molex **PRODUCT SPECIFICATION**

MULTICAT™ IN-LINE POWER

Wire-To-Wire AND Wire-To-Board CONNECTOR SYSTEM

Female Crimp Contact	Male Crimp Contact
	
Series: 201846	Series: 201845

Receptacle Housing	Plug Housing
	
Series: 201841	Series: 201840

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A8	EC No: 621534 DATE: 29 / 7 /2019	PRODUCT SPECIFICATION FOR MULTICAT™ IN-LINE POWER CONNECTOR SYSTEM (WtW/WtB)	1 of 26

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Receptacle Housing With CPA	Plug / Receptacle Backshell
	
Series: 201841	Series: 201844

Vertical Header	Right Angle Header
	
Series: 201842	Series: 201843

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1.0 SCOPE

This Product Specification covers the 7.40 mm (.291 inch) centerline (pitch) connector series terminated with 8 to 18 AWG wire using crimp technology with gold plating.

This Product Specification also covers the 7.40 mm (.291 inch) centerline (pitch) printed circuit board (PCB) connector series with gold plating

2.0 PRODUCT DESCRIPTION

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2.1 DESCRIPTION, SERIES NUMBER, AND LINKS

DESCRIPTION	SERIES NUMBER
MULTICAT PLUG HOUSING 1X3 KEY A BLACK	201840
MULTICAT PLUG HOUSING 1X3 KEY B GRAY	
MULTICAT PLUG HOUSING 1X4 KEY A BLACK	
MULTICAT PLUG HOUSING 1X4 KEY B GRAY	
MULTICAT RECEPTACLE HOUSING 1X3 KEY A BLACK	201841
MULTICAT RECEPTACLE HOUSING 1X3 KEY B GRAY	
MULTICAT RECEPTACLE HOUSING 1X4 KEY A BLACK	
MULTICAT RECEPTACLE HOUSING 1X4 KEY B GRAY	
MULTICAT RECEPTACLE HOUSING WITH CPA 1X3 KEY A BLACK	
MULTICAT RECEPTACLE HOUSING WITH CPA 1X3 KEY B GRAY	
MULTICAT RECEPTACLE HOUSING WITH CPA 1X4 KEY A BLACK	
MULTICAT RECEPTACLE HOUSING WITH CPA 1X4 KEY B GRAY	
MULTICAT VERTICAL HEADER 1X3 KEY A BLACK	201842
MULTICAT VERTICAL HEADER 1X3 KEY B GRAY	
MULTICAT VERTICAL HEADER 1X4 KEY A BLACK	
MULTICAT VERTICAL HEADER 1X4 KEY B GRAY	
MULTICAT RIGHT ANGLE HEADER 1X3 KEY A BLACK	201843
MULTICAT RIGHT ANGLE HEADER 1X3 KEY B GRAY	
MULTICAT RIGHT ANGLE HEADER 1X4 KEY A BLACK	
MULTICAT RIGHT ANGLE HEADER 1X4 KEY B GRAY	
MULTICAT BACKSHELL 1X3 BLACK 8-10 AWG	201844
MULTICAT BACKSHELL 1X3 GRAY 8-10 AWG	
MULTICAT BACKSHELL 1X3 BLACK 12-18 AWG	
MULTICAT BACKSHELL 1X3 GRAY 12-18 AWG	
MULTICAT BACKSHELL 1X4 BLACK 8-10 AWG	
MULTICAT BACKSHELL 1X4 GRAY 8-10 AWG	
MULTICAT BACKSHELL 1X4 BLACK 12-18 AWG	
MULTICAT BACKSHELL 1X4 GRAY 12-18 AWG	
DESCRIPTION	**SERIES NUMBER**
MULTICAT MALE CRIMP CONTACT 8-10 AWG	201845
MULTICAT MALE CRIMP CONTACT 12-14 AWG	
MULTICAT MALE CRIMP CONTACT 16-18 AWG	
MULTICAT FEMALE CRIMP CONTACT 8-10 AWG	201846
MULTICAT FEMALE CRIMP CONTACT 12-14 AWG	
MULTICAT FEMALE CRIMP CONTACT 16-18 AWG	

2.2 DIMENSIONS, MATERIALS, PLATINGS

Refer Sales Drawings 2018400000-SD, 2018410000-SD, 2018420000-SD, 2018430000-SD, 2018440000-SD, 2018450010PSD, 2018450020PSD, 2018450040PSD, 2018460010PSD, 2018460020PSD, 2018460040PSD.

2.3 ENVIRONMENTAL CONFORMANCE

To find product compliance information:
a. Go to molex.com
b. Enter the part number in the search field.
c. At the bottom of the page go to “Environmental” to see compliance status.

2.4 SAFETY AGENCY LISTINGS

UL / cUL File Number: E29179

3.0 APPLICABLE DOCUMENTS AND SPECIFICATION

3.1 MOLEX DOCUMENTS

MultiCat In-Line Power Connector System Test summary 2018400000-TS-000
MultiCat In-Line Power Connector System Application summary 2018400000-AS-000
Molex Quality Crimping Handbook Order No. 63800-0029
Molex Solderability Specification SMES-152
Molex Heat Resistance Specification AS-40000-5013
Molex Package Handling Specification 454990100-PK
ATS – Application Tooling Specification*

**Application Tooling Specification for terminals is not provided in this document. ATS for terminals can be available from respective terminal part number page in Molex.com*

3.2 INDUSTRY DOCUMENTS

EIA-364-1000

4.0 ELECTRICAL PERFORMANCE RATINGS

4.1 VOLTAGE

1200 Volts AC/DC

4.2 APPLICABLE WIRES

Wire Gage	Insulation Diameter
8	5.84 mm
10	4.03 mm
12	3.40 mm
14	2.92 mm
16	2.59 mm
18	2.36 mm

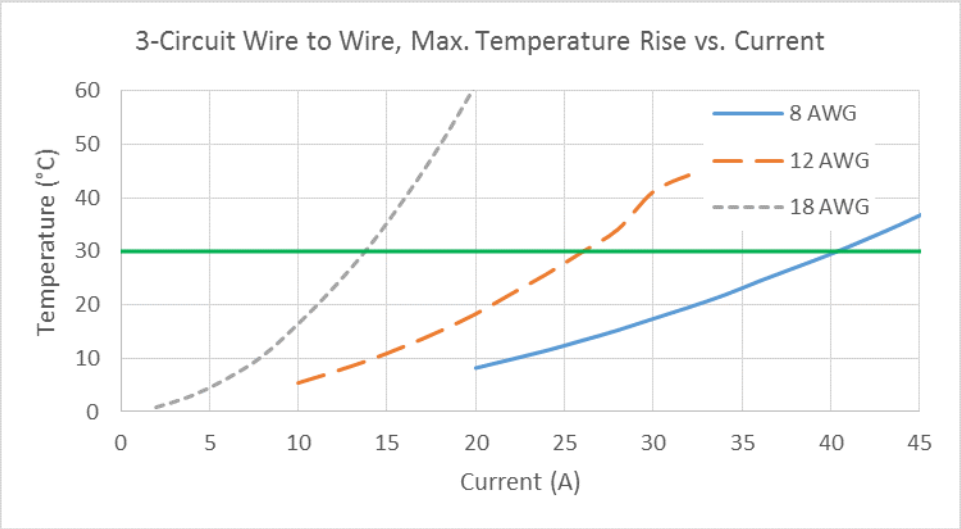
4.3 CURRENT RATING (MAXIMUM AMPERES)

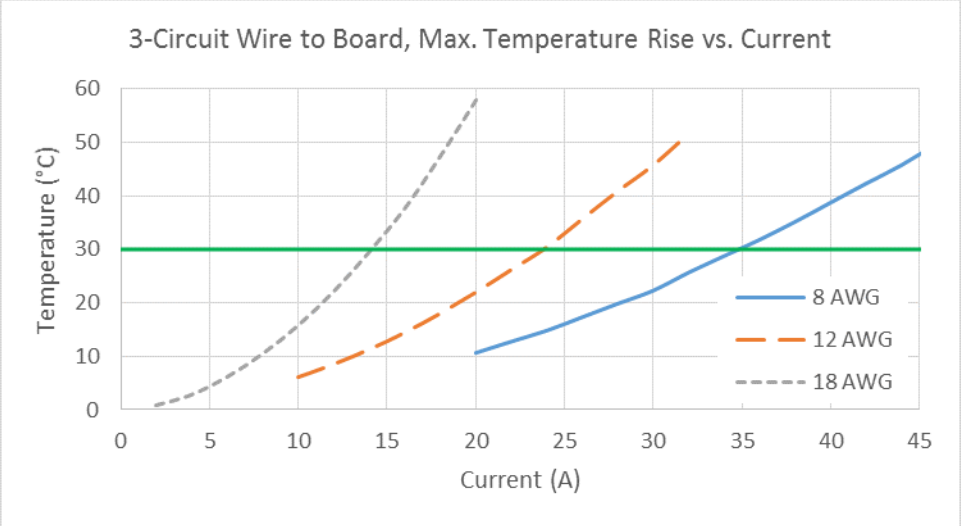
Note: Ratings shown represent *MAXIMUM* current carrying capacity of a fully loaded connector with all circuits powered using **UL1199** stranded wire. Ratings are based on a 30°C maximum temperature rise limit over ambient (see section 6.1.4 for specifications). Current is dependent on connector size, ambient temperature, printed circuit board characteristics and related factors. Actual current rating is application dependent and should be evaluated for each use.

Note: PCB trace design can greatly affect temperature rise results in Wire-to-Board applications.

	3 CIRCUIT		4 CIRCUIT	
	Wire-to-Wire	**Wire-to-Board**	**Wire-to-Wire**	**Wire-to-Board**
8 AWG	40 A	34 A	38 A	34 A
10 AWG	32 A#	28 A#	31 A#	28 A#
12 AWG	26 A	24 A	26 A	24 A
14 AWG	20 A#	20 A#	21 A#	20 A#
16 AWG	16 A#	16 A#	17 A#	16 A#
18 AWG	14 A	14 A	14 A	14 A

#Interpolated





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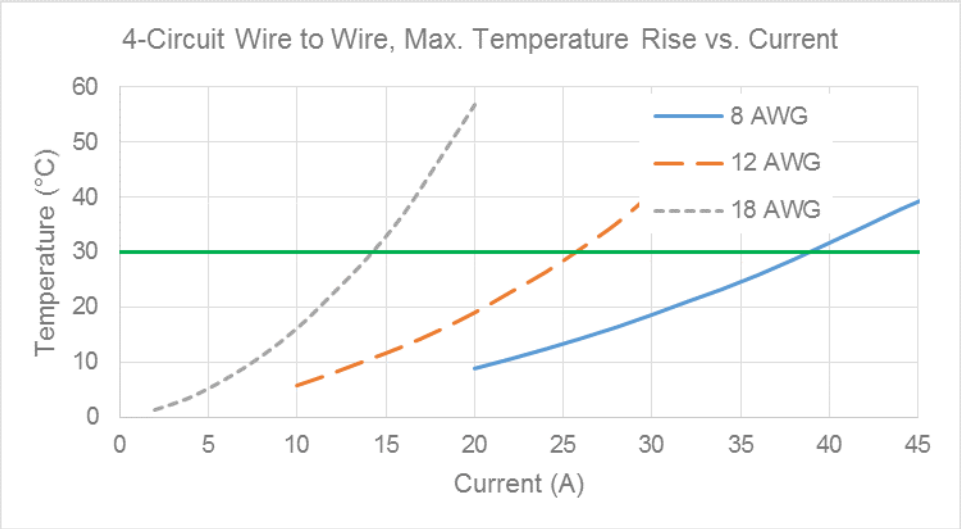

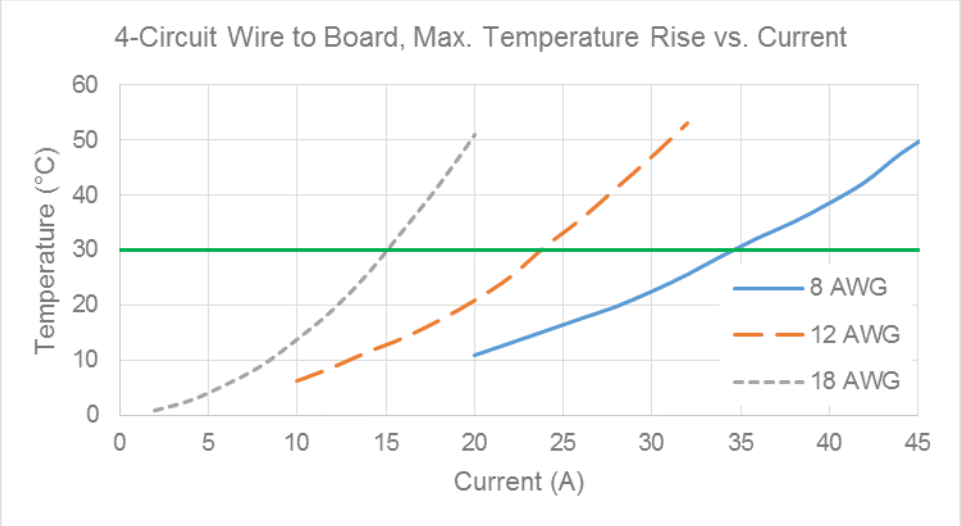

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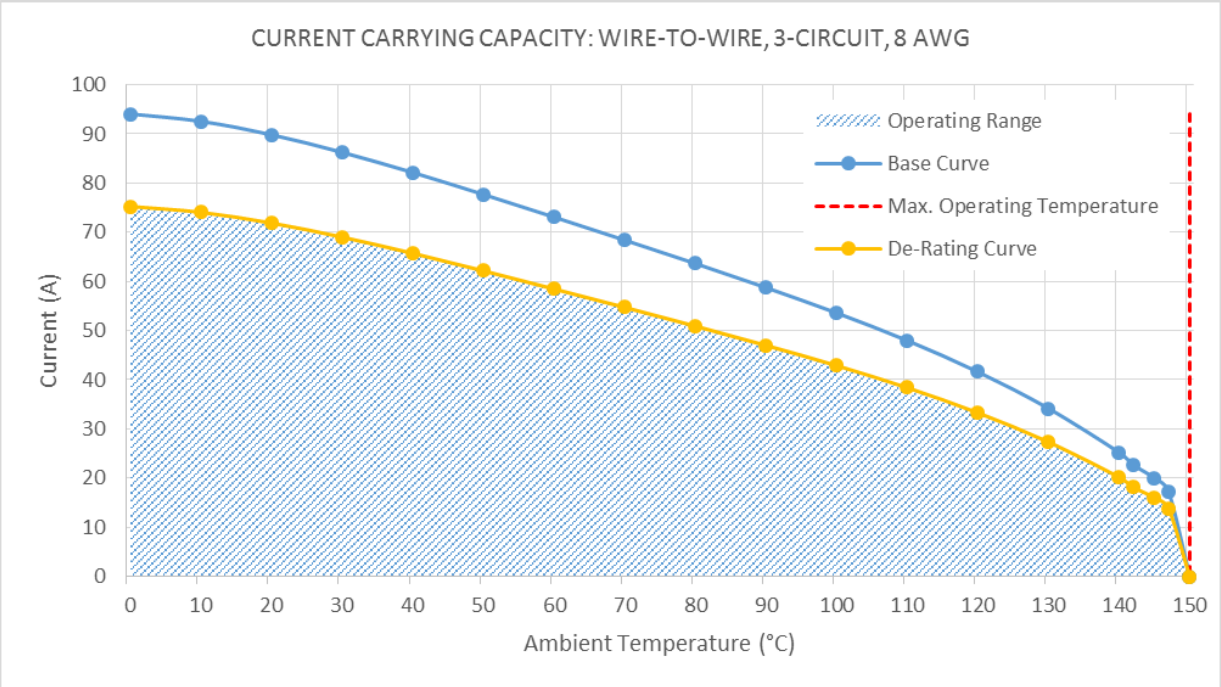

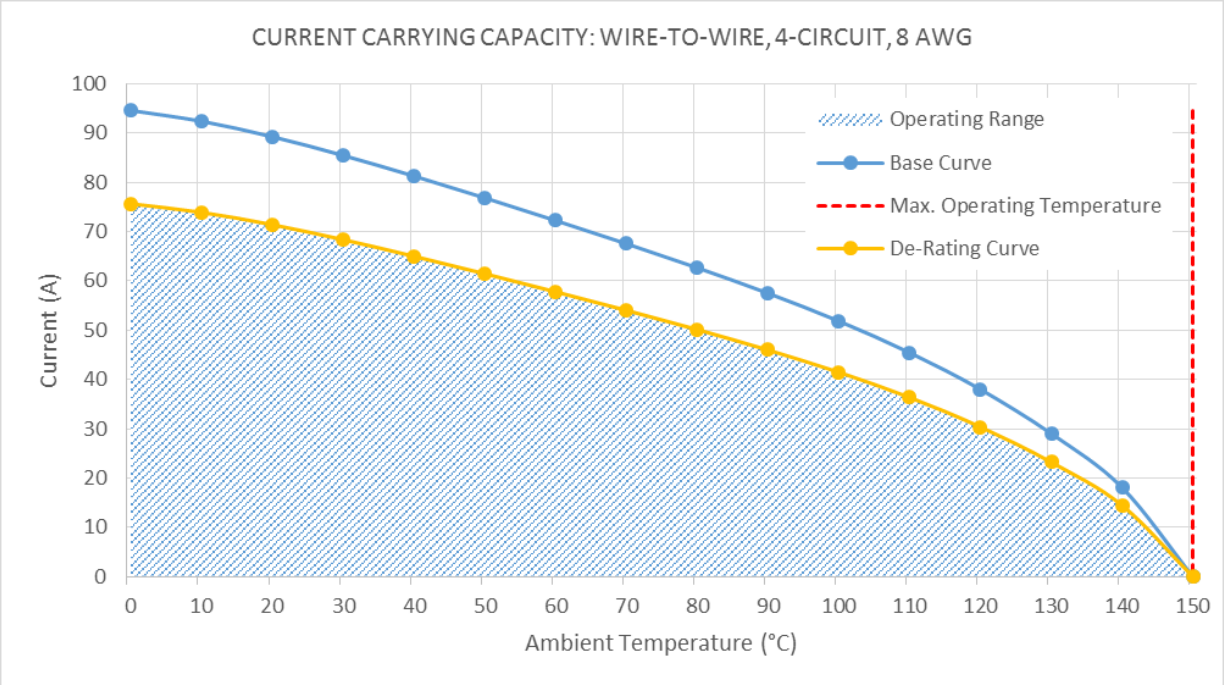

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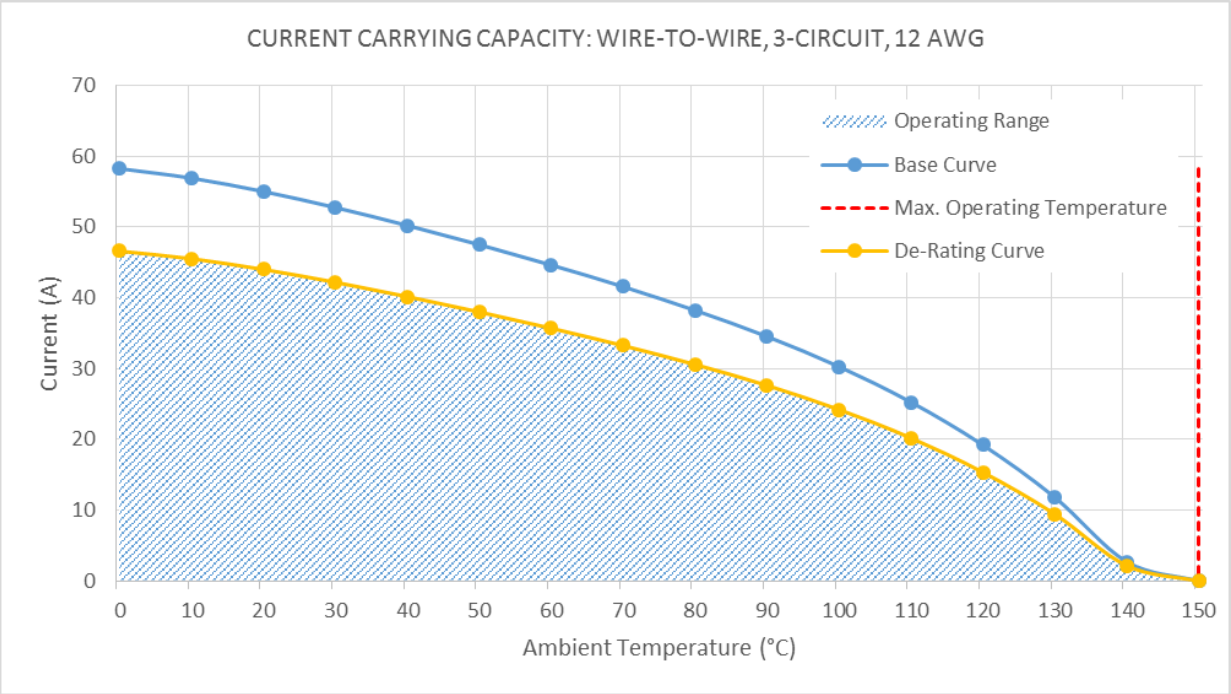
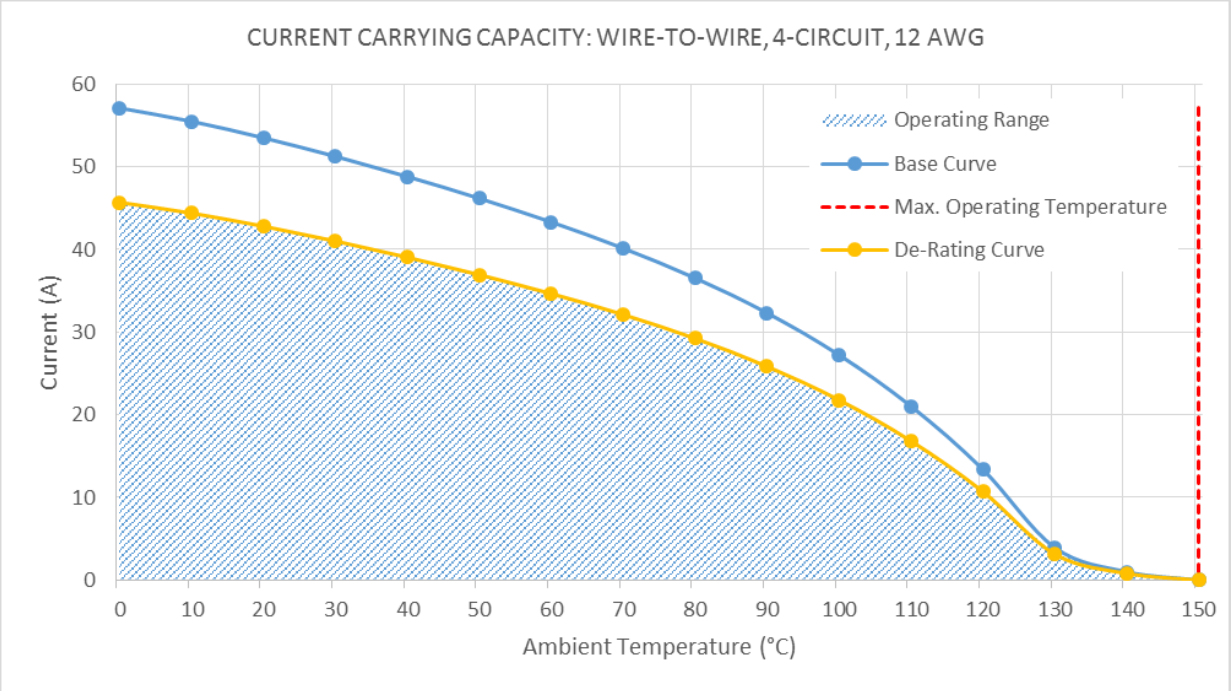
2018400000-PS	PS	000	CD	NCSR	KPRASAD





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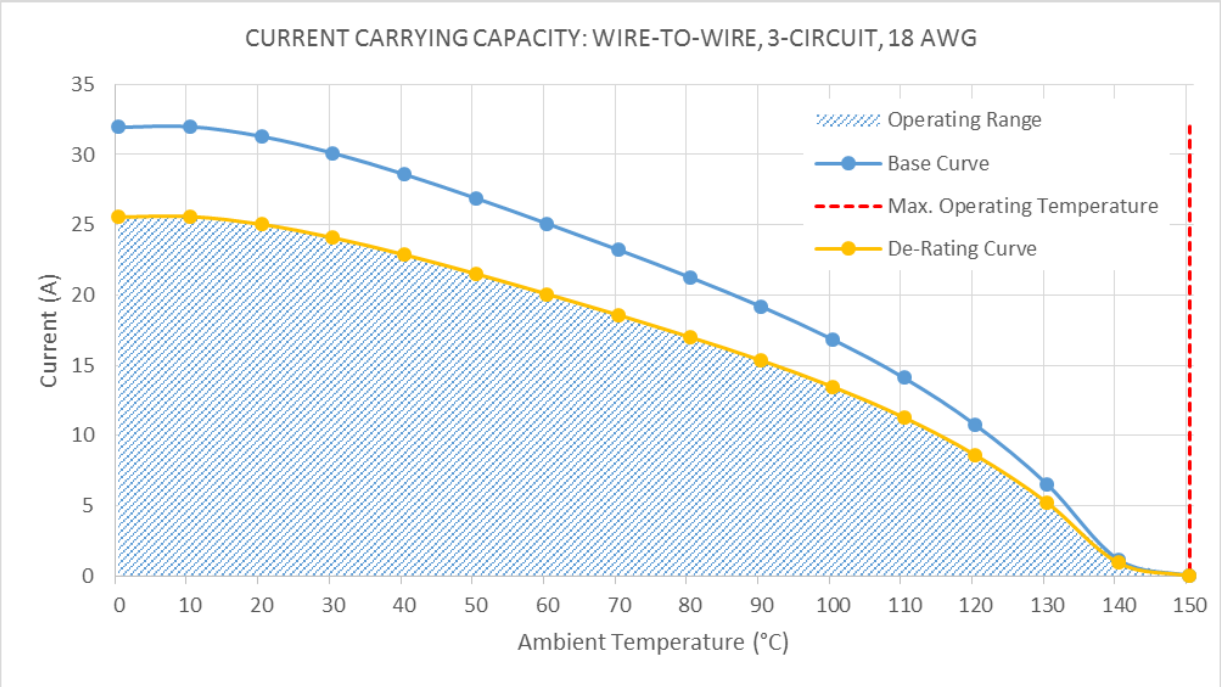

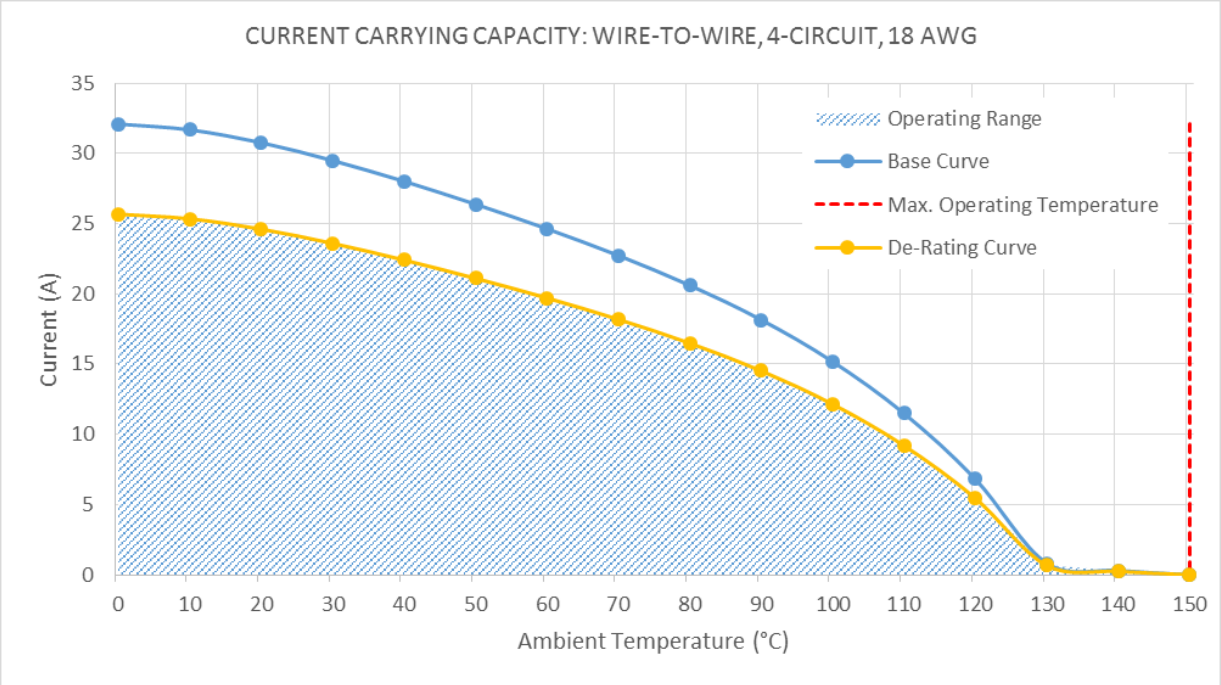

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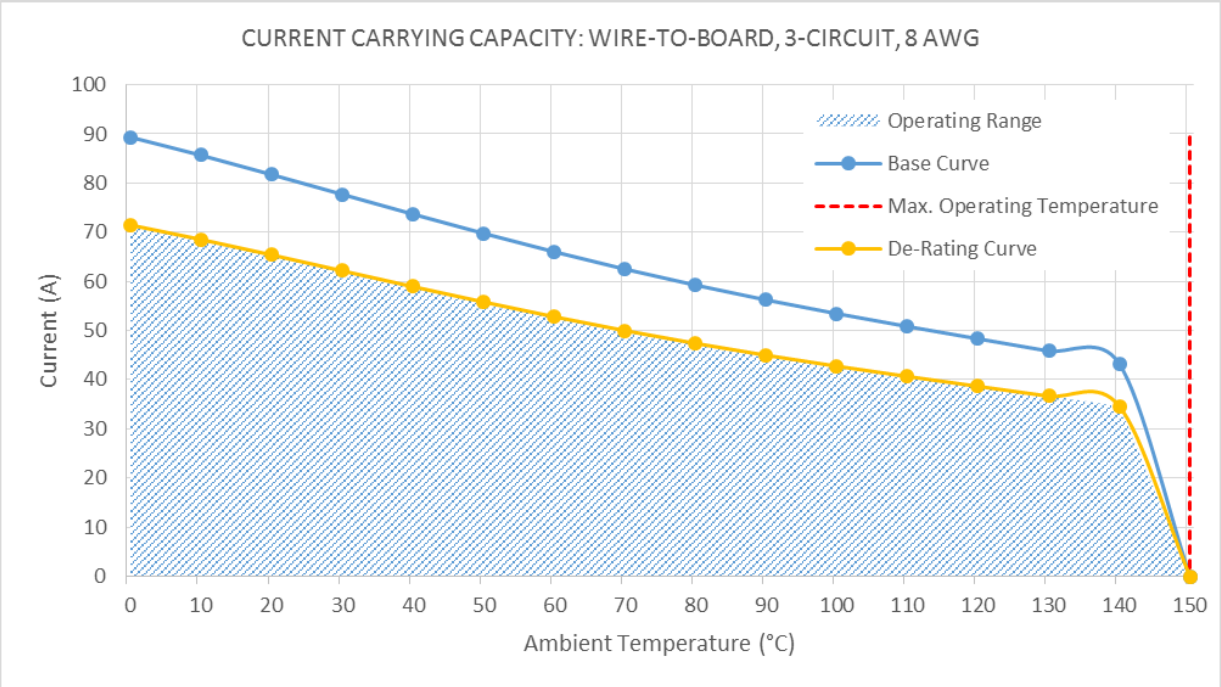

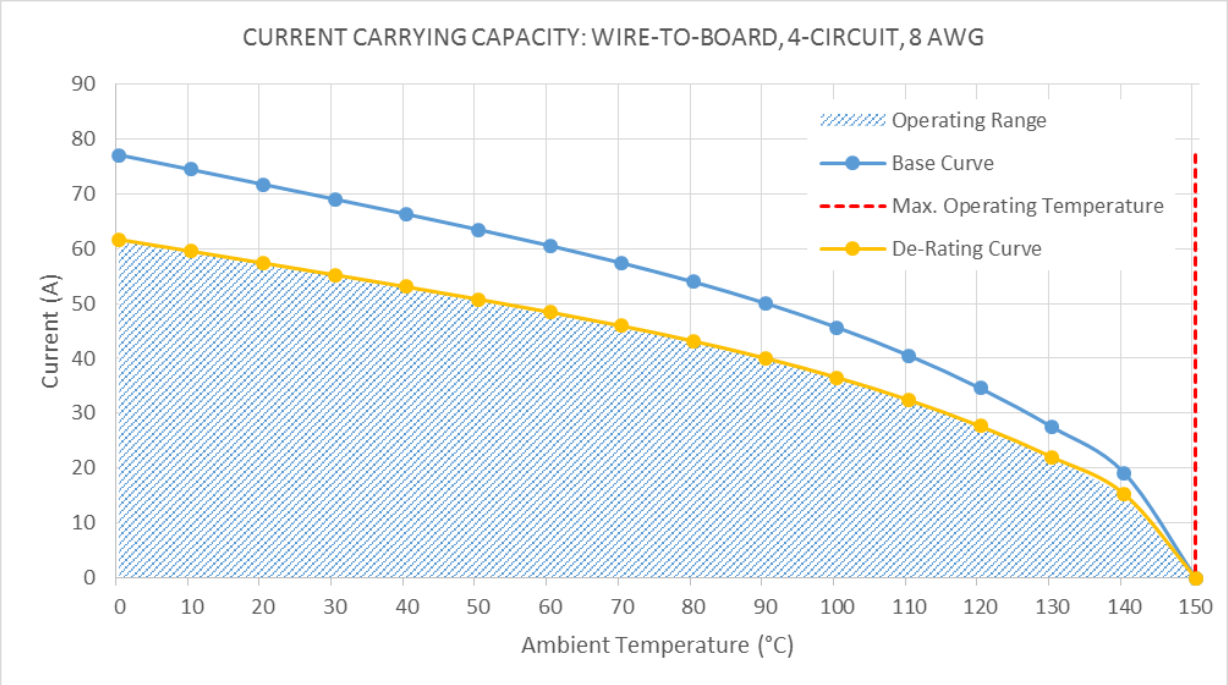

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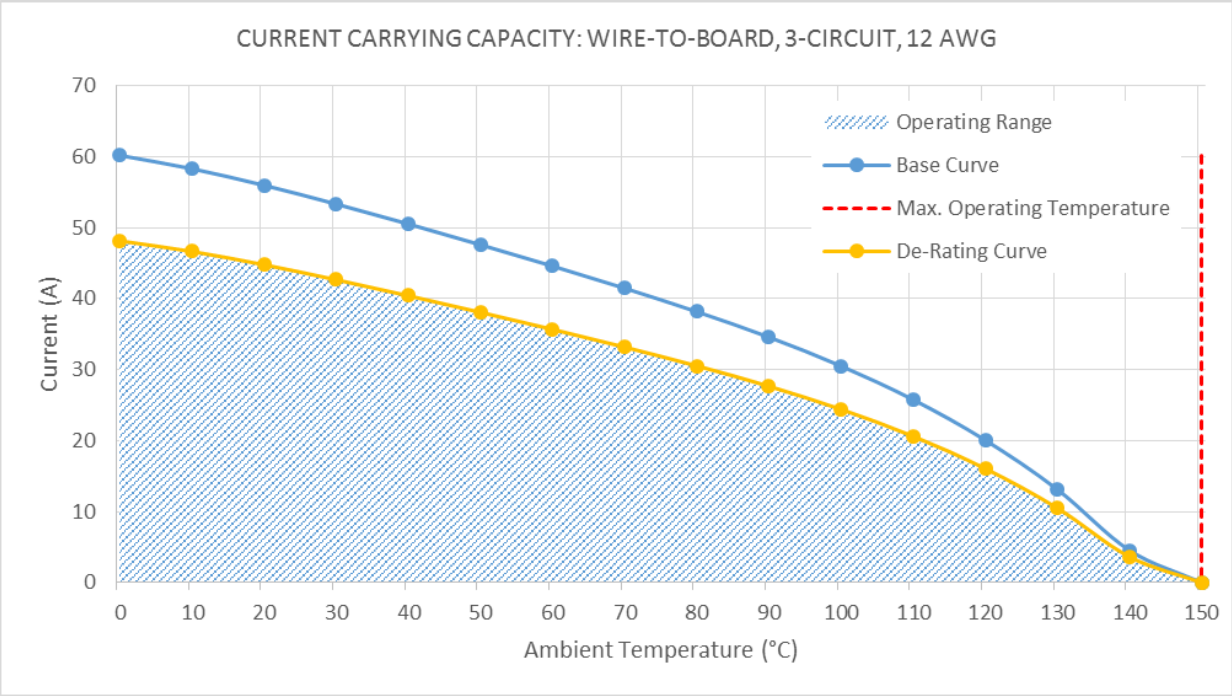

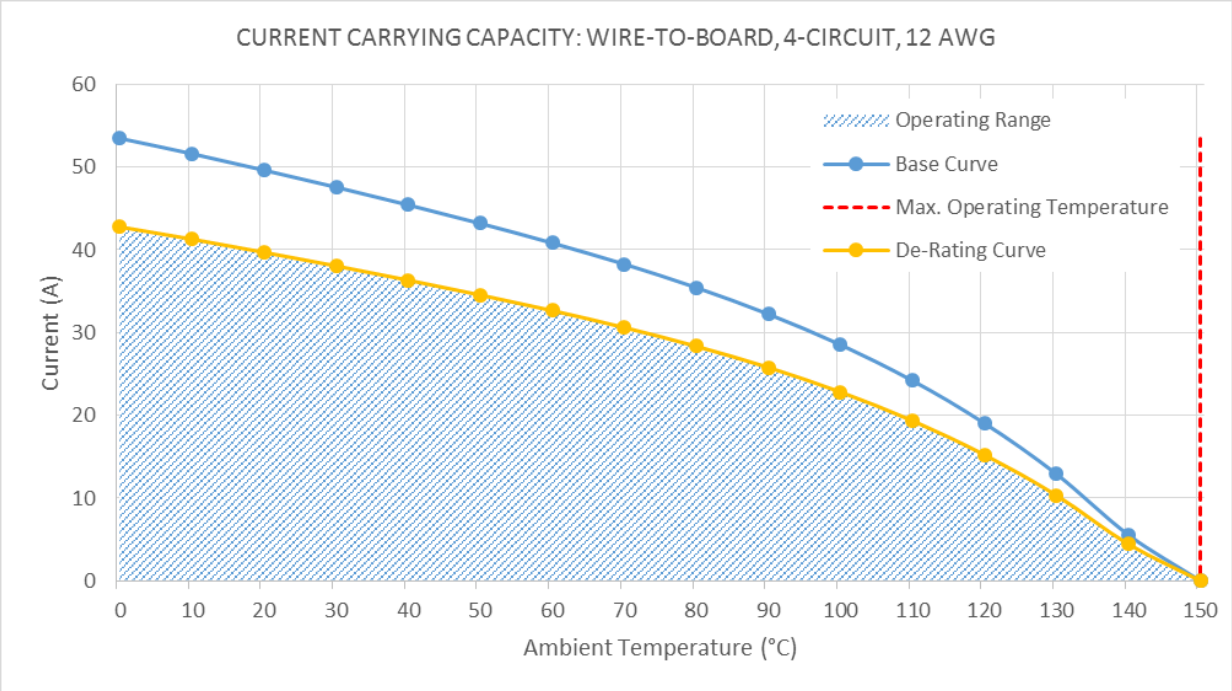

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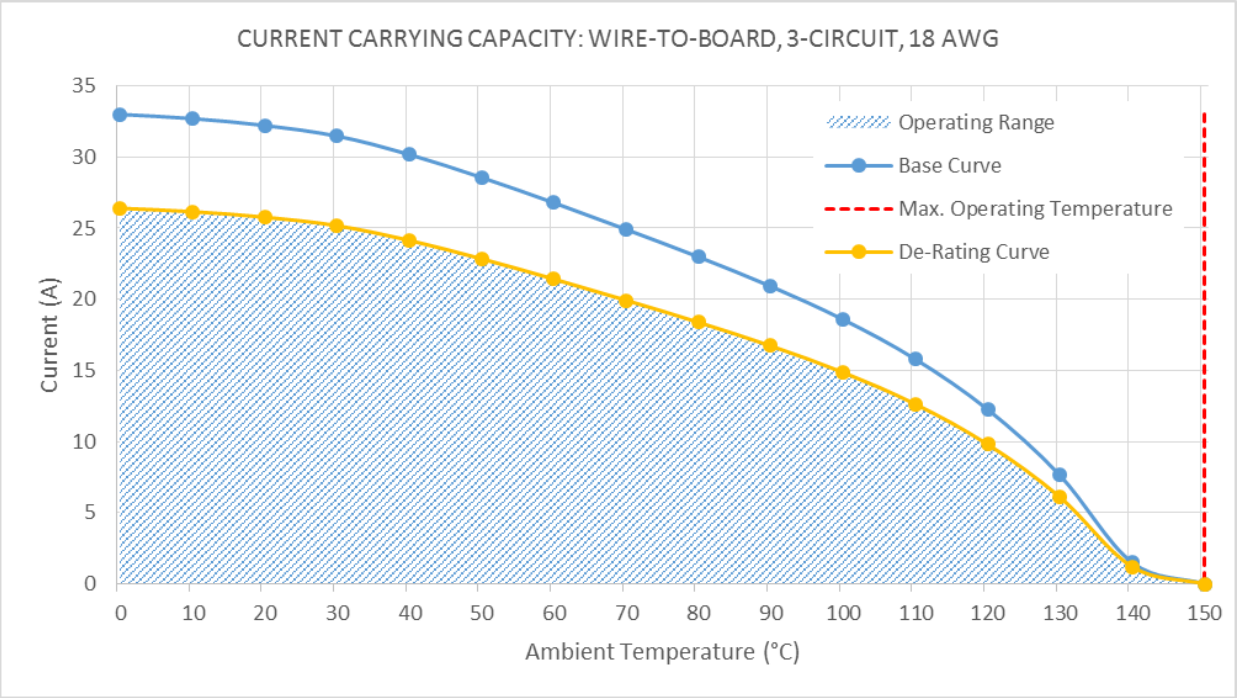

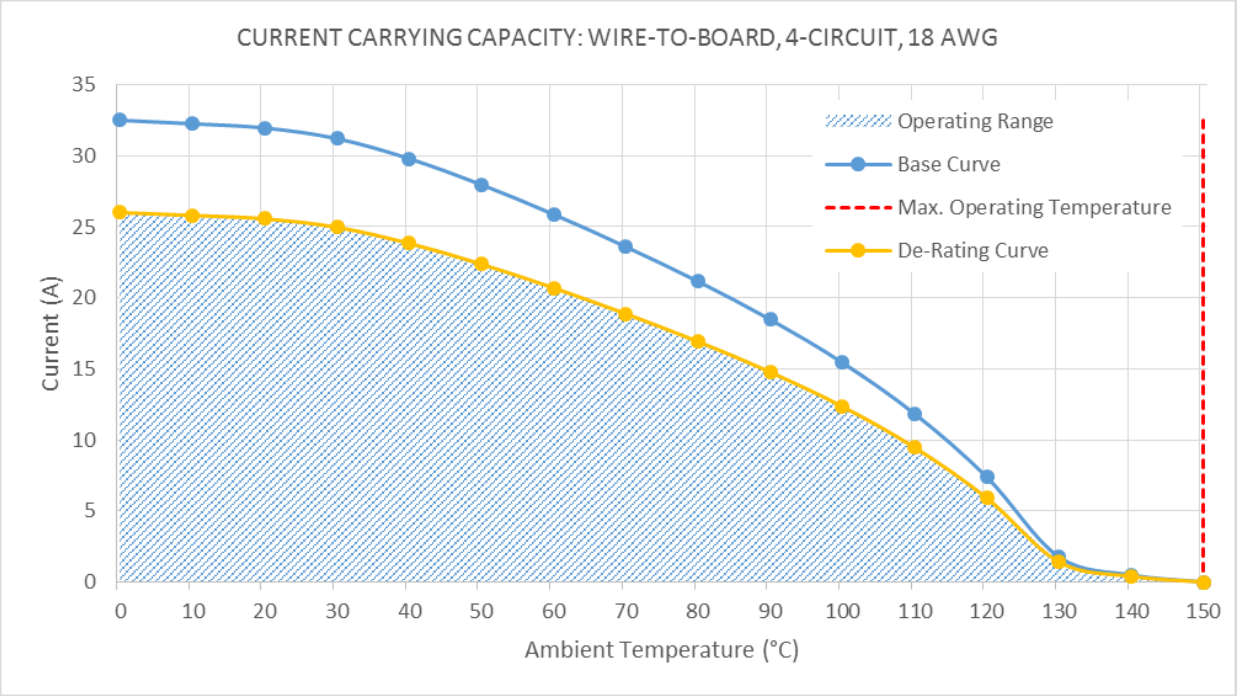

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4.4 TEMPERATURE

Operating Temperature Range : - 40°C to + 150°C

4.5 DURABILITY

Plating Type	Number of Cycles
Gold Plated	500

As tested in accordance with EIA-364-1000 test method (see sec 6.2.7 of this specification). Durability per EIA-364-09

5.0 QUALIFICATION

Laboratory condition, sample selection and test sequences are in accordance with EIA-364-1000.

6.0 PERFORMANCE

6.1 ELECTRICAL PERFORMANCE

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6.1.1	Contact Resistance (Low Level)	Mate connectors: apply a maximum voltage of 20 mV and a current of 100 mA. EIA-364-23B	1 mΩ MAXIMUM [initial]
6.1.2	Insulation Resistance	Mate connectors: apply a voltage of 500 VDC between adjacent terminals and between terminals to ground. EIA-364-21D	1000 MΩ MINIMUM
6.1.3	Dielectric Withstanding Voltage	Mate connectors: apply a voltage of 3400 VAC for 1 minute between adjacent terminals and between terminals to ground. EIA-364-20E, Method B	No breakdown; current leakage < 5 mA
6.1.4	Temperature Rise (Current Profiling)	Mate connectors: measure the temperature rise at the rated current. EIA-364-70B, Method 2	Temperature rise: +30 °C MAXIMUM [over ambient]
6.1.5	Temperature Rise (18-day Stability)	Mate connectors: measure the temperature rise at the rated current after: 96 hours (Steady state) 240 hours (Current cycling) 45 minutes ON and 15 minutes OFF per hour 96 hours (Steady state) Steady state per EIA-364-70B, Method 2. Current cycling per EIA-364-55A, Test Condition A, Test Method 4.	Temperature rise: +30 °C MAXIMUM [over ambient]

6.2 MECHANICAL PERFORMANCE

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT	
6.2.1	Connector Mate and Unmate Forces [Initial cycle] *Latch disabled* (See section 7.0 for additional information)	Mate and unmate connector (male to female) at a rate of 25 ±6 mm (1 ± ¼ inch) per minute. EIA-364-13E, Method A	20 N (4.49 lbf) MAXIMUM mate force per circuit and 5 N (1.12 lbf) MINIMUM unmate force per circuit	
6.2.2	Terminal Insertion Force (into Housing)	Apply an axial insertion force on the terminal at a rate of 25 ± 6 mm (1 ± ¼ inch). EIA-364-05B	40 N (8.99 lbf) MAXIMUM insertion force	
6.2.3	Terminal Retention Force (in Housing)	Axial pullout force on the terminal in the housing at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute. EIA-364-29C, Method C	175 N (39.34 lbf) MINIMUM retention force	
			after High Temperature exposure (see item 6.3.4) 150 N (33.72 lbf) MINIMUM retention force	
6.2.4	Housing Locking Mechanism Strength (after 500 Cycles)	Exert an axial force at a rate of 13mm per minute (0.5 inch per minute) to separate the housing halves. EIA-364-98	200 N (44.96 lbf) MINIMUM retention force	
6.2.5	Wire Pullout Force (Axial)	Apply an axial pullout force on the wire at a rate of 25 ± 6 mm (1 ± ¼ inch). EIA-364-08B	AWG	MINIMUM pullout force
			8	450 N (101.2 lbf)
			10	355 N (79.8 lbf)
			12	275 N (61.8 lbf)
			14	200 N (44.9 lbf)
			16	135 N (30.3 lbf)
			18	90 N (20.2 lbf)
6.2.6	Connector Audible Feedback	The connector lock must provide audible feedback during connector mating. USCAR-2, Rev 6, Paragraph 5.4.7	7 dB over Ambient	
6.2.7	Durability EIA-364-1000 Test Group 7 (See section 8.0)	Mate and unmate connectors up to 500 cycles at a rate of 300 cycles per hour. Actuate housing latch mechanism for each cycle. EIA-364-09	5 mΩ MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No breakdown; current leakage < 5 mA & Visual: No Damage	

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6.2 MECHANICAL PERFORMANCE CONTINUED

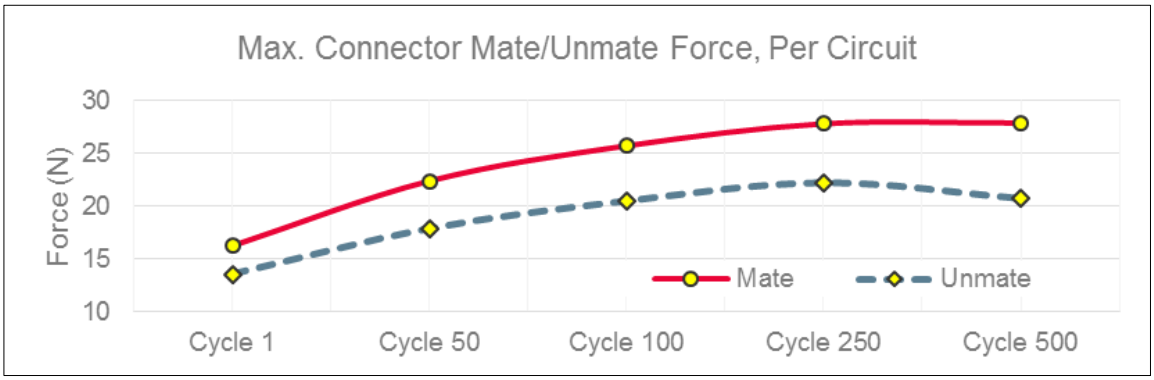
ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6.2.8	Vibration (Random) Shock (Mechanical) EIA-364-1000 Test Group 3 (See section 8.0)	Mate connectors and vibrate per EIA 364-28, test condition VII. (Acceleration 3.1 g) Mate connectors and shock at 50 g's with ½ sine wave (11 milliseconds) shocks in the ±X, ±Y, ±Z axes (18 shocks total). EIA-364-27C, Test Condition A	5 mΩ MAXIMUM (change from initial) & Discontinuity < 1 microsecond
6.2.9	Connector Position Assurance (CPA) Insertion Force	The force to insert the CPA from the preload (as shipped) position to the final position at a rate of 50 ± 6 mm (2 ± ¼inch) per minute.	25 N (5.62 lbf) MAXIMUM insertion force
6.2.10	Connector Position Assurance (CPA) Extraction Force	The force to extract the CPA from the final position to the preload position at a rate of 50 ± 6 mm (2 ± ¼ inch) per minute.	40 N (8.99 lbf) MAXIMUM extraction force
6.2.11	Backshell Latch retention	The force to separate the backshell halves at 25.4 mm/min	200 N (44.96 lbf) MINIMUM retention force
6.2.12	Backshell Latch Insertion	Mate the backshell halves at 25.4 mm/min	20 N (4.49 lbf) MAXIMUM insertion force

6.3 ENVIRONMENTAL PERFORMANCE

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6.3.1	Shock (Thermal) EIA-364-1000 Test Group 2A & 2B (See section 8.0)	Mate connectors; expose to 5 cycles of: Temperature °C — Duration (Minutes) -40 +0/-3 — 30 +25 ±10 — 5 MAXIMUM +150 +3/-0 — 30 +25 ±10 — 5 MAXIMUM EIA-364-32D, Test Condition 4	5 mΩ MAXIMUM (change from initial) & Visual: No Damage
6.3.2	Cyclic Temperature & Humidity EIA-364-1000 Test Group 2A & 2B (See section 8.0)	Mate connectors: cycle per EIA-364-31: 24 cycles at temperature 25 ± 3 °C at 80 ± 5% relative humidity and 65 ± 3 °C at 50 ± 5% relative humidity; dwell time of 1.0 hour; ramp time of 0.5 hours.	5 mΩ MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No Breakdown at 500 VAC & Insulation Resistance: 1000 Megohms MINIMUM & Visual: No Damage
6.3.3	Corrosive Atmosphere: Mixed Flow Gas (MFG) EIA-364-1000 Test Group 4 (See section 8.0)	Mate connectors: Test per EIA-364-65, Class 2A	5 mΩ MAXIMUM (change from initial) & Visual: No Damage
6.3.4	High Temperature Exposure (See section 8.0)	Mate connectors per durability and expose to 1008 hours at 150 ± 2 °C USCAR-2, Class T4	5 mΩ MAXIMUM (change from initial) Visual: No Damage
6.3.5	Solderability	Per SMES-152	Solder coverage: 95% MINIMUM (per SMES-152)
6.3.6	Solder Resistance	Dip connector terminal tails in solder: Solder Duration: 10 ± 0.5 seconds; Solder Temperature: 245 ± 5 °C	Visual: No Damage to insulator material

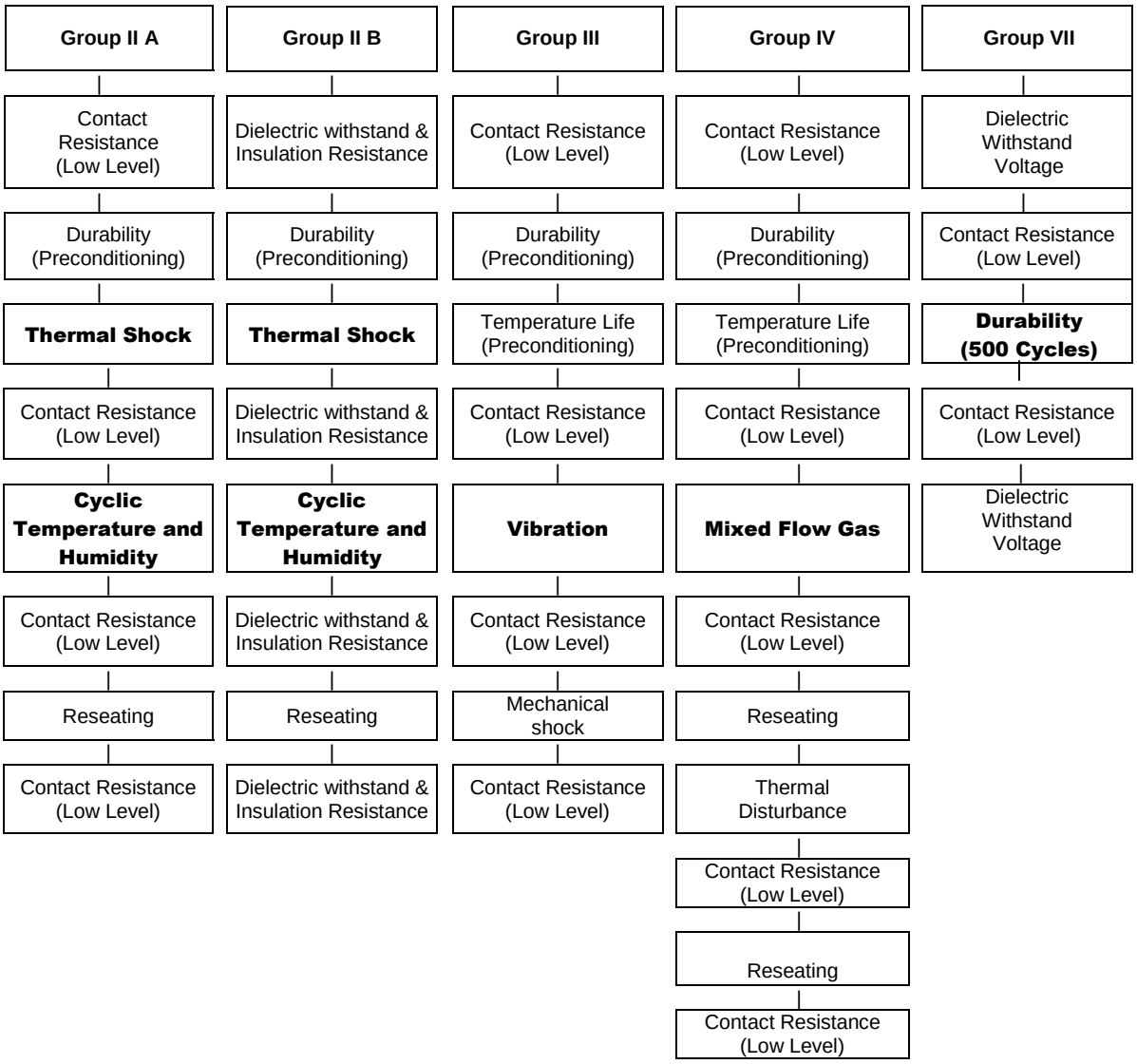
7.0 SUPPLEMENTARY INFORMATION

Connector mate/unmate [Item 6.2.1]



8.0 TEST SEQUENCE GROUPS

Reliability Test Sequences per EIA-364-1000



USCAR

- Contact Resistance (Low Level)
- Durability (10 cycles)
- Contact Resistance (Low Level)
- High Temperature 150°C for 1008 hours
- Contact Resistance (Low Level)
- Terminal Retention (in Receptacle)

- Temperature Rise
- T-Rise Profiling
- Steady State Temperature Rise

Individual Tests

- Connector Mate / Un-mate Force
- Crimp Terminal Insertion force
- Crimp Terminal Retention force
- Housing Locking Mechanism Strength
- Wire Pullout force (Axial)
- Connector Audible Feedback
- Connector Position Assurance (CPA) Insertion Force
- Connector Position Assurance (CPA) Extraction Force
- Backshell Latch Retention
- Backshell Latch Insertion

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9.0 SOLDER INFORMATION

Per SMES-152 and AS-40000-5013
*These specifications establish standard solderability test methods used to evaluate a products ability to accept molten solder. Solder Process Temperatures and Reflow Solder Profiles will vary based on application, equipment, solder paste, PCB thickness, etc.

9.1 SOLDER PROCESS TEMPERATURES *

Wave Solder Temperature: 245°C Maximum

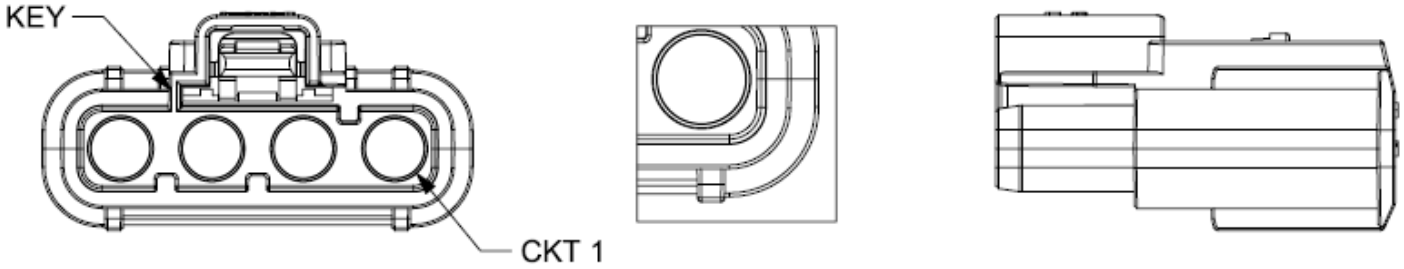
Molex Solderability Specification SMES-152 (Click Here)

10.0 PACKAGING

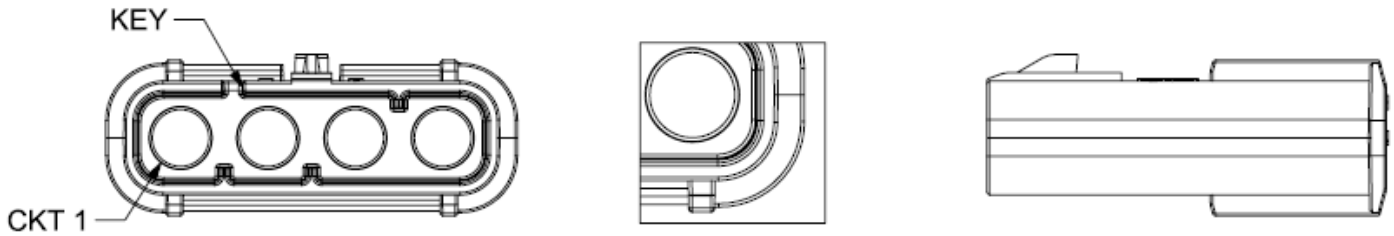
Parts shall be packaging to protect the parts from damage during standard shipping, storage, and handling. Refer Molex.com specific part number webpage to get the exact packaging document for that item.

11.0 POLARIZATION AND KEYING OPTIONS

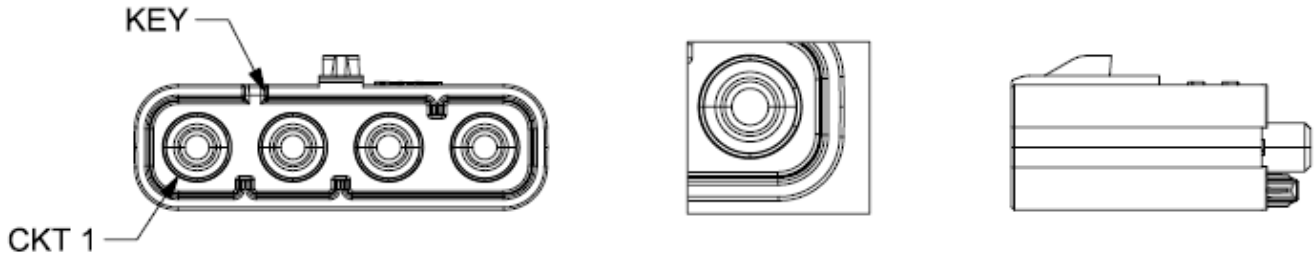
11.1 Receptacle Housing with CPA & w/o CPA (Series: 201841)



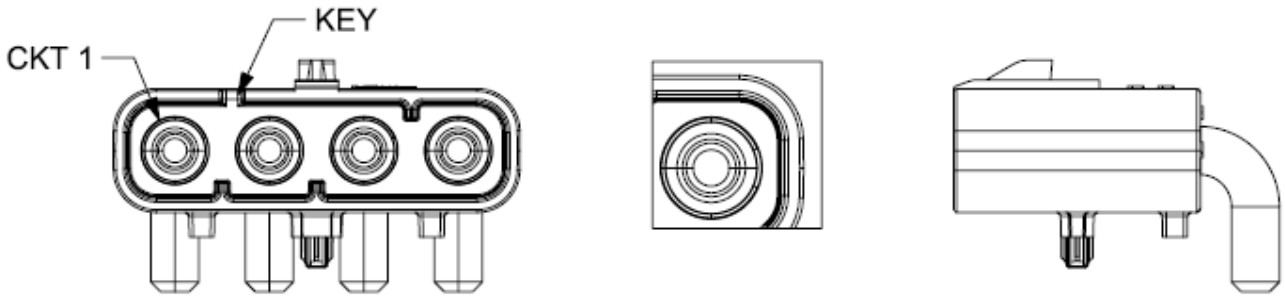
11.2 Plug Housing (Series: 201840)



11.3 Vertical Header (Series: 201842)



11.4 Right Angle Header (Series: 201843)



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