



PRODUCT/PROCESS CHANGE NOTIFICATION

PCN APM-PWR/07/2804
Notification Date 08/10/2007

TO-220 CHANGJIANG

PWR - PWR BIP/ IGBT/ RF

Table 1. Change Identification

Product Identification (Product Family/Commercial Product)	see attached list
Type of change	Package assembly location change
Reason for change	To increase capacity
Description of the change	Following the continuous improvement of our service and to better support the strong market demand of Power Bipolar, the above mentioned products will be also manufactured in Changjiang. The products are in agreement with ST standards and guarantee the same quality as the ones assembled in the ST plants and other qualified subcontractors having a slight different POA as described in the attached datasheet. At the moment Changjiang is qualified subcontractor for TO-220 package and is already assembling the BUL128-K, TIP122 and TIP127 since year 2004. Changjiang is also qualified subcontractor for other packages.
Product Line(s) and/or Part Number(s)	See attached
Description of the Qualification Plan	See attached
Change Product Identification	Mark "GC" as first digits of the trace code.
Manufacturing Location(s)	

Table 2. Change Implementation Schedule

Forecasted implementation date for change	01-Nov-2007
Forecasted availability date of samples for customer	30-Sep-2007
Forecasted date for STMicroelectronics change Qualification Plan results availability	03-Aug-2007
Estimated date of changed product first shipment	09-Nov-2007

Table 3. List of Attachments

Customer Part numbers list	
Qualification Plan results	



Customer Acknowledgement of Receipt		PCN APM-PWR/07/2804
Please sign and return to STMicroelectronics Sales Office		Notification Date 08/10/2007
<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
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Falcone, Giuseppe	Division Q.A. Manager

	APM CATANIA RELIABILITY REPORT	Date:	July '07
		No	15/07

Reliability evaluation

on

TO-220 made in Changjiang

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Introduction

This report is aimed to qualify the package TO-220 made in Changjiang.

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

The evaluation results meet ST products qualification targets, therefore the TO-220 made in Changjiang is qualified.

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Test Vehicles :

Product Line	Sales Type	Package
BV73	ST13005	TO-220

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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 (I_{cbo} or I_{ceo} or I_{ces} , etc...)
 Emitter Leakage (I_{ebo})
 H_{FE} , V_{cesat} , V_{besat} , V_f
 Breakdown Voltage (BV_{cbo} , BV_{ceo} , V_{bces} , $Bvebo$)

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Reliability Evaluation Plan and results

D.U.T.: ST13005 LINE: BV73 PACKAGE: TO-220

Test	Conditions	S.S.	Requirement	Results
H.T.S.	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.
T.H.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.
H.T.R.B.	T.A.=150°C Vdd=560V	77 x 1 Lot	Parameter deviation within spec. limits at 1000 hours.	No parameter deviation out of spec. limits at 1000 hours.
PRESSURE POT	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.
THERMAL CYCLES AIR TO AIR	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
THERMAL FATIGUE	ΔTC=105°C - Pd=4.8W	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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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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