Product Change Notices

PCN No.: 20140401

Date: May. 7, 2014

Subject: Apply Ag bonding wire on AME's DFN package products

This is to inform you that Ag bonding wire will be applied to all the AME's DFN package products stated in table 1 with below conditions:

1. AME to ensure " Electrical Characteristic" with Ag bonding wire packaged as table 1 is 100% meet compliance of AME specifications.
2. AME had qualified this new material package with reliability test.
3. The Part Number of each product is unchanged, but identification by using D/C is available.

Table 1

DFN-6(2x2x0.75mm)、DFN-8(2x2x0.75mm)、DFN-8(3x3x0.75mm)
DFN-10(3x3x0.75mm)、DFN-12(3x3x0.75mm)

This notification is for your information and concurrence.

If you require AME Qual/Rel data or samples to qualify this change, please contact AME, Inc. directly or through AME's authorized Sales Representative or Distributor.

Please note this PCN will be effective 30 days after the issuing date automatically if we do not receive any response, comment or questions from you.

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If you have any questions concerning this change, please contact:

PCN Originator:

Name: Jerry Su – Manager, Engineering Department
Email: jerrys@ame.com.tw
Phone: +886.2.2627.8687 # 2110

Reason of Change:
Adding Ag bonding wire is to ensure the sufficient material source from supplier.

Qual/Rel Report:

Test Item	Method	Description	Result
HTOL	MIL-STD-883F 1005.8	T_{STRESS}=125℃, Duration= 1000hrs Biased	**Pass**
MSL	IPC/JEDEC J-STD-020D	30/60 192 hours, IR-reflow 3 cycles Peak Temp.= 260℃	**MSL3**
HTS	JESD22-A103C	150℃, 1000 hrs	**Pass**
THT (85/85)	JESD22-A101C	85℃,85% RH, 1000hrs, without bias	**Pass**
PCT	JESD22-A102C	121℃, 100% RH, 2atm, 168hrs	**Pass**
TCT	JESD22-A104D	-65℃ ~ 150℃, 500 cycles, DWELL=15min	**Pass**
Solderability	J-STD-002C	Temp.=260℃, Duration=5sec	**Pass**
IR-reflow	JESD22-A113F	See IR reflow Profile, Perform 3 cycles test	**Pass**

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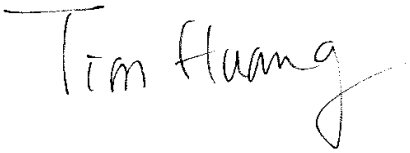
AME Ag Wire Reliability Report

Packages related to this PCN were shown below :

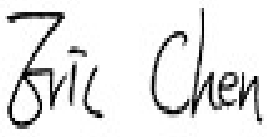
DFN-6(2x2x0.75mm)、DFN-8(2x2x0.75mm)、DFN-8(3x3x0.75mm)、DFN-10(3x3x0.75mm)、DFN-12(3x3x0.75mm)

Approved by



Tim Huang
Quality & Reliability Dept.
Manager

Prepared by



Eric Chen
Quality & Reliability Dept.
Supervisor

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I、Failures In Time Calculation:

Use HTOL test information mentioned in section Ⅳ, FIT (Failures In Time) can be calculated as below:

$$FIT = (x^2_{(\nu,\ CL)} \times 10^9) / (2 \times S \times H \times A_F) = (4.61 \times 10^9) / (2 \times 77 \times 1000 \times 280.59)$$

=106.69 (pieces per 10^9 hours) @ 40℃ with 90% Confidence Level.

Where A_F is acceleration factor setting activation energy to 1.0eV as zero failure.

II、Product Reliability Test Result:

Test Item	Test Condition	Sample Size / Failures	Result
HTOL	T_{STRESS}=125℃ Duration= 1000hrs Biased, Read at 168/504/1000 hours	77 pcs / 0 pcs	Pass

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III、Package Reliability Test Result:

Test Item	Test Condition	Sample Size / Failures	Result
MSL	30/60 192 hours IR-reflow 3 cycles Peak Temp.= 260℃ IPC/JEDEC J-STD-020D	22 pcs / 0 pcs	Level 3
HTS	Precondition NOTE 2 Temp.=150℃ Duration=1000 hours Unbiased, Read at 1000 hours	77 pcs / 0 pcs	Pass
THT	Precondition NOTE 2 Temp.=85℃, R.H.=85% Duration=1000 hours Unbiased, Read at 1000 hours	77 pcs / 0 pcs	Pass
PCT	Precondition NOTE 2 Temp.=121℃, R.H.=100% 15PSIG, Unbiased Duration=168 hours Read at 168 hours	77 pcs / 0 pcs	Pass
TCT	Precondition NOTE 2 -65℃ ~ 150℃ 500 cycles Unbiased, Read at 500 cycles	77 pcs / 0 pcs	Pass
Solderability	Temp.=245℃ Duration=5sec	5 pcs / 0 pcs	Pass

NOTE 2: 30/60 192 hours + IR-reflow 3 cycles with Peak Temp.= 260℃

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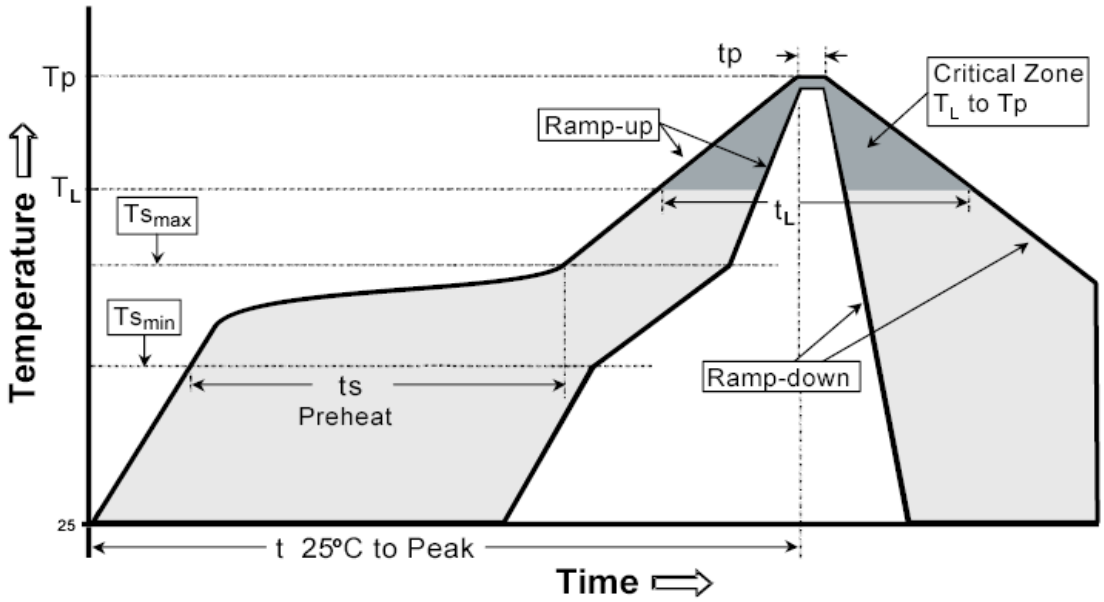
IV、IR-reflow Test Result:

Test Item	Test Condition	Sample Size / Failures	Result
IR-reflow	See IR reflow Profile Perform 3 cycles test	22 pcs / 0 pcs	Pass

IR reflow Profile:

Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (Ts_{max} to Tp)	3℃/second max.
Preheat - Temperature Min (Ts_{min}) - Temperature Max (Ts_{max}) - Time (ts_{min} to ts_{max})	 150℃ 200℃ 60~180 seconds
Time maintained above - Temperature (T_L) - Time (t_L)	 217℃ 60~150 seconds
Peak/Classification Temperature (Tp)	260℃
Time within 5℃ of actual Peak Temperature (tp)	20~40 seconds
Ramp-Down Rate	6℃/second max.
Time 25℃ to Peak Temperature	8 minutes max.



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