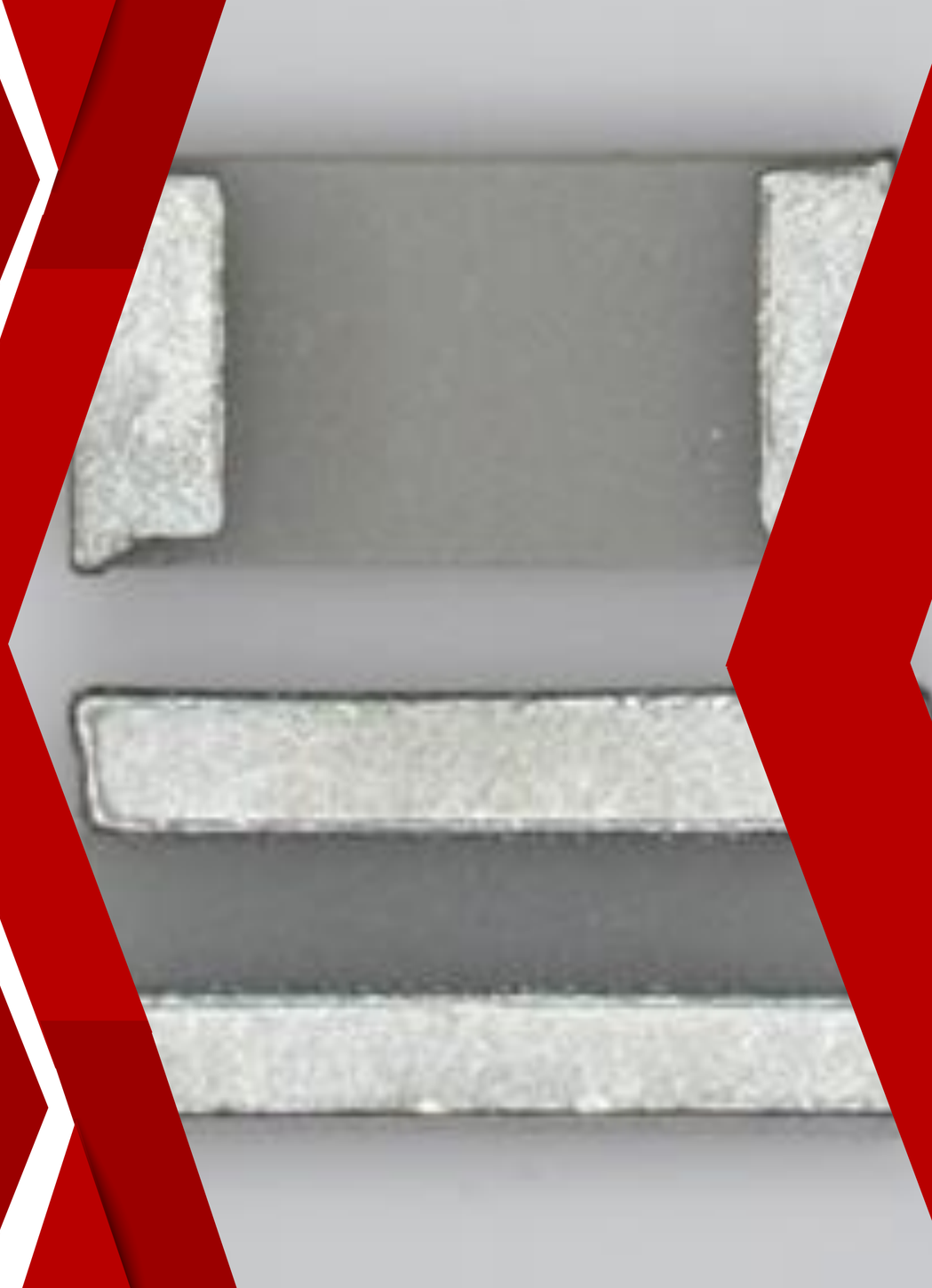
Stackpole Electronics, Inc.

Resistive Product Solutions

TMJ0612 COMPARISON TEST



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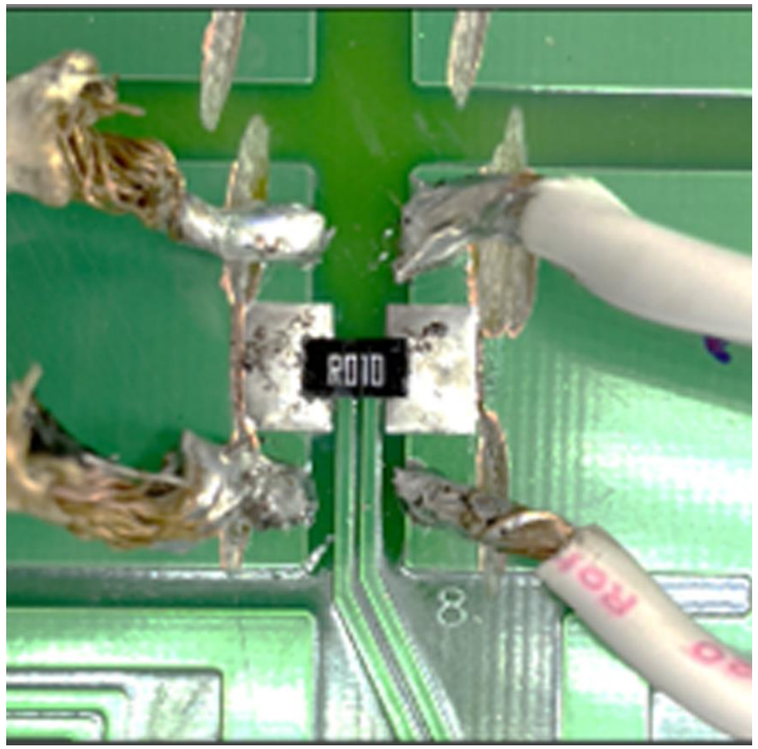
TEST EQUIPMENT

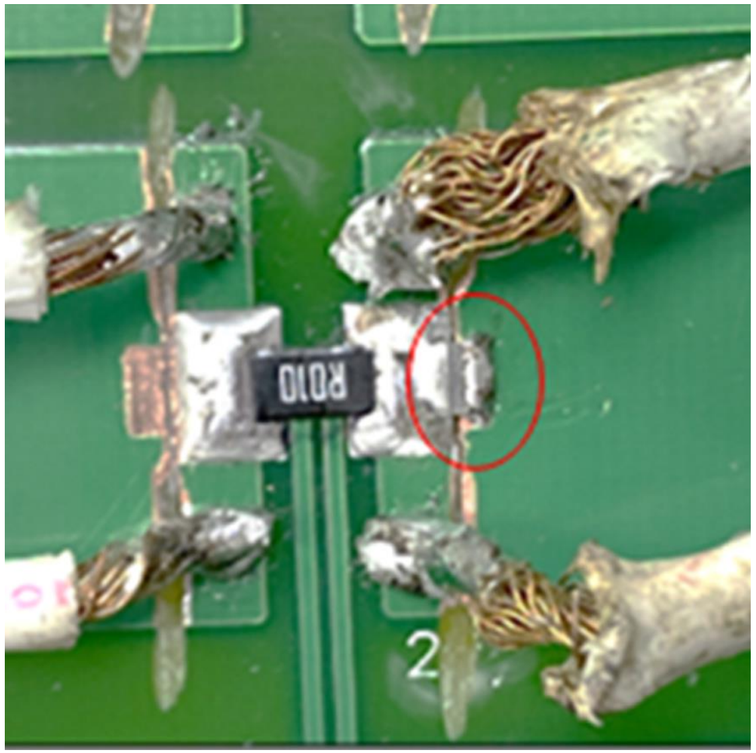
- Surface temperature measurement equipment:
  ITECH IT8513C, electronic load machine
  ITECH IT6723C, power supply
  FOTRIC thermal imaging camera

- Heat producing component:
  SEI CSSH2512, 3W, 10 milliohm

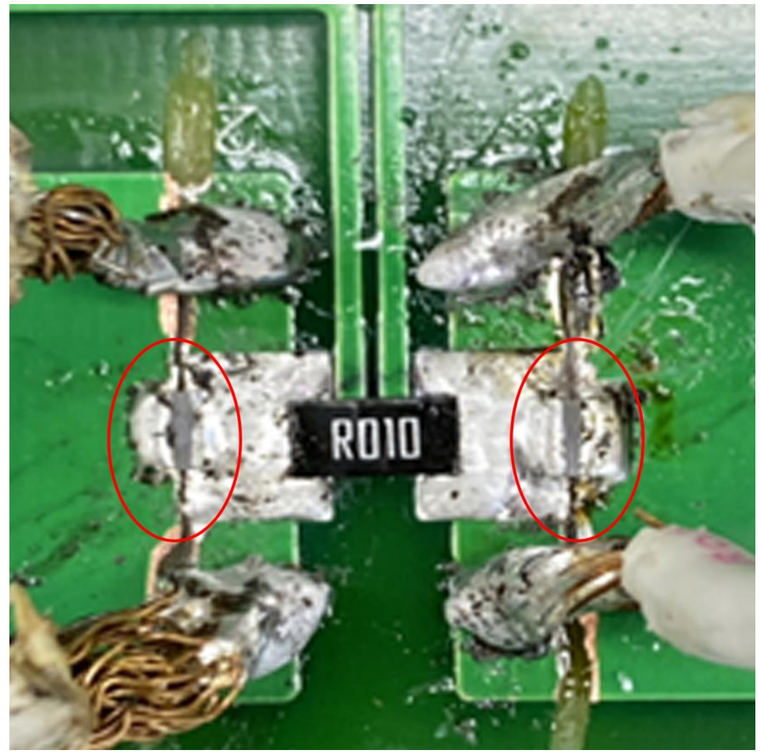
TEST METHODS



CSSH2512 resistor mounted on a PCB, providing 3W power rating current, and measure its surface temperature after the temperature stabilizes. (Picture 1)

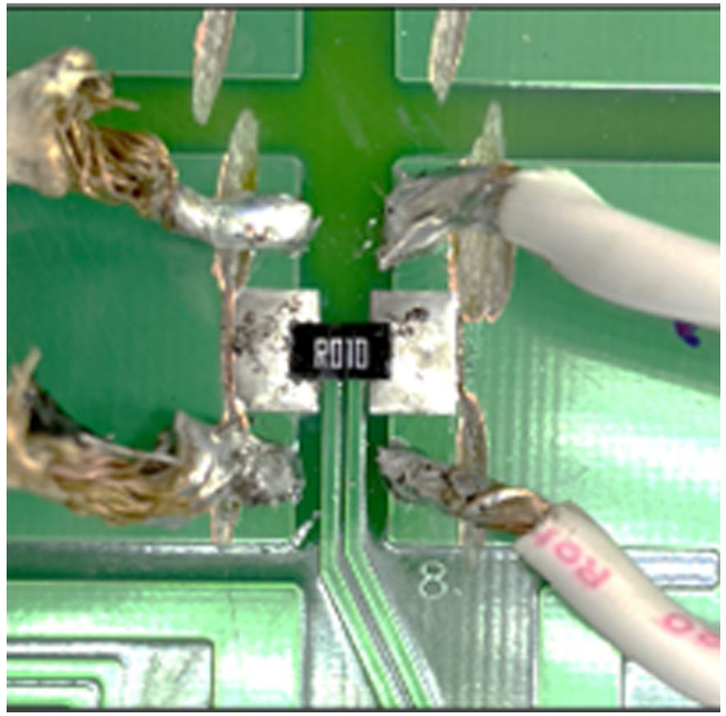


Test method 1: Weld thermal jumper TMJ0612 on one side of the CSSH2512 resistor end of the board, providing 3W current, and measure its surface temperature after the temperature stabilizes. (Picture 2)

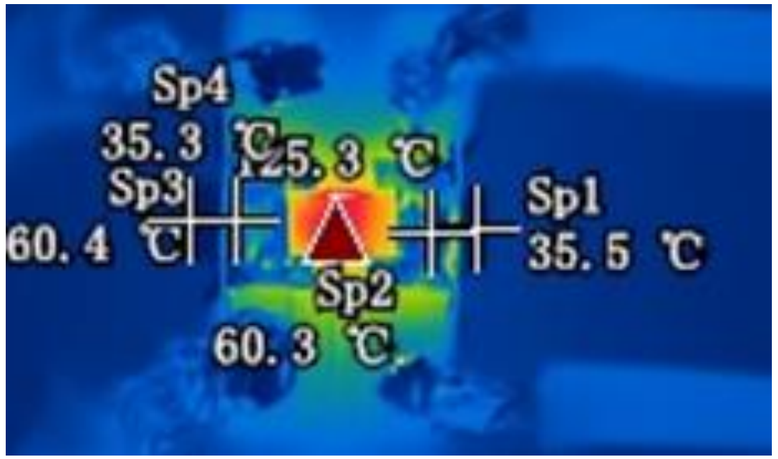


Test method 2: Weld thermal jumper TMJ0612 on the left and right sides of the CSSH2512 resistor terminal on the board, send a 3W current, and measure its surface temperature after the temperature stabilizes. (Picture 3)

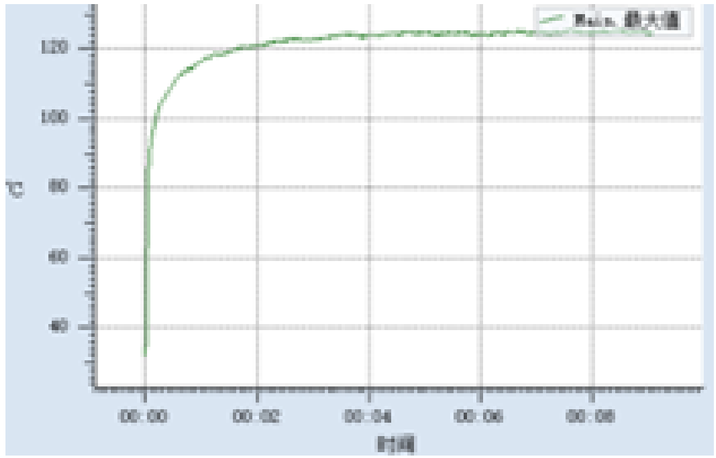
CSSH2512
SURFACE TEMPERATURE MEASUREMENT
No thermal jumper



Thermal Image

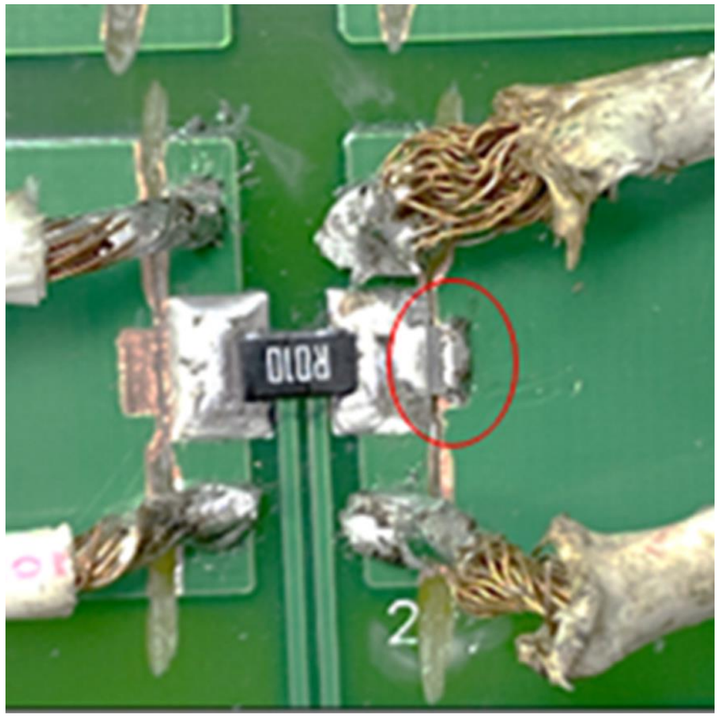


Temp vs. Time



HOT POINT	TERMINAL (SP1)	TERMINAL (SP2)	TERMINAL (SP3)	TERMINAL (SP4)
125.3°C	35.1°C	60.3°C	60.4°C	35.3°C

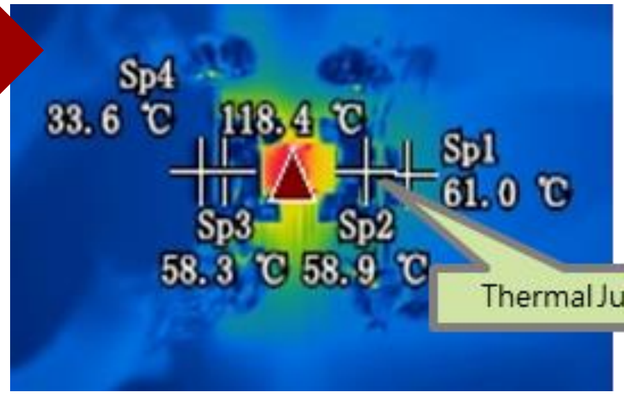
CSSH2512
SURFACE TEMPERATURE MEASUREMENT
Thermal jumper added in one terminal

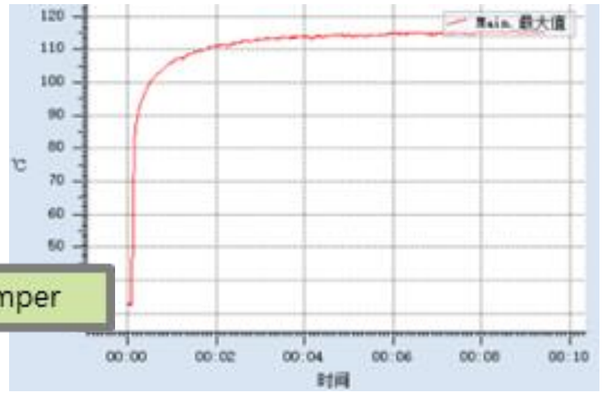


BRAND	HOT POINT	TERMINAL (SP1)	TERMINAL (SP2)	TERMINAL (SP3)	TERMINAL (SP4)
Comp	118.4°C	61.0°C	58.9°C	58.3°C	33.6°C
SEI TMJ	115.8°C	60.3°C	60.9°C	61.7°C	36.4°C

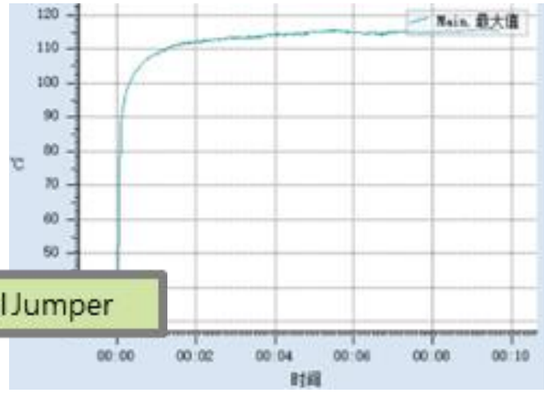
Thermal Image | **Temp vs. Time**

Comp





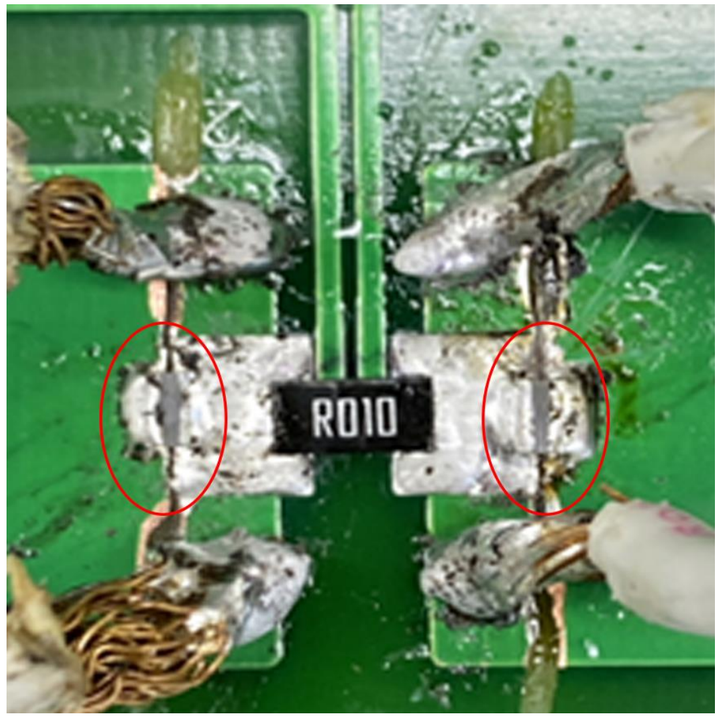
TMJ



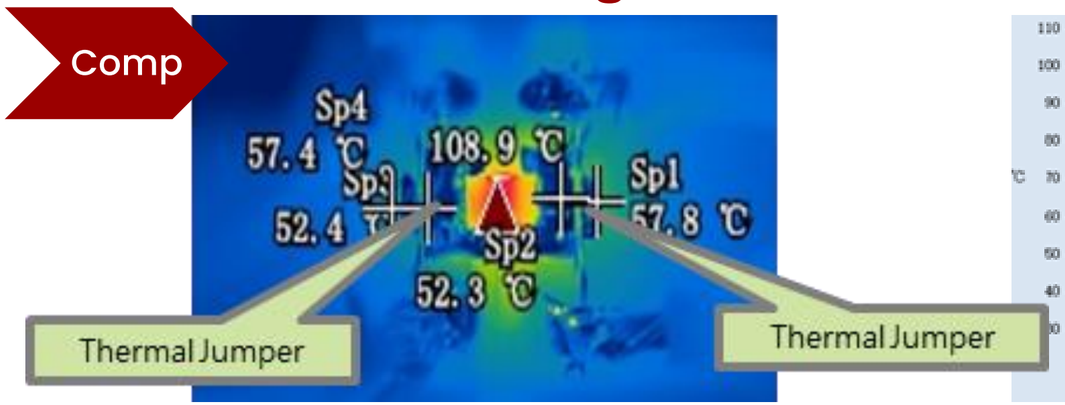
CSSH2512

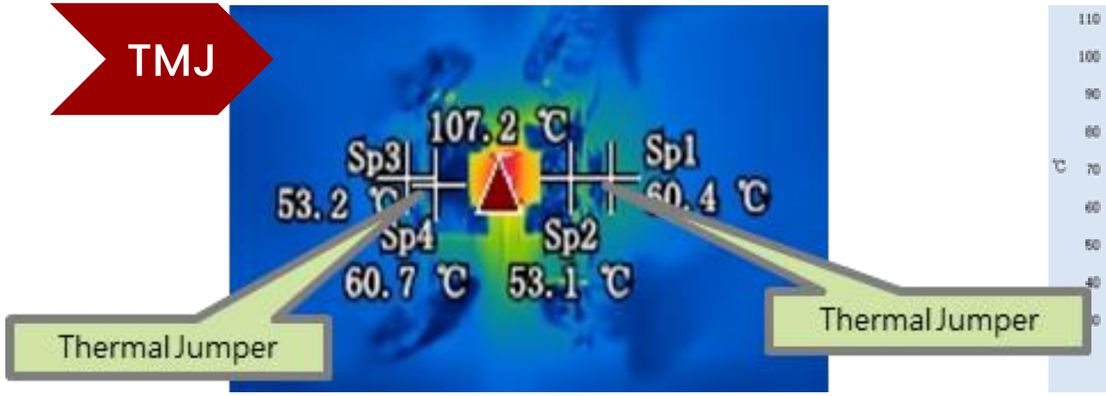
SURFACE TEMPERATURE MEASUREMENT

Thermal jumpers added in both terminals

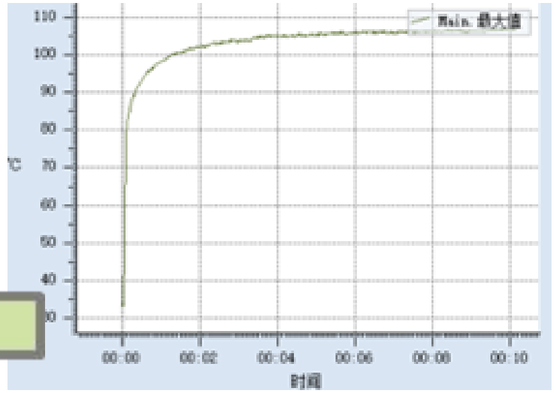


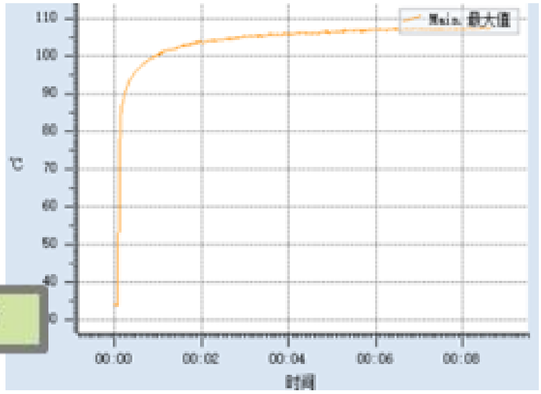
Thermal Image





Temp vs. Time





BRAND	HOT POINT	TERMINAL (SP1)	TERMINAL (SP2)	TERMINAL (SP3)	TERMINAL (SP4)
Comp	108.9°C	57.8°C	52.3°C	52.4°C	57.4°C
SEI TMJ	107.2°C	60.4°C	53.1°C	53.2°C	60.7°C

	TEST POINT DEFINITION	AREA		COPPER THICKNESS
SP1	Right side heat sink copper temp	30 mm x 20 mm	600 mm	1 oz.
SP2	Right side soldered joint temp	3 mm x 20 mm	60 mm	
SP3	Left side soldered joint temp	30 mm x 20 mm	600 mm	
SP4	Left side heat sink copper temp	3 mm x 20 mm	60 mm	

CONCLUSION

Comparison of thermal jumper performance (°C)

	No Thermal Jumper Resistor Temp.	One Thermal Jumper Resistor Temp	One Thermal Jumper Temp Diff (ΔT)	Two Thermal Jumpers Resistor Temp	Two Thermal Jumpers Temp Diff (ΔT)
Comp	125.3	118.4	6.9	108.9	16.4
SEI TMJ	125.3	115.8	9.5	107.2	18.1

STACKPOLE'S performance is better than the competition

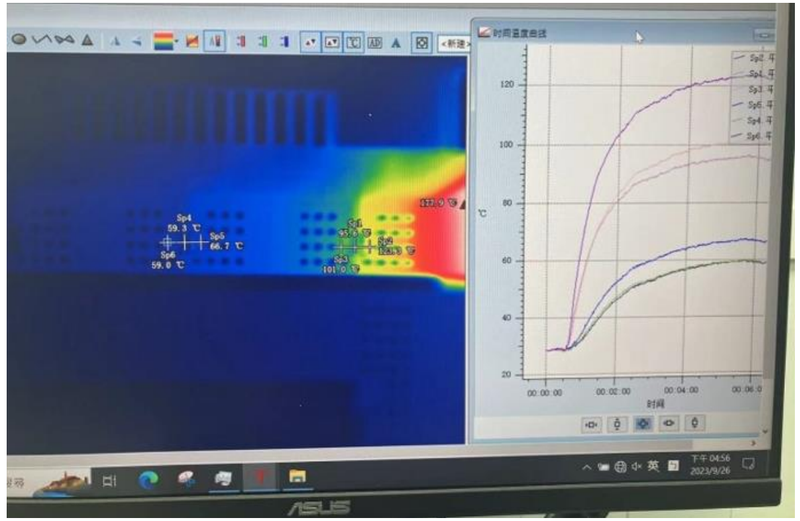
Thermal jumper on the circuit will help to dissipate the heat and will not affect the EMI or EMC performance

Functional Applications / Connection Options

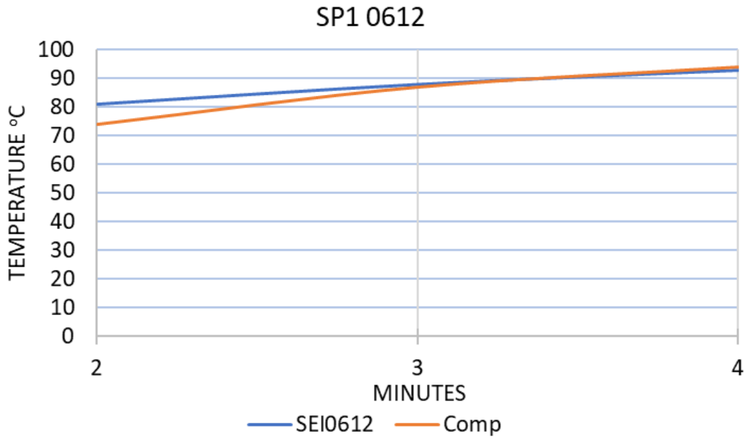
- Component to heat sink
- Component to case
- Component to ground plane
- Pad to pad
- Pad to via
- Pad to trace

HEAT DISSIPATING SPEED (0612)

STACKPOLE



Center of Thermal Jumper



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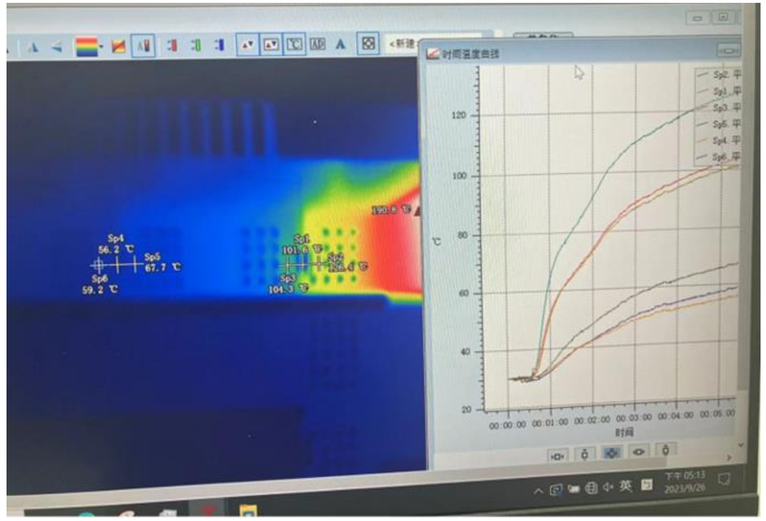
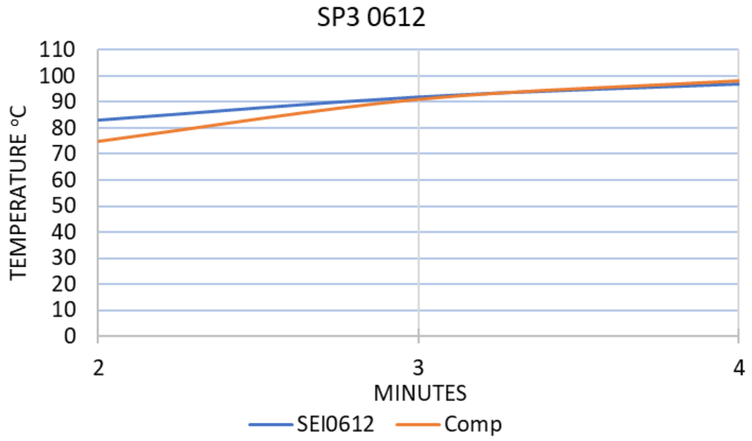
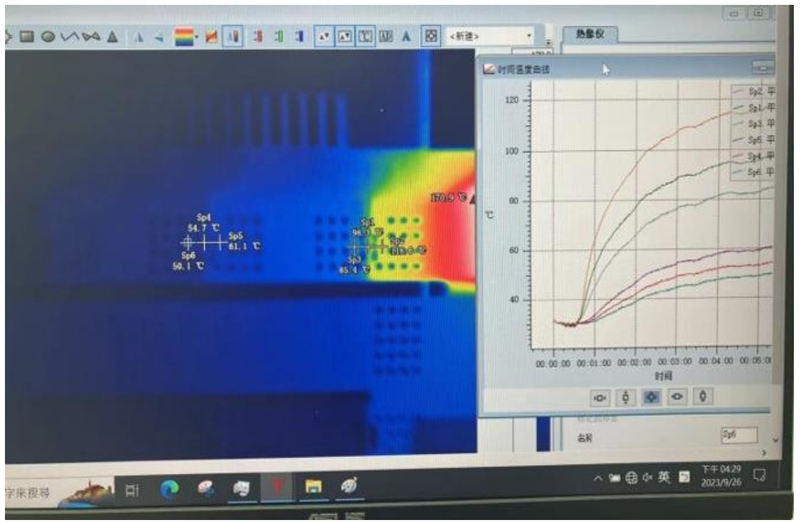


Copper Pad Close to Thermal Jumper

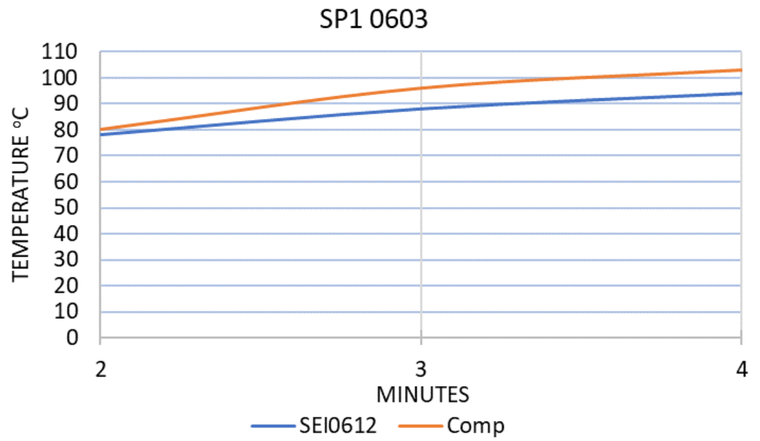


HEAT DISSIPATING SPEED (0603)

STACKPOLE



Center of Thermal Jumper



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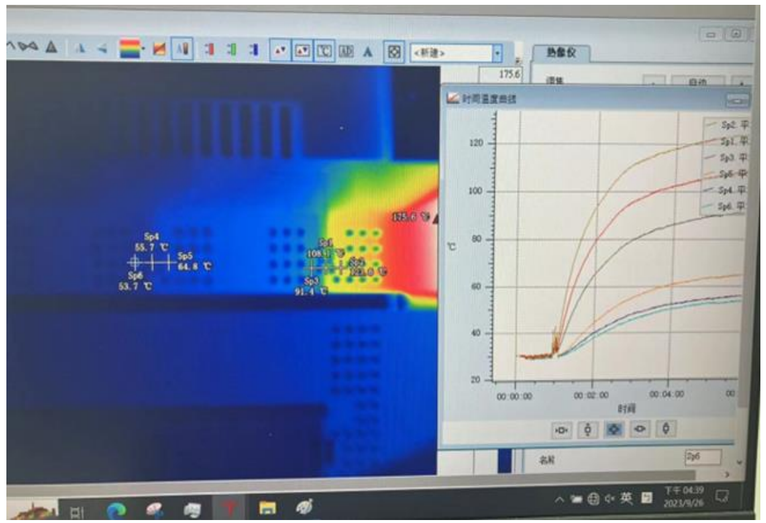
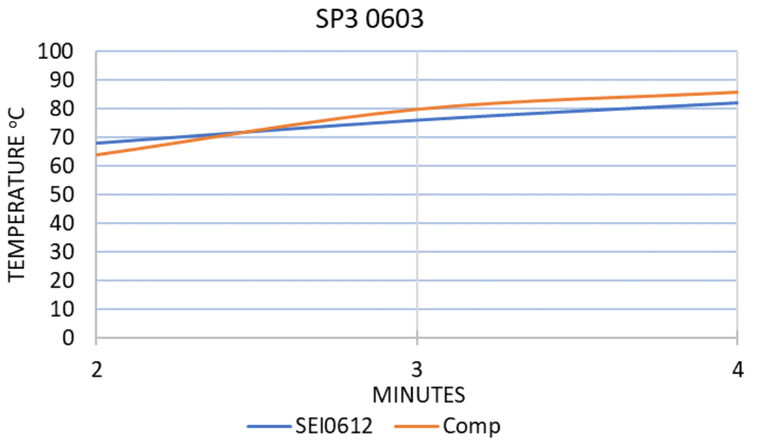
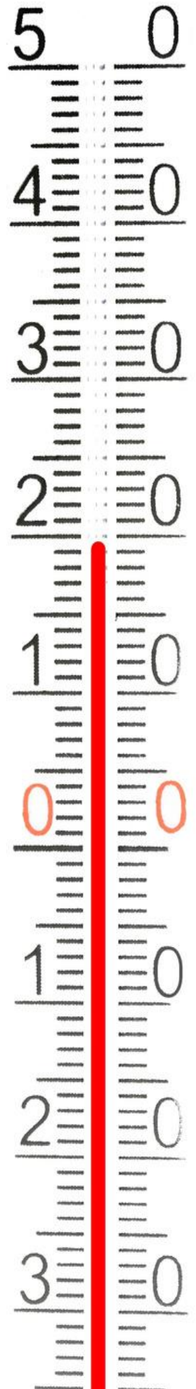


Copper Pad Close to Thermal Jumper





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THANK YOU

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