



# PRODUCT SPECIFICATION

## MICRO-SHUNT 90059 SERIES PRODUCT SPECIFICATION

### 1.0 SCOPE

This Product Specification covers the performance requirements for the Molex Micro-shunt Connector.

### 2.0 PRODUCT DESCRIPTION

**2.1** Molex Micro shunts provide a direct means of mating with (0.63)/.025" square or round pins on (2.54mm)/.100" grid spacing.

**2.2** Product is available in (2.54mm)/.100" centres, two circuit only.

**2.3** The connector is supplied to the customer molded to a break off carrier strip, in units of 10 shunts. Product may also be supplied in loose piece form (broken off carrier strip).

**2.4** Connectors are supplied with contacts fitted.

**2.5** This connector will mate with the following: -

**2.5.1** Pins assembled into a printed circuit board.

**2.5.2** Headers on (2.54mm)/.100 grid

**2.6** Products are available in three versions:

VERSION	DESCRIPTION
1	Standard (for post-solder assembly)
2	Wave solder compatible for pre wave solder assembly
3	IR reflow compatible for pre IR solder assembly

Products are distinguished on applicable product drawings and corresponding part number codes.

### 3.0 RECOGNISED AGENCY APPROVALS

UL and CSA approved.

UL File No. E29179(N)      Card E3

CSA File No. 19980      Card 4

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DOCUMENT NUMBER: <b>PS-90059</b>	CREATED / REVISED BY: <b>DBYRNES</b>	CHECKED BY: <b>EOMAHONY</b>	APPROVED BY: <b>EOMAHONY</b>



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## 4.0 REQUIREMENTS

### 4.1 Design and construction:-

Connectors shall be of the design, construction and physical dimensions specified in the applicable drawings.

### 4.2 MATERIALS: -

- Housings - **Polyester** – Glass filled 94V-0 rated. (for version 1 & 2)  
**Liquid Crystal Polymer** – Glass filled 94V-0 rated. (for version 3)
- Terminals - **Phosphor Bronze** – for version 1.  
- **High Copper content alloy** – (for versions 2 & 3).  
Both with various plating's.

### 4.3 Contact Point:-

(3.95mm)/ .156" maximum from front of housing.  
Minimum pin length (4.50mm)/ .177".

### 4.4 Overall length: -

(5.0mm)/ .197" maximum.

### 4.5 Ratings: -

- Rated current 3.0 ampere gold  
1.5 ampere tin
- Not intended for interruption of current.
- Operating temperature -65°C to +120°C
- Non Operating temperature -65°C to +120°C

### 4.6 Test requirements – Procedures

Connector assemblies shall be designed to meet the electrical, mechanical and environmental requirements as specified over.

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## 5.0 PERFORMANCE

DESCRIPTION	REQUIREMENT	PROCEDURE
Inspection of product	Meets requirement of Molex Product drawing.	Visual and dimensions checks per relevant Molex drawing.

## 5.1 Electrical Requirements

DESCRIPTION	REQUIREMENT	PROCEDURE
Contact Resistance (Low Level)	Gold-Initial 10mOhms max -Final 12mOhms max Tin - Initial 12mOhms max - Final 15mOhms max	Test at 100m A max Current 50m V max open Circuit voltage
Insulation Resistance	6 > 2 x 10 megaOhms min	Per MIL-STD 202 E Method 302, Condition B.
Dielectric Strength	2000V a.c. r.m.s. 60 second hold	Per MIL-STD 202 E Method 302, Condition B.
Capacitance	1.5 pF max	Measured between adjacent shunts Unmounted.
Temperature Rise	Less than 30° C over ambient when current of 3A (gold) or 1.5 (tin) applied for 141 hours.	Connectors to be cycled before testing  50 times - gold 20 times - tin

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## 5.2 MECHANICAL

DESCRIPTION	REQUIREMENT	PROCEDURE
Durability	Gold-Contact - 50 Cycles Tin Contact - 20 Cycles Meets contact resistance test.	Mating and unmating cycles at 20 cycles/minute max.
Engagement/Disengagement	Engagement Force :- Gold - 7N Max Tin - 7N Max per contact Disengagement Force :- Gold - 0.30 N Min Tin - 0.50 N Min per contact	Record measurements for 1st, 5th, 10th and 20th cycles.
Vibration	Meets contact Resistance test. Shall remain mated with pins and show no signs of damage.	Connectors to be cycled : - 50 times - gold 20 times - tin  Test per MIL-STD 202F (10-55 Hz Method 201 A)
Resistance to Wave Solder process (Version 2)	Meets contact resistance test	Per IEC 512-6 test 12d method 1, 260°C/5s
Resistance to IR reflow process (Version 3).	Appearance - no damage	Sample to be passed through reflow oven according to temp profile shown in Appendix A.

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## 5.3 ENVIRONMENTAL

DESCRIPTION	REQUIREMENT	PROCEDURE
<b>Humidity</b>	Shall meet insulation resistance, dielectric strength, contact resistance & inspection of product test.	Complete durability test. Per MIL-STD 202F, Method 103 B. Condition C. (38 ° C, 95/100% R.H. 504 hours).
<b>Salt Spray</b>	Shall meet contact resistance test.	Complete durability test. Per MIL-STD 202 F, Method 101D. Condition B. (5% for 96 hours)
<b>Thermal Shock</b>	Shall meet contact resistance test.	Complete durability test. Per MIL-STD 202F, Method 107D, Condition B. (-65 ° C to +120° C).
<b>Thermal ageing</b>	Shall meet contact resistance test.	Heat soak at 105 ° C for 300 hours.

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## 5.4 TEST SEQUENCE

TEST	TEST GROUP					
	I	II	III	IV	V	VI
INSPECTION OF PRODUCTS	1,5	1	1	1	1	1
CONTACT RESISTANCE	2,8	2,5	2,6	2,7	2,5	2,5
DIELETRIC STRENGTH	6					6
INSULATION RESISTANCE	7					7
CAPACITANCE			3			
TEMPERATURE RISE			5			
DURABILITY	3	3	4	4	3	3
ENGAGEMENT/DISENGAGEMENT				3		
VIBRATION					4	
RESISTANCE TO SOLDER TEMP.						4
HUMIDITY	4					
SALT SPRAY		4				
THERMAL SHOCK				5		
THERMAL AGEING				6		

**NOTE:** IR Reflow Compatible Parts, must be subjected to resistance to solder temperature, before Any other testing in each test group.

## 6.0 QUALITY ASSURANCE PROVISIONS

The applicable Molex inspection plan will specify the acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with applicable product drawings and the specification.

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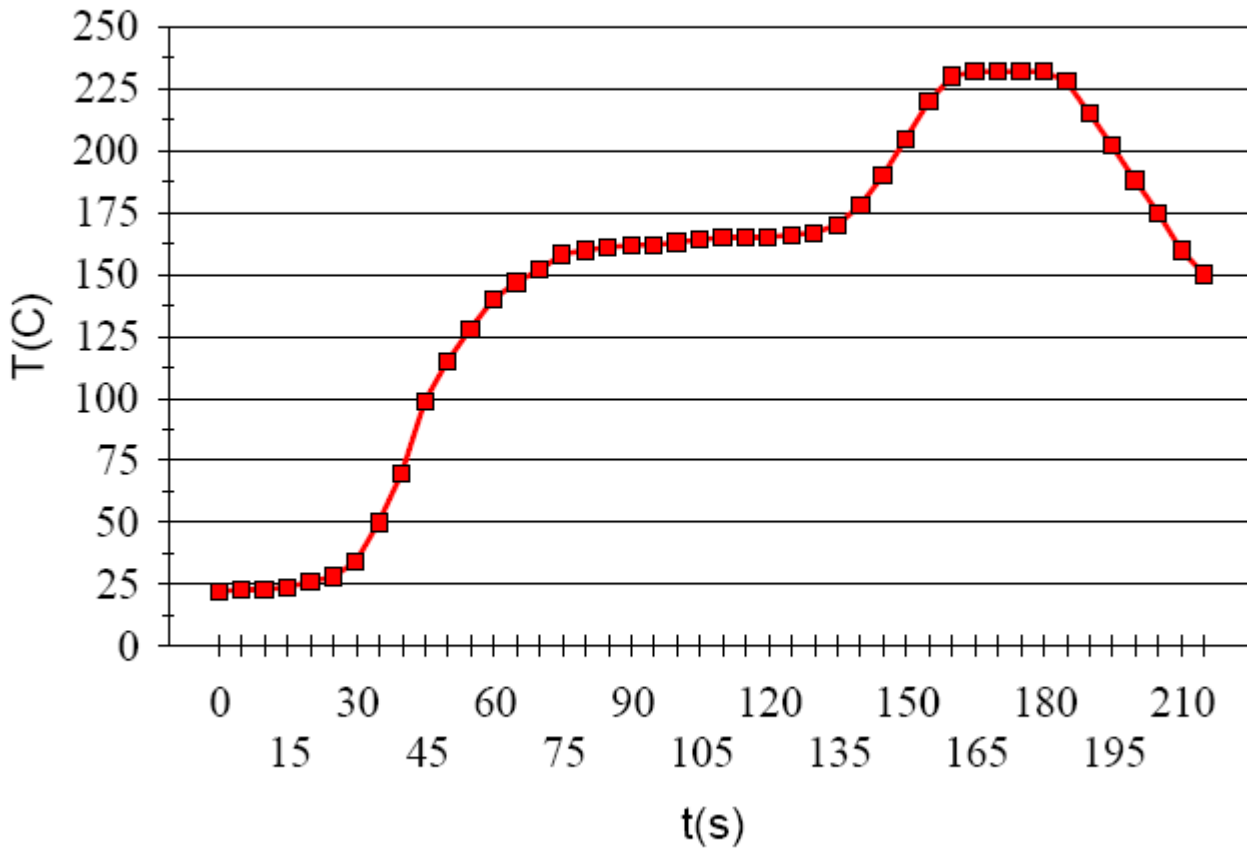
## APPENDIX A

<b>REVISION:</b> <b>F</b>	<b>EGR/ECN INFORMATION:</b> EC No: <b>E2008-****</b> DATE: <b>2007 / 09 / 25</b>	<b>TITLE:</b> <b>MICROSHUNT 90059 SERIES PRODUCT SPECIFICATION</b>	<b>SHEET No.</b> <b>7 of 8</b>
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## Resistance to Solder Conditions



**NOTE:** Cooling time dependant on method.

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