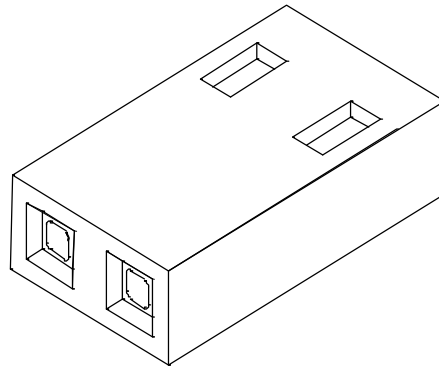




# PRODUCT SPECIFICATION



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DOCUMENT NUMBER: <b>PS-7859</b>	CREATED / REVISED BY: <b>J SCHAFFER/MIBARRA</b>	CHECKED BY: <b>DMORGAN</b>	APPROVED BY: <b>SMILLER</b>

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# PRODUCT SPECIFICATION

## 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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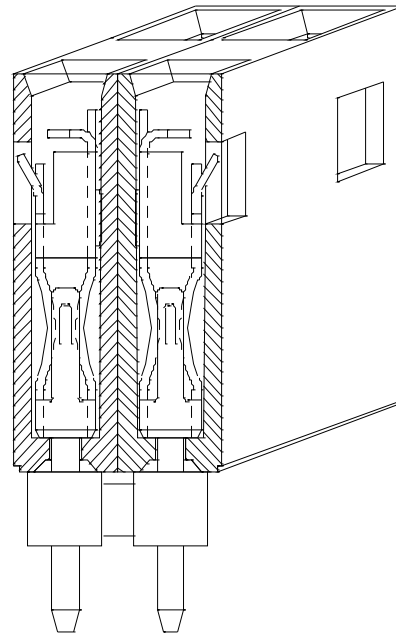
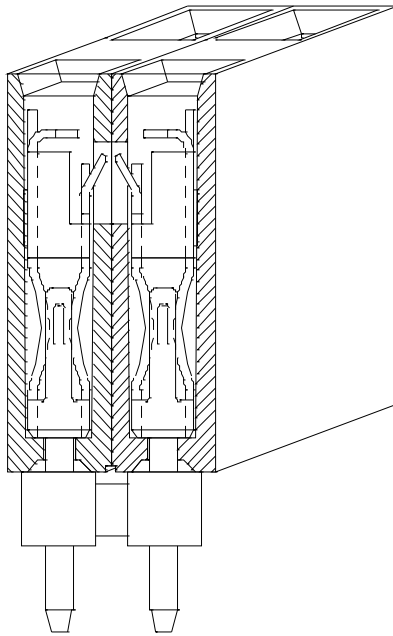


# PRODUCT SPECIFICATION

## 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	$1 \times 10^5$ 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

## 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 minimum tin 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 minimum 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 minimum 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
Vibration	Amplitude: $(1.9 \text{ mm})/.076$ " 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 $(25 \pm 6 \text{ mm})/1 \pm \frac{1}{4}$ inch per minute	100 grams minimum

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# PRODUCT SPECIFICATION

## 5.3 Environmental

Item	Test Condition	Requirement						
Thermal Shock	Mate connectors; expose to 5 cycles of: <table border="1"> <tr> <td><u>Temperature °C</u></td> <td><u>Duration (Minutes)</u></td> </tr> <tr> <td>-40 +0/-3</td> <td>30</td> </tr> <tr> <td>+105 +3/-0</td> <td>30</td> </tr> </table>	<u>Temperature °C</u>	<u>Duration (Minutes)</u>	-40 +0/-3	30	+105 +3/-0	30	Appearance: No damage Maximum contact resistance change: 10 milliohms
<u>Temperature °C</u>	<u>Duration (Minutes)</u>							
-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						
Fretting	Mate connectors; expose for 500 cycles of: <table border="1"> <tr> <td><u>Temperature °C</u></td> <td><u>Duration (Minutes)</u></td> </tr> <tr> <td>+25 ± 10</td> <td>30</td> </tr> <tr> <td>+70 +3/-0</td> <td>30</td> </tr> </table>	<u>Temperature °C</u>	<u>Duration (Minutes)</u>	+25 ± 10	30	+70 +3/-0	30	Appearance: No damage Maximum contact resistance change: 10 milliohms
<u>Temperature °C</u>	<u>Duration (Minutes)</u>							
+25 ± 10	30							
+70 +3/-0	30							
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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