Process / Product Change Notification

PCN No: 2012-007
Date: 30th July 2012
Subject: Addition of second die source and change of base material for the MPLAD15KP and MPLAD30KP part families and their derivatives.

Description of Change:
This correspondence is official notification of the addition of a second die source and change of base material from a Copper -Molybdenum Alloy to a Nickel Alloy for the Microsemi manufactured part families listed below. In addition all parts will be 0.150 inches in height. The part specifications are available on the Microsemi website at www.microsemi.com.

Qualification tests for the second die source with Nickel Alloy base verify there is no degradation in performance between the existing MPLAD products and the new design announced in this PCN. Qualification results are shown in appendix A below.

Product built with the old structure and/or original die source will remain available but will be managed on customer specific P/N system.

Further technical information is available from your local Sales office or Félim Downey at felim.downey@microsemi.com

Open Orders:
All currently scheduled orders shall be delivered per the dates reflected in the Order Acknowledgement from Microsemi.

Part Numbers Affected:
All M/MA/MXL/MX level parts and their derivatives in the following Transient Voltage Suppressor series:

MPLAD15KP7.0A thru MPLAD15KP200CA, e3
MPLAD30KP14A thru MPLAD30KP400CA, e3

Date Code Implementation: 1240

Microsemi Contacts:
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Customer Acknowledgement:

Any questions or concerns regarding this PCN should be communicated to the above contacts ASAP and not later than 14 days from the date of issue.

Appendix I

Qualification Data Summary

Table 1 details the qualification tests performed on devices assembled with dice from the second source.

Qualification Data Summary							
Screening Level	**Test Performed**	**Condition**	**Duration or Qty**	**Standard / Reference**	**Sample size per Lot**	**No. of Lots**	**Failures**
M	Temperature Cycle	-55 °C to +150 °C	1000 cycles	MIL-STD-750E Method 1051, JESD22-A104	77	3	0
M	HTRB	125 °C	1000 hours	MIL-STD-750E Method 1038, JESD22-A108	77	3	0
M	Autoclave	121 °C, 100 % RH, 15 psig	96 hours	JESD22-A102	77	3	0
M	Physical Dimensions			MIL-STD-750E Method 2066, JESD22-B100	15	2	0
M	Terminal Strength			MIL-STD-750E Method 2036	22	2	0
M	Visual and Mechanical Review			MIL-STD-750E Method 2071, JESD22 –B101	45	2	0
M	Solderability			MIL-STD-750E Method 2026 J-STD-002	15	2	0
MX	Surge Tests	100 % I_{PP}	100 times	10/1000 µS waveform	45	2	0
MX	High Temperature (non-operating)	150 °C	340 hours	MIL-STD-750E Method 1032	32	2	0
MX	HTRB	125 °C	1000 hours	MIL-STD-750E Method 1038	15	2	0
MX	Moisture Resistance			MIL-STD-750E Method 1021	22	2	0
MX	Salt Atmosphere (Corrosion)			MIL-STD-750E Method 1021	15	2	0

Table 1: Qualification Data

Reliability Data

The results in Table 2 below have been accumulated from High Temperature Reverse Bias (HTRB) testing performed on the M level devices.

Reliability Data	
Term	**M Level**
Cumulative Device Hours	>246,000
Equivalent Device Hours	>.19.1 million
# of Failures	0
Failure Rate	4.78E-08
FIT (per billion hours)	48
MTTF (in years)	2,389

Table 2: Reliability Results

NOTE: There have been zero failures to date. The reliability data will be updated as more data is accumulated.

Definitions

Cumulative device hours: Number of devices tested (n) * test hours per device
Equivalent devices hours (EDH): Acceleration factor (Af) * cumulative device hours

where the acceleration factor (Af) using the Arrhenius model is expressed as:

$A_F = e^{-Ea/k(1/T_{TEST} - 1/T_{USE})}$ where:

Ea = thermal activation energy (eV) which, for semiconductors is typically 0.7eV
k = Boltzmann's constant = 8.617 x10-5 eV/°K
T_{TEST} = Test junction temperature of 125°C (398 °K)
T_{USE} = Typical usage junction temperature of 55°C (328 °K)

Failure Rate: Number of failures / hour @ 60% confidence level
FIT: Failure rate x 10^9 hours (Failures in time)
MTTF: 1 / failure rate (Mean time to failure)