



Product Change Notices

PCN No.: 20110802

Date: September 1, 2011

Subject: Apply Cu bonding wire on AME1117 SOT-223 package

This is to inform you that Cu bonding wire will be applied on the AME1117 SOT-223 series with below conditions:

1. AME to ensure "Electrical Characteristic" of Cu bonding wire package is 100% compliance AME1117 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:

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Expected 1st Device Shipment Date: 10/1/2011

Effective Year/Work Week of Changed Product: NA



AME1117 SOT-223 series Part Number – Au bonding wire

Part Number	Marking*	Output Voltage	Package
AME1117ACGT	ABEyw \bar{w}	ADJ	SOT-223
AME1117ACGTZ	ABEyw \bar{w}	ADJ	SOT-223
AME1117BCGT	AKEyw \bar{w}	2.5	SOT-223
AME1117BCGTZ	AKEyw \bar{w}	2.5	SOT-223
AME1117CCGT	ABFyw \bar{w}	3.3	SOT-223
AME1117CCGTZ	ABFyw \bar{w}	3.3	SOT-223
AME1117DCGT	AKFyw \bar{w}	5.0	SOT-223
AME1117DCGTZ	AKFyw \bar{w}	5.0	SOT-223
AME1117ECGT	AXHyw \bar{w}	1.8	SOT-223
AME1117ECGTZ	AXHyw \bar{w}	1.8	SOT-223

AME1117 SOT-223 series Part Number – Cu bonding wire

Part Number	Marking*	Output Voltage	Package
AME1117ACGT	ABEyw \bar{w}	ADJ	SOT-223
AME1117ACGTZ	ABEyw \bar{w}	ADJ	SOT-223
AME1117BCGT	AKEyw \bar{w}	2.5	SOT-223
AME1117BCGTZ	AKEyw \bar{w}	2.5	SOT-223
AME1117CCGT	ABFyw \bar{w}	3.3	SOT-223
AME1117CCGTZ	ABFyw \bar{w}	3.3	SOT-223
AME1117DCGT	AKFyw \bar{w}	5.0	SOT-223
AME1117DCGTZ	AKFyw \bar{w}	5.0	SOT-223
AME1117ECGT	AXHyw \bar{w}	1.8	SOT-223
AME1117ECGTZ	AXHyw \bar{w}	1.8	SOT-223



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
	JEDEC EIA/JESD22-A115	Machine Model, Class B, 200V minimum	Pass
	JESD22-C101C	Charged Device Model, Class II, 200V minimum	Pass
Latch-up	JEDEC STANDARD NO.78 MARCH 1997	Level A, 100mA minimum	Pass
MSL	IPC/JEDEC J-STD-020C	85/85 168 hours, IR-reflow 3 cycles Peak Temp.= 260	MSL1
HTS	JESD22-A103D	150 , 1000 hrs	Pass
THT (85/85)	JESD22-A101C	85 ,85% RH, 1000hrs	Pass
PCT	JESD22-A102D	121 , 100% RH, 2atm, 168hrs	Pass
TCT	JESD22-A104D	-65 ~ 150 , 500 cycles, DWELL=15min	Pass
Solderability	J-STD-D02C	Temp.=260 , Duration=5sec	Pass
IR-reflow	JESD22-A113F	See IR reflow Profile, Perform 3 cycles test	Pass



Cu Wire Reliability Report for AME1117 SOT-223 Series Product

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Manager

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Quality & Reliability Dept.
Engineer



Conclusion:

The AME1117 SOT-223 series product has successfully met AME's reliability standard that is required on all AME, Inc products.

Furthermore, QRA Dept. of AME, Inc monitors the reliability continuously to make sure that all AME1117 SOT-223 series product will still meet AME's reliability standard in the future.

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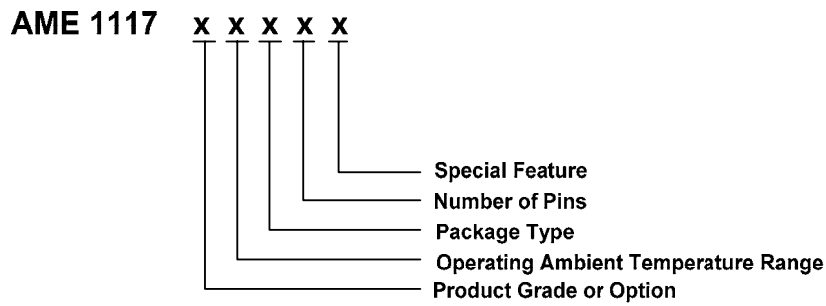
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I、 General Description:

The AME1117 is a 1A low-dropout positive voltage regulator. It is available in fixed and adjustable output voltage versions. Over current and thermal protection are integrated onto the chip. Output current will limit as while it reaches the pre-set current or temperature limit. The dropout voltage is specified at 1.4V Maximum at full rated output current. The AME1117 series provides excellent regulation over line, load and temperature variations.

II、 Product Information:



Product Grade or Option	Operating Ambient Temperature Range	Package Type	Number of Pins	Special Feature
A: ADJ B: 2.5V C: 3.3V D: 5.0V E: 1.8V	C: 0°C to 70°C	G: SOT-223	T: 3	Z: Lead Free



III、 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.

IV、 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
	Machine Model Pin-to-Pin test Class B, 200V minimum	3 pcs per pin pair / 0 pcs	Pass
	Charged Device Model Class II, 200V minimum	3 pcs package pair / 0 pcs	Pass
Latch-up	Level A, 100mA minimum	3 pcs per pin pair / 0 pcs	Pass



V、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



VI、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 ($T_{s_{min}}$) - Temperature Max ($T_{s_{max}}$) - Time ($t_{s_{min}}$ to $t_{s_{max}}$)	150 200 60~180 seconds
Time maintained above - Temperature (T_L) - Time (t_L)	217 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.

