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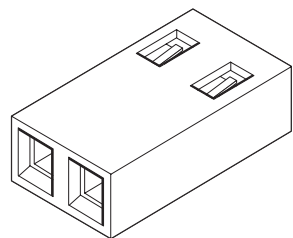
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Jameco Part Number 1962252

## 2.54mm (.100") Pitch C-Grid® Shunt/Jumper

**7859**  
2-Circuit



### Features and Benefits

- Easily applied without soldering and reliable without accidental disconnects
- Low cost alternative to DIP switches
- Increases current flow and decreases resistance vs DIP switches
- Dual beam terminals: 2 points of contact per pin
- Open and closed top versions
- Stackable end-to-end and side-to-side

### Reference Information

Product Specification: PS-7859  
Packaging: Bag  
UL File No.: E29179  
CSA File No.: LR19980  
Mates With: C-Grid breakaway headers  
Designed In: Inches

### Electrical

Voltage: 250V  
Current: 5.0A  
Contact Resistance: 30 milliohms max.  
Dielectric Withstanding Voltage: 1500V  
Insulation Resistance: 100K Megohms min.

### Mechanical

Contact Retention to Housing: 26.69N (4 lb)  
Mating Force: 4.448N (6 lb)  
Unmating Force: 0.98N (1 lb)  
Durability: Tin—25 cycles; Gold—200 cycles

### Physical

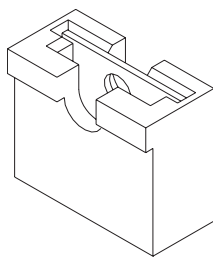
Housing: Black polyester, UL 94V-0  
Contact: Copper Alloy  
Plating: See Table  
Operating Temperature: -40 to +105°C

### Not For Use With Molex C-Grid III™ Components

Open Top			Closed Top		
Order No.	Plating	Lead-free	Order No.	Plating	Lead-free
<a href="#">15-38-1024</a>	150µm Tin	Yes	<a href="#">15-38-1026</a>	150µm Tin	Yes
<a href="#">15-29-1024</a>	15µm Gold		<a href="#">15-29-1025</a>	15µm Gold	
<a href="#">15-29-1026</a>	30µm Gold		<a href="#">15-29-1027</a>	30µm Gold	

## 2.54mm (.100") Pitch C-Grid® Micro Shunt

**90059**  
Low Profile



### Features and Benefits

- Fully stackable
- Center probe hole—for continuity testing and easy pull-off
- Color-coded housings for plating and identification
- Delivered on break-off carrier strips for easy handling (10 per strip) or loose
- Recommended to be applied after mating header is soldered

### Reference Information

Product Specification: PS-90059  
Packaging: Strips or Bag  
UL File No.: E29179  
CSA File No.: LR19980  
Designed In: Inches

### Electrical

Voltage: 350V  
Current: 3.0A Gold; 1.5A Tin  
Contact Resistance: Gold—12 milliohms max.;  
Tin—15 milliohms max.  
Dielectric Withstanding Voltage: 2000V  
Insulation Resistance: 2000 Megohms max.

### Mechanical

Mating Force: 7N max.  
Unmating Force: 0.3N Gold; 0.5N Tin min.  
Durability: 50 cycles Gold and 20 cycles Tin

### Physical

Housing: Glass-filled polyester, UL 94V-0  
Contact: Phosphor Bronze  
Plating: See Table  
Operating Temperature: -55 to +125°C  
Height: 4.95mm (.195") max.

Order No.	Plating No.	Color	Packaging	Lead-free
<a href="#">90059-0009*</a>	1	White	Strip	Yes
<a href="#">90059-0007*</a>	2	Black		
<a href="#">90059-0013</a>	3			
<a href="#">90059-0014</a>	4	White		
<a href="#">90059-0012</a>	5			
<a href="#">90059-1009</a>	1	White	Bag	
<a href="#">90059-1007</a>	2	Black		

\* Preferred Version In Europe/Americas

Plating No. 1: 0.38µm (15µ") Gold in contact area over 0.76µm (30µ") Nickel with Gold flash overall

Plating No. 2: 5.0µm (200µ") min. Tin over 0.2µm (8µ") min. Copper

Plating No. 3: 0.9µm (35µ") min. Pretinned

Plating No. 4: 0.1µm (4µ") min. Gold over 1.0µm (40µ") min. Nickel overall

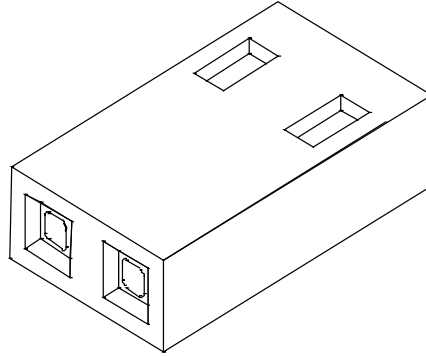
Plating No. 5: 0.76µm (30µ") Gold over 1.27µm (50µ") Nickel in contact area with 0.2mm (8µ") min. Nickel overall



# PRODUCT SPECIFICATION



<b>LANGUAGE</b>
ENGLISH



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REV	D						
SHT	1-7						
REVISE ON PC ONLY		TITLE					
<b>D</b>	REVISED, CHANGED TO MS WORD FORMAT PER ECN UDT2002-0519	<b>TWO-CIRCUIT SHUNT</b>					
		THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION					
REV	DESCRIPTION	WRITTEN BY:	CHECKED BY:	APPROVED BY:	DATE: YR / MO / DAY		
DESIGN CONTROL	STATUS	J.SCHAFFER	J.SCHAFFER	D.BRINKMAN	01/9/27		
UDT					FILE NAME	SHT NO.	
<b>DOCUMENT NO.</b>					PS7859.DOC	1 OF 7	
<b>PS -7859</b>							



# PRODUCT SPECIFICATION



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## C-Grid 7859 Series Two-Circuit Shunt

### 1.0 SCOPE

This specification covers the test criteria and performance requirements of the 2.54 mm (.100 inch) centerline (pitch) two-circuit shunt.

### 2.0 PRODUCT DESCRIPTION

#### 2.1 Product Name and Series Number

C-Grid shunt 7859 series available in both open top version which accommodates mated pin lengths from 5.08mm (.200 inch) minimum and longer and closed top version which accommodates mated pin lengths from 5.08mm (.200 inch) to 6.86mm (.270 inch)

#### 2.2 Part Numbers, dimensions, materials, platings and markings

See appropriate sales drawing for information

#### 2.3 Safety Agency Approvals

2.3.1 Underwriters Laboratories Inc.: File No. E29179

2.3.2 Canadian Standards Association: File No. LR19980

### 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

#### 3.1 Molex documents

SDA-7859-2\*\*\*N sales drawing for open top version

SDA-7859-2A\*\*\*N sales drawing for closed top version

PK-70873-0815

### 4.0 RATINGS

4.1 Current: 5.0 Amperes with 30°C rise over ambient

4.2 Operating temperature: -40°C to +105°C

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# PRODUCT SPECIFICATION



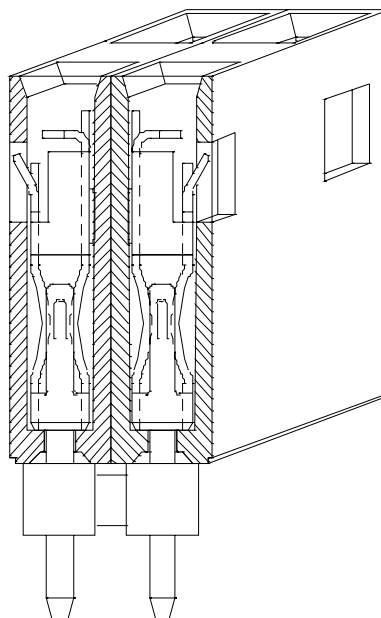
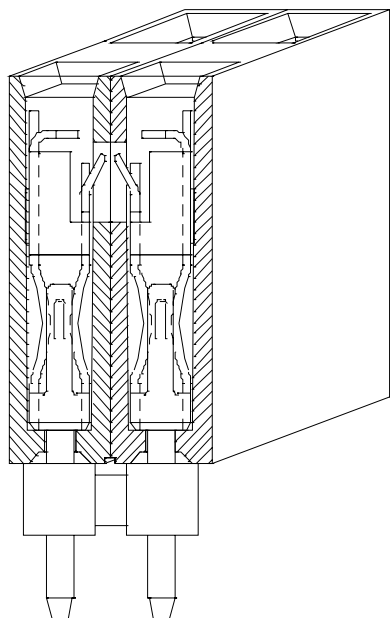
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## 5.0 PERFORMANCE

### 5.1 Electrical

Item	Test Condition	Requirement
Contact Resistance (Low Level)	Mate connectors with a maximum voltage of 20 mV and a current of 100 mA	30 milliohms maximum
Contact Resistance (Rated)	Measure contact resistance at rated current	30 milliohms maximum
Insulation Resistance	Mate connectors with a voltage of 500 VDC for 1 minute	1 x 10 <sup>5</sup> Megohms minimum
Dielectric Withstanding Voltage	Mate connectors with a voltage of 1000 VAC for 1 minute Connectors to be oriented as shown below, In either configuration.	No breakdown Regardless of configuration



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# PRODUCT SPECIFICATION



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## 5.2 Mechanical

Item	Test Condition	Requirement
Connector Insertion/ Withdrawal Forces	Insert and withdraw a connector at a rate of $(25 \pm 6 \text{ mm})/1 \pm \frac{1}{4}$ inch per minute	
	Plating: .000150 min.tin/lead over .000050 min. nickel overall Maximum mate force: After 1 cycle = 6.12 lbs. After 5 cycles = 5.71 lbs. After 10 cycles = 2.74 lbs. After 25 cycles = 2.66 lbs.	Minimum unmate force: After 1 cycle = 3.84 lbs. After 5 cycles = 3.25 lbs. After 10 cycles = 0.79 lbs. After 25 cycles = 0.31 lbs.
	Plating: .00015 min. gold over .000050 min. nickel overall Maximum mate force: After 1 cycle = 2.37 lbs After 50 cycles = 1.72 lbs After 100 cycles = 1.71 lbs. After 200 cycles = 1.70 lbs.	Minimum unmate force: After 1 cycle = 1.26 lbs. After 50 cycles = 1.07 lbs. After 100 cycles = 1.05 lbs. After 200 cycles = 1.04 lbs.
	Plating: .000030 min. gold over .000050 min. nickel overall Maximum mate force: After 1 cycles = 2.61 lbs. After 50 cycles = 1.24 lbs. After 100 cycles = 1.24 lbs. After 200 cycles = 1.22 lbs.	Minimum unmate force: After 1 cycle = 1.20 lbs. After 50 cycles = 0.78 lbs. After 100 cycles = 0.78 lbs. After 200 cycles = 0.68 lbs.
Terminal Retention Force In Housing	Axial pullout force on the terminal in the housing at a rate of $(25 \pm 6 \text{ mm})/1 \pm \frac{1}{4}$ inch per minute	4.0 pounds minimum
Durability	Mate connector up to 25 cycles for tin/lead plating and 200 cycles for gold plating at a maximum rate of 10 cycles per minute prior to Environmental Tests	Maximum contact resistance change: 10 milliohms

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Cont'd...

Item	Test Condition	Requirement
Vibration	Amplitude: (1.9 mm)/.076" peak-to-peak Sweep: 10-55-10 Hz in one minute Duration: 2 hours in each axis x, y, & z	Maximum contact resistance change: 10 milliohms
Mechanical Shock	50 G's with three sine waveform shocks, both directions in each axis (x, y, & z)	Maximum contact resistance change: 10 milliohms
Normal Force	Apply a perpendicular force at a rate of (25 ± 6mm)/1 ± ¼ inch per minute	100 grams minimum

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# PRODUCT SPECIFICATION



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## 5.3 Environmental

Item	Test Condition	Requirement						
Thermal Shock	Mate connectors exposed to 10 cycles of:  <table border="1"> <tr> <th>Temperature (C°)</th> <th>Duration (minutes)</th> </tr> <tr> <td>-40 +0, -3</td> <td>30</td> </tr> <tr> <td>+105 +3, -0</td> <td>30</td> </tr> </table>	Temperature (C°)	Duration (minutes)	-40 +0, -3	30	+105 +3, -0	30	Appearance: No damage Maximum contact resistance change: 10 milliohms
Temperature (C°)	Duration (minutes)							
-40 +0, -3	30							
+105 +3, -0	30							
Thermal Aging	Mate connectors exposes to 240 hours at 105 ± 2°C	Appearance: No damage Maximum contact resistance change: 10 milliohms						
Humidity (Steady State)	Mate connectors exposed to 40 ± 2°C, 90-95% RH, for 240 hours per MIL-STD-202F, Method 103B, Test Condition A	Appearance: No damage Maximum contact resistance change: 10 milliohms						
Humidity (Cyclic)	Test mate connectors per MIL-STD-202F, Method 106E, excluding steps 7a and 7b	Appearance: No damage Maximum contact resistance change: 10 milliohms						

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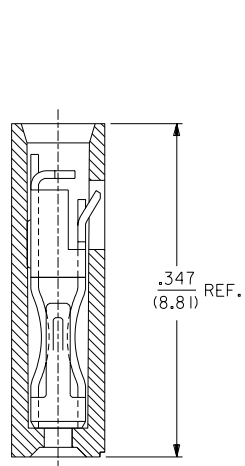
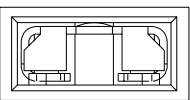
Item	Test Condition	Requirement
Fretting	Mate connectors exposed for 500 cycles  Temperature (°C) +25 ± 10 +70 +3, -0  Duration (minutes) 30 30	Appearance: No damage Maximum contact resistance change:
Temperature Rise and Current Cycling	Mate the connectors and measure the temperature rise at the rated current after 96 hours, then after 45 minutes ON, 15 minutes OFF for 240 hours, and finally at the rated current after 96 hours.	Maximum temperature rise: 30°C over ambient Maximum contact resistance change: 10 milliohms

Reference Test Report Nos.: 2281, 2445, 4146, 4147

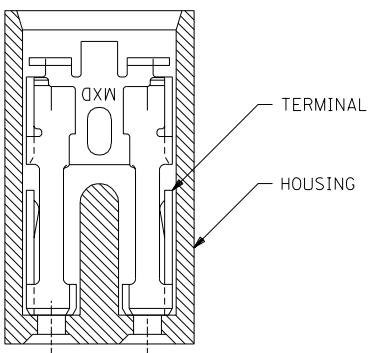
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EDP NO.	ENG NO.	FINISH
15-38-1026	A-7859-2A164	TIN OVERALL
15-29-1025	A-7859-2A554	15 GOLD
15-29-1027	A-7859-2A561	30 GOLD

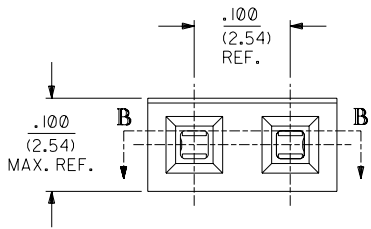
**PART IDENTIFICATION:**



**SECTION A-A**



**SECTION B-B**



**NOTES:**

- MATERIAL;  
HOUSING: GLASS FILLED POLYESTER; 94V-0; COLOR: BLACK  
TERMINAL: PHOSPHOR BRONZE ALLOY.
- THIS PRODUCT CONFORMS TO MOLEX PRODUCT SPEC. PS-7859.
- TO BE USED WITH .025/(0.64) SQUARE PINS.
- MINIMUM MATING PIN LENGTH: .200/(5.08)  
MAXIMUM MATING PIN LENGTH: .270/(6.86)
- PRODUCT IS PACKAGED IN BOXES PER PK-70873-0815.

**FINISH SPECIFICATION**

- TIN OVERALL - .000150 MINIMUM TIN PLATE OVER  
.000050 MINIMUM NICKEL UNDERPLATE.
- 15 GOLD - .000015 MINIMUM GOLD PLATE IN SELECT AREA OVER  
.000050 MINIMUM NICKEL UNDERPLATE OVERALL.
- 30 GOLD - .000030 MINIMUM GOLD PLATE IN SELECT AREA OVER  
.000050 MINIMUM NICKEL UNDERPLATE OVERALL.

NOTE FOR LEAD FREE CONVERSION:

THE PRIMARY SHIPPING CARTON WILL BE LABELED "COMPLIANT TO ROHS DIRECTIVE 2002/95/EC AND ELV ANNEX II OF DIRECTIVE 2000/53/EC". CARTONS WITHOUT THIS LABEL MAY CONTAIN PRODUCT WITH LEAD.

D	LEAD FREE CONV ECN UCP2004-2133 RKADAMS 04/04/27
CI	ADDED PKG SPEC. PER ECN U70786 WHETSTON 97/2/7
C	CHANGED MATERIAL PER ECR #U51214 95/06/02 CAC
B	REVISED ENG. NOS. PER ECR # U31581 10/26/93 REED
A	RELEASED PER ECR # U30372 03/11/93 REED
3	REVISE GOLD PLTG. PER ECR # U12055 10/18/91 AAB
2	REVISE TERM. PLTG. PER ECR # U11096 06/18/91 AAB
1	*X* RELEASE PER ECR # U10445 02/07/91 AAB

DIMENSIONS SHOWN (METRIC) INCH		▽ = 0		= 0		REVISE ONLY ON CAD SYSTEM	
UNLESS OTHERWISE SPECIFIED TOLERANCES: ANGULAR ± 1/2°							
3 PLACE ± .005		---		TITLE		SALES ASSY - SHUNT	
2 PLACE ± .01 ± 0.13		---		MOLEX INCORPORATED		SHEET NO. DATE	
1 PLACE --- ± 0.25		---		LITSE,ILL. 60532		1 OF 1 02/07/91	
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DRWG. BY AAB		CHK'D. BY		PART NO.		DRWG. NO.	
APP'D. BY MJM		SCALE 10: 1		FILE NAME 57859X1A		MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION	