



PRODUCT/PROCESS CHANGE NOTIFICATION

PCN APM-PWR/07/2995
Notification Date 10/24/2007

SILICON LINE CHANGE FOR BIPOLAR DEVICES - BI19 PRODUCT LINE

PWR - PWR BIP/ IGBT/ RF

Table 1. Change Identification

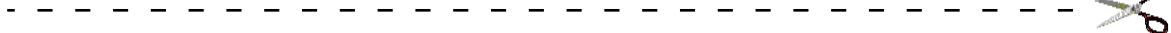
Product Identification (Product Family/Commercial Product)	BIPOLAR DEVICES
Type of change	Waferfab process change
Reason for change	Production Optimization
Description of the change	Planar Base Island technology is ready to replace the mature Epibase technology in order to align our products to the actual Market. The line BI19 will replace the old ones B600. Feature: Improved hFE linearity and Higher fT frequency benefit: Better performances in switching and linear application.
Product Line(s) and/or Part Number(s)	See attached
Description of the Qualification Plan	See attached
Change Product Identification	See "N" in additional info on P/N
Manufacturing Location(s)	

Table 2. Change Implementation Schedule

Forecasted implementation date for change	08-Jan-2008
Forecasted availability date of samples for customer	17-Oct-2007
Forecasted date for STMicroelectronics change Qualification Plan results availability	17-Oct-2007
Estimated date of changed product first shipment	23-Jan-2008

Table 3. List of Attachments

Customer Part numbers list	
Qualification Plan results	



Customer Acknowledgement of Receipt		PCN APM-PWR/07/2995
Please sign and return to STMicroelectronics Sales Office		Notification Date 10/24/2007
<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
Di falco, Luca	Division Marketing Manager
Porto, Michele Claudio	Division Product Manager
Falcone, Giuseppe	Division Q.A. Manager

	APM CATANIA RELIABILITY REPORT	Date:	Sept '07
		No	17/07

Reliability evaluation
on
BI19 for silicon line change on
MJD2955T4 and MJE2955T sales type

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Introduction

This report is aimed to qualify the new line BI19 for line change on devices MJD2955T4 and MJE2955T.

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

The evaluation results meet ST products qualification targets, therefore the new line BI19 for silicon line change on MJD2955T4 and MJE2955T is qualified.

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Test Vehicles :

Product Line	Sales Type	Package
BI19	MJD2955T4	DPAK
BI19	MJE2955T	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 Parameters

Collector Leakage Current (Icbo or Iceo or Ices, etc...)
 Emitter Leakage (Iebo)
 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.: MJD2955T4 LINE: BI19 PACKAGE: DPAK

Test	Conditions	S.S.	Requirement	Results
PRECONDITIONING OF SMD DEVICES BEFORE TC/THB/ENV. SEQ.	DRYNG 1H @ 125°C STORE 168H @ TA=85°C RH=85% Oven Reflow @ Tp=260°C 3 times	204 x 1 Lot	Parameter deviation within spec. limits at end of preconditionings.	<i>No parameter deviation out of spec. Limits at end of preconditionings.</i>
H.T.S.	TA=150°C	77 x 1 Lot	Parameter deviation within spec. limits at 1000 hours.	<i>No parameter deviation out of spec. limits at 1000 hours.</i>
T.H.B.	<i>D.U.T. SMD PRECONDITIONED</i> TA=85°C - RH=85% Vbias= -50V	77 x 1 Lot	Parameter deviation within spec. limits at 1000 hours.	<i>No parameter deviation out of spec. limits at 1000 hours.</i>
H.T.R.B.	T.A.=150°C ; Vbias=-56 V	77 x 1 Lot	Parameter deviation within spec. limits at 1000 hours.	<i>No parameter deviation out of spec. limits at 1000 hours.</i>
PRESSURE POT	TA=121°C - PA=2Atm	77 x 1 Lot	Parameter deviation within spec. limits at 96 hours.	<i>No parameter deviation out of spec. limits at 96 hours.</i>
THERMAL CYCLES AIR TO AIR	<i>D.U.T. SMD PRECONDITIONED</i> TA=-65°C TO 150°C 1 HOUR / CYCLE	77 x 1 Lot	Parameter deviation within spec. limits at 500 cycles.	<i>No parameter deviation out of spec. limits at 500 cy.</i>
THERMAL FATIGUE	ΔTC=105°C - Pd=2W	77 x 1 Lot	Parameter deviation within spec. limits at 10k cycles.	<i>No parameter deviation out of spec. limits at 10 Kcy.</i>
ENVIRONMENTAL SEQUENCE	<i>D.U.T. SMD PRECONDITIONED</i> 100 THERMAL CYCLES + 96H PP	50 x 1 Lot	Parameter deviation within spec. limits at end of test.	<i>No parameter deviation out of spec. limits at end of test.</i>

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Reliability Evaluation Plan and results

D.U.T.: MJE2955T LINE: B119 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.	<i>No parameter deviation out of spec. limits at 1000 hours.</i>
T.H.B.	TA=85°C - RH=85% Vbias= -50V	77 x 1 Lot	Parameter deviation within spec. limits at 1000 hours.	<i>No parameter deviation out of spec. limits at 1000 hours.</i>
H.T.R.B.	T.A.=150°C ; Vbias=-56 V	77 x 1 Lot	Parameter deviation within spec. limits at 1000 hours.	<i>No parameter deviation out of spec. limits at 1000 hours.</i>
PRESSURE POT	TA=121°C - PA=2Atm	77 x 1 Lot	Parameter deviation within spec. limits at 96 hours.	<i>No parameter deviation out of spec. limits at 96 hours.</i>
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.	<i>No parameter deviation out of spec. limits at 500 cy.</i>
THERMAL FATIGUE	ΔTC=105°C - Pd=4.8W	77 x 1 Lot	Parameter deviation within spec. limits at 10k cycles.	<i>No parameter deviation out of spec. limits at 10 Kcy.</i>
ENVIRONMENTAL SEQUENCE	100 THERMAL CYCLES + 96H PP	50 x 1 Lot	Parameter deviation within spec. limits at end of test.	<i>No parameter deviation out of spec. limits at end of test.</i>

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Technological Characteristics

D.U.T.: MJE2955T LINE: BI19 PACKAGE: TO-220

DIE	<i>Technology:</i> PLANAR PNP <i>Material:</i> Silicon <i>Passivation :</i> P-Vapox <i>Metallization – Front :</i> Al/Si <i>Dimensions :</i> 2240 x 1940 um - Back : Au/Cr/Ni/Au			
	DIE ATTACH	Soft Solder	FRAME	<i>Frame and lead material:</i> Raw Copper <i>Frame coating :</i> Full Ni/NiP <i>Lead coating :</i> Sn 100%
WIRE BOND	Ultrasonic	WIRE	<i>Material :</i> Al/Mg Base Al Emitter <i>Diameter :</i> 7 mils Base 10 mils Emitter	
SEALING	Molding	PACKAGING	<i>Material :</i> Epoxy Resin	

PRODUCTION PLACES: WAFER PROCESSING: SINGAPORE
ASSEMBLY LOCATION: AIN SEBAA; SHENZHEN
QA LOCATION: AIN SEBAA; SHENZHEN

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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.

Thermal cycles

This test is aimed at determining the resistance of the devices to the exposure to extreme changes in temperature. Specimen are first placed in a suitable chamber at a low temperature and then transferred to one at high temperature. Effects of thermal cycles include cracking of the die, breaking of the wire bonding, mechanical damage to the device case.

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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