



# PRODUCT/PROCESS CHANGE NOTIFICATION

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PCN APM-PWR/07/2356  
Notification Date 03/20/2007

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**Package change from ISOWATT218 to ISOWATT218FX for Power Bipolar products**

**PWR - PWR BIP/ IGBT/ RF**

**Table 1. Change Identification**

Product Identification (Product Family/Commercial Product)	Power Bipolar assembled in ISOWATT218
Type of change	Package assembly process change
Reason for change	To improve performances
Description of the change	To improve the product performance and offer a package mechanically compatible with the high runners in the market, the ST decided to move the products listed in this document, from ISOWATT218 to ISOWATT218FX package, already in use for several different products since 2003. The package ISOWATT218FX is manufactured by our Subcontractors in Korea who are perfectly compliant with STMicroelectronics Quality Standard. We underline that the products in ISOWATT218FX guarantee the same electrical parameters as the product in ISOWATT218 package. Attached mechanical drawing for both ISOWATT218 and ISOWATT218FX.
Product Line(s) and/or Part Number(s)	See attached
Description of the Qualification Plan	See attached
Change Product Identification	The change is identified by the different package
Manufacturing Location(s)	

**Table 2. Change Implementation Schedule**

Forecasted implementation date for change	06-Jun-2007
Forecasted availability date of samples for customer	13-Mar-2007
Forecasted date for <b>STMicroelectronics</b> change Qualification Plan results availability	13-Mar-2007
Estimated date of changed product first shipment	19-Jun-2007

**Table 3. List of Attachments**

Customer Part numbers list	
Qualification Plan results	



Customer Acknowledgement of Receipt		PCN APM-PWR/07/2356
Please sign and return to STMicroelectronics Sales Office		Notification Date 03/20/2007
<input type="checkbox"/> Qualification Plan Denied <input type="checkbox"/> Qualification Plan Approved  <input type="checkbox"/> Change Denied <input type="checkbox"/> Change Approved	Name:	
	Title:	
	Company:	
	Date:	
	Signature:	
Remark ..... ..... ..... ..... ..... ..... ..... ..... ..... .....		

## DOCUMENT APPROVAL

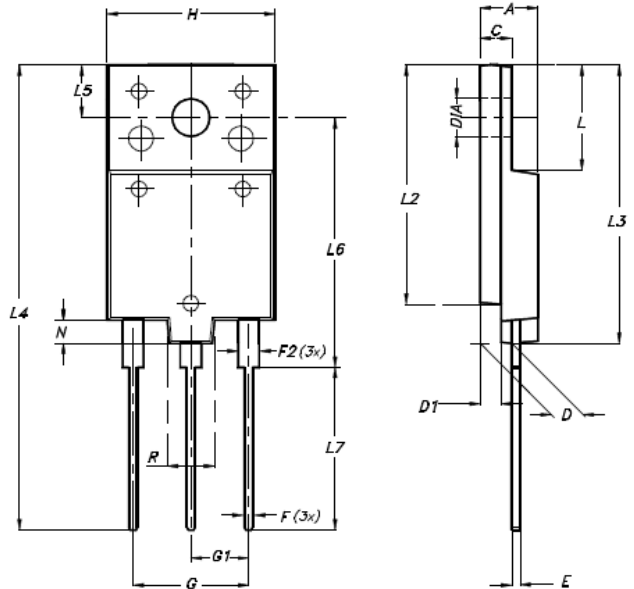
Name	Function
Lanzafame, Alfio Salvator	Division Marketing Manager
Porto, Michele Claudio	Division Product Manager
Falcone, Giuseppe	Division Q.A. Manager

**TITLE : ISOWATT218FX**

**PACKAGE CODE : LZ**

**PACKAGE WEIGHT : 5,60 g./unit Typ**

REF.DIM	DIMENSIONS			NOTES
	DATA BOOK (mm)			
	NOM	MIN	MAX	
A		5.30	5.70	
C		2.80	3.20	
D		3.10	3.50	
D1		1.80	2.20	
E		0.80	1.10	
F		0.65	0.95	
F2		1.80	2.20	
G		10.30	11.50	
G1	5.45			
H		15.30	15.70	
L		9	10.20	
L2		22.80	23.20	
L3		26.30	26.70	
L4		43.20	44.40	
L5		4.30	4.70	
L6		24.30	24.70	
L7		14.60	15	
N		1.80	2.20	
R		3.80	4.20	
Dia		3.40	3.80	

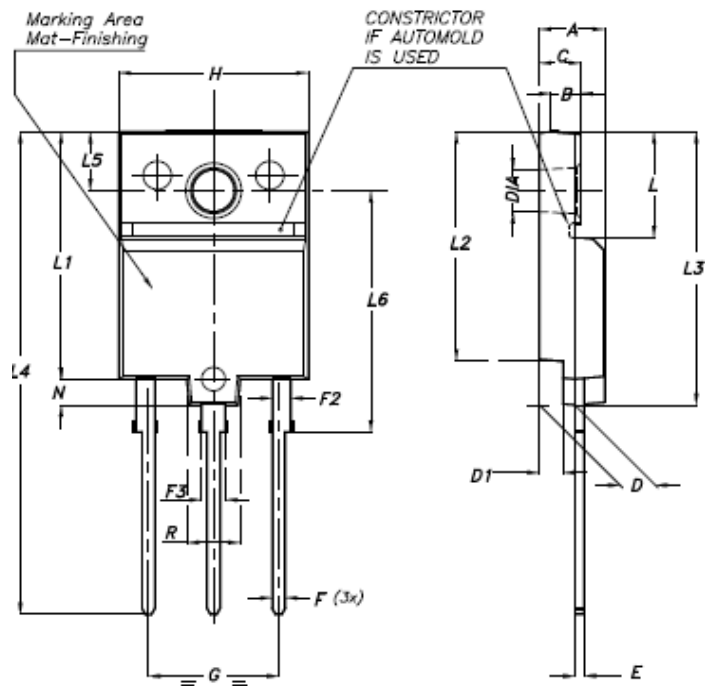


**ISOWATT 218 IN LINE**

**PACKAGE CODE : LI**

**PACKAGE WEIGHT : 5,2 g / unit Typ**

REF. DIM.	STANDARD - NARROW LEADS			NOTES
	DATA BOOK mm			
	NOM	MIN	MAX	
A		5.35	5.65	
B	2.50			
C		3.30	3.80	
D		2.90	3.10	
D1		1.88	2.08	
E		0.75	0.95	1-2
F2		1.50	1.85	1-2
F3		1.90	2.20	1-2-4
F5			1.10	2
G		10.80	11.20	
H		15.80	16.20	
L	9			
L1		20.80	21.20	
L2		19.10	19.90	
L3		22.80	23.60	
L4		40.50	42.50	
L5		4.85	5.25	
L6		20.25	20.75	
N		2.0	2.40	
R	4.6			
Dia		3.50	3.70	



	<b>MPA CATANIA RELIABILITY REPORT</b>	<b>Date:</b>	<b>Dec '06</b>
		<b>No</b>	<b>25/06</b>

**Reliability evaluation**  
**on**  
**TO3PF made in SP Semi**

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### **Introduction**

This report is aimed to qualify the package TO3PF made in SP Semi

The Qualification Reliability test trials have been performed in ST Catania Site.

The evaluation results meet ST products qualification targets, therefore the TO3PF made in SP Semi is qualified.

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**Test Vehicles :**

<b>Product Line</b>	<b>Sales Type</b>	<b>Package</b>
B587	BU941ZPFI	TO3PF

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**Failure Criteria :**

A failed component is a device which becomes inoperative during the test or it fails on meeting the end limits foreseen in the device specification, for one or more than the parameters here below reported

**Parameter Power BIPOLAR Main Parameter**

Collector Leakage Current (Icbo or Iceo or Ices, etc...)  
 Emitter Leakage (Iebo)  
 $H_{FE}$ , Vcesat, Vbesat, Vf  
 Breakdown Voltage ( BVcbo, BVceo, Vbces, Bvebo )

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## Reliability Evaluation Plan and results

**D.U.T.: BU941ZPFI    LINE: B587    PACKAGE: TO3PF**

<b>Test</b>	<b>Conditions</b>	<b>S.S.</b>	<b>Requirement</b>	<b>Results</b>
<b>H.T.S.</b>	TA=150°C	77 x 1 Lot	Parameter deviation within spec. limits at 1000 hours.	No parameter deviation out of spec. limits at 1000 hours.
<b>T.H.B.</b>	TA=85°C - RH=85% Vbias= 100V	77 x 1 Lot	Parameter deviation within spec. limits at 1000 hours.	No parameter deviation out of spec. limits at 1000 hours.
<b>H.T.R.B.</b>	T.A.=150°C Vdd=400V	77 x 1 Lot	Parameter deviation within spec. limits at 1000 hours.	No parameter deviation out of spec. limits at 1000 hours.
<b>PRESSURE POT</b>	TA=121°C - PA=2Atm	77 x 1 Lot	Parameter deviation within spec. limits at 96 hours.	No parameter deviation out of spec. limits at 96 hours.
<b>THERMAL CYCLES AIR TO AIR</b>	TA=-65°C TO 150°C 1 HOUR / CYCLE	77 x 1 Lot	Parameter deviation within spec. limits at 500 cycles.	No parameter deviation out of spec. limits at 500 cy
<b>THERMAL FATIGUE</b>	ΔTC=70°C - Pd=24W	77 x 1 Lot	Parameter deviation within spec. limits at 10k cycles.	No parameter deviation out of spec. limits at 10Kcy.

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### Technological Characteristics

**D.U.T.: BU941ZPFI      LINE: B587      PACKAGE: TO3PF**

<b>DIE</b>	<i>Technology:</i> Planar NPN <i>Material:</i> Silicon <i>Metallization – Front :</i> Al/Si (1%) <i>- Back :</i> Ti/Ni/Au <i>Passivation :</i> P/Vapox <i>Dimensions :</i> 4560 x 5560 um			
<b>DIE ATTACH</b>	Soft Solder	<b>FRAME</b>	<i>Frame and lead material:</i> <i>Frame coating :</i> <i>Lead coating :</i>	Cu Ni / Ni Spot on leads Tin plating
<b>WIRE BOND</b>	Ultrasonic	<b>WIRE</b>	<i>Material :</i> <i>Diameter :</i>	Al Base Al Emitter 7 mils Base 15 mils Emitter
<b>SEALING</b>	Molding	<b>PACKAGING</b>	<i>Material :</i>	Epoxy Resin

**PRODUCTION PLACES :** WAFER PROCESSING : SINGAPORE  
ASSEMBLY LOCATION : KOREA  
Q.A. LOCATION : KOREA

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### Reliability Test Description

#### High Temperature Reverse Bias (HTRB )

This test is performed in order to demonstrate the quality and reliability of devices subjected to an elevated temperature and simultaneously reverse biased. The purpose of this test is to detect surface defects such as poor passivation, presence of contaminants, etc...

#### High Temperature Storage (HTS)

This stress test is performed to check the device life in a high temperature ambient. Specimens are put for a period of time inside a stove in free air. Detectable failure mechanisms are presence of contaminants and metal corrosion.

#### Temperature Humidity Bias (THB)

This test is performed to check the device life in a high humidity ambient. Specimens are subjected to a permanent bias in a climatic chamber in the presence of steam. Detectable failure mechanisms are metal corrosion and molding defects.

#### Pressure Pot

This test is performed in order to check device life in a high humidity ambient in an accelerated way. Specimens are subjected for a period of time inside an autoclave in the presence of steam and pressure. Detectable failure mechanism is metal corrosion.

#### Thermal Fatigue

This test is performed to demonstrate the quality and reliability of devices exposed to cyclic variation in electrical stress between "on" and "off" conditions and resultant cyclic variation in device and case temperatures (thermo-mechanical stress). The purpose of this test is to detect assembly defects: improper die-attach, bonding weakness and thermal mismatch among various components of the package.

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