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ELECTRONICS

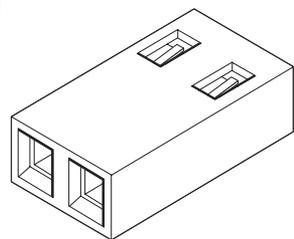
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Jameco Part Number 884985

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

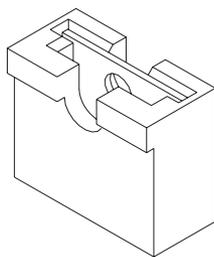
Not For Use With Molex C-Grid III™ Components

Open Top		
Order No.	Plating	Lead-free
15-38-1024	150µm Tin	Yes
15-29-1024	15µm Gold	
15-29-1026	30µm Gold	

Closed Top		
Order No.	Plating	Lead-free
15-38-1026	150µm Tin	Yes
15-29-1025	15µm Gold	
15-29-1027	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
90059-0009*	1	White	Strip	Yes
90059-0007*	2	Black		
90059-0013	3			
90059-0014	4	White		
90059-0012	5			
90059-1009	1	White	Bag	
90059-1007	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



LANGUAGE

English

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 platings.

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

4.6 Test requirements - Procedures

Connector assemblies shall be designed to meet the electrical mechanical and environmental requirements as specified in Table 1 over.

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E	FOR REVISION DATA SEE LAST PAGE OF THIS SPEC.			
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PRODUCT SPECIFICATION



LANGUAGE

English

TEST	REQUIREMENT	PROCEDURE
Inspection of product	Meets requirements of Molex product drawing.	Visual & dimensions checks per relevant Molex drawing.

ELECTRICAL

Contact Resistance	Gold-Initial 10mohms max -Final 12mohms max Tin - Initial 12mohms max - Final 15mohms max	Test at 100m A max current 50mV max open Circuit voltage.
Dielectric Strength	2000V a.c. r.m.s. 60 second hold	Per MIL-STD 202 E Method 302, Condition B.
Insulation Resistance	⁶ > 2 x 10 megohms min	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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PRODUCT SPECIFICATION



LANGUAGE

English

TEST	REQUIREMENT	PROCEDURE
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MECHANICAL

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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PRODUCT SPECIFICATION



LANGUAGE

English

TEST	REQUIREMENT	PROCEDURE
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ENVIRONMENTAL

Humidity	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).
Salt Spray	Shall meet contact resistance test.	Complete durability test. Per MIL-STD 202 F, Method 101D. Condition B. (5% for 96 hours)
Thermal Shock	Shall meet contact resistance test.	Comple durability test. Per MIL-STD 202F, Method 107D, Condition B. (-65 ° C to +125° C).
Thermal Ageing	Shall meet contact resistance test.	Heat soak at 105 ° C for 300 hours.

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PRODUCT SPECIFICATION



LANGUAGE

English

4.7 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
DIELECTRIC 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		

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PRODUCT SPECIFICATION



LANGUAGE

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

5.0 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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PRODUCT SPECIFICATION



LANGUAGE

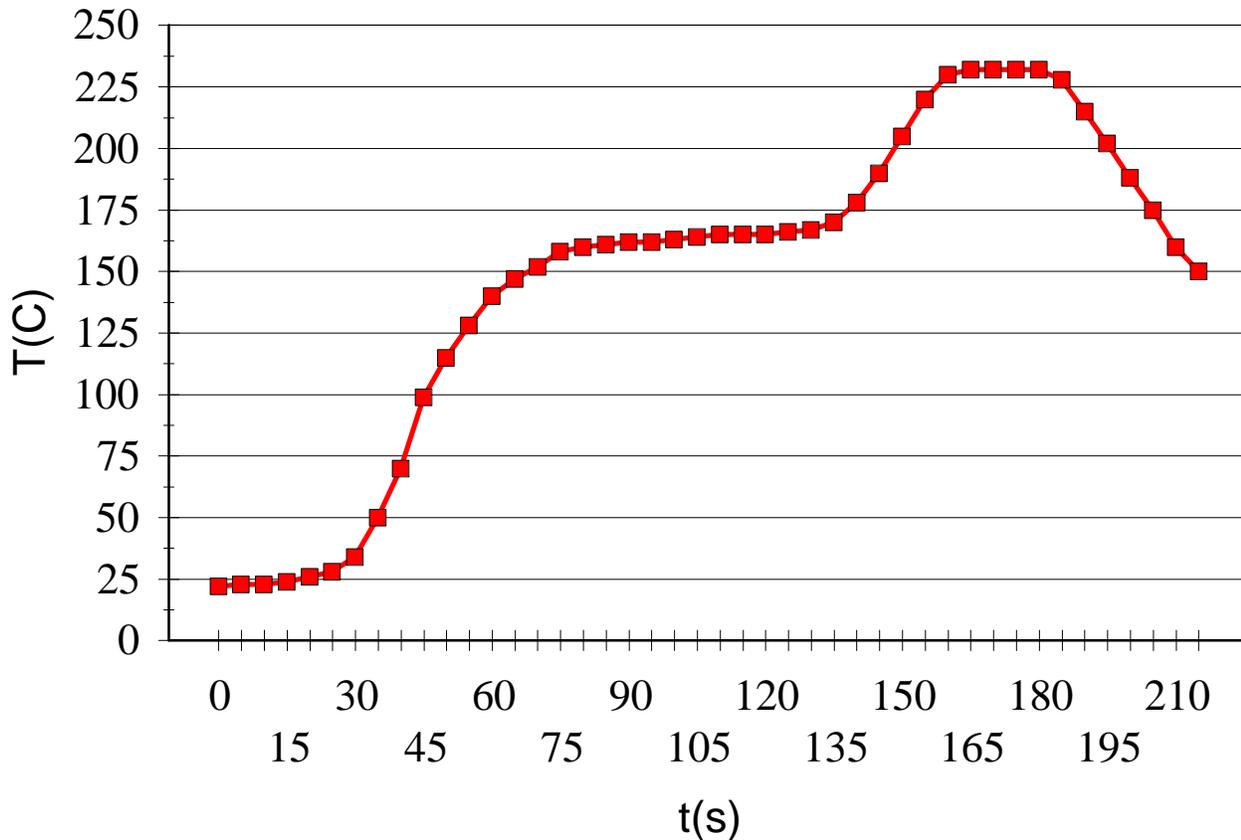
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Appendix A

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Resistance to Solder Conditions



NOTE: Cooling time dependant on method.

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PRODUCT SPECIFICATION



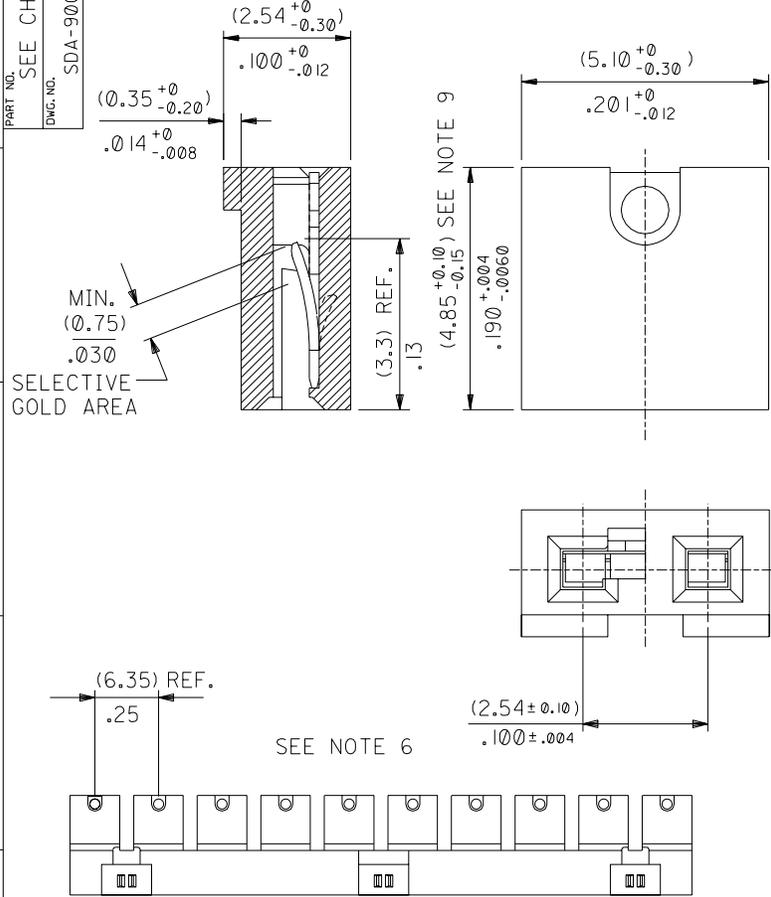
LANGUAGE

English

LETTER	REVISION
A	RELEASED 22 AUGUST 1983 ERO MEML 671
B	REVISED 1 DECEMBER 1983 ECO MEML 198
C	REVISED FOR HIGH TEMP. PRODUCTS ADDITION, ECN NO. E00173 M.W. 90-09-13
D	ADDED VERSION 3 FOR IR REFLOW PROCESS ECN NO. E2001-0110 D.K. 00-07-26
E	CHANGED OPERATING TEMPERATURE VALUE ECN NO. E2002-0081 CBC 01/05/15

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PART NO. SEE CHART
DWG. NO. SDA-90059



- NOTES:
- HOUSING MATERIAL: POLYESTER 30% GLASS FILLED.
 - TERMINAL MATERIAL: PHOSPHOR BRONZE.
 - THIS PART IS STACKABLE, END TO END AND SIDE BY SIDE ON (2.54)/.100 CENTRES.
 - SHUNT WILL ACCEPT (0.64)/.025 SQUARE AND ROUND PINS.
 - MAX. PROBE DIA. (0.9)/.035.
 - PARTS SUPPLIED IN STRIPS OF TEN OR AS LOOSE PIECE (SEE CHART).
 - VERSIONS 90059-0007,90059-0009 PREFERRED IN EUROPE/AMERICA.
 - VERSIONS 90059-0013,90059-0014,90059-0015 PREFERRED IN FAR EAST.
 - DIMENSION APPLIES TO MOULDED HOUSING ONLY. BREAK-OFF (5.10)/.201 MAX.

SUPPLIED AS STRIP/LOOSE	PART No	TERMINAL PLATING	HSG. COLOUR	PACKAGING INNER QTY.	PACKAGING QTY.PER BOX
⑦ STRIP	90059-0007	TIN (5u)/.0002 MIN. OVER NI (1.27u)/.00005 MIN.	BLACK	1000 pcs	20,000 pcs
LOOSE	90059-1007	TIN (5u)/.0002 MIN. OVER NI (1.27u)/.00005 MIN.	BLACK	10,000 pcs	40,000 pcs
STRIP	90059-0009	GOLD (0.38u)/.000015 MIN IN CONTACT AREA OVER NICKEL (1.27u)/.00005 IN CONTACT AREA WITH NICKEL (0.2u)/.000008 OVERALL MIN.	WHITE	1000 pcs	20,000 pcs
LOOSE	90059-1009	GOLD (0.38u)/.000015 MIN IN CONTACT AREA OVER NICKEL (1.27u)/.00005 IN CONTACT AREA WITH NICKEL (0.2u)/.000008 OVERALL MIN.	WHITE	10,000 pcs	40,000 pcs
STRIP	90059-0011	GOLD (0.38u)/.000015 MIN IN CONTACT AREA OVER NICKEL (1.27u)/.00005 IN CONTACT AREA WITH NICKEL (0.2u)/.000008 OVERALL MIN.	BLACK	1000 pcs	20,000 pcs
⑧ STRIP	90059-0012	GOLD (0.76u)/.000030 MIN IN CONTACT AREA OVER NICKEL (1.27u)/.00005 IN CONTACT AREA WITH NICKEL (0.2u)/.000008 OVERALL MIN.	WHITE	1000 pcs	20,000 pcs
⑨ STRIP	90059-0013	0.76um OF Ni UNDER 3 - 5 um OF TIN	BLACK	1000 pcs	20,000 pcs
⑧ STRIP	90059-0014	GOLD (0.1u)/.000004 MIN OVERALL OVER (1.0u)/.00004 MIN NICKEL OVERALL	WHITE	1000 pcs	20,000 pcs
STRIP	90059-0015	GOLD (1.0u)/.00004 MIN IN CONTACT AREA OVER NICKEL (0.76u)/.00003 IN CONTACT AREA WITH NICKEL (0.2u)/.000008 OVERALL MIN.	WHITE	1000 pcs	20,000 pcs
STRIP	90059-0016	GOLD (0.38u)/.000015 MIN IN CONTACT AREA OVER NICKEL (1.27u)/.00005 IN CONTACT AREA WITH NICKEL (0.2u)/.000008 OVERALL MIN.	RED	1000 pcs	20,000 pcs
LOOSE	90059-1011	GOLD (0.38u)/.000015 MIN IN CONTACT AREA OVER NICKEL (1.27u)/.00005 IN CONTACT AREA WITH NICKEL (0.2u)/.000008 OVERALL MIN.	BLACK	10,000 pcs	40,000 pcs
STRIP	90059-0017	TIN (5u)/.0002 MIN. OVER NI (1.27u)/.00005 MIN.	WHITE	1000 pcs	20,000 pcs
STRIP	90059-0018	GOLD (0.38u)/.000015 MIN IN CONTACT AREA OVER NICKEL (1.27u)/.00005 IN CONTACT AREA WITH NICKEL (0.2u)/.000008 OVERALL MIN.	BLUE	1000 pcs	20,000 pcs
STRIP	90059-0020	GOLD (0.1u)/.000004 MIN OVERALL OVER (1.0u)/.00004 MIN NICKEL OVERALL	BLACK	1000 pcs	20,000 pcs
LOOSE	90059-1020	GOLD (0.1u)/.000004 MIN OVERALL OVER (1.0u)/.00004 MIN NICKEL OVERALL	BLACK	10,000 pcs	40,000 pcs

CHANGE TIN/LEAD TO TIN. UPDATE LOOSE PKT. QTY. EC NO. E2004-0584 DRWN: M McS 04/01/05 CHK: / / / APPR: / / /	QUALITY SYMBOLS MAJOR CRITICAL	GENERAL TOLERANCES: (UNLESS SPECIFIED)		SCALE 10:1	DESIGN UNITS <input checked="" type="checkbox"/> mm <input type="checkbox"/> INCH	THIRD ANGLE PROJECTION	DIMENSIONS: <input checked="" type="checkbox"/> mm <input type="checkbox"/> INCH <input type="checkbox"/> mm ONLY		SHT	REV
		4 PLACES ±0. ±.	3 PLACES ±0. ±.	1 PLACE ±0.10 ±.	DRAWN BY & DATE mcc 86/04/08		TITLE: 2.54mm C-Grid Micro Shnt			
		ANGULAR: ± 1°			CHECKED BY & DATE dbrennan 00/07/26					
		DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS			APPROVED BY & DATE mwilite 00/07/26		CAD FILENAME		MATERIAL NO. SEE CHART	DRAWING NO. SDA-90059

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