



# PRODUCT SPECIFICATION

## RIGHT ANGLE SMT JACKS

### PRODUCT SPECIFICATION 85502 SERIES

#### 1.0 SCOPE

This specification covers the Molex Right Angle modular Jack I/O type connector. Where applicable, tests are in accordance with, or in excess of, all the requirements specified in IEC 60603-7 specification for Modular Telephone set. Other applicable documents are FCC rules and regulations part 68: Connection of terminal equipment to the telephone network.

#### 2.0 PRODUCT DESCRIPTION

##### 2.1 PRODUCT NAME.

True SMT R/A Jack with side solder tabs.  
SMT R/A jack with through/hole solder pegs.

##### 2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

See the appropriate Sales Drawings for information on materials, platings and markings.

##### 2.3 VISUAL INSPECTION

Visually inspect parts for cracks, flash, loose material and other imperfections.

#### 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

See the appropriate Sales Drawings and the other sections of this Specification for the necessary referenced Documents and Specifications.

IEC 60603-7  
FCC PART 68  
TIA/EIA 568-C

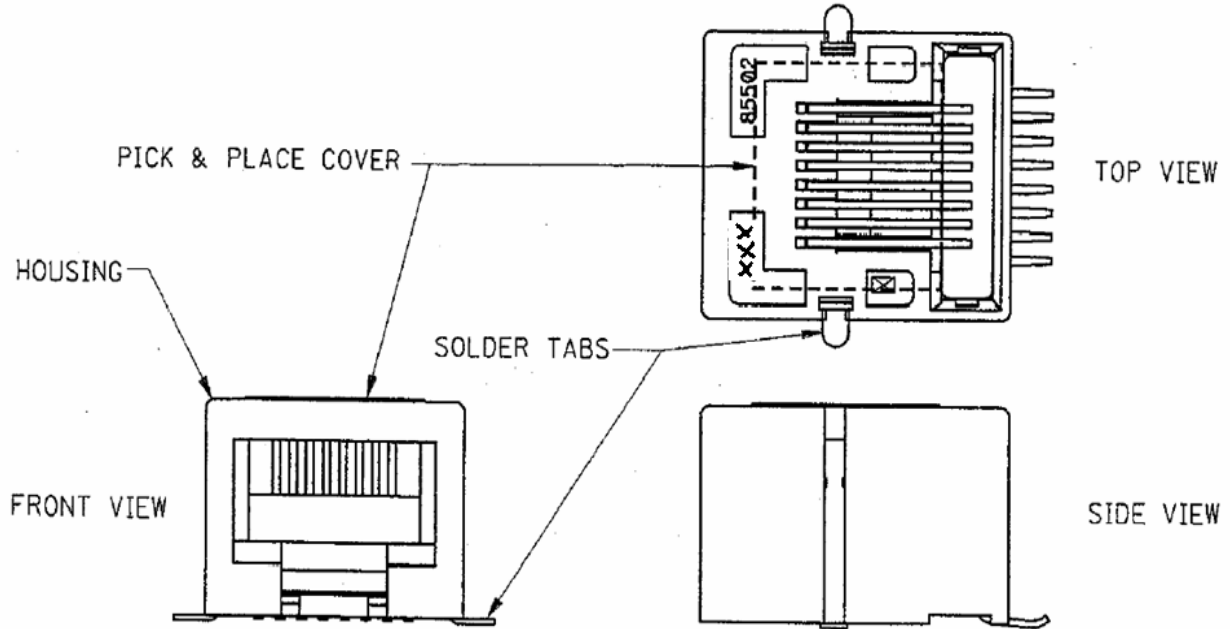
REVISION: <b>E</b>	ECR/ECN INFORMATION: EC No: <b>E2011-0159</b> DATE: <b>2011 / 05 / 05</b>	TITLE: <b>RIGHT ANGLE SMT JACKS WITH SOLDER TABS OR T/H SOLDER PEGS</b>	SHEET No. <b>1 of 12</b>
DOCUMENT NUMBER: <b>PS-85502-001</b>	CREATED / REVISED BY: <b>D.Byrnes</b>	CHECKED BY: <b>A.Higgins</b>	APPROVED BY: <b>E.Folan</b>



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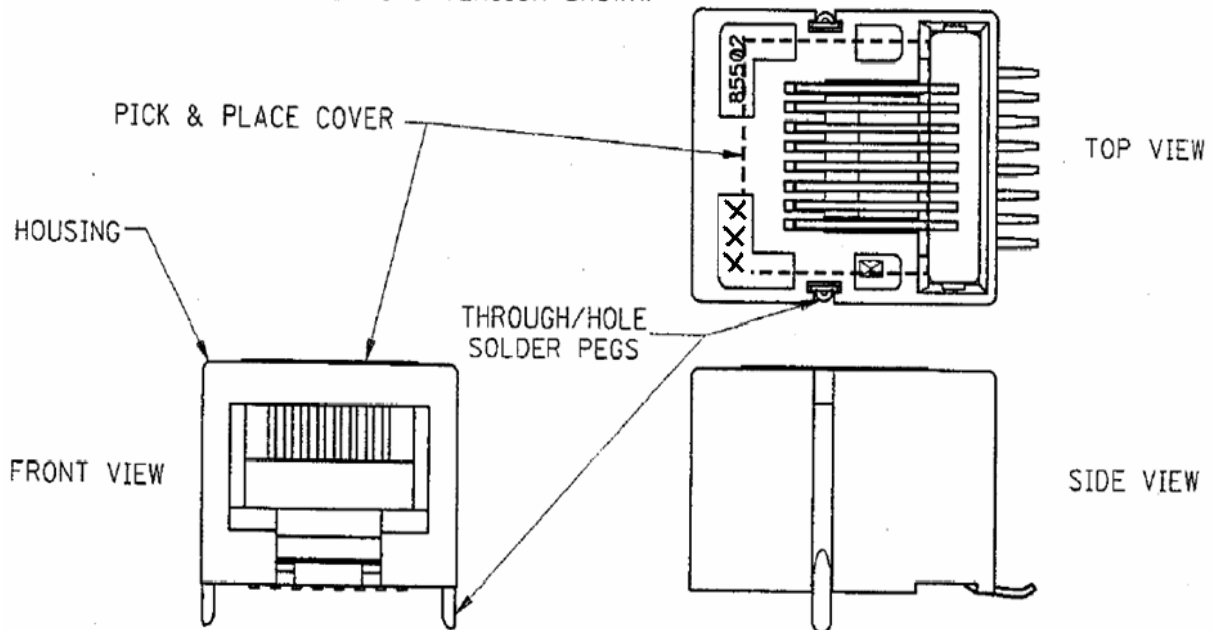
## SOLDER TABS VERSION SHOWN

(ONLY 8/8 VERSION SHOWN)



## THROUGH HOLE SOLDER PEGS VERSION SHOWN

(ONLY 8/8 VERSION SHOWN)



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## 4.0 RATINGS

### 4.1 VOLTAGE

125 Volts DC

### 4.2 CURRENT

1.5 Amps

### 4.3 TEMPERATURE

Operating: - 40° C to + 80° C

Non operating: - 40° C to + 80° C

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## 5.0 PERFORMANCE

### 5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	CONTACT RESISTANCE. Conditions: IEC 60512-2-1, Test 2a	Mate connectors: Test at 100 mA max current, 20 mV a.c. peak, max Open circuit voltage (see Section 7).	Initial <b>20</b> milli $\Omega$ max Final $\leq$ 10 milli $\Omega$ max change from initial.
2	INSULATION RESISTANCE. Conditions: IEC 60512-3-1, Test 3a, Method A.	Mate connectors with a voltage of <b>500</b> VDC between adjacent terminals and between terminals to ground.	<b>500</b> Mega $\Omega$ minimum
3	DIELECTRIC WITHSTAND VOLTAGE. Conditions: IEC 60512-4-1, Test 4a, Method A	Mate connectors: apply a voltage of 1000 V d.c or a.c. PEAK, for 1 minute between adjacent terminals and between terminals and ground.	No breakdown; current leakage < 5 milli A.

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## 5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
4	CONNECTOR INSERTION AND WITHDRAWAL FORCES  Conditions: IEC 60512, Test 13b Connector locking device depressed.	Insert and withdraw a plug at a rate of 25±6 mm per minute.	Insertion force <b>20 N</b> maximum & Withdrawal force <b>20 N</b> maximum
5	EFFECTIVENESS OF CONNECTOR COUPLING DEVICE  Conditions: IEC 60512-8, Test 15f	Rate of load application 44.5N/s max.  (See Appendix 1)	<b>50 N</b> for <b>60 s ± 5s</b> .  Connectors shall remain fully engaged.No loss of electrical continuity
6	MODULE RETENTION FORCE (in Housing)	Axial pullout force on the module in the housing at a rate of 25 ± 6 mm (1 ± ¼ Inch) per minute.	<b>20 N (4.4 lbf)</b> MINIMUM retention force
7	JACK RETENTION FORCE ON P.C. BOARD	Axial pullout force on the Jack on the P.C. Board at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.  (See Appendix 2).	Min. Retention Force <b>100 N (22 lbf)</b> SMT Jack with through hole Solder pegs. Min. Retention Force <b>70 N (15.7 lbf)</b> SMT Jack with Side Solder pads.
8	DURABILITY  Conditions: IEC 60512, Test 9a	Mate connectors up to <b>750</b> cycles(Au) Or <b>2,500</b> cycles (PdNi) at a maximum rate of 20 cycles per minute.  Cycle by hand.	Contact Resistance: <b>10 milli Ω</b> MAXIMUM (change from initial)
9	VIBRATION  Per IEC 60512-6-4, Test 6d.	Amplitude: 1.50 mm peak to peak 10-55-10Hz in 60 sec cycles for 2 hours on each axis, X-Y-Z	Meets contact resistance test, Shall remain mated and show no sign of damage.

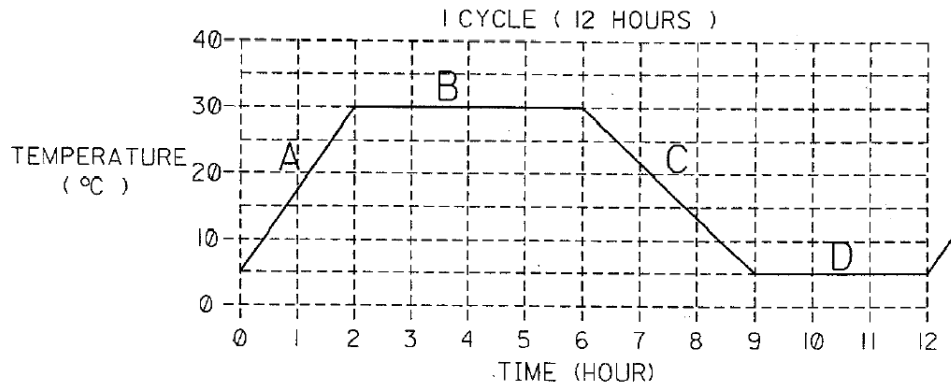
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<b>10</b>	<b>SHOCK (MECHANICAL)</b>  Conditions: IEC 60068-2-27	50 g's with 3 saw tooth waveform shocks in each $\pm X$ , $\pm Y$ , $\pm Z$ axes, 11 ms pulse. (18 shocks in total)	Contact Resistance: 10 milli $\Omega$ Maximum (Change from initial) & Discontinuity < 1 microsecond
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## 5.3 ENVIRONMENTAL REQUIREMENTS



ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
<b>11</b>	<b>HUMIDITY (Cyclic)</b>	Mate connectors exposed for 10 cycles at 90 to 95% relative humidity with a transition time of 2 hours when increasing and of 3 hours when decreasing the temperature. Temperature                      Duration +5° C                                      3 hours +30°C                                      4 hours	Appearance: No Damage  Contact resistance: <b>20</b> milli $\Omega$ max change from initial. Dielectric withstanding voltage: no breakdown Insulation resistance: <b>500</b> Mega $\Omega$ min.
<b>12</b>	<b>MIXED FLOW GAS CORROSION</b>  Conditions: IEC 60512 test 11g	4 Days: half the samples in mated state and half in unmated state.	Appearance: No Damage  Contact resistance: <b>20</b> milli $\Omega$ max change from initial. Dielectric withstanding voltage: no breakdown Insulation resistance: <b>500</b> Mega $\Omega$ min.
<b>13</b>	<b>COLD RESISTANCE</b>	Duration: 96 hours; Temperature: $-40 \pm 3^{\circ}\text{C}$	<b>10</b> milli $\Omega$ <b>MAXIMUM</b> (change from initial) & Visual: No Damage

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<b>14</b>	<b>SOLDERABILITY</b>  Conditions: IEC 60512-6 Test 12A 168-2-20 Test TA Method 1	Solder Bath 260+0/- 5°C Immersion Time 2,0 +/- 0.5s	The Dipped surface shall be covered with a smooth and bright solder coating. Some imperfections are acceptable but NOT concentrated in the same area.
<b>15</b>	<b>RESISTANCE TO SOLDERING CONDITIONS.</b>  Conditions: IEC 60512-6 test 12d	Sample to be passed twice through reflow oven Subject to IR reflow profile, 1 hour cooling between passes. (See Appendix 3)	Appearance- No damage.

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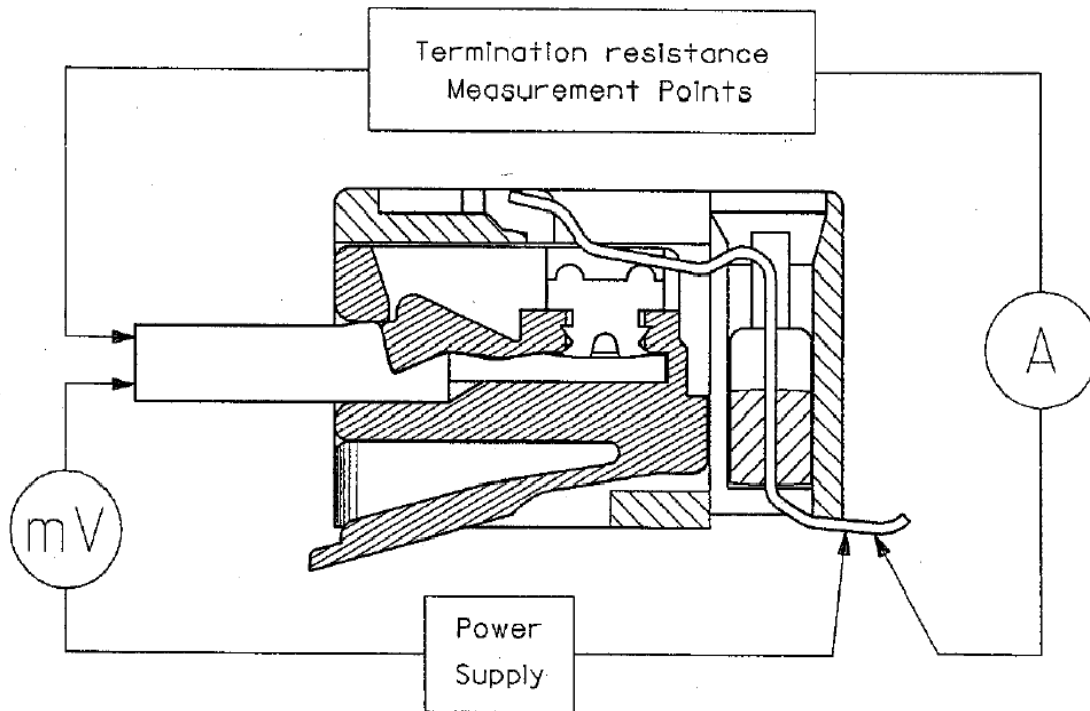
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## 6.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage. (Refer to sales drawings).

## 7.0 GAUGES AND FIXTURES

### Termination Resistance Measurement Points



System resistance equals millivolt drop (mV) divided by test current (A)  
(Conductor resistance will be deducted from measurement.)

## 8.0 QUALITY ASSURANCE PROVISIONS

The applicable Molex inspection plan specifies the sampling acceptable quality level to be used. Dimensioned and functional requirements shall be in accordance with applicable product drawings and this specification.

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## 9.0 TEST SEQUENCE

	I	II	III	IV	V	VI	VII
	Sample size 10	Sample Size 10	Sample Size 20**	Sample Size 10	Sample Size 2	Sample Size 2	Sample Size 10
INSPECTION OF PRODUCT	1	1, 13	1, 6	1	1	1	1
CONTACT RESISTANCE	2, 8	2, 8, 10	4	2, 4			
DIELECTRIC WITHSTAND VOLTAGE	4	4, 12					
INSULATION RESISTANCE	3	3, 11	5				
DURABILITY		6, 9					
SHOCK (MECHANICAL)			3				
COLD RESISTANCE				3			
SOLDERABILITY					2		
VIBRATION			2				
HUMIDITY (CYCLIC)	7						
INSERTION & WITHDRAWAL FORCES	5, 9						
RESISTANCE TO SOLDERING CONDITIONS						2	
JACK RETENTION FORCE ON PCB						3	
EFFECTIVENESS OF CONNECTOR COUPLING DEVICE	6				3		
MODULE RETENTION FORCE (in housing)							2
FLOWING MIXED GAS		7					
LOCKING DEVICE MECHANICAL OPERATIONS		5					

NB: NUMBERS DENOTE THE ORDER IN WHICH THE TESTS ARE PERFORMED.

\*10 connectors for Dielectric Withstand Voltage (DWV)

10 connectors for contact resistance, durability and temperature/humidity cycling.

\*\* Vibration:

10 connectors for low level contact resistance,

10 connectors monitored for discontinuity

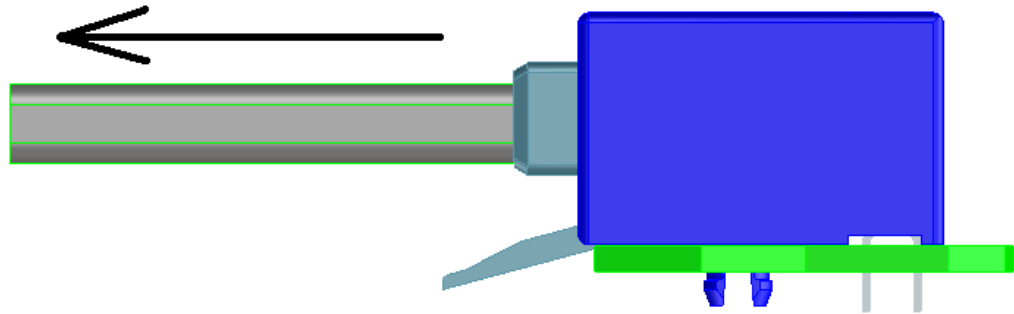
\*\*\* Jack retention axial test – 5 direction x 8 connectors

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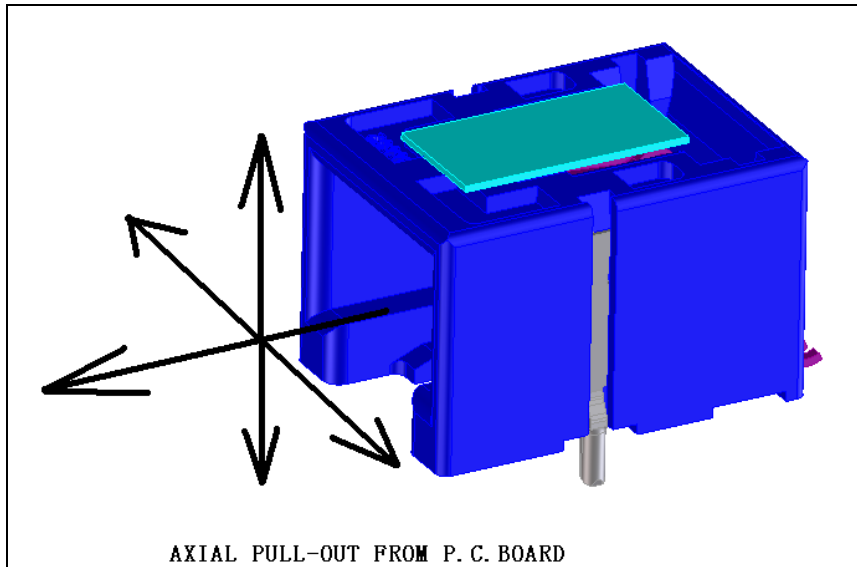
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## APPENDIX 1



### CONNECTOR COUPLING

## APPENDIX 2



AXIAL PULL-OUT FROM P. C. BOARD

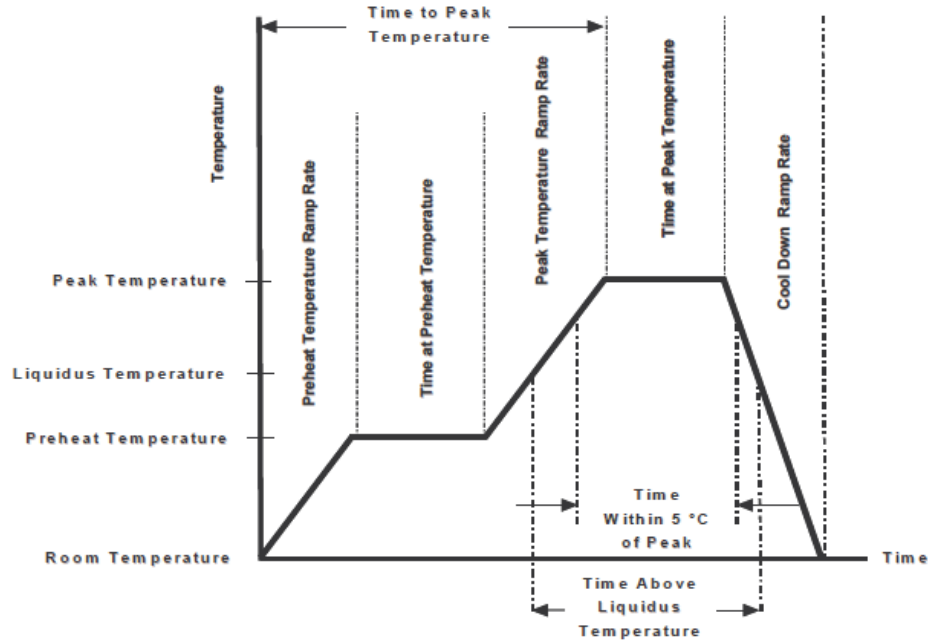
JACK RETENTION FORCE ON P.C. BOARD

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## APPENDIX 3



### REFLOW SOLDERING SIMULATION PEAK PROFILE REFLOW AT 260 °C

DESCRIPTION	REQUIREMENT
Solder Type	None
Solder Flux Type	None
Paste Flux Type	None
Average Ramp Rate	3 °C/second maximum
Preheat Temperature	150 °C minimum; 200 °C maximum
Preheat Time	60 to 180 seconds
Ramp to Peak	3 °C/second maximum
Time over Liquidus (217 °C)	60 to 150 seconds
Peak Temperature	260 °C +0/-5 °C
Time within 5 °C of peak	20 to 40 seconds
Ramp – Cool Down	6 °C/second maximum
Time 25 °C to Peak	8 minutes maximum

### Resistance to Soldering Conditions.

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