



Product Change Notices

PCN No.: 20191001

Date: October 01, 2019

Subject: Add new BOM on TO-252 package

This is to inform you that lead frame “TO-252-2L(6R)” and conductive epoxy “DAD-87” will be applied on the TO-252 package with below conditions:

1. AME had qualified these new materials with reliability test.
2. The Part Number of each product is unchanged, but identification via D/C is available.

This notification is for your information and concurrence.

If you require Qual/Rel data or samples to qualify this change, please contact AME, Inc. directly or through AME’s authorized Sales Representative or Distributor within 30 days.

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.

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

Description of Change (From):

Lead frame “TO-252-2L(4R)” / conductive epoxy “84-1LMISR4”

Description of Change (To):

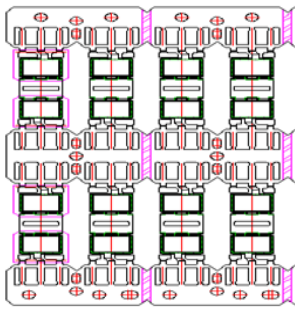
Lead frame “TO-252-2L(6R)” / conductive epoxy “DAD-87”

Reason for Change: Improve productivity.

Change description of lead frame :

a. The change of LF design

	Lead frame size(mm)	Rows	Columns	Amount
4R lead frame	240.80 * 58.00	4	28	112
6R lead frame	250.00 * 67.50	6	28	168

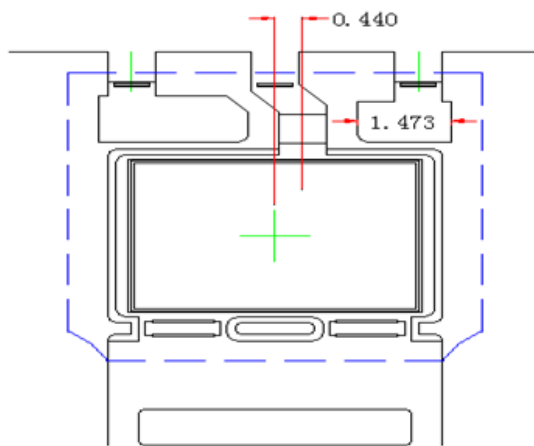


4R(original)

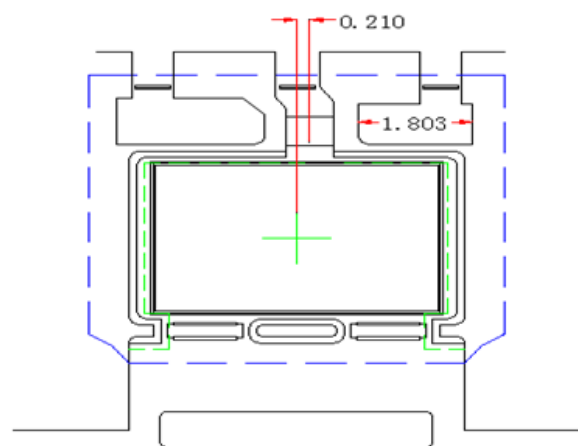


6R(new)

b. The change of inner lead

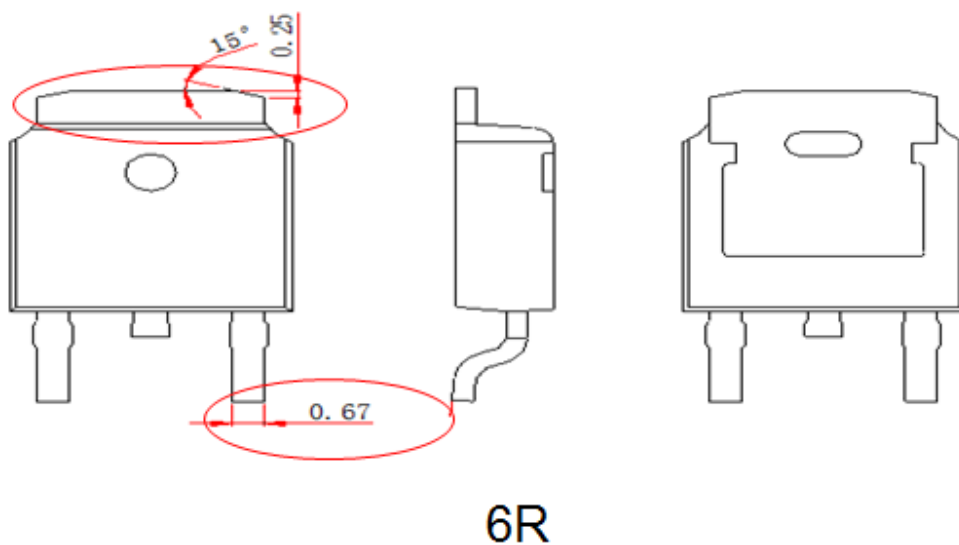
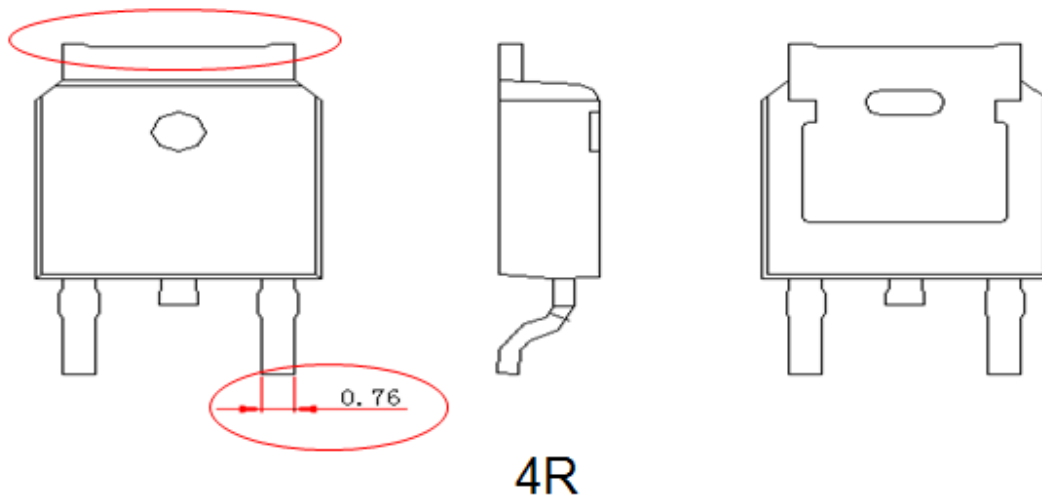


4R



6R

c. The change of package outline





Qual/REL Plan Numbers: PR190401

Qualification:

Test Item	Method	Description	Result
MSL	IPC/JEDEC J-STD-020E	85/85 168 hours, IR-reflow 3 cycles Peak Temp.= 260°C	MSL1
HTS	JESD22-A103E	150°C, 1000 hrs	Pass
THT (85/85)	JESD22-A101D	85°C, 85% RH, 1000hrs, without bias	Pass
PCT	JESD22-A102E	121°C, 100%RH, 205 kPa, 168hrs	Pass
TCT	JESD22-A104E	-65°C ~ 150°C, 1000 cycles, 30min/cycle	Pass
Solderability	J-STD-002D	Temp.=260°C, Duration=5sec	Pass
IR-reflow	JESD22-A113F	See IR reflow Profile, Perform 3 cycles test	Pass



AME, Inc. 安茂微電子股份有限公司

Reliability Report
for
TO-252 Series Product
(PCN20190801)

Prepared by Eric Chen, Manager of Quality & Reliability Dept.



Conclusion:

The TO-252 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 TO-252 series product will still meet AME's reliability standard in the future.

Table of Contents:

I 、 Package Reliability Test Result

II 、 IR-reflow Test Result



I 、 Package Reliability Test Result:

Test Item	Test Condition	Sample Size / Failures	Result
MSL	85/85 168 hours IR-reflow 3 cycles Peak Temp.= 260°C IPC/JEDEC J-STD-020E	22 pcs / 0 pcs	Level 1
HTS	Precondition ^{NOTE 1} Temp.=150°C Duration=1000 hours Unbiased, Read at 1000 hours	77 pcs / 0 pcs	Pass
THT	Precondition ^{NOTE 1} Temp.=85°C, R.H.=85% Duration=1000 hours Unbiased, Read at 1000 hours	77 pcs / 0 pcs	Pass
PCT	Precondition ^{NOTE 1} Temp.=121°C, R.H.=100% 205 kPa, Unbiased Duration=168 hours Read at 168 hours	77 pcs / 0 pcs	Pass
TCT	Precondition ^{NOTE 1} -65°C ~ 150°C 1000 cycles Unbiased, Read at 1000 cycles	77 pcs / 0 pcs	Pass
Solderability	Temp.=260°C (lead-free) Duration=5sec	5 pcs / 0 pcs	Pass

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

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

