to be considered and checked if they are necessary to assess the specific change. Test modifications or generic data have to be justified in detail.
- "Further applicable conditions", comments and notes need attention, as they provide important hints and limitations.
- In order to use all functions in EXCEL, macros have to be allowed

History of DeQuMa

Version	Remarks
2.0	Revised by ZVEI PCN Methodology Workgroup in March 2015
2.1	Released March 2015
2.1.1	Active Components - delete write protection in comments
2.2	Solved problems with some ActiveX configurations
2.2.2	Solved Problems in Active Components
2.2.3	Solved Problems ActiveX, Active Components SEM-DE-02 (Design changes in routing) error fixed
2.2.4	Minor fixes
3.0	General Revision by ZVEI PCN Methodology Workgroup in June 2016
	Changes are indicated by underlining in the read only version named Changes_DeQuMa_rev3_vs_rev2.xlsx
3.0.4	Expert Release
3.0.5	Fixing of macro bugs
3.1	Final Release (orthographic and punctuation corrections)
4.0	General Revision by ZVEI PCN Methodology Workgroup in July 2019.
	Muliti Chip Modules newly added to DeQuMa
	LED Components now based on the AEC Q102
	Further Changes see separate PDF's Excel-File, where changes are indicated by underlining
4.1	LED worksheet: Content of columns had been swapped due to rearrangement and omission of columns.

		1																							
Worked on: Name, Function)	Carl Iwashita																								
Date:	26/06/2020		Form provided by ZVEI - Revision 4.1 - Nov	ember 2019																					
PCN number:	PCN 20_0245																								
Signature:														vice e											
tegrated circuits or siconductors select below:	AEC-Q100 Revision H							includes	integrate		MATERIAL (e.g. ASICs									vices, an	alog dev	ices,)		ditional to EC-Q10x	
1				I	Evaluation level A / B / C		he cid)		ins orbins at HAST	Bug	gs Life sing Life	identen, and Operations			rio Breatisdown	ure instability			thity	ation			o management	changed device	
	Assessment of Impact on Supply Chain regarding following aspects - contractal agreements - contractal agreements - contractal agreements - contractal agreements - come fit function quality performance, reliability of customer - form, fit, function, quality performance, reliability	Remain risks wi Supp Chain	ng hin / Understanding of semiconductors experts	Examples to explain	ation level yvel ment level yvent for qualification restric	Further applicable conditions	p egs upjupre ac easp kg po	revision n eaton	Temperature Humiday Bi	Tamperature Opting Power Temperature Oyd	High Temperature Sons High Temperature Opera Early Life Fallow Ride	MM Endurance, Dua R Life Wee Bond Shear	Wre Band Pull Saldenability Physical Dimensions	Sadar Bat Shear Lead integry Electomigration	Time Depending Dielectr Hot Camier Injection	Negative Bas Temperat. Seves Moneting	Electroric Dischage Human Body Model Bectroric Dischage Charged Device Model	Larch up Electrical Distribution	Characterisaton Electromagnetic Compat	Short Grout Charactering Settlemor Rate	Hermetic Package Test Package Drop	Lid Tonque Die Shear	Memory Water Waper Whistoritest Office annual supplies	Parameter Analysis: Comparison of current with the anadostration, electrical	Remarks Remarks
, io	Type of change	No	••		A: Application b B: Board evel C: Component		n be evaluation	ack of special	8 B	no or	4TSL 4TGL ELFR	TOR	A18P	88 - M	1008	TI NE	HBM COM	3 8	CHWR	2 8	WE CH	T. SC	AM .		
SEM-AN-01	ANY Any change with impact on agreed upon technical contractual agreements		Intended to be used if no other type of change is applicable but the change affects agreed technical				18	58	A2 A	3 A4 A5	A6 B1 B3		C2 C3 C4		D2 D3	D4 D	E2 E3	E4 E5	E7 E9	E10 E11 E	12 G1-4 G1	G8 G7	G8		
SEM-AN-02		P	contractus acreements.		В														H						
	DATA SHEET		econymences.													4	Щ.	Ц.			Щ	Щ	H	_	
SEM-DS-01	Change of datasheet parameters/electrical specification (min./msx./syp. values) and/or AC/DC specification	Р	P Update of data sheet because of technical change of the product. No technical change of product, process or test.	e.g. recommendations for pull-up/pull-down or NC pins, MSL	A											-								-	•
58M-DS-02	Conection of data sheet of issue of eresta	1	or the procuss. No inchrinisis change of product, processe or beat. New description of behavior which was not yearlied before or which a different from initial specification. Please indicate clearly, that infonce contains this type of change. Assessment in servicination service-file.	e.g. Errota	A																			-	
SEM-DS-03	Specification of additional parameters	1	Description of a new not previously covered parameter. No technical change of the product. (b): Definition of new parameter which was not documented before. (b): Not known as single change. Only in combination with other changes.	(I): e.g. adding new tested parameter.	A										- -									-	
	DESIGN		Any device relevant changes in design / layout of																						
SEM-DE-01	Design changes in active elements. 1)	Р	Any device relevant changes in design / layout of learnants with effect on data sheet P 1 Not included: Modification to adjust product parameter within specified process window and design rules.	e.g. change of ESD structure e.g. add / remove a translator in layout	A	Please check if data sheet is affected (SEM-DS-01). A: Impact on EMC behavior cannot be evaluated / excluded on			٠.	• M		D,J -		D	D D	D E		٠.		• •	· - F			•	
SEM-DE-02	Design changes in routing . ³)	Р	Any change of wiring between elements in chip design / tayout with effect on data sheet. P 1) Not included: Modification to adjust product parameter within specified design rules.	e.g. mask changes in metal fix for corrective action (based on external 8D report)	с	component level. A: If impact on electrical function is not excluded on component level. Please check if data sheet is affected (SEM-DS-01).	•			A M								• •		•				•	
SEM-DE-03	Die shrink ³)	Р		Typical shrink of die.	A	Please check if change in process technology (SEM-PW-60) is also affected.				- м		D,J -												•	•
SEM-DE-04	Firmware modification		integrated software by design or memory as defined by supplier. (I): Firmware modification or update without effect of sunctional performance at the outstorer (bug fol). (P): Firmware modification or update with effect of structional performance at the customer.	(I): e.g. addition of Firmware opportunities (P): e.g. bug fix with impact on functional performance	А																				
	PROCESS - WAFER PRODUCTION New / change of wafer substrate material	Р	P New water material.	e.g. different water material to currently released material (like change from EPI material into non-	С					$\overline{}$		ТТ						П.			П		T	Τ.	Qualification effort acc. AEC-Q100: see diffusion/doping
X SEM-PW-02	New valer diameter		P Change of water diameter resulting in equipment and process changes.	EPI materiali	С	Impact on changes in SEM-PW-09 and/or SEM-EQ-01.				ЕМ		- E	Е				E E	Е •							AEC-Q100: "For broad changes that involve multiple attributes (e.g., site, material processes), refer to section A13 of this appendix and section 2.3 of Q100, which for the selection of vaccine set set vehicles to cover all the possible permutations.
SEM-PW-03	New final wafer thickness	Р	P Change in final water thickness.	e.g. change in final chipidie thickness	С	A: If harms conductivity is affected (like MOSFET; IGBT, BGA package, stacked dise,) A: If impact on EMC or ESD behavior cannot be evaluated / excluded on component level.				ЕМ		- Е	E				E E	Е •							for the selection of worst-case test vehicles to cover all the possible permutation.
SEM-PW-04	Change of electrically active doping/implantation element	Р	P Change in electrically active doping / implantation element resulting in a new technology.		А																			٠.	
			element resulting in a new technology. P Change of gate material and / or gate dielectric material.		Α					• M		D.I					1							+ :	
SEM-PW-05	Change of pase manns / casecrics New / change of backside operation (girnding / metallization)	P	Change of bottom layer of die (between die and leadframe). Change in process, material, or	e.g. change from CrtN\V4u to CrtN\V4g	c	A: If thermal conductivity is affected (like MOSFET; IGBT, BGA package, stanked data,) A: If impact on ERM or ESD behavior cannot be evaluated / excluded on component level.				• M							мм				. н .	- н			AEQ-Q100: Applicable to all arrest power devices
SEM-PW-07	New / change of metallization / vias / contacts	Р	dementative value and the second seco	e. g. change from ASICu to ACu e. g. change in over pad metallization	С	NAMES OF COST POPER SEVEL				• M															
SEM-PW-08	New / change of passivation or die costing (without bare die)	Р	P Change of top layer on die (between mold commound and die)	e. g. addition of polyimide	С	Change of intrinsic mechanical stress might influence electrical function				• M	- • #,1		•												•
SEM-PW-03	Change in process technology not covered by any other type of change	-	(): If the change in process technology does not influence the integrity of the final product. (P): If the change in process technology can influence the integrity of the final product.	(-); e.g. change from well to dry etching, e.g. change from horizontal to vertical oven for exidation (P); e.g. change of layer thickness	A	Please also check changes described under EQUIPMENT. Please check if change is described by specific type of change in this matrix.	٠																	•	Qualification effort depends on type of change.
SEM-PW-10	Process integrity, runing within specification	-	Variation within process specification (-): If suring within process specification does not refluence the integrity of the final product. (P): If servicing risk on product specification is anticipated.	f (-): e.g. process control	С	Please check if DATA SHEET is affected. Please check if SEM-PW-09 is affected.																		•	•
SEM-PW-11	Change of water supplies.	-	(-): If no remaining dak in supply chain exist P (F): If the change of wafer supplier can influence the integrity of the final product.	(—): e.g. change of wafer supplier with same material composition. e.g. same material composition and does not influence electrical behavior. (P): e.g. new supplier with impact on substrate material and / or electrical behavior.	С	Not on component, tested on test structure (typical for IC), Interaction on component level for discrete components expected. In case of SCI substate HIP properties have to be qualified. Please check if SEM-PW-01 and SEM-05-01 is affected.												- @•						•	Qualification for X: 8 p-Controller difficult on product level. Characterisation on only on text structure. Explain the studie performs a risk assessment if there is a technology dependent of enging additional qualification effort. ACC-100: "For board charges and studies multiple attributes (s.g., sits, ratio-processes), while "For board charges state shows have been added to the studies of the studies are vivided to cover at the possible permutation."
SEM-PW-12	Change of specified wafer process sequence (deletion and/or additional process step)	-	Any change which is not covered by another type of change. Risk is to be assessed. P (-): No Risk for Supply chain. (P): Risk for Supply chain (influence on product integrity)	(-): e.g. change of cleaning process in wafer production (P): e.g. additional sinker implantation after standard implantation (to protect circuit against interference impulses).	С																			-	-
X SEM-PW-13	Move all or parts of production to a different wafer tab site.	Р	Wafer fab transition with additional changes (described above). Includes transfer as well as additional site.	e.g. dual source / fab strategy	A	Check if any other type of process change is applicable due to the transfer	•			• M		J .									- н -	- н		٠	AEC-Q100: "For broad changes that involve multiple attributes (e.g., site, materior processes), refer to section A13 of this appendix and section 23 of Q100, which for the selection of worst-case test vehicles to cover all the possible permutation.
SEM-PW-14	Linography	-	Change in process technique for lithographic process and material (): If the change in process technology does not influence the integrity of the final product. (P): If the change in process technology can influence the intecrity of the final product.	(-): e.g. exchange of defect mask (P): e.g. change from E-biann process to X-ray process e.g. change from contact into projection mode	С	Please also check changes described under EQUIPMENT.			•	• M	- • #		•			•		-						•	

SEM-PW-15	Cutde / httringer Delectric	-	Change in process technique for colde / interti delectric process (-): If the change in process technology does influence the integrity of the final product. (P): If the change in process stechnology can influence the integrity of the final product.	ver od:	A	Please also check changes described under EQUIPMENT.	 		• N		• #,N	D,J													•	
SEM-BD-01	BARE DIE New final wafer thickness	Р	P Change in final water thickness.	Change in final chip/die thickness	A		 			1-1		- 1				 -	Е	E E						-		ELFR can only be performed on packaged test vehicles. NSTI was removed in deviation from the AEC-QNO Matrix because there it is a combined type of change (Wafer Dimension/Thickwass, DSTI is applicable for water dimension
SEM-8D-02	Change of top metalization or bond pad atack	Р	P Change in bondpads (incl. stack below), mate pad pitch, surface changes, layer thickness	e. g. change from AlSiCu to AlCu e. g. change in over pad metalization	В		 			-						 	-							-	-	change only.
SEM-BD-03	New / change of backside metallization	Р	P Change of bottom layer of die (between die ar leadframe). Change in process, material, or dimensions.	e.g. change from CrNNVAu to CrNNVAg	A		 			-	•					 	м	м •	• •					-	•	-
SEM-BD-04	Change of water setup or number of possible good dies on water.	1	P (i): amount of possible good dies on water (P): influence on water setup and water mapp		В			-		-		-				 	-	- -						-	-	
SEM-BD-05	Change of optical appearance of water edge region (like imids coverage or edge exclusion)	1	P Selection of dea in water edge region which is full electrical functionality. (i): in case of water edge is affected only (P): in case of single die is affected.	(I); e.g. appearance of water edge (rounded instead of square) (P); e.g. polyimide as new costing on die	В		 	-		-		-				 	-							-	•	
SEM-BD-06	Die sorbe or separation		Needed information for sawing and pick & plas machine. P (i): If the change in sawing process does not influence the integrity of the final product. (P): In case if product is delivered on water	 (i): e.g. if product is delivered as known good die (in tape and neil) (iii): e.g. information change for pick & place machine. e.g. information change for sawing machine. 	В	Please check if SEM-BD-04 is affected.	 			. -						 		- -							-	
SEM-BD-07	Die Preparation / Clean	-	Change in process technique for die preparati desning. P (-): If the change in process does not influent the inlegsity of the final product. (P): If impact on product integrity is anticipated.	n/	В	Please check if SEM-BD-96 is affected.	 	-		-		-		- -		 	-							-	-	
SEM-BD-08	New / change of passivation or dis costing	Р	P Change of top layer on die.	e.g. addition of polyimide e.g. change of polyimide thickness	В		 				• #,N	D,J				 								-		-
SEM-PA-01	PROCESS - ASSEMBLY Change in critical dimensions of package		P Change in dimensions of existing package.	e.g. changes in package dimensions (further	В			_	- 1		<u> </u>				т • -		1.1	. 1 1					нн			
SEM-PA-01	Change in critical dimensions of padage Change of leadframe base material	Р.	Change in dimensions of existing package. P New lead/name material in new composition.	development). e. g. change from alloy42 to copper e. g. change between two different copper alloys.	В				• N	-											LH		н -	•		
SEM-PA-03	Charge in leadframe denembers Charge in leadframe denembers	P	P receivements of memorial or new composition. Disarge in leadings dimensions which has in the specified electrical parameter a circ. date per periodic districts of the state of a specification (e.g. specification, circ. plant of memorials, circ. dispractication, circ. parameters of the state of the st		В	ESD investigations are only necessary if internal ground and power supply connection of leadframe is affected. At it impact on EMC behavior cannot be evaluated / excluded on component level.		•	• N							 		- -			LH			-		
SEM-PA-04	Change of lead frame finishing material / area (internal)	Р	Not included: Variation within specification. Change of surface material of die attach pad a second bond area (e.g. Influence in adhesion mold compound, wedge bond reliability)	ed e. g. change from Ag flash to NIP protection layer e. g. change from Ag spot to Au spot e. g. increase of silver plating area	С		 	•	• N			-	- c	• -		 	-	- -			L H		н -	-	-	For wire bond sitengh test: Pre- & Post-process change comparison to evaluate process change nobusiness (AEC-Q101).
SEM-PA-05	Change of lead and heat stug plating material/plating thickness (external)	Р	P Change in material and / or process resulting in new technology (e.g. pune tin).		В		 	•	• N			-	- с	• -		 	-				L H		н -	-	-	-
SEM-PA-05	Bump Material / Metal System (Internal)		P Stack die or die to substrate (flip chip)	e.g. change to Pb-free material e.g. change to Pb-free material e.g. change of copper pillars	С		 	•	• N			-				 	-			٠.	L -			-	-	-
SEM-PA-07	Die attach resterial	Р	Change of die attach material and / or process nasulting in a new technology (e.g. ach solder, epoxy, etc.)		С	A: If impact on EMC behavior cannot be evaluated / excluded on component level (if die attach has impact on electrical conductivity).		•	• N	٠.	•	-				 	-	- -			L H		нн	-	•	
SEM-PAGS	Change of wire bonding	Р	Material, diameter, change in bonding diagram and for change in process resulting to a new technology.	e.g. change from Au to Cu material e.g. change from 25µm to 23µm diameter e.g. change from single to double bond e.g. change from sich bond to stich on ball bond.	С	A: In case of bond diagram change and EMC cannot be evaluated on component level. Please also check changes described under SEN-EO-E.		•	• 0			-		- -		 	-	1		• -	- н			-	•	Praximate Analysis: Strictly regulated only for Power devices. In general: Size and the revisional change with impact on bondprocess (e.g., from Au to Co) accommended. AEC-0100: "For board changes that involve multiple size-board (e.g., size, materials, processess), else's boardon's All of the appended and section 25 of CHO, which allows for the selection of everal-case less trethicles to cover all the prosetting permutations."
SEM-PA-09	Substrate / Interposer	Р	P Change of BGA substrate	e.g. changes in routing	В	A: Impact on EMC behavior cannot be evaluated / excluded on component level. A: If impact on electrical function is not excluded on component level.	 	•	• N			-			т	 -	-	- -	- @•		L H		нн	-		
SEMPA-10	Die Cvercose / Underfüll	-	Supporting layers for complex packages like if sign and / or change in process resulting in a is suchnology. (-): If change does not influence the integrity the final product. (P): If impact on product integrity is anticipated.	(-); e.g. change of dispensing speed (P); e.g. change of undertill material	С			•	• N			-				 	-	- -		٠.			- н		-	-
SEMPA11	Charge of mold compound I encapsulation material	Р	P Change of mold compound / encapsulation material.		С	B: impact on themso-mechanical shess caused by mismatch of mold compount, interconsecting technology and carrier is anticipated specific for Prower Devices. B: for wave soldmed devices. B: for wave soldmed devices make (> 500tg) is should be standard devices. Since the soldmed devices in participation of the solution of seasons of possible devices in prematability of mold compound could affect signal behavior (e.g., digital signal processor).		•	• M			-				 -	-	- -		- •	L -			-	-	
SEM-PA-12	Change of hermetic sealing	Р	P Affected areas are material and process of hermatic (e.g. ceramic) packages, capped die sealed devices (e.g. pressure sensors)	e.g. change of sealing material for RoHS	В	impact on EMC behavior cannot be evaluated / excluded on component level (if encapsulation / sealing has impact on electrical conductivity).		•	•			-		- •		 	-	- -				- •	- •	-	-	
SEM-PA-13	Change of product marking	1	Change of marking on device and / or change process resulting in a new technology. 9): If change does not influence the integrity of final product. 97: If impact on product integrity is smicipated.	n (i): e.g. change of appearance (additional marking) the (Pr. e.g. change from inked marking to baser marking e.g. marking of pin 1	В		 	-		-		-		в -		 	-							-		
SEM-PA-14	Change in process technology (e.g. tim and form, leadframe preparation)	-	(-): If the change in process technology does influence the integrity of the final product. (P): If the change in process technology can influence the integrity of the final product.		В	Please also check changes described under SEM-CO-01. Please check if change is described by specific type of change in this matrix.				-		-				 	-							-	-	
SEM-PA-15	Process inlegitly: tuning within specification	-	Variation within process specification (—): If faming within process specification does P filturous the integrity of the final product. (P): If impact on product specification is anticipated.		С		 	-		-			- -			 								-	-	
SEM-PA-16	Charge of direct melerial supplier	-	Change of suppliers for direct materials which used in assembly process (BCM). P (-): If change does not influence the integrity the final product. (P): If impact on product integrity is anticipated.		с	Please check if material is changed!		-								 								-	-	See change of material.
SEM-PA-17	Change of specified-essembly process sequence (deletion and/or additional process step)	-		(-); e.g. additional cleaning step e.g. deletion of optical inspection (P)*; e.g. change lead finishing pre-trim & form to post trim & form	С			-		-		-				 	-	- -	ļ					-	-	Qualification depends on specific change.
SEM-PA-18	Move all or parts of production to a different assembly alls.	Р	p Assembly transfer or relocation. Includes transfer as well as additional site.		С	A or B: impact on other type of changes described under PROCESS ASSEMBLY and SEM-EQ-91. Check if any other type of process change is applicable due to the transfer.	 	•	• N			-			т • -	 	-	- -			L H		нн	•		Whisker leash have to be done on monitoring basis! AEC-0100: 'For broad changes that involve multiple attributes (e.g., site, materials, processes), refer to section A13 of this appends and section 23 of 0100, which allows for the selection of vornal-case set vehicles to cover af the possible permanditors.'
SEM-PA-19	Die acthe or separation	-	Separation process from single water to dies. (—): If the change in process does not influence the integrity of the final product. (P): If impact on product integrity is smitigated.	(-): e.g. change of kerf width (P): e.g. change from sawing to laser cut	С			•	• N			-				 	-							-		
SEM-PA-20	Die Preparation / Clean	-	Change in process technique for die preparati desering P (-): If the change in process does not influent the integrity of the final product. (P): If impact on product integrity is anticipated.	n / (); e.g. change of cleaning time.	С		 	•	- N		•					 	-	- -					н -	-	-	
SEM-PA-21	Molding / Encapsulation process	-	Change in process technique for moliding / encapsulation. P (-): If the change in process does not influence the integrity of the final product. P): If impact on product integrity is unfolgated.	(-): e.g. turing within process specification	С			٠	• N		• -		- -			 	-	- -			L -			-	-	

	*																													_	
	PACKING/SHIPPING																														
SEM-PS-01	Packing/shipping specification change	P	P Packing/shipping specification change.				-	-				-		-							-								-		
SEM-PS-02	Dry pack requirements change	Р	P Change of dry pack requirements (e.g. chang MSL)	of .				-				-		-					-		-							-	-	-	
SEM-PS-03	Change of carrier (tray, reel)	P	P Change of carrier (tray, real)		В							-							-		-							-	-	-	
SEM-PS-04	Change of labeling	-	Change of labelling also on reel. \$\(\begin{align*} \text{\$\text{\$P\$}} \) Change of material label without impact of barcode. \$\(\begin{align*} \text{\$P\$} \) Changes of material label information whatflects data processing at customer. \end{align*}	(P) e.g. change of defined nomenclature for data	В																			-				-	-	-	
	EQUIPMENT																														
SEM-EQ-01	Production from a new equipment/loof which uses a different basic technology or which due to its unique form or function can be expected to influence the integrity of the final product.	Р	P Change in process technique which is not all covered above.	change from single water to batch process (e.g. over pad metalization) e.g. dambar cutting (mechanical to laser cutting)	A		-					-		-					-		-					- - -		-	-	-	Affected process change is to check.
SEM-EQ-02	Production form a new equipment/bod lehich uses the same basic technology (replacement equipment or extension of existing equipment pool) without change of process.	-	PCN required for dedicated equipment for sensitive component production. (—): If change does not influence the integrity the first product. (P): If impact on product integrity is anticipate	case hasir technology still need to be nowen	С			-													·							-	•	-	
		Р	P Change of tester platform with differences in or SW that makes a change in test concept necessary (only in case of bare die: final test means water test).	ew .	С				-			-							1					,				-	•		Gage R&R / delta correlation
	TEST FLOW																														
SEM-TF-01	Move of all or part of electrical wafer test and/or final test to a different test site.	Р	P Check impact on SEM-AN-01 brokering transfer as well as artificional site.	Dual source strategy	С	Check if any other type of process change is applicable due to the transfer						-		-	- - -	- - -			-		-	- •			- -	- - -		-	•	-	Gage R&R / delta correlation
	Q-GATE																											•	•		
SEM-QG-01	Charge of the text coverage leading process flow used by the supplier to ensure data sheet strangeror (e.g. dimension/addition of electrical measurement has those block, situations of membering processins or sampling).	- 1	e.g. test flow block, reduction from three temperature measurements to two temperature measurements, change in burn in / nx in pro- (—): if change does not influence the integrity the final product. (P): it impact on product integrity is anticipate.	exx. (P): e.g. reduction from three temperature measurements to teo temperature measurements	С		٠							-	- -				1									-	•		Purameter Analysis: Delta correlation * For 'burn in' changes ELFR recommended
	Tests, which should be considered for the appropriate process change.				Α		•	•	-		E,• M	-	• •	JE	,• E,•		- •		•	• E,•	E,∙ E					н	н -	-	•	•	
	Tests, which should be considered for the appropriate process change after select	ction o	f condition table.				•	•	-	•	•	-	•	-	• •			•	٠	•	٠	• •							٠	•	
	Suppliers performed tests (mark with an 'X' for done or 'G' for generic)									G G	G		G G		G G		G	GG	G	G X	Х	x x	Х						G		
	Reason for exception of tests and/or usage of generic data:																							N/A						N/A	

-	Not required.
	Information Note required.
P	PCN required.

Worked on: (Name, Function)	Max Mustermann																												
Date:																													
PCN number:																	Device												
Signature:					_									MATERIAL	PERFOR	MANCE TI	EST RESU	ULTS (on	the basis (of AEC Q102	– Revisio	n March 15, 20	17)						
					duation level Af Bf C																						T	T	
					Music A78		*						80															1	
						Ī	9		8		eg U e		n Dody is															1	NA STATE OF THE PARTY OF THE PA
	Assessment of Impact on Supply Chain regarding following aspects	Remaining			alco rut				by a set		r Opera	O option	or Home	W 00 40			Countries											- 1	Remarks
Mark change with an "x"	contractual agreements ischnical interface of processability/manufacturability of customer form, fit, function, quality performance, reliability	Remaining risks within Supply Chain?	Understanding of semiconductors experts	Examples to explain	head head frequality	Further applicable conditions	8	8 0		egic o	1011	9 9	10401	10401	100	ib and	Artistic P	10.00	2 Sec. 11	ou dra	j			- N	2	9.00		A Acetylogical Control	
					Application for Boardwal Compressed by Notralesant b		102	adka) milled	agh Tee	Terpora	обинда	Power Te	#-O 053	W-C 0053	Physical C	Territor	Verain	Machanis	Desk to	100	Parita	Dea Ted	Pa B	Therail	Weeke	Wrebox	De Dear		X X L
ID.	Type of change	No Yes			A Age B Base C: Ose		ECO		a		a		1	a)											-				
LED-AWEI	Any chance with impact on acreed upon technical contractual acreements.		branded to be used if no other type of change i applicable but the change affects agreed technical contractual agreements.	1		1			- 1	- 1				•								-	- 4	7		-			
LED-AN-ES	Any change with impact on technical interface or processability/manufacturability of customer, which is	p p	the change affects agreed technical contractual agreements. See processability on board level technical interface means component terminals.		В	Check if LED-09-01 is affected						-	-		-	-			ŖT -		-		-	-	-	-			
	DATA SHEET			1		Processing occur of assessed.		H		1					_									+				+	
LED-05-01	Change of datastheet parameters/electrical specification (nin. Imax. typ., values) and/or Pulsa/DC specification	P P	Change of application relevant information (e.g. maximum pulse current): due to a technical product or process change.		A			٠	Е	E	E	-	E	E	-	-	-	-	s -		E	-	-	E	-	-		. E	
LED-09-02	Correction of data sheet or issue of entata	1.1.	No technical change of product, process or test. New description of behaviorwhich was not specified before or whichis different born initial specification.	e.g. Errata e.g. change of typ, values due to new information about component behavior e.g. inspruyed statestics.																									
about	Contection of data sheet of value of entata	1.1.	description of behaviorablish was not specified before or whichle offerwer bonished appointation. Please indicate clearly, that infonce contains this type of change! Assessment in application required.	e.g. improved statistics. e.g. reduction of max allowed forward voltage due to improved statistics.	^								-		•		-						-		-	-	1		
			Definition of an additional parameter which was not specified before P. If there is a nick on supply chain where at least one additional other PCN-relevant change category will apply.																								Т	T	Scandisco stoca this is not a contra
LED-09-03	Specification of additional garaneeers	P	P. Ethere is a risk on supply chain where at least one additional other PCN-relevant change category will apply.	t e.g. additional temperature coefficient parameter	A				-							1										-		٠ ١	Formation since this is not a product change, any additional information Classification: C
	Distribu		Any device relevant changes in design / layout of exitarial	1		Ī										_								+				Ŧ	
LED-06-01	Design changes in spitzey.	p p	Any device relevant changes in design / layout of epitadal layers. Not included. Changes within design rules and design specified functions, parameters, and reliability.	e.g. change from Double-Netero to Quantum wells e.g. change of barrier thickness	c	A change from Double heners to Quantum webs — spectrum is affected		1	٠		•	•	٠	•		-	-	-			•	н			-	-			
Library	Design changes in routing layout.		and relability. Any change in chip design / layout. Not included: Changes within design rules and design specification without affecting specified functions, parameters.	e.g. change in tayout of current apreader; thickness of current spreader e.g. reduction of bond pad size		A change in layout of current spreader radiation pattern changes						_								м	+-		м		В	В	ъм .		TO mint he consistent by complex the board by boards.
LED-DE-ES												•			_	-	-				H.		_	H.					
	Die strink LEibpackage (except leadfanne)		Not included: saving streethertscribe ine	Typical shrink of die. e.g. change of dimensions e.g. change of x, y, or z dimension of the package	A	Please check? change in process sechnology (LED-PW-08) is also affected. Check ? LED-09-02 is affected which leads to a change of the elchologic parameters or distributions.		-			•	•	•	•	•		· v	_	• ·	D	÷	D	D			_	_		
LEDOS-OI	LED package (except leadtraine)	-	any change in housing thickness any change in turns or dimensions	e.g. change of x, y, or z dimension of the package e.g. change in leadtrane / carrier dimensions in xy, or z direction								-	-	-		-		V	· T	D	-	D	D	+	В		D -	+	
LED-DE-65	Design of leadframe	P P	any change of leadhame / carrier dimensions, any change of outer dimensions.	direction e.g. change inner design of the leadfeame not affecting the ero performance & reliability of the device		Check if LED-0540 is affected which leads to a change of the elchooptic parameters or distributions.	1		٠	•	•	٠	٠	•	٠	-	v	V	• T	-	-	-	-	•	В	В	D 2	2 •	
	PROCESS - WAFER PRODUCTION New / change of water substrate or carrier material		New-watter substrate respectat.	e.g. different water material to currently released material (change translapphine to discort)		Check if LED-05-02 is affected which leads				Р	Р		Р	Р				$\overline{}$		Р	Τ.	Р	Р	Τ.		$\overline{}$.	Τ.	
_					·	Check if LED-0540 is affected which leads to a change of the elchooptic parameters or distributions.		_			\vdash	•			-	-	•	-	•	Р	÷	Р	P		-	-	•	1	
LED-PW-02	Marker discretizer	p p	change of water diameter resulting in equipment and process changes.	46.6,204,	c	It case other type of changes are affected to equipmentiprocess technology - they need to be identified in addition	•	٠	٠		٠		Р	Р	-	-	-	-	•	-	•	-	-	٠	-	-	-		
LED-PW-03	Newfood water thickness	P P	Change in final water thickness	e.g. change in final chipidie thickness	c	Check if LED-0942 is affected which leads to a change of the elchooptic parameters or distributions.				•	Р	•	Р	Р	-	-	-	-		-		-	-	•	В	В	•	٠ ٠	
LED-PW-04	Change of electrically active-doping/implantation element	р р	Change in electrically active disping / implantation element resulting in a new technology.	e.g. change from the to C as dopare	c			С	٠		С	С		•	-	-	-	-				-	-	•	-	-			
LED-PW-05	Change of stacking	р р	change in layer sequence or thickness	e.g. change of isolation layer thickness between r- and p- nativital	A	customer application needs to be checked due to potential system voltage differences				F					-	-	-	-		-		F	-		-	-		٠,	
LED-PW-06	New/change of metalization (specifically chip bortiside)	р р	Change in metalization of bondpads, material, layer thickness	e.g. change in bond-pad metalization thickness	с			м		•	•	•	M,B	M,B	-	-	-	-		м		м	м	-	•	•			
LED-PW-07	New/ change of metalization (specifically chip backside)	р р	Change of bottom layer of die (between die and leadflame/carrier). Change in process, resterial, or dimensions.	e.g. change from Au to Aurille	с	A customer application needs to be checked due to potential system voltage		м					D,M	D,M						D,M		D,M	D,M	D,M					
	Change in process technique (e.g. significant process changes like lithography, etch, colde deposition, die back surface preparation/backgrind,)		Change from wet to dry exthing, change from horizontal to	e.g. change from set with to dry with e.g. change from laser cutting (saving) to plasma cutting	c	St change from CVD dep to sputter dep for backside/honoide metalization.		_																				+	
		- P	Change from wet to dry etching, change from horizonrains vertical over far oxidation, change from contact litho into shapper litho,	e.g. change from contact litho to stepper liths		LED-PA-14 is also affected.		1	-		-	•		•	•	-	-			-		- 1	-	-	-	-	- '		Qualification effort depends on type of change.
LED-PW-09	Process integrity: Tuning within specification	Р	Variation within process specification	e.g. process control	c			·	-		-		-	-	-	-	-	-		-	-	-	-	-	-	-		-	
LED-PW-11	Change of material supplier with no impact on agreed specifications. Change of specified wafer process sequence (deletion and/or additional process stap)	- P	Change of water supplier. Change of supplier for chemicals resealed for water production. Any change which is not convered by another type of change. Rola is to be assessed.	e.g. Change of water supplier. e.g. additional deaning process in water production	c															-	+ -	-		+ :					Qualification effort depends on type of change. Qualification effort depends on type of change. PHAP has sobe updated.
	Change in de coating or passivation			e.g. change from SICU to SINU	С			Р				Р	Р	Р						Р	٠.	P	Р		Р	Р		٠.	
LED-PW-13	Newwider production location or transfer of water production to a different not previously released transferables in transaction.		New water propluction location or transfer of water production with possible additional changes.			Aur & Impact on other type of changes described under PROCESS - WWFSR PRODUCTION and EQUIPMENT caregories													_					J		_		Τ.	
	BANG DE DELIVERES					PRODUCTION and EQUIPMENT caregories of this DeQuiMa			_							_		الثا			Ļ						_	+	
LED-BD-01	New / change of front side metalization		Change introndpads, nutwisk pad pisth, surface changes, toyer thickness	e.g. change from Au to Au alby e.g. change in over pad metalization	В					•					- [- [-	- [•			•		•	•			
	New/ change of backside metalization		Change of bottom layer of die (between die and	e.g. change from Au to Au alloy		Check if LED-05-02 is affected which leads to a change of the elchooptic parameters or distributions.		М	٠	•	•	•	D,M	D,M	-	-	-	-	• •	•	•	•	•	•	-	-	•		customer application needs to be checked due to potential system soltage differences
LED-RID-ES	Change of water samp or number of dies on water.	1 P	Needed information for pick & place machine. Lumly additional number of drilps. Pt change in spacing between chips and form of water.	e.g. information change for pick & place machine.				-		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	- -		
LED-RO-64	Newfinal soller thickness	РР	Changes in final Chip height (including carrier); very rare and usually combined with a material change (change of carrier	e.g. change on converter thickness		Check if LED-09-01 is also affected.			٠		Р	•	Р	Р	•	-	-	-	•			-				В	•		
LED-MD-65	Change in die custing or passiunton PROCESS - ASSEMBLY	p p	manerial) Change in material, thickness, and process for scaling and passwards:	e.g. change from SICD to SIND		Check if LED-09-01 is also affected.		P	٠	•	•	Р	Р	Р		- 1	-	- 1	•	Р	1 -	Р	Р	1 -	Р	Р			
	PROCESS - ASSESSELY Change of leaditane carrier base numerial	p p	New leadstame/carrier material (new in composition)	e.g. change from copper alloy to bare copper		Check if LED-06-02 is affected which leads to a change of the ektroopid parameters.			Р			-	- 1	- 1	-	3	-			A		A	A	P,1					Suplanation should be provided in case HISS test is not applicable Regarding applicable manerials please refer to the Whisker standard.
LEDPAGE	Change of leadflame/carrier finishing naterial (internal)	p p	Change of surface numerior of die attach-pad and second bond ama (i.g. influence in adhesion to mold compound, wedge bond reliability)		A	or elementaria.		-	-							-		_		A	-	A	A	P,1	_	_		_	HIS test should be considered for automotive extension applications, eiglianation should be provided in case HIS test is not application.
		H	band reliability! Change in material and process technique for final pin	e.c. chance in heat size stack				_																+			===		
LED-PA-03	Change of lead and hear oleg plating materiallylating trickness (esternal)	p p	Change in material and process technique for final pin termination (e.g., pure tris) Herein-package, processability and reliability on board level can be verified by generic data. Classification depends on impact of change	e.g. change from St Into NEPCIAu e.g. change of layer thickness				м			К	-		-	1	-	•	-		A	-	A	A	P,1	-	-	- 1		Suplanation should be provided in case HISE text is not applicable Regarding applicable nametals please refer to the Whisker standard.
	Stump-Material / Metall System (internal)		Stack die or die to substrate	e.g. change to Pti-free insterial	A				٠		•	•	-	-	- [- [-	_	•	W	-	w	W				•		
	Die amach manerial		Change of die attach material (e.g. soft saider, eposy, etc). Thermal management must be respected.	e.g. change of Ag glue to Au glue;	B	1			٠			•		-	-			N D		Q P,D		N	Q P,D	•			•		Site audit for material change with impact on bondprocess (e.g. from Au to Chil programmed
	Change of bond wire material Change in material for sub-components (excluding LED chip & LED package related berss) with impact on agreed specifications.	P P	Material, wire diameter, change in process technique Change of sub-component supplier using different technology/materials	e.g. change from 30y to 28y e.g. using a different Edb-dode in sechnology and material than previously	A					•	M,D	•					U	В	•	P,D	÷		P,D		•	•		H	to Cu) recommended. Cualification effort depends on type of change.
	on agreed specifications Die Overloos / Underfill			than previously P. s.o. change of undefit with change of thermal resistance		Check if LED-0941 is also affected.					Р	•						Р		Р	+		Р				υ .	۳	Anne mean seperate on type of change.
LEDPAGE	the Overcoal / Ghidefili	- P	Supporting layers for complex packages like flip chip. - No change in product integrity P; change can influence the integrity of final product.					_	٠	1				-					_		+-	-		+	-	-	J .		
LED-PA-09	Change of maid compound/encapsulation/sealing material	p p	Change of mold compound, escapositation, or sealing manetal signt be attracted optical function in case of package related effect (e.g. browning). Component assembly and board costing tax to be assessed. MSL might be changed.	e.g. PPA mold compound	A	Check if LED-09-01 is also affected.		٠	٠	-	•	٠	-	-	D	3	D	D	• т	Р	Р	Р	Р	Р	-	-			
LED-PA-10	Change of convention material	p p	Change of material class.	e.g. change from granuts to nitrides	c	Check if LED-05-01 is affected for optical/photometric parameters				Y		•	-	-	-	-		Y		Р	Р	Р	Р	Y	-	-		٠,	
LED-PA-11	Change of direct supplier for convenier material	- р			С			٠	٠	Р	•	•	-	-	-	-	Р	Р		Р	Р	Р	Р	Р	-	-	-		
LED-PA-12	Change of converter process technology	I P		e.g. change from volume conversion to layer conversion; e.g. change from stamping to printing of layer	c	Check if any change in electro-optical characteristics results in change of data sheet LED-05-01			٠	Y	•	٠	-	-	-	-	Y	Y	•	Z	Z	Z	Z	Y	-	-		. •	
LED-Parts	Change of product marking	1 P	Manking on device. It change in appearance, readability not attended It change of content or change of appearance of data matrix code.	e.g. marking of carbode;					-	0	-	-	-	-	-	-	-	-	Т	-	-	-	-		-	-			
LEDPANI	Change in process technique (e.g., die attach, bonding, moulding, plating, trim and form,)	р р	Any change in assembly process technique	e.g. change die attached from gluing to soldering:		Aur it: Please check it EQUIPMENT and other type of changes of naterial (LED-PA 04/05/06/07/08/09/10) are affected					-	-	-		-		-	-				-			-	-			Qualification effort depends on type of change.
LED-PA-15	Process Integrity: Tuning within specification	- P		e.g. process control	c					-	-	-		-	-	-	-	-			-	-		+-		-		+	
_								_	_																			_	

LEDPANI	Change of direct material supplier with no impact on specification	- Р	Change of suppliers e.g. for lead trames, wire material, die attach, electronical components	Change of suppliers e.g. for lead frames, wire material, ESD- dode	c	Assumption that change material specification remains unchanged. Otherwise see change of material.		-		-	-	-			-		-						-			-	See change of material.
LED-PA-17	Change of specified-essentity process sequence (additional and/or deterior of process step)	1 P	Addition or deletion of a process step in assentity process sequence with potentially eignificant impact on the product performance. It is no fitteness on product integrity. Pr influence on product integrity especial.	e.g. additional or deletion plasma deaning process	с	Single case assessment necessary to identify possible interactions or risk.				-	-	-	-	-			-		-		-	-	-		-	-	Qualification effort depends on type of change.
LED-PA-18	New assembly location or standar of assembly to a different not previously released location-libelsubcontractor	p p	New assembly location, assembly transfer or relocation. Transfer of known technology and equipment.	e.g. Dual source strategy	c	A or 8: Impact on other type of changes described under PROCESS ASSEMBLY and EQUIPMENT		-		-	-	-			-		-				-	-	-		-	-	Qualification effort depends on type of change.
	PACKING/SHIPPING			·											 				•			•			•		
LED-P9-01	tner Packins Missins specification change	p p	dimension change of direct product packing	e.c. SMT pocket in tape changes			. Р					Р	Р		 		T	-				T .					
LED-PS-02	Chair Packing Nipping specification change	I P	dimension changes indirect product packing E. small changes in dimension or appearance Pr. number of mest, in the packing are changing	eg pissetox				-	-	-	-	-			-		-		-		-	-	-		-	-	
LED-P9-03	Change of labeling	I P	Change of labelling also on reef. It additional information no change of previous information. P: change in content of previous information.	(f) e.g. additional information (RoHG stamp) (P) e.g. change of customer specific information		Check if LED-09-01 is also affected.			-	-	-	-	-	-	-		-	-	-		-	-	-			-	
LED-PS-01	Dry pack requirement change	p p	Change of dry pack requirements (change in MSL)	e.g. change from MSL3 to MSL1		Check if LEID-05-02 is also affected.			-		-		-				-		-	-	-					-	
_	SOUPMENT				_										 							-					
LED-EQ-61		P P	Change in process technique which is not already covered show. Maper changes affecting the product not covered by the state require also a PCN.	e.g. change from single water to batch process e.g. over pad menalization e.g. clambar cutting (mechanical to baser cutting)		Check if LED-05-01 is also affected. Corrosion stability should be assessed.		-	-	-	-		-	-			-	-	-	-	-		-	. -	-	-	Qualification effort depends on type of change.
160-60-63	Production from a new equipment/bod which-used the same basic technology (replacement equipment or extension of existing equipment pool) without change of process.	Р	PCN required for dedicated equipment for sensitive component production.	e.g. change from single site to multi site handler.	u						-			-	-				-	-	-		-		-	-	Qualification effort depends on type of change.
LED-EQ-ES	Change in final test equipment type that uses a different technology	I P	Change of tester platform (e.g. major test program changes , see tester interface,). I product specification is not affected P product specification is affected	e.g. change in text method from of to lumen				-		-	-	•	•	-			т	-			-				-	•	Gage RBR / deta correlation
	Watflow														 									_			
LED-19-01	None of all or part of electrical earlier sest and/or final sest to a different location/ske/subcontractor	p p	Seaso transfer or relocation.	e.g. Dual source strategy	С			В	•	•	В	•	•	-	-		T	-	В	-		-	В	В	-	•	Gage RBR / deta correlation; additional specification check is should be considered for Water testing
	Q-GATE																										
LED-00-01	Change of the text coverage testing process flow used by the supplier to ensure data sheet compliance (e.g. eliminatorizaddico of electrical measurementhes) flow block; instantion/enhancement of excelluting procedure or susplicit.	Р	Reduction or additional control steps, test coverage within the process flow	e.g. settfowblock like Final test / final clearance	с					-	-	-	-	- -	-		-		-		-	-	-		-	٠	
Tests, which:	should be considered for the appropriate process change.								-		-		-				-	-	-	-	-		-		-	-	
Tests, which	should be considered for the appropriate process change after selection of condition to	ble.							-		-	-			-		-		-			-	-				
Suppliers per	ormed tests (mark with an 'X' for done or 'G' for generic)																										
Reason for ex	ception of tests and/or usage of generic data:							_								_								_	1		
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(Name, Funct	on: Max Mustermann																							
PCN numb												Device	e evalua	ition										
Signatu	re:								MATERIA	L PERFORM	ANCE TEST I	RESULTS o	n the basis	of AEC-Q1	04 Revision	n -Septemb	er 14, 2017						additional AEC-Q1	il to Ox
				Y NEW COMMAN	14,2017	s or thated HAST	by .	og tree	lan for and							lity				Life Saps	9		HG01)	and the state of t
tark change ith an "x"	Assessment of impact on Bupply Chain regarding following aspects - controcted apprehens - sectrical interface of processability/manufacturability of customer - form, fit, function, quality parformance, reliability	Remainir risks with Supply Chain?	ng control of the con	Further applicable conditions Further applicable conditions	ydes oras Bande check) Revision September Ion London processes	Terperate Hundly Ba	Autoclave or Urbia sed HA Temperature Cycling	Tomp	NAMEndurance, Date Red Operational Life Wind Board	WireBond Rull Soldershilly	Physical Dimensions Solder Ball Shear Leadintegity	X-ray/ CSAM Electronic Dischage Human Body Model	Electronic Discharge Changed Device Model	Latch up Electrical Distribution	Faut Grading Charachrisaton	Electromagne for Comparity	Hermatic Package Test	Package Drop Lid Torque	Die Shear Internal Water Vapor	Board Level Relability Low Temperature Startup and Temperature	MCMD to p Test Destructive Physical Analy	X-ray Acoustic Microscopy	Whister test (IIID 00006-1240, JECIE O JE Parameter Arabata:	Remarks
0	ANY	No Y		To Compare the Com	Contine ground and Contine Gro	9	9 P	2 2 2 3	8 8	13 wae	Q 88 7	g asay	woo D	2 <u>9</u> 84 85	0 ES E7	OWE SEE	HOW G1-4	9 080P 9 JT	g & :	11 11 12 12 12 12 12 12 12 12 12 12 12 1	vac £	HS H7		
MCM-ANG	Any change with impact on agreed upon technical contractual agreements.	P	material consequent	•				AS AS B1 B.															-	
MCM-ANY	Any change with impact on processability/manufacturability at customer, which is not covered in the matrix below. DATA SHEET	P	Anychange which is not cowered in the matrix below, but fisk assessment at customer is recommended.	В								1 -							- -	- - -	- -		•	•
MCM-DS-I		P	Update of data sheet because of technical change of the product. ag. secommendations for pull-uplyal-down or NC pins, MSL.	Α.		-						Π.	1 - 1										T - T	
MCM-DS-4			No individual change of profiles, process or text. New description of behaviour within the san of specified believe or which is different from Initial specification. Pleasar indicase cleanly, that Mo note complies the specification of the specification of the specification of the specified of	A .																			-	
MCM-DS-I	Gpecification of additional parameters DESIGN		#Ps Norkhosen as single change. Only in combination with other changes.	A									-										-	·
MCM-DE-4	H Firmsen modification		Bit grade du thrain by design or memory as defined by explain modifications or edited without affected \$\text{\$\tilde{P}\$ = \$\tilde{\text{\$\tilde{A}\$} = \$\tilde{\text{\$\tilde{A}\$}\$ = \$\tilde{A}\$ = \$\t	A								-	-										-	
MCM-DE-4	TOTAL STATE OF THE	P		A		e•		8- 6					·			. ,	M ⊗ •,D		@ F ·				-	
мсмен	H Replacement of any sub-component by a Non-AEC qualified sub-component	P	Change from an AEC Qualified sub-component to a Non-AEC Qualified sub-component or Change from a Non-AEC Qualified sub-component to arother Non-AEC Qualified sub-component	A		•	•						•			. ,	M @◆,D	@• ·	@F -		. 6.	e• e		
MCM-PA-	Replacement of any sub-component by an AEC qualified sub-component	P	e.g. with impact on electrical robustness (ESD, tach up,) electrical functionality, test coverage	A Requires additional evidence that new sub-component is ASC qualified					•			٠					M @◆,D		@F -			e• e		
MCM-PA-C	Replacement of any sub-component by an AEC qualified sub-component	1 1 1 1	e.g. with no impact on electrical robustness (ESD).	C Requires additional evidence that new sub-component is AEC qualified		-			@• ·				@•						@ F ·		. 6.	0.0		•
MCM-PA-	Change within a sub-component that has been requalified Critical characteristics of sub-component are affected	P	ιβ,) electrical functionality, fast coverage	Requires additional use of the appropriate ZVEI DeQuilds (e.g. active, passive component) for qualification of the changed sub- component					•										@ F ·				-	•
MCM-PA-c		1 1	e.g. with an impact on electrical robustness (ESD,	Component Requires additional use of the appropriate ZVETDeCulta (e.g. active, passive component) for qualification of the changed sub-component		-			@• ·			@•	@• (e• •	@• @•	• 8	M ⊗•,D		@ F ·				-	•
MCM-PA-	Si Dibitinal change affecting models unbersalic (Changes to the Internal directions and Forschemistics)	P	dimensions, dia padda siza) Not included: Variation within specification.	A						@• ·				٠ .		. ,	и -				. @•		-	
MCMPAG	Change to the processes used in mobile assembly (e.g., pick & place, de attach, bonding, reflow, encapsulation, singulation, die overcost, underfit, die preparation, die clean)	- 1	Influence the integrity of the final product.	c	• •	٠		8K - 8A -		• -	• • •	•	-	- 0; н	- @•						. 6.		•	•
MCM-PA-C	III Process integrity: suring within specification	- 1	Ply I impact on product specification is anticipated.	С		•										- 1								
MCMPA	O Change is materials used in module assembly (e.g., otherion, underful, encapsularis, solder, epony, bump estateral, dis withch material, fond view, die covercust, submate, leadframe base material;	Р	bonding diagram e.g. change from Sn into NIPdiAu	B: Impact on thermomechanical shess caused by mismatch of mold compound, interconnecting technology and carrier is smillipsted. B: esternalised frieshing material is affected.		٠		8 K @ • 8 E 8	E . •						. 6.						. 6.			
MCM-PA-1	O Change of direct material supplier	- 1	Change of suppliers for dissert maintains which are used in search process (ROM). It is a change of with maintain supplier P. s. a, change of which company dissert for all product. (P) Elimpact on product integrity is anticipated.	C Please check if material is changed		٠							-											See change of material. Whider tests have to be done commonitoring basis!
MCMPA-	Though to assembly location (Mow all or pasts of production to a different assembly step)			A or Rt impact on other type of changes described under PROCESS ASSEMBLY and SEMACO-01. In case of Curvine product please consider ADC-Q006.	• • •	٠		⊜к - • •			• @T •	-	-	٠.	. @•						8.		6.	Whisiar tests have to be done committed passels ACC-0100: "For broad-change shall exhaus easily authors (e.g., site, materials, processes), refer to section A1.2 of this appends and section 2.2 of 0100, which allows for the selection of vicest-case herr vehicles to cover all the possible permansions."
MCMPA-	PACKNGSHIPPNG		Stud product. P(x if impact on product integrity is anticipated. Ag. marking of pin 1	8		٠				- в									- -	- - -				
	Packinghitoping specification change Dry pack requirements change	P 1								1111						н					H			:
		P	MSL) Change of carrier (tray, real)	В								H÷								- -				
MCM-PS-C	COUPMENT		PF. Changes of material label information which affects data percensing at customer.	8																				
MCM-EQ-I	Production from a new equipmentitod which uses a different basic technology or which due to its unique from or function can be expected to influence the integrity of the final product		e.g. damber cutting (mechanical to laser cutting)	A		-									. 6.									Affected process change is to check.
MCM-EQ-	Production from a new equipment/bod which uses the same basic technology (replacement equipment or extension of existing equipment pool; without change of process.	- 1	PCN required for dedicated equipment for sensitive component production component production. Let a present production component product the sensitive product of the sensitive product in the sensitive product in the sensitive product in the sensitive product integrity is anticipated. PS it impact on product integrity is anticipated.	с												-							-	
MCMEGA	Change to lessing platform Change in final test equipment type leading to a different test concept) TEST FLOW	P	Change of saster platform with differences in 1910 or SW that makes a change in test concept recessary a. g. change sester equipment from LTX to Teradyne	с		٠	- -							• •	. @•									Gaga R&R / delta correlation

MCM-TF	Change to testing location (Move of all or past of the finalment to a different test site)	Tester transfer or microsion. P Check impaction MCM-NH-Of harders in management of the microsion and microsion		• •	 	• - @•	 Gage RER / delta convisition
	OGATE						
MCM-Qc	Charge of the text coverage/letting process flow used by the topoler to ensure data other compliance as a plothability and electrical measurements of the block released or here are considered or surriging. - P	s g are fixe block, reduction from these temperature requirements and the second results of the temperature reasonable for the temperature reasonable for the temperature results of the second result			 	 •	Parameter Freights: Date constitutes "For Than In" dampas ELFR recommended
	Tests, which should be considered for the appropriate process change.						
	Tests, which should be considered for the appropriate process change after selection of co	condition table.					
	Suppliers performed tests (mark with an 'X' for done or 'G' for generic)						
		•	•				
	Reason for exception of tests and/or usage of generic data:						

Not required.
 Information Note required.
 Information See The Section of The Section Sec

Adder or "* indicates that performance of that shares text should be considered for the appropriate process
A GR economicsed additionally by 2PC.1.

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	Signature														MATERI	AL PERFOR	MANCE TEST	RESULTS (on the basi	s of AEC-C	200 Revisior	n D)					ads	ditional to AEC- Q200	
Mark change with an "X"						Evaluation level A / B / C		(Appendix																				rged device	
with an "s"		Assessment of impact on Burply Chain regarding following aspects - contractual agreements - technical instrince of processability/manufacturability of customer - form, fit, function, quality performance, reliability	Remainin risks with Supply Chain?	Understanding of component experts	Examples to explain	A Application level B Board evel C. Component level 1: Nat refearer for qualification matrix	Further applicable conditions	estand by das or safford	4gh Temp Exposure (Skrago)	Destactive Physical Analysis	Voistre Raidance	Bandharidky Operatoral Uto	Datement of many	Prysical Dimension Ferritorial Broadsh (Leaded)	Relators to Schorts Vectorical Stock	rbraton	Sestamos to Saddering Heat	Sectional Collectoring (ISD) Sobbreatility	Section Characteristics Section Characteristics	loardflex	Familiasi Strengh (SAD) Jeem Lood Test	Three Retandance	Surga Vidage Salt Spray	Section Tension Conductor	Sherr Stength Talf Ourest Durably	Ind d-LTe Modi Verfication Amp Start Endrance	oad Dury Endergos	JBC mater covers Personeter-Arabyshi: Comparison of current with dra chemotherization, electrical data	Remarks
Selection of component	ID	Type of change	No Ye			R Bos C Con		AEC.	3		4	7			0 0	14	16 N	17 N	19 20	21	и и	24 25	27 29	30	31 32	33 34	38		
NETWORKS & RESISTORS NETWORKS & RESISTORS	_	NETWORKS & RESISTORS ANY			*	_																							
NETWORKS & RESISTORS	PAS-RES-AN-01	Any change with impact on agreed upon technical contractual agreements. Any change with impact on processability/manufacturability at customer, which is not covered in the matrix below.	P P	Intended to be used if no other type of change is applicable but the change affects agreed technical contract of accessors		•					-																	<u> </u>	4
NETWORKS & RESISTORS NETWORKS & RESISTORS	PAS-RES-AN-02	Any change with impact on processability/manufacturability at customer, which is not covered in the matrix between the contraction of the covered in DATASHEET	P P	,	Technical interface means component terminals.	В					-						- -			1 . 1				Lil			. 6	• •	
NETWORKS & RESISTORS	PAS-RES-DS-01	Onange of datasheet parameters/electrical apacification (min./max./kpp. values) and / or AC/DC apacification	P P	Change of application relevant information Not included: Editorial changes.	e.g. tighten of electrical parameter distribution	A	Risk assessment depending on change for each application.				-																		
APTANEWS & SPESSTORS	PAS-RES-DS-02	Corraction of data sheet or lease of emals	1 1	No technical change of product, process or less. New description of behavior which was not specified before or which is different from initial specification. Please indicate cheating this type of change! Assessment in well-realism sensional!	e.g. data aheet correction because of new information about component behavior	A					-		-											-				-	
	PAS-RES-05-03	Specification of additional parameters	I P	Description of a new not previously covered parameter. No technical change of the product. (It no inflamone of the product of the new of the product of the new of t	e.g. adding new (tested) parameter.	A																						-	
NETWORKS & RESISTORS	PAS-RES-MA-01	MATERIAL CONTROL OF THE PROPERTY OF THE PROPER				c								- W		1.1		F .	В -	· · ·		R ·		1				@•	
NETWORKS & RESISTORS	PAS-RES-MA-01 PAS-RES-MA-02			Change of Ink / Wine material Change of Ink / Wine material	e.g. nesistor paste, NCr, resistor wine e.g. AgPd paste, Ag poste, lead wine , NCr for side termination	В								- w				F .	в .		\rightarrow	R ·		+				@•	
NETWORKS & RESISTORS	PAS-RES-MA-03				e.g. for chip res.: final coating, epoxy	В																R -		++					
NETWORKS & RESISTORS	PAS-RES-MA-04	Change of material composition - Passivation	P P	Change of Passivation /Inner protection	e.g. change of glass	С			•		٠				•							R ·	- N						
NETWORKS & RESISTORS	PAS-RES-MA-05 PAS-RES-MA-06	Change of material composition - Substrate material Change of supplier of material	. P	Change of substrate material Change to a new or additional material supplies at component manufacturer.	e.g. for 2nd source purpose	c									•		: :		В •			R -	- N					@• @•	
NETWORKS & RESISTORS NETWORKS & RESISTORS					1									_	_				_									_	Dange of Hallian.
NETWORKS & RESISTORS NETWORKS & RESISTORS	PAS-RES-DE-01	Changes of termination, surface thish, shape, color, appearance or dimension shuckure Changes of inner construction - Passisation	. P	Change of passivation/Inner protection	e.g. change of glass, laquer, spory,	B		-	- : :		•	• •	•	: :	•	•	: :	: :	•	•	: :	R -	- N		1 1			-	
NETWORKS & RESISTORS		Process			e.g. change of firing profile e.g. change from normal atmospher to nitrogen atmospher	_				7			т т		$\overline{}$					т т				$\overline{}$					
NETWORKS & RESISTORS	PAS-RES-PR-01 PAS-RES-PR-02	Changes in process technology or manufacturing methods - Ink Fire Changes in process technology or manufacturing methods - Ink Print	. P	Change of ink fire process Change of ink print process	e.g. change from normal atmospher to nitrogen atmospher	c						•		- R					В -	R	R .	R .		4				@• @•	4
NETWORKS & RESISTORS	PAS-RES-PR-03 PAS-RES-PR-04	Changes in process suchnology or manufacturing methods - Trim Changes in process suchnology or manufacturing methods - Lead Form	. P	Change of Irim process Change of lead form process	e.g. change from mill trimming to laser trimming e.g. change from bending to punching	C B					-	•							В -			-						@• @•	
NETWOOD A RESISTORS	PAS-RES-PR-05	Changes in process technology or manufacturing methods - Termination Attach	- Р	Change of termination attach process	e.g. chip resistors: electroplating process e.g. welding of leads for through put devices.	В										-			в -	-			- N					@•	
NETWORKS & RESISTORS	PAS-RES-PR-06	Changes in process technology or manufacturing methods - Marking	. Р	Change of marking process	e.g. change from tampon printing to laser marking	В		•					•			-													
NETWORKS & RESISTORS NETWORKS & RESISTORS	PAS-RES-PR-08	Changes in process technology or manufacturing methods - Molding Process integrity: tuning within specification	. P	Change of molding process Variation within process specification.	e.g. process control	B C					•	•	•	•	•		: :	•	•	•	•	R -			1 1			+=	
NETWORKS & RESISTORS NETWORKS & RESISTORS	PAS-RES-PN-01	PACKING / SHIPPING - NEW MATERIAL, CRITICAL DIMENSIONS			e.g. number of pieces on reel.	В							1 - 1	- -		T - T	-1-1	- -		1.1	- -		T - T -	10	- -		T - T -		
NETWORKS & RESISTORS	PAS-RES-PN-02			Change of dry pack requirements.	e.g. change of MSL e.g. change in dry pack assurance (HC, MSS)	В										-												- 7	
NETWORKS & RESISTORS	PAS-RES-PN-03		P P	Change of carrier	e.g. change by material e.g. change by geometry.	В										-									-			- 7	
NETWORKS & RESISTORS		PACKING / SHIPPING - VISUAL INSPECTION			1	_				7		_	т т		$\overline{}$					т т				$\overline{}$				_	
NETWORKS & RESISTORS	PAS-RES-PV-01	Change of labeling	I P		(i) e.g. additional information (RohS stamp) (P) e.g. change of customer specific information	В						1												لنب				لناب	4
NETWORKS & RESISTORS	PAS-RES-PV-02	Change of product marking	I P	Marking on device.	e.g. change of content of marking e.g. change of method of marking e.g. change of appearance of marking	В					-																		
	PAS-RES-PV-03	Change of packing/shipping specification	P P	Change in packing specification which does not described a change of dimensions or material of the packing.	e.g. change of documentation in packing specification																								
NETWORKS & RESISTORS NETWORKS & RESISTORS		LOGISTICS / CAPACITY / TESTING - EQUIPMEMENT	\vdash		1																			=					_
NETWORKS & RESISTORS	PAS-RES-EQ-01	Production from a new equipment bool which uses a different feechnology or which due to its unique form or function can be expected to influence the integrity of the final product	P P	Change in process technique which is not a leady covered above. Note: Changes affecting the product not covered by the table require also a PCN.	e.g. new equipment supplier with different process concept e.g. additional equipment to increase production	с					•					-		•	в -	-				11				@•	process change.
NETWORKS & RESISTORS	PAS-RES-EQ-02	Production from a new equipment/loof which uses the same basic technology (replacement equipment or extension of existing equipment pool)	- Р	PCN required for dedicated equipment for sensitive component production.	e.g. additional equipment to increase production capacity e.g. replacement of same equipment	С					٠	•				•	•	•	В -	•								@•	Test effort depends on final risk assessment. Performance test according to affected process charq
NETWORKS & RESISTORS	PAS-RES-EQ-03	Change in find test equipment type that uses a different technology LDGISTICS / CAPACITY / TESTING - PROCESS FLOW	P P	Change of final test equipment which use different technology. PCN required for dedicated equipment for sensitive parameters.	e.g. change of tester platform	С		• -						- -				- -	@В -	•	- -		- -				- -	@•	Gage R&R / delta correlation
NETWORKS A RESISTORS	PAS-RES-PF-Q1	LOGISTICS / CAPACITY / TESTING - PROCESS FLOW Manufacturing site transfer or movement of a part of production process to a different location/site.	P P	Change of manufacturing site. Includes transfer as well as additional site. Note: Reorganization inside one plantistie is not affected.	e.g. movement or transfer of manufacturing sits or process step(s) to a different location/site. e.g. dust source / fab strategy	В							•		•			• [• [в .	•		R ·	- N				. 6	. 6.	
NETWORKS & RESISTORS NETWORKS & RESISTORS	PAS-RES-PF-02	Elimination or addition of a manufacturing process step LOGISTICS / CAPACITY / TESTING - Q-GATE	- Р		e.g. washing / cleaning process e.g. change of order of processes	С					-		-						@B ·	-				·				@•	Characterisation depends on impact production flow.
NETWORKS & RESISTORS	PAS-RES-QS-01	Change of test coverage used by the supplier to ensure data sheet compliance (e.g., eliminate/shedden of electrical measurementhest flow block, releastor/enhancement of excellent grounds or sampling). NOUCTORS	. Р	Change of test coverage.	e.g. change from 100% to sample inspection e.g. test flow block, reduction from three to two temperature measurements e.g. change in burn in/hun in process.	С					-						- -											-	R (electr. funct.): test coverage. R (reliability) only for change in burn process.
INDUCTORS	PAS-IND-AN-01	ANY Any change with impact on agreed upon technical contractual agreements	РР	Intended to be used if no other type of change is applicable but the change affects agreed	Not relevant for technical evaluation.															T . I				TI					
INDUCTORS	PAS-IND-AN-02	Any change with impact on processability/manufacturability at customer, which is not covered in the matrix below.	P P	technical contract of assessments	Technical interface means component terminals.	В																					. 6		
INDUCTORS		DATASSET			1																								
INDUCTORS	PAS-IND-05-01	Charge of delauheet parameters/electrical specification (min./msx./typ., values) and / or ACDC specification	Р Р	Change of application relevant information Not included: Editorial changes. No technical change of product, process or test. New description of behavior which was not	e.g. tighten of electrical parameter distribution		Risk assessment depending on change for each application.																						
INDUCTORS	PAS-IND-05-02	Correction of data sheet or issue of errats	1 1	No technical change of product, process or test. New description of behavior which was not specified before or which is different from pictal specification. Please indicate clearly, that infonds contains this type of change! Assessment in application required?	e.g. data sheet correction because of new information about component behavior	A		* * *			-					-												-	

PAS-IND-CIS-03		Description of a new not previously covered parameter. No technical change of the product. (It no influence (IP): Risk assessment depending on change to each plack about to provide endence of additional parameters (stat. evaluation)	e.g. adding new (tested) parameter.	A													-		-		-			-	-	
PAS-IND-MA-01	MATERIAL Change of material composition - Sobbin Material P P P	Meterial without magnetic function ("Spuler/bitper") typically made by plastic material	e.g. change from Thermoset to Thermoplastic	В					. @								Τ.					-17		- 1	- 1	
PAS-IND-MA-02		material Change of core material, which is material with magnetic function	is g. change from NZh into MnZh	Α.		@• •								В •	-		-				+-+	_	+-		@•	_
PAS-IND-MA-03		Change of insulation material	e.g. wire insulation, insulation tapes, e.g. change from Polyurethane to Polyamide	с										в •			-						_		-	_
PAS-IND-MA-OI		Change of lead material	e.g. change from Polyunethane to Polyamide e.g. change from tin coverd to non-coverd lead	В													+-		+	+-	+	_	##	@•	_	_
			material												+ -					+	++	\vdash	+		. 0	Electrical mechanic changes. board cor
PAS-IND-MA-05	Change of material composition - Mold Compound P P	Change of mold compound material	e.g. change to green mold	В		٠ .	•		• -	•	• -	- •		В •	-		-			1		نلث	1	- (@• dv	nanges. soard cos VSL migh
PAS-IND-MA-06	Change of material composition - Solder Material P P P	Change of solder material at internal connection.	e.g. change of SnAgCu composition	В		- •			• -	• -	• •	@• •			•	• -	-		-		-		-	@•	-	
PAS-IND-MA-07	Change of material composition - Wire / Foll Material P	Wire for wounded inductors. Poil for multilayer inductors (inner electrode).	e.g. change of Cu composition	В		@• -			• -					в -	•	•	-		-		-		-	- 1	@•	
PAS-IND-MA-08	Change of material composition - Glue P P	Change of glue material	e.g. change from glue A into glue B	с		- @•		@• -	@•		- @•	@• -	- @•	@В -			-		- 7		-		-	- 1	@•	Conside the air g
PAS-IND-MA-09	Change of supplier of material - P	Change to a new or additional material supplier at component manufacturer.	e.g. for 2nd source purpose	с		- •		@• -		• -		-		в -	-		-		-		-			- 1	@• An	Assump remains change
PAS-IND-MA-10	Change of material composition - Poling Material P P	Change of potting material	e.g. change from epoxy reain to allicon	C A: If influence on other connections PCB or laquer expected.		- @•		@• -	@• @		- @•	@• -	@•	@B -	-		-		1-17		- 1		-	- 1	@•	
PAS-IND-DE-01	DESIGN Changes of termination, surface finish, shape, color, appearance or dimension structure - Bobbin I P	Material without magnetic function ("Souteristineer") troically made by plastic	e.g. construction / dimension change of bobbin	В				Ι.Ι.	T . T .	1 - 1 -				В -	1.1	. T .	T -		T		П	T	7.7		@•	-
	Changes of termination, surface finish, shape, color, appearance or dimension shucture -	material Change of lead/terminals	e.g. change from PTH terminals to SMD terminals	Α					. .						+		+-		+	# -	$\pm \pm$	_	##		@• En	Effect re
PAS-IND-DE-03	Lasd reminal	Change of mold	e.g. new mold material with different color	В				@• -						в -			-						##		@• Pa	Paramet compone magnetic
PAS-IND-DE-04			d e.g. change fromfrum core & shield core into pot core & cover plate core	A		- •								В -			-								@•	agnet
PAS-IND-DE-05	Changes of Inner construction - Insulation System - P	with magnetic function Change of insulation system	e.g. wire insulation, insulation tapes,	c		@•							A -	В •	- 1		-				- 1				- 7	
PAS-IND-DE-06	Changes of inner construction - Wire / Foil Construction . P	Change of wire / foil dimensions	e.g. who insulation, insulation topes, e.g. change from Polyssethane to PTFE (Tellon) e.g. change from round cross section to rectangular cross section e.g. from single wire to litz wire	В		- •		+			- @•			в -											@•	Ť
PAS-IND-DE-07	Changes of termination, surface finish, shape, color, appearance or dimension shucture - Poling III P	Channe of position direction	e.g. from single wire to litz wire e.g. change of potting (filling) height	C If data sheet is affected (PAS-ND-D 01)		- @•			@• @		- @•			@B -	انا				اللبيد	-	+	تبليد	اخب		@•	£
	Material P PROCESS	Crawye or possing american	with committee on bossed (seadil) seeding	61)		. @•			@• @		- @•	e		8D -				-	بنيه			تبلت				
PAS-IND-PR-01	Changes in process technology or manufacturing methods - insulation Strip . P	(Mechanical) removal of insulation.	e.g. change from mechanical removal to laser removal	В									- @•		-		-			آد ا	-			-	- in	Mechani impact o stripping
PAS-IND-PR-02	Changes in process technology or manufacturing methods - Lead Prep. / Plating . P	Change of lead prep. / plating	e.g. change from hot dip tinning to electroplating	В												• -	-				- 1			@•		area. Influenc joint.
PAS-IND-PR-03		Connection of wire terminal and / or connection of termination to core/bobbin.	e.g. chanfe from Manual winding to Semi-automic sinding (winding of wire on terminal)	с				@• -				Α •			- 1		-				- 7			@•	- 6	Increase
PAS-IND-PR-04	Changes in process technology or manufacturing methods - Marking - P	Change of marking process	e.g. change from ink marking to laser marking	В											- 1		-		4-1-	-	-		4-1		-	
PAS-IND-PR-05	Changes in process technology or manufacturing methods - Molding . P	Change of molding process	e.g. change from one component molding to two component molding (other technology needed) e.g. change from hot tip tinning to resistance welding	В	•						• -			В •	-		-		-		-		-	-	-	
PAS-IND-PR-05 PAS-IND-PR-07	Changes in process technology or manufacturing methods - Soldering Internal Connections - P	Change of soldering internal connection	e.g. change from hot tip tinning to resistance welding e.g. change from manual to automatic process	B B									• •	 D	•	• -	-		44	4	\vdash	4	4		4	4
PAS-IND-PR-01 PAS-IND-PR-08	Changes in process technology or manufacturing methods - Winding Insulation - P Changes in process technology or manufacturing methods - Winding Wine - P	Change of winding - insulation Change of winding - wine	e.g. change from manual to automatic process e.g. change from semi-automatic winding to full automatic winding	С		@•			· -					В -						. .	+		Hil		@•	f
PAS-IND-PR-09		Variation within process specification.	susomatic winding e.g. process control	c											-		-				- 1				-	T
PAS-IND-PR-10	Changes in process technology or manufacturing methods - Potting - P	Change of potting process	e.g. change from manual potting process to automatic potting process	с	•	- @•		@• -							-		-		-		-		1 -	-	-	
PAS-IND-PN-01	PACKING / SHPPING - NEW MATERIAL, CRITICAL CIMENSIONS Packing / shipping specification change (bosening of tolerances) P P P P	Change of packing specification.	e.g. number of pieces on reel.	В				T . I .	T . I .						1.1				7.							-
PAS-IND-PN-02		Change of drypack requirements.	e.g. change of MSL e.g. change of MSL e.g. change in dry pack assurance (HC, MBB)	В																						
PAS-IND-PN-02 PAS-IND-PN-03		Change of drypack requirements. Change of carrier	e.g. change in dry pack assurance (HC, MBB) e.g. change by material e.g. change by geometry.	В																	+					÷
	PACKING / SHIPPING - VISUAL INSPECTION		e.g. change by geometry.																	H	H			بلت		_
PAS-IND-PV-01	Change of labelling (P	Change of labelling, also on reel.	(f) e.g. additional information (RoHS stamp) (P) e.g. change of customer specific information	В																				-	-	
PAS-IND-PV-02	Change of product marking	Marking on device.	e.g. change of content of marking e.g. change of method of marking e.g. change of appearance of marking	В															4 - 7		1 - 1		/ - /	-	- /	
PAS-IND-PV-03	Change of packing/shipping specification P P	Change in packing specification which does not described a change of dimensions or material of the packing.	e.g. change of documentation in packing specification														-					- 1		-	- 7	
	LOGISTICS / CAPACITY / TESTING - EQUIPMEMENT								1 1											=	Ħ	=				Total editor
PAS-IND-EQ-01	Production from a new equipmentitool which uses a different technology or which due to its unique form of function can be expected to influence the integrity of the final product	Change in process technique which is not sheady covered above. Note: Changes affecting the product not covered by the table nequine also a PCN.	e.g. introduction of polling process	с										@B -	-		-				-		1	- /	@•	Test efformations process of
PAS-IND-EID-02	Production from a new equipment/bod which uses the same basic technology (replacement equipment or extension of existing equipment pool)	PCN required for dedicated equipment for sensitive component production.	e.g. duplication of existing winding machine	с											-		-							- 1	@•	Test efforms process or
PAS-IND-ED-03		Change of final test equipment which use different technology. PCN required for dedicated equipment for sensitive parameters.	e.g. change of fester platform	с										@B -							\vdash			-	pro	grocess Gage R&
	Change in find test equipment type that uses a different schnology P LOGISTICS / CAPACITY / TESTING - PROCESS FLOW	PCN required for dedicated equipment for sensitive parameters.	wy cowyl of seast passers											8p .	ш		L		للثلا	نلا	للا		لنب	اللث	E . G	-,0-10
PAS-IND-PF-01	Manufacturing alle transfer or movement of a part of production process to a different location halls P P P	Change of manufacturing site. Includes transfer as well as additional site. Note: Reorganization inside one plantisite is not affected.	e.g. movement or transfer of manufacturing site or process step(s) to a different location/site.	в				@• •	@• -					в -										@• (@•	T
			e.o. dual source / fab strategy					@• •	@• ·			•		3 .					الشه	4	1	4	انب	_		_
PAS-IND-PF-02	Elimination or addition of a manufacturing process step - P	Change of manufacturing process sequence. But or fine features.	e.g. vashing / cleaning process e.g. change of order of processes	с											-		-			خلا	\perp		1	-		Charact
PAS-IND-PF-03	Elimination of final electrical measurement / text flow block I P LOGISTICS / CAPACITY / TESTING - Q-GATE	Reduction of final testing. PCN required for dedicated final test reductions for sensitive parameters.	e. g. elimination of High-sollage measurement	С										- -			1 -	- -		نيك		تلذ		- (@• Ch	Characte final test
	Change of test coverage used by the supplier to ensure data sheet compliance (e.g., elimination/addition of electrical measurement/set flow block, releasion/enhancement of enothering procedure or sampling).		e.g. change from 100% to sample inspection e.g. test flow block, reduction from three to two temperature measurements e.g. change in burn in trocess.																						R	R (electr R (reliab process.
PAS-IND-QG-01	elimination/addition of electrical measurement/test flow block, releastion/enhancement of moritoting procedure or sampling) CERAMIC / TANTALLUM	Charge of test coverage.	temperature measurements e.g. change in burn in/run in process.	с				<u> </u>					لنا		لنا		T.		الت	خلا	ш	نلن		للت	R (, (reliab /oceas
PAS-CER-ANO1		Intended to be used if no other type of change is applicable but the change affects agreed technical content of annexements	Not relevant for technical evaluation.					T . T .	T.T.	T . T .			. .		1.1		Τ.								-	
	Any change with impact on processability/menufacturability at customer, which is not covered in P P	terbolical contracts all accessments	Technical interface means component terminals.																	+		-		@•		-
	DATASHEET		The same states are property with the same states and same states are same states and same states are same states and same states are same sta										+						++	+-	=	#		3.	_	
PAS-CER-OS-01	Change of datasheet parameters/secrical specification (min./max./lyp. values) and / or ACIDC p pecification	Change of application relevant information Not included: Editorial changes.	e.g. lighten of electrical parameter distribution	A Risk assessment depending on chan for each application.											-							- 1				
PAS-CER-OS-02	Correction of data sheet or lause of errata I I I	No technical change of product, process or test. New description of behavior which was not apacified before or which is different from initial specificate, and produce of the Please indicate clearly, hall infonde contains that type of change! Assessment in application required!	e.g. data sheet correction because of new information about component behavior	A .																	-					
		Description of a new not previously covered parameter. No technical change of the product. No technical change of the product. (pt no influence) product (pt): Risk assessment depending on change to seach application to provide evidence of additional parameter (stat. evaluation)																								

MIC / TANTALUM MIC / TANTALUM	PAS-CER-MA-01	MATERIAL Change of material composition - Ceramic Binder	P P Binder material (ceramic)		С							T . T .									T . I			
MIC / TANTALIM MIC / TANTALIM	PAS-CER-MA-02	Change of material composition - Tantalum Binder	P P Binder material (tantal)	e.c. chance from wax 1 to wax 2	c																			
	PAS-CER-MA-04 PAS-CER-MA-04	Change of material composition - Districtic Change of material composition - Electrode Attach	P P Dielectric change (ceramic only) P Diectrode attach (only tental, glue, carbon, A	e.g. change from ceramic A into ceramic B e.g. change of Ag particle size in conductive	c		•			•			с •		В -	c			-		-		-	
MIC / TANTALUM		Change of material composition - Electrose Attach	p Discrede Material (only ceramic, inner	scheine	c			 	1 1 1										+		+ -			
MIC / TANTALUM			P P Encapsulation	e.g. change from spetric to fake shape (N paste) e.g. change from epoxy1 into spoxy2	c																			Check whether AOI at Tier 1 can be
MIC / TANTALUM MIC / TANTALUM	PAS-CER-MA-07	Change of material composition - Lead material / Termination	P P Lead material / Termination	e.c. change from SnPb to pure Sn	c				• • •						В -						-			affected
		Change of supplier of material	P P Lead material / Termination - P Change to a new or additional material supplied component manufacturer.	er e.g. for 2nd source purpose	С					•						• • c							. 6	Assumption material specification remains unchanged. Otherwise see
MIC / TANTALUM MIC / TANTALUM				e.g. to 240 states parpaie		<u> </u>																		change of material.
	PAS-CER-0E-01	Changes of termination, surface finish, shape, color, appearance or dimension structure - Lead Diameter	I P Lead diameter	e.g. change from 0.8mm into 0.6mm	В																			
MIC / TANTALUM	PAS-CER-DE-02		P Termination area	e.g. change in width of termination from 0.1 -0.3mm into 0.2 - 0.4 mm	В																-			
MIC / TANTALUM	PASCEROE AT		P Terminal interface	into 0.2 - 0.4 mm e.g. additional byer in termination	В							+ + + +			D .						+ -			
MIC / TANTALUM MIC / TANTALUM	PAS-CER-DE-04	Tarrefination Interface Changes of Inner construction - Electrode Trickness	P Electrode thickness (ceramic only)	e.g. N layer change from 2.5µm into 3.5µm	c			• •	 						В .						-			
MIC / TANTALUM	PAS-CER-DE-05	Changes of inner construction - Layer Thickness	P Layer thickness (delectric thickness)	e.g. Ceramic layer thickness changes from 3µm into 5µm.	С				: : :	•					В -	с								
	PAS-CER-DE-06		P Number of layers (ceramic only). Allways in combination with PAS-CER-DE-05.	see also layer thickness	с			. с	с - с	с .	с	с .	. с	с -	в,с -	с								
MC / TANTALUM		PROCESS	- COMBINSON WIT PAS-CER-UE-10.																					
MIC / TANTALUM MIC / TANTALUM	PAS-CER-PR-01	Changes in process technology or manufacturing methods - Dicing	p Change of dicing	e.g. change from cutting to sawing	С		•								В -	c								
MIC / TANTALUM	PAS-CER-PR-02	Changes in process technology or manufacturing methods - Electrode apply	- P Electrode apply (dielectric layer process)	e.g. change from wet to dry process	С		•	с -	с				СС		в,с -	с								
MIC / TANTALUM MIC / TANTALUM	PAS-CER-PR-03		. P Change of firing profile	e.g. seperation of decarbonization and firing profile.	С		•			•				• -	в -	C								•
MIC / TANTALUM	PAS-CER-PR-04	Changes in process technology or manufacturing methods - Lamination	. P Change of lamination / press technique	e.g. standard pressing to iso static pressing.	С		• •								В -	• · c			-		-		-	
MIC / TANTALUM	PAS-CER-PR-OS	Changes in process technology or manufacturing methods - Particle Size	Change of powder particle size. Always in combination with PAS-CER-MA-03.	e.g. change DS0 from 0.5µm into 0.4µm	С		• •	•					• •	•	В -	• • •								
MC / TANTALUM	PAS-CER-PR-06		p Change of screening / printing	e.g. change from screen printing into offset printing	С					с .		с -		с -	в,с -	с					-			
	PAS-CER-PR-07		Change for termination preparation like platin or apply of termination base layer.		В										в .									
MIC / TANTALUM	DAZ-CER-DR-M	Terror Service Assessment Service (Service Service)	or apply of termination base layer.																					
MIC / TANTALIM MIC / TANTALIM MIC / TANTALIM		POLICIA I SINTING - NEW MOLECUPE, COLUMN COMERCIONS	P Variation within process specification.	e.g. process control																		- 1 -		
MIC / TANTALUM	PAS-CER-PN-01	Packing / shipping specification change (loosening of tolerances)	P Change of packing specification.	e.g. number of pieces on reel.	В																. 1			
	PAS-CER-PN-02		P P Change of drypack requirements.	e.g. change of MSL e.g. change in dry pack assurance (HC, MSB)	В																			
MIC / TANTALUM	PAS-CER-PN-03																		+		+			
MIC / TANTALUM MIC / TANTALUM	PAS-CER-PN-03	Charge of carrier (tray, reel) PACKING / SHEPPING - VISUAL INSPECTION	p P Change of carrier	e.g. change by material e.g. change by geometry.	В											<u> </u>					لنا	- -		
	PAS-CER-PV-01	PALANNA FOR PHANA - VISUAL INSPECTION	I P Change of labelling, also on reel.	(f) e.g. additional information (RoHS stamp) (P) e.g. change of customer specific information	В										.					.	1			
MIC / TANTALUM				(P) e.g. change of customer specific information																				
MIC / TANTALUM	PAS-CER-PV-02		P Marking on device.	e.g. change of content of marking e.g. change of method of marking e.g. change of appearance of marking	В																			
	PAS-CER-PV-03	Change of packing/shipping specification	Change in packing specification which does	e.g. change of documentation in packing																				
MIC / TANTALUM		Charge of packing/shipping specification LOGISTICS / CAPACITY / TESTINS - EQUIPMEMENT	P P Change in packing specification which does not described a change of dimensions or material of the packing.	specification				نانا					النالنا					نانا			لنا			
MIC / TANTALUM		LOGISTICS / CAPACITY / TESTING - EQUIPMEMENT		1																				_
	PAS-CER-EQ-01	Production from a new equipment/fool which uses a different technology or which due to its unique form or function can be expected to influence the integrity of the final product	P Change in process technique which is not stready covered above. Note: Changes affecting the product not covered by the table require also a PCN.	e.g. change from wet to dry technology.	С						• A -				В -	c			-		-		- 6	Test effort depends on final risk assessment. Performance test according to affer
MIC / TANTALUM		ATTEM TALLACTION REPORTED AT PROPERTY OF THE PERSON OF THE	covered by the table require also a PCN.																					process change.
	PAS-CER-EQ-02	Production from a new equipment/locil which uses the same basic technology (replacement equipment or extension of existing equipment pool)	PCN required for dedicated equipment for sensitive component production.	e.g. elimination of manual handling processes	С						. A .				в -	c							- 6	Test effort depends on final risk. assessment.
MC / TANTALUM	PASCENEGUE	equipment or extension of existing equipment pool)	sensitive component production.	e.g. elmination of manual randing processes	c		•			· ·	• ^ .				ь .				1		1		- 6	Performance test according to affer process change.
	PAS-CER-EQ-03		Change of final test equipment which use																					
	PAS-CER-EQ-03	Change in final test equipment type that uses a different technology	P P Change of final test equipment which use different technology. PCN required for dedicated equipment for sensitive parameters.	e.g. change of tester platform	С										@B -	1 1 1			-		-		- 6	Gage R&R / data correlation
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	PAS-CER-PF-01	Manufacturing site transfer or movement of a part of production process to a different location/site	P P Change of manufacturing site. P Includes transfer as well as additional site. Note: Reorganization inside one plantistic is	e.g. movement or transfer of manufacturing site or process step(s) to a different location/site.	В										В .								@• @	
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MICHAEL MICHAE	PROCEROGOT PROCESSOR	Commission of American Companies (Companies Companies Co	P Design of that comings. P Design of that comings. P P Installation this word if no other goar of them to be a series of the coming of the	A service of contract process A service of contract of contract A service of contra	C C C C C C C C C C C C C C C C C C C	As a constitution with PAS-FAM-GG-E4 or of change of militing commence desired to recommend the recommendation of the recommendation		@•	@• 	@• @• @ @• @• @ @• @• @	• • @• • • • • • • • • • • • • • • • • •	@• @•	@• · · · · · · · · · · · · · · · · · · ·	- @•	B	@ @								e (slotch brid's) and company, in slotch(s), or dy company in slotch(s). The slotch(s) is slotch(s) in slotch(s) in slotch(s) in slotch(s), or dy company in slotch(s). Or slotch(s) in slotch(s) in slotch(s), or dy company in s
MICHAEL MICHAE	PROCERTOGOS PROCESSOS PROCESSOS	Science Scienc	P Design of that comings. P Design of that comings. P P Installation this word if no other goar of them to be a series of the coming of the	A service of contract process A service of contract of contract A service of contra	C C C C C C C B B	A to constitution with PAS-FAR-SS-SS of advantage reconstruction with PAS-FAR-SS-SS of advantage reconstruction with PAS-FAR-SS-SS of a few collects SS-SS of Collects of other PAS-FAR-SS-SS and analysis of the PAS-FAR-SS-SS-SS and analysis of the PAS-FAR-SS-SS and analysis of t		@•	@• 	@• @• @ @• @• @ @• @• @	• • @• • • • • • • • • • • • • • • • • •	@• @•	@• · · · · · · · · · · · · · · · · · · ·	- @•	B	@ @								e (slotch brid) and company in slotch(s), or dy company in slotch(s). Crostiler duration in supplication of slotch(s), or dy company in slotc
	PROCERTORS PROCESSOR	Comment of comment Section Sec	P Design of that company. P Design of that company. P Design of the company of	And the control of the control	C C C C C C C B B B C C C B	A to constitution with PASTALESS III should be reconstruction with PASTALESS III should be reconstructed properties. And to constitution with PASTALESS III should be a few collections of the PASTALESS III should be collected by the PASTALESS III should be considered by the PASTALESS III		@•	@• @• @•	@• @• @ @• @• @ @• @• @	• • @• • • • • • • • • • • • • • • • • •	@• @•	@• · · · · · · · · · · · · · · · · · · ·	- @•	B	@ @								a juliarity funda year company, in juliarity juliarity company, in
	PROCERTIFICATION OF THE PROCESS OF T	Comment of comment Section Sec	P Company from company. P Description of any description of the company of the c	A service of contract process A service of contract of contract A service of contra	C C C C C C C C C C C C C C C C C C C	A to constitution with PASTALESS III should be reconstruction with PASTALESS III should be reconstructed properties. And to constitution with PASTALESS III should be a few collections of the PASTALESS III should be collected by the PASTALESS III should be considered by the PASTALESS III		@•	@• 	@• @• @ @• @• @ @• @• @	• • @• • • • • • • • • • • • • • • • • •	@• @•	@• · · · · · · · · · · · · · · · · · · ·	- @•	B	@ @								e (slotch brid) and company in slotch(s), or dy company in slotch(s). Crostiler duration in supplication of slotch(s), or dy company in slotc

	PAS-FLM-DE-06	Changes of inner construction - Insulation System	P Change of inner insulation to protect winding	e.g. change of potting material e.g. change of number of inner insulation layers	с								. B .					@•
Film capacitors	PAS-FLM-DE-07		p Change of packaging	(depending of insulation material thickness) e.g. change of dimension or shape e.g. change of surface	В		- @•	- @• -		@• -	@• @• @•		@•					
Film capacitors Film capacitors	PROPULATION	Package I PROCESS	p crange or passaging		В		- @•	- @• -	- @•	@● -	6. 6. 6.		@•			1 - 1 -		
	PAS-FLM-PR-01	Changes in process technology or manufacturing methods - Package .	P Change of resin filling or hardening process (relevant for based types only)	e.g. change in resin filling process (mixing, sequences, polling,) e.g. change in hardening process (temperature,	с													
Film capacitors	PAS-FLM-PR-02		P Change Terminal Attach Process to winding element for boxed and racked types	100	B: for naked SMD			. . .	_	T			. в .					Consider ESR: Soldenbilly Test for relead SMD
Film capacitors											• •			• • •				Soldenskilly Test for raised SMD components.
Film capacitors		Changes in process technology or manufacturing methods - Winding . Process integrity: tuning within specification .	P Change of winding, flattening or tempering process. P Variation within process specification.	e.g. change of tempering temperature e.g. process control	c c			@				<u> </u>	- В -			1 1		
Film capacitors Film capacitors		PACKING / SHIPPING - NEW MATERIAL, CRITICAL DIMENSIONS							_									
Film capacitors			P Change of packing specification.	e.g. number of pieces on reel.	В													
Film capacitors	PAS-FLM-PN-02		P Change of drypack requirements.	e.g. change of MSL e.g. change in dry pack assurance (HC, MSE)	В	100												
Film capacitors			p Change of carrier	e.g. change by material e.g. change by geometry.	В				1 - 1									
Film capacitors		PACKING / SHIPPING - VISUAL INSPECTION		1					-	1 1								
	PAS-FLM-PV-01	Change of labeling	P Change of labelling, also on reel.	(f) e.g. additional information (RoHS stamp) (P) e.g. change of customer specific information	В				1 - 1									
Film capacitors	PAS-FLM-PV-02		P Marking on device.	e.g. change of content of marking e.g. change of method of marking	В				+									
Film capacitors				e.g. change of appearance of marking	В													
	PAS-FLM-PV-03	Change of packing/shipping specification P	Change in packing specification which does p not described a change of dimensions or material of the packing.	e.g. change of documentation in packing specification	•				/									
Film capacitors		LOGISTICS / CAPACITY / TESTING - EQUIPEMENT																
	PAS-FLM-EQ-01	Production from a new equipment/loof which uses a different technology or which due to its unique form or function can be expected to influence the integrity of the final product	P Change in process technique which is not sheady covered above. Note: Changes affecting the product not covered by the table require also a PCN.	e.g. implementation of new machines	с			- • @	. @•	@• •			- в -					Test effort depends on final risk assessment. Performance lest according to affected process change.
Film capacitors																		Test effort depends on final risk
	PAS-FLM-EQ-02	Production from a new equipment/bod which uses the same basic technology (replacement equipment or extension of existing equipment pool) -	P PCN required for dedicated equipment for sensitive component production.	e.g. extension of existing machine capacity	С	•		- 0	• @•	@• •			- в -					Test affort depends on final risk assaurant. Performance leaf according to affected process change.
rimcipaciors	PAS-FLM-EQ-03	Change in final test equipment type that uses a different technology P	Change of final test equipment which use different technology.	T									- @B -					
Film capacitors	PRG-FLM-EQ-03		P Change of final test equipment which use different technology. PCN required for dedicated equipment for sensitive parameters.	e.g. change of tester platform	с				نانه				. @B .					Gaga RAR / delta correlation
Film capacitors	PAS-FLM-PF-01	LOGISTICS / CAPACITY / TESTING - PROCESS FLOW	Change of manufacturing site. Includes transfer as well as additional site. Note: Reorganization inside one plantitale is not effected.	e.g. movement or transfer of manufacturing site or process step(s) to a different location/site.									• B •					
Film capacitors				process sap(s) to a dimensi ocasionismi.	В							1.1.1.	В	• • •	1 1 1			
Film capacitors			P Change of manufacturing process sequence	e.g. weahing / cleaning process e.g. change of order of processes	с	•												Characterisation depends on impact of production flow.
Film capacitors		LOGISTICS/CAPACITY/TESTING - O-GATE		e.g. change from 100% to sample inspection					$\overline{}$	T T								
	PAS-FLM-QG-01	Change of test coverage used by the supplier to ensure data sheet compliance (e.g., elimination) addition of electrical measurement/lest flow block, releaston/enhancement of monitoring procedure or sampling)	P Change of test coverage.	e.g. change from 100% to sample inspection e.g. test flow block, reduction from three to two temperature measurements e.g. change in burn in/run in process.	c													R (electr. funct.): test constrage. R (electr.funct.): test constrage. process.
QUARTZ CRYSTAL / SAW		QUARTZ CRYSTAL / SAW			<u> </u>													
QUARTZ CRYSTAL / SAW	PAS-QUA-ANOI	Any change with impact on agreed upon technical contractual agreements P	Intended to be used if no other type of chan is applicable but the change affects agreed	pi Not relevant for technical evaluation.						1								
QUARTZ CRYSTAL / SAW	PAS-QUA-AN-02	Any change with impact on processability/manufacturability at customer, which is not covered in p		Technical interface means component terminals.	В													
QUARTZ CRYSTAL / SAW		DATASHEET																
QUARTZ CRYSTAL / SAW	PAS-QUA-OS-01	Change of datasheet parameters/electrical specification (min/max/lyp. values) and / or ACIDC pecification	P Change of application relevant information Not included: Editorial changes.	e.g. tighten of electrical parameter distribution	A Plak assessment depending on change for each application.													
GUARIZ CRYSTAL / SAW			No technical change of product, process or lest. New description of behavior which was not specified before or which is different from lested specification. Plasse indicate cleanly, that infonds contain this type of change!															
	PAS-QUA-OS-02	Correction of data sheet or issue of erratis	New description of behavior which was not specified before or which is different from initial specification.	e.g. data sheet correction because of new information about component behavior	A													
QUARTZ CRYSTAL / SAW			Please indicate clearly, that infoncts contain this type of change! Assessment in application required!															
			Description of a new not previously covered parameter. No technical change of the product. P (I): no influence (P): Risk assessment depending on change each application to provide evidence of additional parameters (stat. evaluation)															
	PAS-QUA-05-03	Specification of additional parameters	No technical change of the product. P (f): no influence	e.g. adding new (tested) parameter.	Α													
			each application to provide evidence of additional parameter (stat. evaluation)															
QUARTZ CRYSTAL / SAW QUARTZ CRYSTAL / SAW		MATERIAL																
QUARTZ CRYSTAL / SAW	PAS-QUA-MA-01	Change of material composition - Quartz Blank P	P A change of Quartz Blank is a very nane case. Mainly for SAW-Filter		A								- B -					
QUARTZ CRYSTAL / SAW			P Changing of the material of the base.	e.g. change from ceramic to epoxy	A					• -		@• @• -	@•				- @• -	Temperature expansion coefficient
CONTRACTOR OF THE			P Change of Lead/Termination P Change of Glass Seal	e.g. change of plating finish. (eg:Au, AgPd,Sn)	B								• B -			- @•		X-Pay inspection may be influenced
QUARTZ CRYSTAL / SAW			P Change of Glass Seal P Changing of the material of the carricap	e.g. change to lead free glass	B A							@• @•	- @B -			- @•		X-Ray inspection may be influenced when sealing is containing Pb
QUARTZ CRYSTAL / SAW		Change of material composition - Clan / Clap P Change of material composition - Stank Support P	P Change of Blank Support	e.g. change from meas to caramic maserial e.g. change of glue (Silicone to Eposy) e.g. change metal holders (old types)	c		@•	- @Y @	Y ·			@• @• -		•		- @¥		
	PAS-QUA-MA-07	Change of material composition - Overmold P	P Change of Overmold	e.a. change to green mild compound									- @B •			- @•		Electrical function affected in case of mechanical stress distribution change.
QUARTZ CRYSTAL / SAW	PAS-QUA-MA-07	Change of material composition - Overmold P		e.g. change to green mold compound e.g. change of filler particles	В	•		@• • @	. @•		$ \cdot \cdot $.		- GB •	. . .		- @•		mechanical stress distribution change ACX, was soldering and board coating track between the second coating tracks be sessessed. MSL might be changed.
	PAS-QUA-MA-08	Change of material composition - Case Sealing P	P Change of Case Sealing, Change of materia for seam welding Relevant for components with ceramic base and metall cap.	e.g. change from solder poste to adhesive glue	c			- @Y •					- в •					- Impedance my be influenced.
QUARTZ CRYSTAL / SAW																		
QUARTZ CRYSTAL / SAW	PAS-QUA-MA-09	Change of material composition - Electrode P			С						@Y - •		- @B -					
QUARTZ CRYSTAL / SAW	PAS-QUA-MA-10	Change of material composition - Insulator P	P Change of Insulator. Only for leaded types Not relevant for typical SMD.	e.g. Insulating plate under crystal e.g. Glass sealing for leads	В			@• • -	@• •	• -	• • •		- B •	•				
QUARTZ CRYSTAL / SAW		Change of material composition - Marking P	P Change of marking material	e.g. change of ink e.g. chemical to environmental friendly	В				- @•		@•	@•						ADI check necessary!
QUARTZ CRYSTAL / SAW	PAS-QUA-MA-12		P Change to a new or additional material supplet component manufacturer.		с						. • • •		• B •					Assumption material specification entrains unchanged. Otherwise see change of material.
QUARTZ CRYSTAL / SAW		DESIGN																
QUARTZ CRYSTAL / SAW		Changes of termination, surface finish, shape, color, appearance or dimension structure - Base		e.g. due to miniaturization purpose.	В						@• • •						- @• -	CO may be influenced
QUARTZ CRYSTAL / SAW	PAS-QUA-06-02		p Change of Lead/Termination design. Chang geometry or terminal pad or lead form		В	* *								• • •		- @•		O) may be influenced Pleability of solider joints may be affected.
QUARTZ CRYSTAL / SAW	PAS-QUA-0E-03	-	P Change of Can/Cap design	e.g. due to miniaturization purpose.	A		@• •	@• • •	<u> </u>	• •	@• • •	@• • -	- в -	•		- @•		
	PAS-QUA-0E-04	Changes of termination, surface finish, shape, color, appearance or dimension shucture - Package	Change of Package (Molded). Change the design of the package. Not relevant for typical SMD.	e.g. change from welded device to glued device (case sealing)	В		@• •	@• • @	e @• •				- в •			- @•		Electrical function affected in case of mechanical stress distribution change. AAX, was existening with owned coaling has to be assessed. MSL might be
QUARTZ CRYSTAL / SAW			Change of Insulator desion.	1														max to be assessed. MSL might be changed.
QUARTZ CRYSTAL / SAW		Changes of termination, surface finish, shape, color, appearance or dimension structure - I traulator	P Change of Insulator design. P Only for leaded types (old technology) Not released for typical SMD.		В	* *		@• @• -				• @• @• ·		@•				
QUARTZ CRYSTAL / SAW		Changes of Inner construction - Quarte Blank -	P Change of Quartz Blank design	e.g. change dimension of blank, add phase, electrode design,	С	•						- @• -	- B -		- -			
QUARTZ CRYSTAL / SAW		Changes of Inner construction - Blank Support - PROCESS	P Change of Blank Support design	e.g. change design of glue shape e.g. change design of metall supporter	С		- @• •	- @Y @	/ • ·	1 - 1 -		@• • -	- В -	• • •	<u> </u>	- @Y		
QUARTZ CRYSTAL / SAW QUARTZ CRYSTAL / SAW	PAS-QUA-PR-01	Changes in process technology or manufacturing methods - Quartz Blank -	P Change of Quartz Blank process	e.g. change of cutting or lapping technology	С									• • •				
QUARTZ CRYSTAL / SAW	PAS-QUA-PR-02	Changes in process technology or manufacturing methods - Blank Elching / Cleaning -	P Change of Blank Etch/Clean process Using different / new technology	e.g. change from liquid eliching to plasma eliching	С	•			4		@		- в -					
QUARTZ CRYSTAL / SAW			P Change of Electrode Formation process		С	•								•				
QUARTZ CRYSTAL / SAW	PAS-QUA-PR-04	Changes in process technology or manufacturing methods - Trimming -	P Change of Auto Trim process (Method of fin frequency tuning)	e.g. change from evaporation to ion beam	С	•						- @• -	- в -	•				
	PAS-QUA-PR-OS	Changes in process technology or manufacturing methods - Bonding / Annealing .	Change of Blank bonding / annealing proces P Change of method how apply conductive material to base or blank		с			@• @Y @	Υ • -				- в -			- @Y		

OUARTZ CRYSTAL / SAW	PAS-QUA-PR-06	Changes in process technology or manufacturing methods - Can / Cap Attaching	- 1	Change of Cap/Can attaching process	e.g. change of the sealing method e.g. change from batch oven to relice oven	С		•		•	• @	@Y	•	•		-	•			В	- •		-								
QUARTZ CRYSTAL / SAW	PAS-QUA-PR-07	Changes in process technology or manufacturing methods - Molding	. 1	Change of Overmolding process. Not relevant for typical SMD.	e.g. change of overmold process parameter	С		•		@•	• @		@•	@•	@.					В			-							-	
	PAS-QUA-PR-08	Changes in process technology or manufacturing methods - Marking			e.g. change from inked marking to baser marking e.g. marking of pin 1	В								-						-					@• .					_	AOI check necessary!
QUARTZ CRYSTAL / SAW	PAS-QUA-PR-09	Changes in process technology or manufacturing methods - Aging	- 1	Change of Marking process Change of Aging process. Typically no aging done on quartz crystals.	e.g. change of appearance (additional marking) If soing is done: e.g. change of times or					@•	+	+		-						В			+		6.	_	-				
QUARTZ CRYSTAL / SAW QUARTZ CRYSTAL / SAW			- 1	done on quartz crystals. Variation within process specification.	sug-process control	c							-		1 1 1		+++			-			+ -							-	
QUARTZ CRYSTAL / SAW	_	PACKING / SHIPPING - NEW MATERIAL, CRITICAL DIMENSIONS																		1 1										1	
QUARTZ CRYSTAL / SAW	PAS-QUA-PN-01	Packing / shipping specification change (loosening of tolerances)	P E	Change of packing specification.	e.g. number of pieces on reel.	В								•			-			-			•					•	-	-	
QUARTZ CRYSTAL / SAW	PAS-QUA-PN-02	Dry pack requirements change	Р 8	Change of drypack requirements.	e.g. change of MSL e.g. change in dry pack assurance (HC, MSS)	В														-										-	
QUARTZ CRYSTAL / SAW	PAS-QUA-PN-03	Change of carrier (tray, reel)	P I	Change of carrier	e.g. change by material e.g. change by geometry.	В											-			-										-	
QUARTZ CRYSTAL / SAW		PACKING / SHIPPING - VISUAL INSPECTION	_		e.g. change by geometry.																									-	
QUARTZ CRYSTAL / SAW	PAS-QUA-PV-01	Change of labeling	1 1	Change of labelling, also on reel.	(f) e.g. additional information (RoHG stamp) (P) e.g. change of customer specific information	В						. .		-			-			-										-	
	PAS-QUA-PV-02	Change of product marking	1 8	Marking on device.	e.g. change of content of marking e.g. change of method of marking e.g. change of appearance of marking	В																								-	
QUARTZ CRYSTAL / SAW					e.g. change of appearance of marking					-	+	+		-						+			+			_	-				
QUARTZ CRYSTAL / SAW		Change of packing/shipping specification	P	Change in packing specification which does not described a change of dimensions or material of the packing.	e.g. change of documentation in packing specification	•														-									-	-	
QUARTZ CRYSTAL / SAW		LOGISTICS / CAPACITY / TESTING - EQUIPMEMENT	_	I			1		_		_	_	т т							т т			_				_	П		т —	Test effort depends on final risk
	PAS-QUA-EQ-01	Production from a new equipment/loof which uses a different technology or which due to its unique form or function can be expected to influence the integrity of the final product	Р 8	Change in process technique which is not stready covered above. Note: Changes affecting the product not covered by the table require also a PCN.	e. g. new equipment supplier with different process concept	С		•				. .		-			-			@B			-				-	-		@•	Test effort depends on final risk assessment. Performance test according to affected process change. Test effort depends on final risk.
QUARTZ CRYSTAL / SAW			-							-	+	+		-						+			+			_	-				process change. Test effort depends on final risk
QUARTZ CRYSTAL / SAW	PAS-QUA-EQ-02	Production from a new equipment/bod which uses the same basic technology (replacement equipment or extension of existing equipment pool)	- 1	PCN required for dedicated equipment for sensitive component production.	e.g. additional equipment to increase production capacity e.g. replacement of same equipment	С		•				-			-			@B			-				-	-		@•	Performance test according to affected process change.
QUARTZ CRYSTAL / SAW				Change of final test equipment which use																											
QUARTZ CRYSTAL / SAW	PAS-QUA-EQ-03	Change in final test equipment type that uses a different technology	P	Change of final test equipment which use different technology. PCN required for dedicated equipment for sensitive parameters.	e.g. change of tester platform	С					. .						-			@B			-				-	-		@•	Gage R&R / delta correlation
QUARTZ CRYSTAL / SAW		LOGISTICS / CAPACITY / TESTING - PROCESS FLOW																												-	
QUARTZ CRYSTAL / SAW	PAS-QUA-PF-01	Manufacturing site transfer or movement of a part of production process to a different location/site	P	Change of manufacturing site. Includes transfer as well as additional site. Note: Reorganization inside one plansititie is not affected.	e.g. movement or transfer of manufacturing sits or process step(s) to a different location/site.	В		•			• -		•	•						В		•							. @•	@•	
QUARTZ CRYSTAL / SAW	PAS-QUA-PF-02	Elimination or addition of a manufacturing process step		not affected Change of manufacturing process sequence.	e.g. dual source / fab strategy e.g. weehing / cleaning process e.g. change of order of processes	С											-													@•	Characterisation depends on impact of production flow.
QUARTZ CRYSTAL / SAW		LOGISTICS / CAPACITY / TESTING - Q-GATE																													
	QUA-QG-01	Change of test coverage used by the supplier to ensure data sheet compliance (e.g., elimination/addition of electrical measurement/less flow block, releasion/enhancement of monitoring procedure or sampling)		Change of test coverage.	e.g. change from 100% to sample inspection e. g. test flow block, reduction from three to two	с																								-	R (electr. funct.): test coverage. R (reliability) only for change in burn in process.
QUARTZ CRYSTAL / SAW Al-Oso		moritoring procedure or sampling) ALUMIUM ELECTROLYTIC CAPACITORS			temperature measurements e.g. change in burn in/run in process.																										process.
Al-Cup	_		Т	Intended to be used if no other type of change is applicable but the change affects agreed ischnical contractual agreements.						T	T	T	П	Т						Т			T			T	Т	П		T	
Al-Cap		Any change with impact on agreed upon technical contractual agreements. Any change with impact on processability/manufacturability at customer, which is not covered in the month plant.	P	Is applicable but the change affects agreed technical contractual agreements.	Not relevant for technical evaluation. Technical interface mesons commonsort terminals	В				-		-		-													+ -	- 1	. @•	-	
Al-Cap Al-Cap	PAS-ALU-AN-02	Projecting the first implication of communication actions as communication to the communication of the communicati	P	·	Technical interface means component terminals. See processability on board level.	В		-				<u> </u>		- 1	- - -								<u> </u>				-	<u> </u>	. @•		
	PAS-ALU-DS-01	Change of datasheet parameters/electrical specification (min/max/kyp, values) and / or AC/DC specification	Р 1	Change of application relevant information	e.g. Soften of electrical parameter distribution	А	Risk assessment depending on change for each application.																							-	
Al-Cap		specinisson		No technical change of product, process or			tor each appacation.				-									+ +			+								
				test. New description of behavior which was not specified before or which is different from initial specification. Please indicate clearly, that Infondie contains	e n. data sheet correction because of new	A																									
	PAS-ALU-DS-02	Connection of data sheet or issue of errats		Initial specification. Please indicate clearly, that Infoncts contains.	e.g. data sheet correction because of new information about component behavior	^											1		' '	1 1										-	
Al-Cap			_	this type of change! Assessment in application required!						_	-	_		-									+			_					
				Description of a new not previously covered parameter. No sechnical change of the product. (i): no influence (Ppt. Rais, assessment deptending on change for additional parameters (stat. evaluation)																											
	PAS-ALU-DS-03	Specification of additional parameters	1 1	(f): no influence (P): Risk assessment depending on change to	e.g. adding new (tested) parameter.	A																							1 1	-	
Al-Cap				each application to provide evidence of additional parametes (stat. evaluation)																											
Al-Cap		MATERIAL	П.	Change of housing			B: only if a cap holder holds the Capacitor body by pressing.				. .	Т.	П	- 1	1.1	П.				1 1			T				T	П		1	
Al-Cup	PAS-ALU-MA-01	Change of material composition - Housing	_	Change of housing	e.g. change Al alloy for housing						•	• •	-	-	- • -	- •		- •		-	• •						ļ -	-		-	
Al-Cap	PAS-ALU-MA-02	Change of material composition - Sealing	P	Change of sealing	e.g. change of nubber compound e.g. change of sealing disc material (solal, Snap in)	С	B: in case of external surface of sealing is changed. Evaluation only, if capacitor is glued			- 1	• -		•	•	• • •	• -	@•	@S •		-	•		-				-	-	- -	-	
Al-Cap	PAS-ALU-MA-03	Change of material composition - External Insulation	Р 8	Change of external insulation / sleeving	e.g. change from PVC into PET e.g. change of color	С	B: Only for glued capacitors.			@•	•		@•	•		• .	-	@S •		-	•						-	-		-	Blased Humidity test can be done without applying voltage.
	PAS-ALU-MA-04	Change of material composition - Lead / Termination	P I	Change of lead or outer termination.	e.g. change of leadframe from into copper e.g. change of leadframe finish from tin/lead into tin	В				-			-	-				•		В		•	-				-	-	- @•		
	PAS-ALU-MA-05	Change of material composition - Internal Insulation / Paper	Р 1	Change of paper type / internal insulation	e.g. change of paper thickness 50 µm to 40µm	c	A: Only if impedance increase (delta characterization). Check if datasheet is affected (PAS-ALU-DS-01).													В										@•	
Al-Cap			_		74-7	-	affected (PAS-ALU-DS-01).				_	_	-	-						+			+			_				-	
ALC:en	PAS-ALU-MA-06			Change of electrolyte	e.g. change in formulation	С	A: Only if impedance increase (debs characterization). Oveck if datasheet is affected (PAS-ALU-0S-01).	-		•		- -		•			-			В			-	- •			-	-	- -	@•	
Al-Cap	PAS-ALU-MA-07	Change of material composition - Tape Material	P 1	Change of closing type material	e.g. change of glue or basis material	C B				- 6	Q• -		-	@•			@•	 @• ·					-				-	-		-	
Al-Cap	PAS-ALU-MA-08	Change of material composition - Sase Plate	Р ,	Change of base plate material	e.g. change of used plastic material				•	- (0	Ų• .	÷					(0,•	(D)		-			Ť			•	Ť			-	Test effort depends on final risk
	PAS-ALU-MA-09	Change of supplier of material		Change to a new or additional material supplies at component manufacturer.	e.g. for 2nd source purpose	с						. .								В										@•	assassment. Performance test according to affected material. Assumption material specification nerrains unchanged. Otherwise see change of material.
																															Assumption material specification remains unchanged. Otherwise see
Al-Cup		DESIGN	_	+	1		1																								
Al-Cap	PAS-ALU-DE-01	Changes of termination, surface finish, shape, color, appearance or dimension structure - Wire Diameter Changes of termination, surface finish, shape, color, appearance or dimension structure - Termination	1 1	Change of wire dameter	e.g. change from 0.8 into 0.6 mm wire diameter.	В			•	-	-	-	-	-	•		- :			В	· •		-				1	-	- @•	-	
Al-Cup	PAS-ALU-DE-02	Territorion	1 1	For welded Al capacitors only. Change of appearance	e.g. change from matt fin into bright fin.				•	-		-		-			+ •			В	•	•	-				1	-	- @•	-	
Al-Cup		Changes of termination, surface finish, shape, color, appearance or dimension structure - Appearance	1 1	Change of termination appearance For welded Al capacitors only. Change of appearance Notes Making on device is defined as asperate change (PAS-ALU-PV-02).	e.g. change of colonispsearance e.g. change of safety vant shape	В			•	- '	-		-	-			-			-			-			-	-	-			
Al-Cup		Changes of termination, surface finish, shape, color, appearance or dimension structure - Rubber Sealing	1 8	Change of rubber sealing stand-off shape (for radial)		A									- @• -					-			-					-		-	
Al-Cap Al-Cap	PAS-ALU-DE-05 PAS-ALU-DE-06	Changes of Inner construction - Aluminum Foil Changes of Inner construction - Separator	. 1	Change of Al foil width Change of seperator width Change of seperator density	e.g. change of width e.g. change of width	c		-			•		-	•			@•		:	В			-				+ -	-		@•	
Al-Cup	PAS-ALU-DE-07	Changes of inner construction - Separator Density	- 1	Change of seperator density	e.g. change of seperator density/resistivity	С					• -		-	•					• -	В			-	- •			-	-		@•	
Al-Cap	PAS-ALU-DE-08 PAS-ALU-DE-09	Changes of Inner construction - Inner Connection		Change of inner connection Change of closing type	e.g. change of shape/dimension	c		-		- @ @•	. @			-	@•	- @	• @• @•			@B	- @•	@• -		- @•	1 1		-	-	1 1	-	Terminal Strength (11) not for axial components without paddle tabs.
Al-Cap		Changes of inner construction - Closing Tape Changes of inner construction - Foil	- 1	Change of foil type	e.g. change of dimension e.g. change of eithing level e.g. change of thickness	c				@•	• -		-	•			-		1 : 1	В			-	- •			-	-		@•	
Al-Cap		PROCESS																													Terminal Shength (15) and Vibration
Al-Cap	PAS-ALU-PR-01	Changes in process technology or manufacturing methods - Terminal Attach		Change of terminal attach process	e.g. change of stitching / welding byout	С		•					-	-	•		@•			В	•	• -	-				-	-			Terminal Strength (11) and Vibration (14) not for axial components without cacklile tabs.
Al-Cap	PAS-ALU-PR-02 PAS-ALU-PR-03	Changes in process technology or manufacturing methods - Winding Changes in response technology or manufacturing methods - increases for	- 1	Change of winding process Change of impregartion	e.g. change of material disposition e.g. change of bulk process into individual impregnation	B C	A: only for HV application			•			i I	:			•			B B			-							@•	Surge voltage test for high voltage components only.
AFCap		Changes in process technology or manufacturing methods - Impregnation Changes in process technology or manufacturing methods - Assembly		Change of assembly process	impregration e.g. change of sealing method e.g. change of assembly process sequence	c		•		- @	0.			-	. @•		@•		<u> </u>												components only. R Depends on process change
Al-Cup		Changes in process technology or manufacturing methods - Aging / Testing		Change of aging/lesting process	e.g. change of sasembly process sequence e.g. change of timing, voltage or temperature of	С								-						@B							-			@•	R Depends on process change
At-Cop		Changes in process technology or manufacturing methods - Trim & Form Leaded	_		e.g. change of tooling shape or bending procedure	В								-	- @• -					1			-								Solderability may be influenced
At-Cup		Changes in process technology or manufacturing methods - Trim & Form SMD			e.g. change of tooling shape or bending procedure	В							-	-	· @• ·		@•		- @		- @•	@• -	-				-	-		-	Solderability may be influenced
Al-Cap	PAS-ALU-PR-08	Process integrity: tuning within specification	. 1		e.g. process control	С		-					-	-			-					<u> </u>	-					-		-	
Al-Cup	_	PACKING / SHIPPING - NEW MATERIAL, CRITICAL DIMENSIONS					1				T																				
Al-Cap		Packing / shipping specification change (loosening of tolerances)		Change of packing specification.	e.g. number of pieces on reel.	В								•			-			-										-	
Al-Cap				Change of drypack requirements.	e.g. change of MSL e.g. change in dry pack assurance (HC, MSB)	В																								-	
Al-Cap			P I	Change of carrier	e.g. change by material e.g. change by geometry.	В								-			-		- -											-	
Al-Cap		PACKING / SHIPPING - VISUAL INSPECTION Change of labeling	Д.	Change of labelling, also on reel.	(f) e.g. additional information (RoNG stamp) (P) e.g. change of customer specific information	В					. T					T . T	1.1		T . T	1.1											
Al-Cap	· ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		- 1		(P) e.g. change of customer specific information																										

		1		7																						
	PAS-ALU-PV-02	Change of product marking	P Marking on device.	e.g. change of content of marking e.g. change of method of marking e.g. change of appearance of marking	В																			-	-	
			P P Change in packing specification which does not described a change of dimensions or material of the packing.	e.o. change of documentation in parking																						
	PAS-ALU-PV-03	Change of packing/shipping specification	P P not described a change of dimensions or material of the packing.	specification		-																		-	-	
		LOGISTICS / CAPACITY / TESTING - EQUIPEMENENT										1 1 1														
	PAS-ALU-EID-01	Production from a new equipmentition which uses a different technology or which due to its unique form or function can be espected to influence the integrity of the final product	p Change in process technique which is not already covered above. Note: Changes affecting the product not covered by the table require also a PCN.	e. g. new equipment supplier with different process concept	с										В										@• Test	effort depends on final risk sament. ormance test according to affect ses change.
	PAS-ALD-ED-01	form or function can be especied to influence the integrity of the final product	Note: Changes affecting the product not covered by the table require also a PCN.	concept	· ·													1				-		1	Pad proc	ormance test according to affects sess change.
				e.g. additional equipment to increase production																					Text	effort depends on final risk
	PAS-ALU-EIQ-02	Production from a new equipment/fool which uses the same basic technology (replacement equipment or extension of existing equipment pool)	PCN required for dedicated equipment for sensitive component production.	e.g. additional equipment to increase production capacity e.g. replacement of same equipment	c	•		•			• •			• •	В				• •	- -		-		-	@• Ped	sament. ormance test according to affects ses change.
																									proc	eas change.
	PAS-ALU-EQ-03	Change in final test equipment type that uses a different technology	P Change of final text equipment which use different technology. PCN required for dedicated equipment for sensitive parameters.	e.g. change of tester platform	с										@B			-				-		-	@• 🛶	e R&R / delta correlation
			sensitive parameters.																							
<u> </u>		LOGISTICS / CAPACITY / TESTING - PROCESS FLOW	P Change of manufacturing site. Includes transfer as well as additional site. Note: Recognition do one planshife is not affected any post of the control o	s.o. movement or transfer of manufacturing site or			_						_											<u> </u>		
	PAS-ALU-PF-01	Manufacturing site transfer or movement of a part of production process to a different location/site	p Includes transfer as well as additional site. Note: Recognization inside one plantitile is	e.g. movement or transfer of manufacturing also or process step(s) to a different location/site.	В			• @•							В		•							@•	@•	
•	PAS-ALU-PF-02	Elimination or addition of a manufacturing process step	Note: Reorganization inside one plantitite is not affactive? Description of manufacturing process sequence. Reduction of final lesting.	e.g. dual source / feb strategy e.g. washing / cleaning process	c							+ . + . +		H . H .								-		+ - +	On On	racterisation depends on impact
	PAS-ALU-PT-03	Elimination of final electrical management / text final-block	P PCN required for dedicated final test	e.g. change of order of processes e.g. elemination of additional impedance control	С																				O Co	funtion flow racterisation depends on impact of test flow.
		Elimination of final electrical measurement / test flow block LOGISTICS / CAPACITY / TESTING - Q-GATE	P PCN required for dedicated final test rankerlines for sensitive remembers	e.g. elemination of additional impedance control	· ·	•					T . T .			I . I .										11	@• free	test flow.
				a a change from 100% in second inspection									\neg							\neg		т		Т		
	PAS-ALU-QG-01	Change of test coverage used by the supplier to ensure data sheet compliance (e.g., elimination/siddition of electrical measurement test flow block, releasion/enhancement of monitoring procedure or sampling)	p Change of test coverage.	e.g. change from 100% to sample inspection e.g. test flow block, reduction from three to two temperature measurements e.g. change in burn in/run in process.	с																			-	- R(a	lectr. funct.): test coverage. slability) only for change in burn
		NTC		e.g. change in burn in/run in process.																					proc	845.
-		ARY																								
	PAS-NTC-AN-01	Any change with impact on sorred upon technical contractual agreements	P P is applicable but the change affects agreed	Not released for technical makeston																						
			technical contractual agreements.										_		+			-			_	-				
		the matrix below.	P P		В												- -						- -	@•		
	PAS-NTC-DS-01	DATASHEET Change of datasheet parameters/electrical specification (min/max/kyp. values) and / or ACIDC specification	p P Change of application relevant information	a a Sobbas of alartical parameter distriction	Risk assessment depending on change									T - T -	T . T				1.1					1.1		
		specification	Not included: Editorial changes. No technical change of groduct reviews or		for each application.																			-		
			No inchrinced charged product, process or last. New description of behavior which was not specified before or which is different from last specified before or which is different from last specified before the control of the control																							
	PAS-NTC-DS-02	Correction of data sheet or issue of errats	I specified before or which is different from initial specification.	e.g. data sheet correction because of new information about component behavior	A	100																				
			Please indicate clearly, that Infonde contains this type of change!																							
			his byse of changel Assessment in application required! Discription of a new not previously covered parameter. No inchinated changes of the product. P P (to infilamena PP): Risk assessment depending on change is each application to produce eledinors of additional parameters (atta. evaluation).																							
			parameter. No technical change of the product.																							
	PAS-NTC-DS-03	Specification of additional parameters	I P (f): no influence (P): Risk assessment depending on change fo	e.g. adding new (tested) parameter. or	A		1																1			
			each application to provide evidence of additional parametes (stat. evaluation)																							
		MATERIAL											0. 0											-		
	PAS-NTC-MA-01	Change of material composition - Ceramic Binder	P P Change of Binder Material to bind ceramics.	1	С		•					@• - (₾• @•			- -				- -					-	
	PAS-NTC-MA-02	Change of material composition - Geramic	P P Change of ceramic composition	e.g. changes in additives amount	с										@B	• @s									@● Para an a	imeter analyse only necessary if inticipated impact on electrical
			. , ,												%B	. 60									gert 5 s	ontrance. SMD device only
	PAS-NTC-MA-03	Change of material composition - Inner Electrode	P P Change of inner electrode material (ink material). Valid in case of multilayer structures		С										В										@•	
		Unarge or material composition - inner sections	ung.					-									- -								-	
	PAS-NTC-MA-04	Change of material composition - Encapsulation	P P Change of encapsulation material.	e.g. change of coating e.g. change of additives in an insulation.	A: Risk assessment on application level, if interaction with other material expected.			• -	•			(₾• •		@B @	ე • -						-		-	@● Pari	meter analyse only necessary if nticipated impact on electrical
					Plak assessment needed to evaluate compatibility of soldering process.																				pert	ontance.
	PAS-NTC-MA-05	Change of material composition - Lead material / Termination	P P lead (finish) material, termination, material or attachment material.	e.g. change from SnPb to pure Sn	B compatibility of soldering process.				@• @• @•		@• -	@• -		@• @	• @B	- @∙	@• -					-		-	@•	
													_									_		+		
	PAS-NTC-MA-06	Change of supplier of material	Change to a new or additional material supplies at component manufacturer.	e.g. for 2nd source purpose	с									- •	В		• -								@• A	implion material specification sins unchanged. Otherwise see age of material.
							•	•	• • •	- -						- -					- -	- 1		- 1		
		DESIGN		*																			- -		da	rge of material.
	PAS-NTC-DE-01	Changes of termination, surface finish, shape, color, appearance or dimension structure - Lead	I P Change of lead dameter	e.g. change lead diameter from 0.5 to 0.4 mm.	В				@•	@• @•				- -	@B	- @•						1 - 1			@•	nge of material.
	PAS-NTC-DE-01	Changes of termination, surface finish, shape, color, appearance or dimension structure - Lead	I P Change of lead dameter	e.g. change lead diameter from 0.5 to 0.4 mm.		•			@•	@• @•	. @			- -		- @•	@• -		: : :			-		-	@•	nge of material.
	PAS-NTC-DE-01 PAS-NTC-DE-02	Changes of termination, surface finish, shape, color, appearance or dimension structure - Lead Dameter Changes of termination, surface finish, shape, color, appearance or dimension structure - Termination Area	P Change of lead diameter P Change of termination area	e.g. change lead diameter from 0.5 to 0.4 mm e.g. change of termination byer frickness e.g. change in termination dimensions	8 8				@•	@• @•	@• -			- 0	@B • @B	- @•	@• · @• ·					-		-	@• ac	
	PAS-NTC-DE-01 PAS-NTC-DE-02 PAS-NTC-DE-03	Changes of termination, surface finish, shops, color, appearance or dimension structure - Lead Changes of termination, surface finish, shops, color, appearance or dimension structure - termination Axes — Changes of termination, surface finish, shops, color, appearance or dimension structure - Internal Connection.	P Change of lead domester P Change of termination area P Change of Inner connection	e.g. change lead diameter from 0.5 to 0.4 mm e.g. change of termination bywr frictionas e.g. change in termination diremations e.g. change from soldered connection to welded	B B C				@•	@• @•	@• -			- 0	@B • @B	- @•	@• · @• ·		·					-	@•	
	PAS-NTC-DE-01 PAS-NTC-DE-02 PAS-NTC-DE-03	Changes of termination, surface finish, shape, color, appearance or dimension structure - Lead Dameter Changes of termination, surface finish, shape, color, appearance or dimension structure - Termination Area	P Change of lead domester P Change of termination area P Change of Inner connection	e.g. change lead diameter from 0.5 to 0.4 mm e.g. change of termination bywr frictionas e.g. change in termination diremations e.g. change from soldered connection to welded	8 8				@•	@• @•	@• -			- @	@B • @B	- @•	@• · @• ·					-		-	@• ac	
	PAS-NTC-DE-01 PAS-NTC-DE-02 PAS-NTC-DE-03 PAS-NTC-DE-04	Dranger of termination, serious finals, shape, cabe, appearance or dimension student—lead Distinuity and emissions, sucheas finals, shape, cabe, appearance or dimension student—lead Distinuities Jean Distinuities Jean Georgia of termination, sucheas finals, shape, cabe, appearance or dimension student—learned Contegor of termination, sucheas finals, shape, cabe, appearance or dimension student—framework.	P Charge of lead denotes P Charge of lead denotes P Charge of terresiation area P Charge of server connection Charge of apparament. P Note: Melving on desicn is defined as segment charge of PATASPY CO.	e.g. change lead distrator horn 0.5 to 0.4 mm e.g. change of termination hyer frictness e.g. change in termination distrations e.g. change in termination distrations e.g. change in moletered connection to welded connection e.g. change or adding of color on component Matrix in contensation with other changes!	8 B C C B				@•	@• @• 	@• · · · · · · · · · · · · · · · · · · ·	@• -	 	· · · · · · · · · · · · · · · · · · ·	@B • @B	- @• - @•	@• - @• -					-		-	@• ac	
	PAS-NTC-DE-01 PAS-NTC-DE-02 PAS-NTC-DE-03	Changes of termination, surface finish, shops, color, appearance or dimension structure - Lead Changes of termination, surface finish, shops, color, appearance or dimension structure - termination Axes — Changes of termination, surface finish, shops, color, appearance or dimension structure - Internal Connection.	P Change of hard denniar P Change of hard denniar P Change of hard connection P Change of Appearance P Change o	e.g. change land dismeler from 0.5 to 0.4 mm. A.g. change of semination layer flockness A.g. change of semination dismelation. A.g. change in termination dismelation. A.g. change in termination dismelation dismelation A.g. change in setting of color control on settled convolution. A.g. change or adding of color control on component Makely in contribution with other changed A.g. change of electrode design	B B C	· · · · · · · · · · · · · · · · · · ·			@•	@• @•	@• · · · · · · · · · · · · · · · · · · ·	@• -		· · · · · · · · · · · · · · · · · · ·	@B • @B	- @•	@• - @• -							-	@• ac	
	PAS-NTC-DE-01 PAS-NTC-DE-02 PAS-NTC-DE-03 PAS-NTC-DE-04	Dranger of termination, serious finals, shape, cabe, appearance or dimension student—lead Distinuity and emissions, sucheas finals, shape, cabe, appearance or dimension student—lead Distinuities Jean Distinuities Jean Georgia of termination, sucheas finals, shape, cabe, appearance or dimension student—learned Contegor of termination, sucheas finals, shape, cabe, appearance or dimension student—framework.	P Change of hard denniar P Change of hard denniar P Change of hard connection P Change of Appearance P Change o	e.g. change land dismeler from 0.5 to 0.4 mm. A.g. change of semination layer flockness A.g. change of semination dismelation. A.g. change in termination dismelation. A.g. change in termination dismelation dismelation A.g. change in setting of color control on settled convolution. A.g. change or adding of color control on component Makely in contribution with other changed A.g. change of electrode design	8 B C C B C C			· · · · · · · · · · · · · · · · · · ·	@•	@• @• @• ·	@• - @• -	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	@B • @B	· @•	@• · · · · · · · · · · · · · · · · · · ·					-		-	@• ac	
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