PRODUCT/PROCESS CHANGE NOTIFICATION

PCN APG-CRM/07/2519
Notification Date 05/16/2007

MULTIWATT 11/15 ASSEMBLY & TESTING TRANSFER FROM TOA PAYOH TO BOUSKOURA

CRM - CAR RADIO & MULTIMEDIA DIV

Table 1. Change Identification

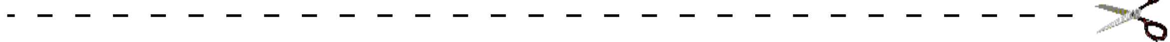
Product Identification (Product Family/Commercial Product)	ALL PRODUCTS IN MW 11/15
Type of change	Package assembly location change
Reason for change	ASSY LINE CLOSURE IN TOA PAYOH
Description of the change	Multiwatt production transfer from Toa Payoh plant (Singapore) to Bouskoura 2000 plant (Morocco). Production in Bouskoura will be leadfree.
Product Line(s) and/or Part Number(s)	See attached
Description of the Qualification Plan	See attached
Change Product Identification	"CZ" AS PRODUCTION AREA FOR BOUSKOURA
Manufacturing Location(s)	

Table 2. Change Implementation Schedule

Forecasted implementation date for change	01-Aug-2007
Forecasted availabillity date of samples for customer	15-Jun-2007
Forecasted date for **STMicroelectronics** change Qualification Plan results availability	09-May-2007
Estimated date of changed product first shipment	15-Aug-2007

Table 3. List of Attachments

Customer Part numbers list	
Qualification Plan results	



Customer Acknowledgement of Receipt	**PCN APG-CRM/07/2519**
Please sign and return to STMicroelectronics Sales Office	**Notification Date 05/16/2007**

☐ Qualification Plan Denied	Name:
☐ Qualification Plan Approved	Title:
	Company:
☐ Change Denied	Date:
☐ Change Approved	Signature:

Remark

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DOCUMENT APPROVAL

Name	Function
Pengo, Tullio	Division Marketing Manager
Cassani, Fabrizio	Division Product Manager
Mercandelli, Laura	Division Q.A. Manager

MULTIWATT 11/15 ASSEMBLY & TESTING TRANSFER FROM TOA PAYOH TO BOUSKOURA

WHAT:

Following Company package roadmap to concentrate in Bouskoura 2000 plant the small watt assembly activity, we are going to transfer there the assembly & testing of the Multiwatt 11 & 15 leads products (2 mils wires, all splittings: vertical, horizontal, in line, short leads).

In 2004, STM already completed a first transfer of Multiwatt products to Bouskoura (PCN TPA/04/437) and the plant is fully operative since mid 2004.
The products involved in this second transfer are the last ones remaining in Toa Payoh for the Car Radio Multimedia division.

Due to the changes introduced on Multiwatt after 2004, production in Bouskoura for all the involved products will be with 2 mils copper wires and leadfree pure tin post plating (RoHS compliant - e3 marking on the parts).

WHY:

Company package roadmap

HOW:

Attached you find the report **ER001707AG6053** covering all the type of products involved in this PCN.

WHEN:

We will start to deliver from Bouskoura from mid August 2007.

MULTIWATT TRANSFER TO BOUSKOURA

RELIABILITY EVALUATION REPORT

Abstract

The MULTIWATT line transfer from Toa Payoh to Bouskoura, involving the devices assembled with 2mil gold or copper wire-bonding (11 and 15 leads), has been successfully tested from the reliability viewpoint.

Four different test-vehicles have been selected, split in 8 different assembly lot as detailed in the "construction note" paragraph.

Conclusion

On the basis of the results summarized in the present report, the MULTIWATT-11/15 package can be qualified in BOUSKOURA as far as Reliability is concerned, with both 2mil gold and 2mil copper wire-bonding technologies.

Reliability test conditions and results

N	TEST NAME	CONDITIONS [SPEC]	TV1 REJ./ S/S	TV2 REJ./ S/S	TV3 REJ./ S/S	TV4 REJ./ S/S	NOTES
1	HTS	Ta=175°C, t=1000h	0/(77x2)	0/77	-	-	-
2	HTS	Ta=150°C, t=1000h	-	-	0/(50x2)	-	2
3	TCT	Ta=-65/+150°C, 1000 cycles	0/(77x2)	-	-	-	1
		Ta=-40/+150°C, 1000 cycles	-	0/77	0/(50x2)	-	1, 2
		Ta=-50/+150°C, 1500 cycles	-	-	-	0/(90x3)	3
4	PPT	P=2atm, Ta=121°C, t=168h	0/(77x2)	-	-	-	-
5	HTRB	Vs=80V, Tj=150°C, t=168h	-	0/30	-	-	-

NOTES:

[1] SAM analysis did not show any abnormal delamination at the die-resin and leadframe-resin interfaces. The rate of die-attach (soft-solder) cracking is acceptable and conform to the MW package standard performance.

[2] Final DPA (Destructive Physical Analysis) on TV3 did not show any weakness of the wire-bonding strength.

[3] The stress was continued up to 1500 cycles in order to investigate the Cu wire-bonding process robustness (standard stress is 1000 cycles).

Test-vehicles construction note

		TV1	TV2	TV3	TV4
Technical code	:	KUV2*L180BA6	KUV2*U115FB6	BBV2*U115FB6	T5V2*L022FA6
Diffusion process	:	BI20II	BCD100I	BCD100I	BI20II
Wafer diameter	:	6“	6“	6“	6”
Diffusion site	:	Ang Mo Kio	Ang Mo Kio	Ang Mo Kio	Ang Mo Kio
Die size (mm^2)	:	3.68x3.25	4.18x3.80	4.18x3.80	4.14 x 3.95
Metal levels (type)	:	2, Al/Si	1, AlSi	1, AlSi	2, AlSi
Passivation	:	Si-glass + SiN	SiN	SiN	SiN
Back finishing	:	Cr/Ni/Au	Cr/Ni/Au	Cr/Ni/Au	Cr/Ni/Au
Package family	:	MULTIWATT			
Pin count	:	15	15	15	15
Assembly site	:	BOUSKOURA / MOROCCO			
Leadframe	:	Copper with Ag-spot on leadframe and slug			
Die attach	:	Soft-solder Pb/1Sn/1.5Ag			
Wire bonding	:	Cu, 2mil	Cu, 2mil	Au, 2mil	Cu, 2mil
Moulding compound	:	Sumitomo EME 6300HR			
Lead finishing	:	SnPb electroplating			Matte Sn
Number of assembly lots	:	2	1	2	3

Attachments

1) Reliability tests description

ATTACHMENT 1: RELIABILITY TEST DESCRIPTION

TEST NAME	DESCRIPTION	PURPOSE
HTS: High Temperature Storage	The device is stored in unbiased condition at the max. temperature allowed by the package materials, sometimes higher than the max. operative temperature.	To investigate the failure mechanisms activated by high temperature, typically wire-bonds solder joint ageing, data retention faults, metal stress-voiding.
TCT: Temperature Cycles Test	The device is submitted to cycled temperature excursions, between a hot and a cold chamber in air atmosphere.	To investigate failure modes related to the thermo-mechanical stress induced by the different thermal expansion of the materials interacting in the die-package system. Typical failure modes are linked to metal displacement, dielectric cracking, moulding compound delamination, wire-bonds failure, die-attach layer degradation.
PPT: Pressure Pot Test	The device is stored in saturated steam, at fixed and controlled conditions of pressure and temperature.	To investigate corrosion phenomena affecting die or package materials, related to chemical contamination and package hermeticity.
HTRB: High Temperature Reverse Bias Test	The device is stressed in static configuration, trying to satisfy as much as possible the following conditions: -) low power dissipation; -) max. supply voltage compatible with diffusion process and internal circuitry limitations; -) max. junction temperature.	To maximize the electrical field across either reverse-biased junctions or dielectric layers, in order to investigate the failure modes linked to mobile contamination, oxide ageing, layout sensitivity to surface effects.

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