AME, Inc. 安茂微電子股份有限公司

iPower for Future

Product Change Notices

PCN No.: 20130601

Date: June 10, 2013

Subject: Add assembly house as another source of AME5250 DFN-6(2*2*0.75mm).

This is to inform you that one assembly house will be added on for the AME5250 DFN-6(2*2*0.75mm) series with below conditions:

1. AME ensure "Electrical Characteristic" of new Assembly house source is 100% in compliance with AME5250 DFN-6(2*2*0.75mm) specifications.
2. The Part Number of each product is unchanged, but identification by using D/C is available.

AME Part Number
AME5250-AVYADJ
AME5250-AVY120
AME5250-AVY180
AME5250-AVY330

This notification is for your information and concurrence.

If you require data or samples to qualify this change, please contact AME, Inc. within 30 days of receipt of this notification.

If we do not receive any response from you within 30 calendar days from the date of this notification, we will consider that you have accepted this PCN.

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

PCN Originator:

Name: Arthur Rong

Email: arthur_rong@ame.com.tw

Phone: +886.2.2627.8687#3110

Expected 1st Device Shipment Date: 01/15/2013

Earliest Year/Work Week of Changed Product: 1251

Description of Change:

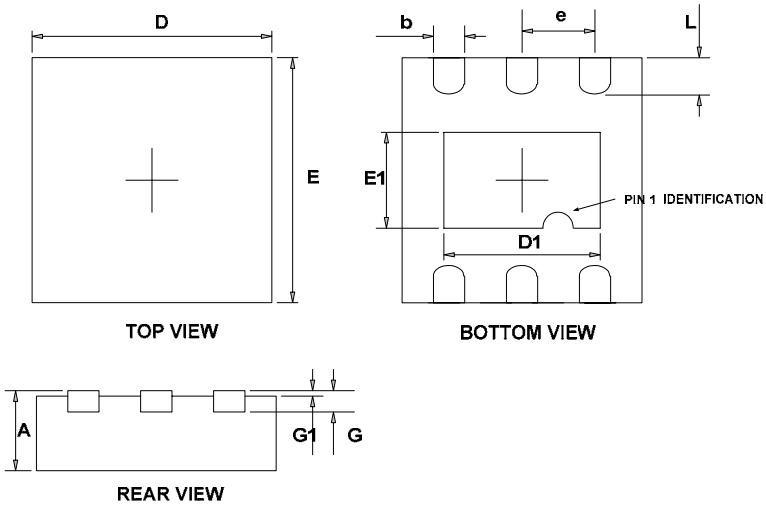
1. To increases the capacity for AME5250 DFN-6(2*2*0.75mm) series.
   (Assembly house: GTK)
2. Modify the package dimension to meet the dimension of GTK.
   2.1 Modify maximum=1.65mm of symbol “D1” for DFN-6D package (was 1.3mm).
   2.2 Modify maximum=1.05mm of symbol “E1” for DFN-6D package (was 0.8mm).
   2.3 Modify maximum=0.35mm of symbol “b” for DFN-6D package (was 0.3mm).
   2.4 Modify minimum=0.2mm of symbol “L” for DFN-6D package (was 0.25mm).

Qual/REL Plan Numbers: AME5250 series_B.doc

TEST ITEM	METHOD	DESCRIPTION	Result
HTS	JESD22-A103D	150℃, 1000 hrs	Accept
TCT	JESD22-A104D	-65℃ ~ 150℃, 500 cycles Unbiased	Accept
THT (85/85)	JESD22-A101C	85℃,85% RH, 1000hrs	Accept
PCT	JESD22-A102D	121℃, 100% RH, 15PSIG, Unbiased, Duration=168 hours	Accept

Package Outline Dimension:

DFN-6D (2*2*0.75mm)



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.700	0.800	0.028	0.031
D	1.900	2.100	0.075	0.083
E	1.900	2.100	0.075	0.083
e	0.650 TYP		0.026 TYP	
D1	1.100	1.650	0.043	0.065
E1	0.600	1.050	0.024	0.041
b	0.180	0.350	0.007	0.014
L	0.200	0.450	0.008	0.018
G	0.178	0.228	0.007	0.009
G1	0.000	0.050	0.000	0.002

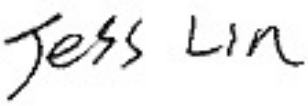
REL-1283-G-B

Reliability Report
for
AME5250 Series Product

Approved by

Arthur Rong
Quality & Reliability Dept.
Director

Prepared by



Jess Lin
Quality & Reliability Dept.
Supervisor

Conclusion:

The AME5250 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 AME5250 series product will still meet AME's reliability standard in the future.

Table of Contents:

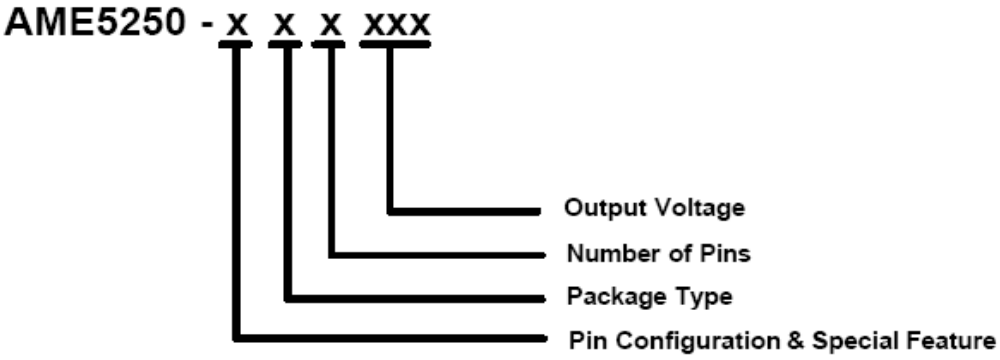
Ⅰ、General Description:

The AME5250 is a high efficiency monolithic synchronous buck regulator using a constant frequency, current mode architecture. Capable of delivering 1A output current over a wide input voltage range from 2.5V to 5.5V, the AME5250 is ideally suited for single Li-Ion battery powered applications. 100% duty cycle provides low dropout operation, extending battery life in portable systems. Under light load conditions, the AME5250 operates in a power saving mode that consumes just around 20μA of supply current, maximizing battery life in portable applications.

The internal synchronous switch increases efficiency and eliminates the need for an external Schottky diode. Low output voltages are easily supported with the 0.6V feedback reference voltage. The AME5250 is available in small DFN-6D & QFN-16C packages.

Other features include soft start, lower internal reference voltage with 2% accuracy, over temperature protection, and over current protection.

Ⅱ、Product Information:



Pin Configuration & Special Feature	Package Type	Number of Pins	Output Voltage
A (DFN-6D) 1. NC 2. EN 3. IN 4. SW 5. GND 6. FB/OUT	V: DFN W: QFN	Y: 6 E: 16	100: 1.0V 120: 1.2V 150: 1.5V 160: 1.6V 180: 1.8V 250: 2.5V 330: 3.3V ADJ: Adjustable
A (QFN-16C) 1. GND 2. GND 3. GND 4. FB/OUT 5. GND 6. NC 7. EN 8. NC 9. IN 10. IN 11. IN 12. IN 13. SW 14. SW 15. SW 16. NC			

Ⅲ、Failures In Time Calculation:

Use HTOL test information mentioned in sectionⅣ, 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.

Ⅳ、Product Reliability Test Result:

Test Item	Test Condition	Sample Size / Failures	Result
HTOL	Precondition NOTE 1 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

NOTE 1: 85/85 168 hours + IR-reflow 3 cycles with Peak Temp.= 260℃

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 (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.