



Product Change Notices

PCN No.: 20111201

Date: December 30, 2011

Subject: Apply Cu bonding wire on below products

This is to inform you that Cu bonding wire will be applied on the products of those packages stated in SOT23, SOT-25, SOT-26, TSOT-23, TSOT-25, TSOT-26, TSOT-23A, TSOT-25A, TSOT-26A, SOT-223, SOP-8, SOP-8/PP with below conditions : (Production list below table 1)

1. AME to ensure " Electrical Characteristic" of Cu bonding wire package is 100% compliance AME specifications.
2. AME qualified this new material package reliability.
3. The Part Number of each product is unchanged, but identification through D/C is available.

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 AME's authorized Sales Representative or Distributor.

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

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

PCN Originator:

Name: Bill Chou – Director, Engineering Department I

Email: bill_chou@ame.com.tw

Phone: +886.2.2627.8687 # 2110

Expected 1st Device Shipment Date: 1/1/2012


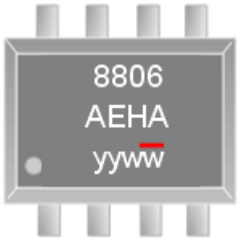
Effective Year/Work Week of Changed Product: NA



Cu bonding wire identification through D/C is available.

A line on top of the last character represents Cu bonding wire such as AA[—]ww

For example :

Item	Package	ex : Marking rule
One row marking	SOT-23 SOT-25 SOT-26 TSOT-23 TSOT-25 TSOT-26 TSOT-23A TSOT-25A TSOT-26A SOT-223	AME8800AEET SOT-25 
Three row marking	SOP-8 SOP-8/PP	AME8806AEHA SOP-8 

Reason of Change:

Add Cu bonding wire to ensure the sufficient material source.



Qual/Rel Report:

Test Item	Method	Description	Result
HTOL	MIL-STD-883F 1005.8	T _{STRESS} =125 , Duration= 1000hrs Biased	Pass
ESD	MIL-STD-883G Method 3015.7	Human Body Model, Class 2, 2kV minimum	Pass
Latch-up	JEDEC STANDARD NO.78 MARCH 1997	Level A, 100mA minimum	Pass
MSL	IPC/JEDEC J-STD-020D	85/85 168 hours, IR-reflow 3 cycles Peak Temp.= 260	MSL1
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



AME Cu Wire Reliability Report

Packages related to this PCN were shown below :

SOT23、 SOT-25、 SOT-26、
TSOT-23、 TSOT-25、 TSOT-26、
TSOT-23A、 TSOT-25A、 TSOT-26A、
SOT-223、 SOP-8、 SOP-8/PP

Production list below table 1

Approved by

Amy Shen
Quality & Reliability Dept.
Manager

Prepared by

Jess Lin
Quality & Reliability Dept.
Engineer



Table of Contents

I、 Failures In Time Calculation

II、 Product Reliability Test Result

III、 Package Reliability Test Result

IV、 IR-reflow Test Result



I、 Failures In Time Calculation:

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

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

=106.69 (pieces per 10⁹ 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
ESD	Human Body Model Pin-to-Pin test Class 2, 2kV minimum	3 pcs per pin pair / 0 pcs	Pass
Latch-up	Level A, 100mA minimum	3 pcs per pin pair / 0 pcs	Pass



III、 Package Reliability Test Result:

Test Item	Test Condition	Sample Size / Failures	Result
MSL	85/85 168 hours IR-reflow 3 cycles Peak Temp.= 260 IPC/JEDEC J-STD-020C	22 pcs / 0 pcs	Level 1
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.=260 (lead-free) Duration=5sec	5 pcs / 0 pcs	Pass

NOTE 2: 85/85 168 hours + IR-reflow 3 cycles with Peak Temp.= 260

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 ($T_{s_{max}}$ to T_p)	3 /second max.
Preheat	
- Temperature Min ($T_{s_{min}}$)	150
- Temperature Max ($T_{s_{max}}$)	200
- Time ($t_{s_{min}}$ to $t_{s_{max}}$)	60~180 seconds
Time maintained above	
- Temperature (T_L)	217
- Time (t_L)	60~150 seconds
Peak/Classification Temperature (T_p)	260
Time within 5° of actual Peak Temperature (t_p)	20~40 seconds
Ramp-Down Rate	6 /second max.
Time 25° to Peak Temperature	8 minutes max.

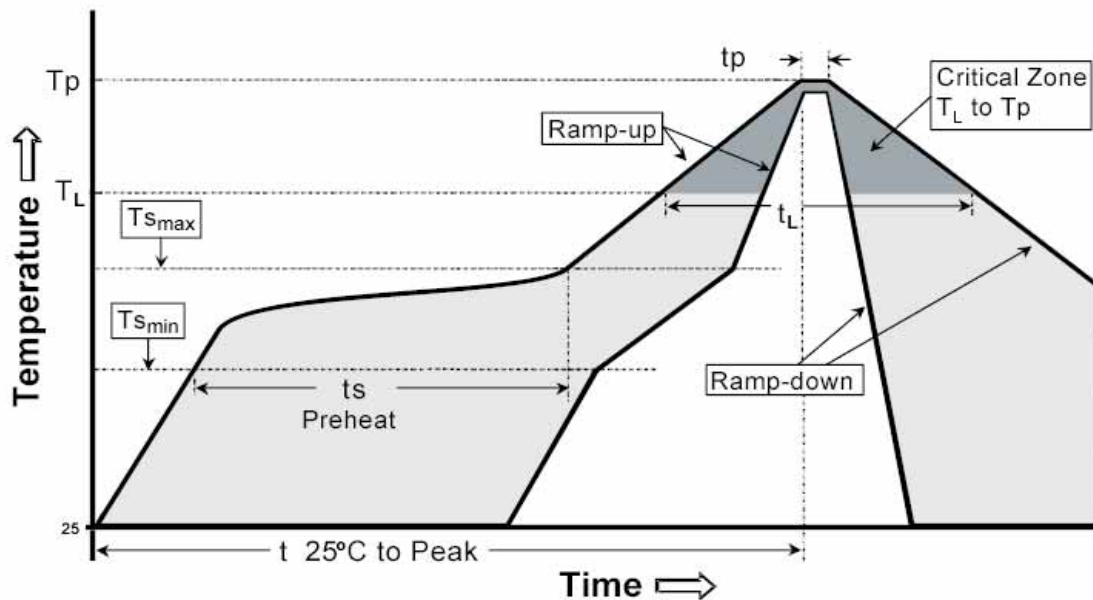


Table 1

Part Number	Package	Part Number	Package
AME4041 Family	SOT-23	AME5253(A) Family AME5258(A) Family AME8510 Family AME8520 Family AME8530 Family AME8861 Family AME8830 Family AME8831 Family AME8833 Family AME8834 Family AME8839 Family	SOT-25
AME8500 Family	SOT-23		
AME8570 Family	TSOT-23		
AME8800 Family	SOT-23		
AME8811 Family	SOT-25		
AME8818 Family	SOT-23		
AME8550 Family	TSOT-23		
	SOT-25		
	TSOT-25		
	TSOT-25		
AME8822 Family AME8570M Family	SOT-23		
	TSOT-23A		
AME8853(A) Family	SOT-25	AME5140 Family AME5145 Family AME5150 Family AME5170A Family AME5248(A) Family AME5249(A) Family AME8821 Family AME8890 Family	SOT-25 TSOT-25
	TSOT-25A		
	SOT-23		
AME431 Family	TSOT-23		
	SOP-8		
	SOP-8		
AME8805 Family	SOT23	AME5170 Family	SOT-25 TSOT-25A
	SOT-223		
AME40 Family AME41 Family AME385 Family	SOT-23	AME8850 Family	SOT-25 SOT-26 SOP-8
	SOP-8		
	SOP-8		
AME8855(A) Family	SOT-23		
	SOT-25		
	SOT-223		
	SOP-8		

Part Number	Package	Part Number	Package
AME5142 Family AME5142A Family AME5142B Family AME8801 Family AME8812 Family AME8840 Family AME8802 Family AME8804 Family	SOT-25 TSOT-25 SOT-26 TSOT-26	AME8827 Family	SOT-223 SOP-8 SOP-8/PP
AME7739 Family AME8755 Family AME8803 Family AME8814 Family AME8824 Family AME8863 Family	SOT-26	AME8851 Family	SOT-223 SOP-8/PP
AME4624 Family AME4625 Family AME5142C Family	SOT-26 TSOT-26	AME78L05 Family AME78LXX Family AME5106 Family AME5269 Family AME8806 Family AME8809 Family AME8842 Family AME8807 Family AME8841 Family AME8816 Family AME8826 Family	SOP-8
AME1085 Family AME1117 Family AME1117L Family AME8808 Family AME8810 Family AME8847 Family AME8848 Family AME8815 Family AME8843 Family AME8845 Family	SOT-223	AT9173 Family AME5107 Family	SOP-8 SOP-8/PP
AME8819 Family	SOT-223 SOP-8	AME5268 Family AME5280 Family AME5281 Family AME5290 Family AME5291 Family AME9172M Family	SOP-8/PP