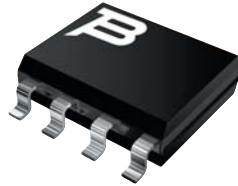
BOURNS®

Product Change Notification

TISP® THYRISTOR SURGE PROTECTORS



March, 2013

Models TISP820xHDMR-S and TISP61089HDMR-S Changes to Die and Package Materials

Description of Changes

This Product Change Notification describes changes to the die and package materials in the Bourns® Models TISP8200HDMR-S, TISP8201HDMR-S and TISP61089HDMR-S in 8-Lead SOIC (210 mil) packages. Copper wire was introduced on 8-Lead SOIC (150 mil) products in 2008. This current change extends the range of products using copper wire to those assembled in 8-Lead SOIC (210 mil) packages.

In addition, a change is being made to the Model TISP8201HDMR-S following recent continuous improvement activities which have demonstrated an improvement in long term moisture resistance achieved by the addition of a Nickel/Gold (NiAu) metal overcoat to selective parts of the Aluminium (Al) chip metallization. NiAu is currently present on the backside of the die as a contact metallization.

Improvement in the robustness of Model TISP8201HDMR-S is achieved by modification to a single metal mask layer. The wafer fab process flow and process settings are not changed for any of the products.

Similar chip designs to Models TISP8200HDMR-S and TISP8201HDMR-S have recently been qualified as one of a pair of die within Model TISP9110LDMR-S in an 8-Lead SOIC (210 mil) package.

There are no changes to the Bourns® Model TISP8200HDMR-S, TISP8201HDMR-S and TISP61089HDMR-S data sheet ratings or electrical characteristics.

Qualification Requirements

Assessment of the appropriate qualification stress test for each of the changes is made in agreement with Bourns Major Change Control Specification 14-0503. The identified change categories requiring qualification are:

Design	Design Change	Applicable to Model(s)
Front Metal	Material	TISP8201HDMR-S
Bonding	Material	TISP8200HDMR-S TISP8201HDMR-S TISP61089HDMR-S

Qualification by Similarity
The front metal change on Model TISP8201HDMR-S is qualified by similarity to Model TISP9110LDMR-S. Wafers are manufactured in Bourns' facility in Bedford, UK using similar wafer fab processing and assembled in packages using the same mold compound.

Qualification Results
Qualification results using copper wire are attached.
Qualification results for the addition of the Nickel/Gold (NiAu) strap are attached.

Product Labeling:
The product marking and labels are unchanged.

Identification of the Changed Product:
Bourns maintains traceability back to source wafer lots and assembly sites for all TISP® products.

Impact on Form, Fit, Function and Reliability:
Product ratings and electrical characteristics are unaffected by the change. There is no impact on form, fit, function or reliability.

Samples:
Evaluation samples are available from April 2013 onward.

Implementation Date:
First date code using above changes: 1337
Deliveries of such products may occur from September 2013 onward.

If you have any questions or need additional information, please contact Customer Service/ Inside Sales.

TISP9110LDMR-S

Product Qualification Report

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Description of product range: Qualification of changes to the design and material content of TISP9110LDMR-S

Qualification sample information is as follows:

Die Technology:	Bipolar SCR Protector	Assembly Site:	AIC Penang, Malaysia
Die Name:	5TY800TQ/5TY900TQ	Mold Compound:	Sumitomo G600
Top Metal :	Al & AlNiAu	Die Attach:	Ablestik 84-1LMISR4
Back Metal:	AlNiAu	Bond Wire:	2.0 mil Copper
Wafer Fab:	Bourns, Bedford, UK	L/F Material:	Copper
		Lead Finish:	100% Matte Tin

Description: Changes to Chip Metal protection, Copper Wire Bonding, Die Design and Leadframe Design as described in the issued PCN.

Stress Test/Conditions	Standard	Method	SS/Accept	Lot 1	Lot 2	Lot 3
Moisture Induced Stress Sensitivity	EIA / JESD22	A113	Level 1	MSL1 Precondition @ 260C Prior to Critical Stress Tests		
HTRB, 150°C, 1000h (Note 1)	JESD22	A108	76/0	76/0	76/0	76/0
THB, 85°C/85%RH, 1000h (Note 1)	JESD22	A101	76/0	76/0	76/0	76/0
HAST, 110°C/85%RH, 264h (Note 1)	JESD22	A110	45/0	45/0	45/0	45/0
Temperature Cycle, -65/+150°C, 200cs (Note 1)	JESD22	A104	76/0	76/0	76/0	76/0
ESD HBM, 1.0kV, Class 1C	JESD22	A114	3/0	3/0	3/0	3/0
Die Shear Strength, >5kg	MIL STD 883	2019.7	32/0	32/0	32/0	32/0
Bond Pull Strength, >12g	MIL STD 883	2011.7	32/0	32/0	32/0	32/0
Wire Bond Shear, >100g	JESD22	B116	32/0	32/0	32/0	32/0
Electrical Parameter Assessment	JESD86		32/0	32/0	32/0	32/0

Notes: 1. Preconditioned according to JESD22 A113 Level 1 at 260°C peak reflow temperature prior to Qualification Reliability Testing

TISP8 & TISP6 in 210 mil SOIC

Copper Wire Bonding

Description of product range: TISP820xHDMR-SD and TISP61089HDMR-S – 8 SOIC (210 mil) Package

Die Technology :	Bipolar SCR Protector	Assembly Site:	AIC Penang, Malaysia
Product Name :	“TISP” as Table (Row 1)	Mold Compound :	Sumitomo G600
Top Metal :	Al	Die Attach :	Ablestik 84-1LMISR4
Back Metal :	AlNiAu	Bond Wire :	2.0 mil Copper
Wafer Fab :	Bourns, Bedford, UK	L/F Material :	Copper
		Lead Finish :	100% Matte Tin

Description of change: Qualification of 2.0mil Copper Wire Bonding replacing 2.0 mil Au wire

Stress Test/Conditions	QSS (Note 1)	Standard	Method	SS/Accept	61089HDM	8200HDM	8201HDM
HTRB, 150°C, 1000h (Note 2)	009-101	MIL STD 883	1015	129/1	45/0	45/0	45/0
85°C/85%RH, 1000h (Note 2)	009-102	JEDEC STD 22	A101	129/1	45/0	45/0	45/0
Temp Cycle, -65/+150°C, 200cs (Note 2)	009-104	MIL STD 883	1010	129/1	45/0	45/0	45/0
Solvent Resistance (3 Solvents)	009-107	MIL STD 883	2015	12/0	Not Applicable - Laser mark		
Physical Dimensions	009-133	MIL STD 883	2016	5/0	5/0		
Flammability	009-111	UL94	VO		Manufacturers Mold Compound Datasheet		
Moisture Reflow Sensitivity		JEDEC STD-020D	MSL1	11/0	MSL1		

Notes:

1. QSS Specifications are Bourns Internal Qualification Standards
2. Bourns Preconditions Surface Mount Products according to JESD22-A113 Level 1, 260 ^{o}C, prior to Qualification Reliability Tests