





MICRO-FIT DUAL ROW CONNECTOR SYSTEM



Female Crimp Terminal	Male Crimp Terminal
	
Series: 43030 , 45773	Series: 43031 43031-0*** for Standard Plug 43031-5*** for TPA Plug
Receptacle, Dual Row	Plug, Dual Row
	
Series: 43025	Series: 43020

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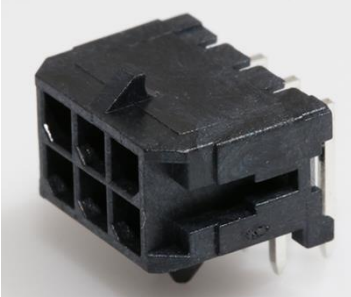

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TPA Receptacle Housing	TPA Plug Housing
	
Series: 172952	Series: 203632

TPA for 172952 and 203632

Series: 172953

Right Angle Header	Vertical Header
	
Series: 43045	Series: 43045 , 44067

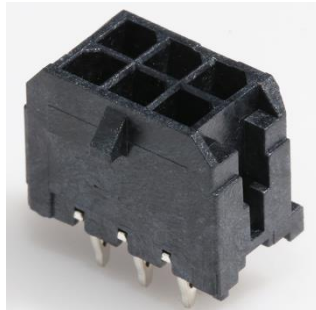
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CPI Header



Series: [44914](#)

Test Plug



Series: [44242](#)

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PRODUCT SPECIFICATION

1.0 SCOPE

This Product Specification covers the performance requirements and test methods for Micro-Fit 3.0 mm (.118 in) centerline (pitch) wire to board and wire to wire connector systems terminated with 18 to 30 AWG stranded copper wire using crimp technology with Tin or Gold plating.

2.0 PRODUCT DESCRIPTION

2.1 DESCRIPTIONS, SERIES NUMBERS, AND LINKS

DESCRIPTION	SERIES NUMBER
Female Crimp Terminal	43030
Female Crimp Terminal, gold plated, with lube	45773
Male Crimp Terminal (43031-0*** for standard plug, 43031-5*** for TPA plug)	43031
Receptacle Housing	43025
Plug Housing, with Panel Mount Ears	43020
Plug Housing, without Panel Mount Ears	
TPA Receptacle Housing	172952
TPA Plug Housing, with Panel Mount Ears	203632
TPA Plug Housing, without Panel Mount Ears	
TPA (for 172952 & 203632)	172953
Header, Right Angle -SMT or Thru Hole PCB Tail -PCB Snap-in Plastic Retention Peg -PCB Press-fit / Solderable Metal Retention Clip -PCB Solder Tab	43045
Header, Vertical -SMT, Thru Hole, or Thru Hole Kinked PCB Tail -PCB Polarizing Peg -PCB Press-fit / Solderable Metal Retention Clip -PCB Solder Tab	
Header, Vertical, Thru Hole Kinked PCB Tail (long p.c. tail)	44067
CPI Header, with PCB Polarizing Peg	44914
Test Plug (recommended for continuity testing only)	44242

Other products conforming to this specification are noted on the individual drawings.

2.2 DIMENSIONS, MATERIALS, PLATING AND MARKINGS

See the appropriate sales drawings for the information on dimensions, materials, platings and markings.

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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 FILE LISTINGS

UL: E29179

CSA: LR19980

IEC 61984 Certification: Tested to and found in compliance with IEC 61984. NRTL type examination certificate available from Molex upon request. Contact Molex Safety Agency team for questions regarding certification on specific part numbers.

Note: Safety agency approval is granted for the connector assembled with its associated terminals. The approval is documented in the agency file/license by the series number of the housing only. The terminal series number will not appear in the agency file/license as a stand-alone approved product. As a result, only the housings may bear the agency certification mark. Please note that even though the housings are marked as approved product, the safety agency approval does not apply if any terminals are installed other than those used to establish the rating.

3.0 APPLICABLE DOCUMENTS AND TEST STANDARDS

3.1 MOLEX DOCUMENTS

See series specific sales drawings and the other sections of this specifications for the necessary referenced documents and specifications.

- [Micro-Fit Test summary TS-43045-001](#)
- [Micro-Fit Test summary TS-43045-002](#)
- [Micro-Fit Test summary TS-43045-003](#)
- [Micro-Fit Test summary 430450004-TS](#)
- [Micro-Fit Test summary 430450005-TS](#)
- [Micro-Fit Test summary 430450006-TS](#)
- [Micro-Fit Test summary 2036320000-TS](#)
- [Molex Quality Crimping Handbook Order No. 63800-0029](#)
- [Molex Solderability Specification SMES-152](#)
- [Molex Heat Resistance Specification AS-40000-5013](#)
- [Micro-Fit Over molding Specification 430250000-AS](#)
- [Micro-Fit Panel Cut-out access AS-43045-001](#)
- [Molex Moisture Technical Advisory AS-45499-001](#)
- [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

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3.2 INDUSTRY DOCUMENTS

EIA-364-1000
 UL-1977
 CSA STD. C22.2 NO. 182.3-M1987
 IEC / EN 61984

4.0 ELECTRICAL PERFORMANCE RATINGS

4.1 SAFETY AGENCY RATINGS

Series	Agency Voltage Rating (AC RMS or DC)			Agency Current Rating (Single Circuit) (Amps)		
	UL	CSA	IEC	UL	CSA	IEC
43020	600	600	600	5	7	5
43025	600	600	600	8	8	5
172952	600	600	pending	5	7	pending
43045	600	600	600	8	8	5
44914	600	600	600	8	8	5
203632	600	600	600	5	7	5

Current ratings are maximum and may vary depending on wire size, circuit count, and end-use application. Further testing may be required in the end-use application.

* Voltage rating based on UL 1977. Maximum voltage allowed may vary dependent upon “End Use Application”. Refer to the applicable end use standard for additional information on Voltage, Creepage and Clearance requirements.

4.2 APPLICABLE WIRES

STRANDED COPPER WIRE SIZE

18 AWG
 0.75 mm²
 20 AWG
 22 AWG
 24 AWG
 26 AWG
 28 AWG
 30 AWG

MAX. OUTSIDE INSULATION DIAMETER

1.85 mm (.073 INCH)
 1.85 mm (.073 INCH)
 1.85 mm (.073 INCH)
 1.85 mm (.073 INCH)
 1.85 mm (.073 INCH)
 1.27 mm (.050 INCH)
 1.27 mm (.050 INCH)
 1.27 mm (.050 INCH)

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4.3 CURRENT DERATING**

CURRENT DERATING REFERENCE INFORMATION								
AWG and Metric Wire Size	2-circuit		6-circuit		12-circuit		24-circuit	
	W-W	W-B	W-W	W-B	W-W	W-B	W-W	W-B
	Amps	Amps	Amps	Amps	Amps	Amps	Amps	Amps
18 AWG	7	8.5	6	6.5	5.5	5.5	5	5
20 AWG or 0.75mm ²	6.5	7	5	* 5.5	4.5	* 5	* 4	4.5
22 AWG	5.5	* 6	* 4	* 4.5	* 3.5	* 4	* 3	* 3.5
24 AWG	5	5.5	4	* 4.5	3	* 3.5	* 2	* 3
26 AWG	4	4.5	3	* 4	2.5	* 3.5	* 1.5	2.5
28 AWG	3	* 4	* 2	* 3	* 2	* 3	* 1	* 2
30 AWG	3	3.5	2	* 3	2	* 2.5	* 1	1

- 1) Values are for REFERENCE ONLY.
- 2) Current deratings are based on not exceeding 30°C Temperature Rise.
- 3) Testing conducted using tinned stranded copper wire and tin-plated terminals.
- 4) PCB trace design can greatly affect temperature rise results in Wire-to-Board applications.
- 5) Data is for all circuits powered.
- 6) * indicates interpolated information.
- 7) **W-W:** Wire-to-Wire **W-B:** Wire-to-Board

***Current rating is application dependent and may be affected by the wire rating such as listed in UL-60950-1. Each application should be evaluated by the end user for compliance to specific safety agency requirements. The ratings listed in the chart above are per Molex test method based on a 30°C maximum temperature rise over ambient temperature and are provided as a guideline. Testing conducted with tinned copper conductor stranded wire. Appropriate de-rating is required based on circuit size, ambient temperature, copper trace size on the PCB, gross heating from adjacent modules/components and other factors that influence connector performance. Wire size, insulation thickness, stranding, tin coated or bare copper, wire length & crimp quality are other factors that influence current rating.*

4.4 CURRENT FOR TEST PLUG 44242

2.5 Amps Maximum (Pogo pin current capacity)
 Test plugs are for testing purposes only and not intended for continuous use.

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4.5 TEMPERATURE

Minimum temperature (operating* and non-operating): -40°C

Maximum temperature (operating* and non-operating):

Housing Type	Crimp Terminal/Header Pin Finish	
	Select Gold Plated	Tin Plated
Glow Wire Capable Receptacles and Plugs	125°C	105°C
Header	125°C	
Non-Glow Wire Capable Receptacles and Plugs	105°C	

*Operating temperature values include 30°C temperature rise at rated current.

Rated Field Temperature and Field Life: 65°C for 10 years (based on EIA-364-1000, table 8)

Note: Temperature Life Test duration (Section 6.3. item 21) is based on assumption that the contact spends its entire life at the rated field maximum temperature (based on EIA-364-1000, table 8)

4.6 DURABILITY

Tin/ Gold plated: 30 mating cycles

As tested in accordance with EIA-364-1000 test method (see Sec. 6.2 item 10 of this specification). Durability per EIA-364-09

4.7 GLOW WIRE

Headers: All 43045 and 44067 series headers are glow wire capable.

Receptacles and Plugs: See individual drawings for Glow Wire Capable part numbers.

Representative samples were tested and found compliant with EN 60695- 2-11-2001 / IEC 60695-2-11-2000 Glow Wire Test Methods for End-Products. These were additionally investigated for compliance with EN 60335-1 / IEC 60335-1 750C / 2 sec with no flaming. VDE Test report available upon request.

5.0 QUALIFICATION

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

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6.0 PERFORMANCE

6.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Contact Resistance (Low Level)	Mate connectors: apply a maximum voltage of 20 mV and a current of 100 mA. (Does not include wire resistance)	10 milliohms MAXIMUM [initial]
2	Contact Resistance of Wire Termination (Low Level)	Terminate the applicable wire to the terminal and measure wire using a voltage of 20 mV and a current of 100 mA.	5 milliohms MAXIMUM [initial]
3	Insulation Resistance	Unmate & unmount connectors: apply a voltage of 500 VDC between adjacent terminals and between terminals to ground.	1000 Megohms MINIMUM
4	Dielectric Withstanding Voltage	Unmate connectors: apply a voltage of {two times the rated voltage plus 1000 volts} VAC for 1 minute between adjacent terminals and between terminals to ground.	No breakdown; current leakage < 5 mA
5	Capacitance	Measure between adjacent terminals at 1 MHz.	2 picofarads MAXIMUM
6	Temperature Rise (via Current Cycling)	Mate connectors: measure the temperature rise at the rated current after: 1) 96 hours (steady state) 2) 240 hours (45 minutes ON and 15 minutes OFF per hour) 3) 96 hours (steady state)	Temperature rise: +30°C MAXIMUM

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6.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
7	Connector Mate and Unmate Forces	Mate and unmate connector (male to female) at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inch) per minute. (Per circuit)	8.0 N (1.8 lbf) per circuit MAXIMUM mate force & 2.4 N (0.5 lbf) per circuit MINIMUM unmate force
8	Crimp Terminal Retention Force (in Housing)	Axial pullout force on the terminal in the housing at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inch) per minute.	24.5 N (5.5 lbf) MINIMUM retention force
9	Crimp Terminal Insertion Force (into Housing)	Apply an axial insertion force on the terminal at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inch) per minute.	14.7 N (3.3 lbf) MAXIMUM insertion force
10	Durability	Mate connectors up to 30 cycles at a maximum rate of 10 cycles per minute.	20 milliohms MAXIMUM (change from initial)
11	Vibration (Random)	Mate connectors and vibrate per EIA 364-28, test condition VII, Letter D. Test Duration: 15 minutes each axis.	20 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond
12	Shock (Mechanical)	Mate connectors and shock at 50 g's with $\frac{1}{2}$ sine wave (11 milliseconds) shocks in the $\pm X, \pm Y, \pm Z$ axes (18 shocks total). (Per EIA-364-27, Test Condition H)	20 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond
13	Wire Pullout Force (Axial) (Wire from Terminal)	Apply an axial pullout force on the wire at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inch) per minute.	MINIMUM pullout force 18 awg: 63.0 N (14.1 lbf) 0.75 mm ² : 63.0 N (14.1 lbf) 20 awg: 57.8 N (13.0 lbf) 22 awg: 35.6 N (8.0 lbf) 24 awg: 22.2 N (5.0 lbf) 26 awg: 13.3 N (3.0 lbf) 28 awg: 8.9 N (2.0 lbf) 30 awg: 6.6 N (1.5 lbf) Values may vary depending on crimp tooling. Refer to Molex Applicator Tooling Specification.

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6.2 MECHANICAL REQUIREMENTS CONTINUED

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
14	Normal Force	Apply a perpendicular force.	2.7 N (0.6 lbf) MINIMUM
15	Pin to Header Retention	Apply axial push force to pin at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	13.7 N (3.1 lbf) MINIMUM pushout force
16	Thumb Latch to Ramp Yield Strength	Full mate and then Unmate the connectors at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	Wire-To-Board (receptacle to header): 58.0 N (13.0 lbf) MINIMUM Yield Strength
			Wire-To-Wire (receptacle to plug): 45.0 N (10.1 lbf) MINIMUM Yield Strength
17	Panel Mount Retention	Insert connector in panel. Apply an axial force on the connector in the opposite direction of insertion at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	155.7 N (35 lbf) MINIMUM pushout force
18	Compliant Pin Insertion Force into PCB Hole (44914 Series)	Apply an axial insertion force on the terminal at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	106.7 N (24 lbf) Maximum Insertion force (Per Terminal) ⁽¹⁾
19	Compliant Pin Retention Force in PCB Hole (44914 Series)	Apply an axial extraction force on the terminal at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	Minimum Retention force (Per Terminal) ⁽¹⁾ Sn-PTH: 35.6 N (8.0 lbf) OSP: 13.3 N (3.0 lbf)

⁽¹⁾ Pin left undisturbed in PCB a minimum of 24 hours after insertion prior to testing Retention Force. PCB with different drill size, finish hole size, copper thickness, or plating thickness than PCBs tested may vary from these results

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6.3 ENVIRONMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
20	Fretting Corrosion (Thermal Cycling)	<p>Mate connectors. Expose for 500 cycles between 15 and 85°C.</p> <p>Dwell 0.5 hours at each temperature.</p> <p>Note: Remove surface moisture and air dry for 1 hour prior to measurements; monitor low level contact resistance every 167 cycles</p> <p>(Per EIA-364-110, condition A test duration C).</p>	20 milliohms MAXIMUM (change from initial)
21	Thermal Aging	<p>Mate connectors</p> <p>Expose tin plated terminals to: 240 hours at 105 ± 2°C (see TS-43045-001)</p>	20 milliohms MAXIMUM (change from initial)
		<p>Mate connectors</p> <p>Expose gold plated terminals to: 1,000 hours at 125 ± 2 °C (see TS-43045-002)</p>	
22	Humidity (Steady State)	<p>Mate connectors: expose to a temperature of 40 ± 2°C with a relative humidity of 90-95% for 96 hours.</p> <p>Note: Remove surface moisture and air dry for 1 hour prior to measurements.</p>	<p>20 milliohms MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No Breakdown at 500 VAC & Insulation Resistance: 1000 Megohms MINIMUM</p>
23	Solderability	Per SMES-152	Solder coverage: 95% MINIMUM (per SMES-152)

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6.3 ENVIRONMENTAL REQUIREMENTS CONTINUED

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
24	Solder Resistance	A) Wave Solder Process Dip connector terminal tails in solder; Solder Duration: 10 seconds MAX Solder Temperature: 260°C MAX Per AS-40000-5013 B) Convection Reflow Solder Process 260°C MAX Per AS-40000-5013	Visual: No Damage to insulator material
25	Salt Spray	Mate connectors Orientation: Horizontal with latch on top surface Duration: 48 hours exposure Atmosphere: Salt spray from a 5% solution Temperature: 35 ± 2°C	20 milliohms MAXIMUM (change from initial)
26	Cold Resistance	Mate connectors Duration: 96 hours Temperature: -40 ± 3°C	20 milliohms MAXIMUM (change from initial)
27	Corrosive Atmosphere Flowing Mixed Gas*	EIA-364-65, Class 2A gas concentrations Duration: 10 days unmated, then 10 days mated	20 milliohms MAXIMUM (change from initial)

*Gold plated terminals with lube only (45773 series)

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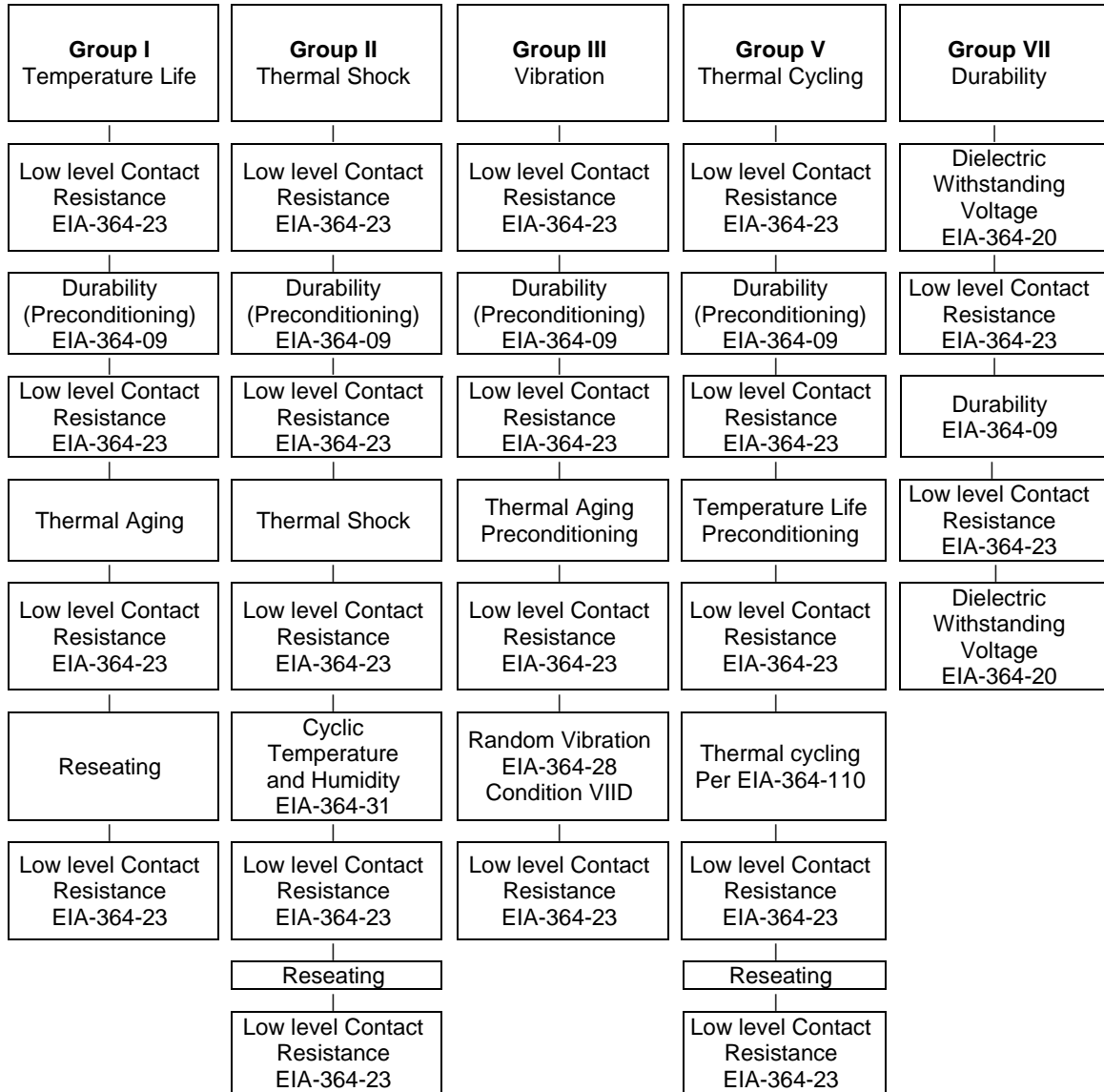


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7.0 TEST SEQUENCE GROUPS

Reliability Test Sequences Per EIA 364-1000



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Individual Tests

Connector Mate and Un-mate Forces

Crimp Terminal Insertion and Retention Forces (in Housing)

Wire Pullout Force (from Terminal)

Normal Force

Pin Retention Force (in Header)

Thumb Latch to Ramp Yield Strength

Compliant Pin Insertion/Retention (in PCB)

Panel Mount Retention

Solderability

Solder Resistance

Salt Spray

Cold Resistance

Corrosive Atmosphere (Flowing Mixed Gas)

Initial Contact Resistance EIA-364-23

Durability EIA-364-09

Mixed Flowing Gas (un-mated 5 days)

Contact Resistance

Mixed Flowing Gas (un-mated 5 days)

Contact Resistance

Mixed Flowing Gas (mated 5 days)

Contact Resistance

Mixed Flowing Gas (mated 5 days)

Contact Resistance

Durability EIA-364-09

Contact Resistance

Temperature Rise

First Steady State 96 hours

Current Cycling 240 Cycles 45 minutes On 15 minutes Off

2nd Steady State 96 hours

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8.0 APPLICATION INFORMATION

8.1 CONTACT ENGAGEMENT (WIPE) For fully mated nominal components (For Reference Only)

Receptacle	Mated to Plug/ Header	Application	Contact Wipe (nominal)
43025 Receptacle ⁽¹⁾	43020 Plug	Wire-to-Wire	0.083 in/(2.11 mm)
	43045 Header 44914 CPI Header	Wire-to-Board	0.069 in/(1.75 mm)
172952 TPA Receptacle ⁽¹⁾	203632 TPA Plug	Wire-to-Wire	0.068 in/(1.72mm)
	43045 Header 44914 CPI Header	Wire-to-Board	0.063 in/(1.60 mm)

Note (1): Contact Wipe is based on 43030 or 45773 series female crimp terminal.

8.2 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

8.2.1 SOLDER PROCESS TEMPERATURES

Wave Solder: 260°C Max
Reflow Solder: 260°C Max

[Molex Solderability Specification SMES-152
\(Click Here\)](#)

[MICRO-FIT WEB LINK](#)



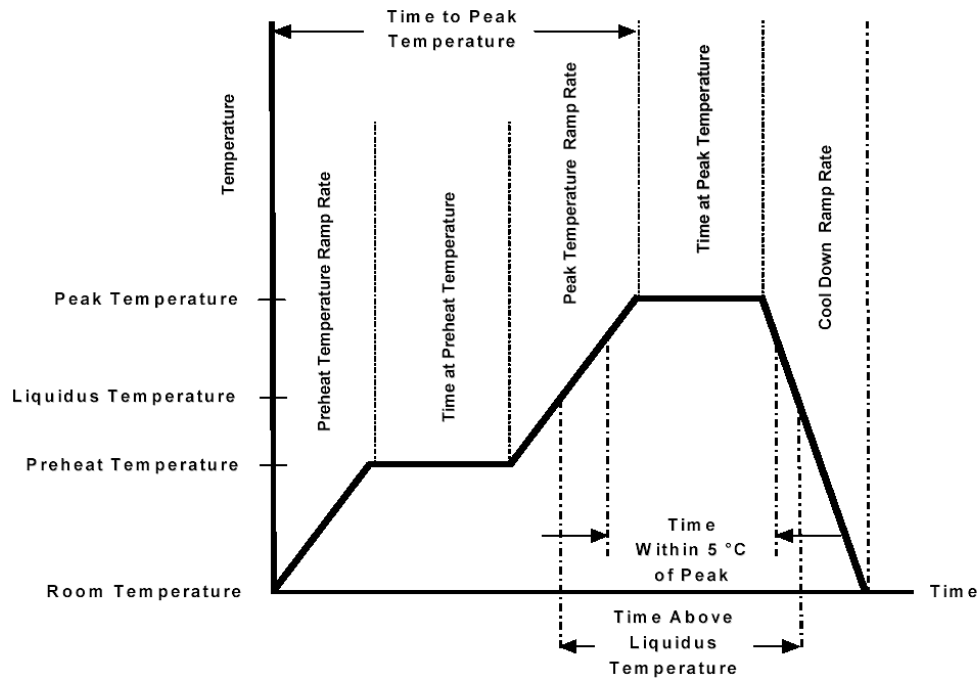
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8.2.2 REFLOW SOLDERING PROFILE

(This profile is per AS-40000-5013 and is provided as a guideline only. Please see notes for additional information)

[Molex Connector Heat Resistance Specification AS-40000-5013](#)
[\(Click Here\)](#)



Description	Requirement
Average Ramp Rate	3°C/sec Max
Preheat Temperature	150°C Min to 200°C Max
Preheat Time	60 to 180 sec
Ramp to Peak	3°C/sec Max
Time over Liquidus (217°C)	60 to 150 sec
Peak Temperature	260 +0/-5°C
Time within 5°C of Peak	20 to 40 sec
Ramp - Cool Down	6°C/sec Max
Time 25°C to Peak	8 min Max

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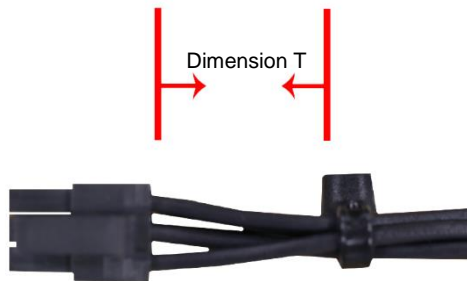
8.3 GAGES AND FIXTURES

It is recommended that test plugs (Series 44242) be used for continuity testing of receptacles. Standard mating parts should not be used for harness testing.

NOTE: The use of unauthorized testing devices and/or probes with a Molex product may cause damage to and affect functionality of the Molex product, and such use may void any and all warranties, expressed or implied.

8.4 CABLE TIE AND / OR WIRE TWIST LOCATION

CKT Sizes	Dimension T Min.
2-8	.500 (12.70)
10-16	.750 (19.10)
18-24	1.000 (25.40)



The “T” dimension defines a “free” length of wire, or a length of wire that is not subject to significant bias by external factors such as a wire tie, wire twisting, or other means of bending or deforming of the wires that repositions them from their natural relaxed state or location where they enter the housing. Wires are to be dressed in such a manner to allow the terminals to float freely in the pocket. This dimension is general recommendation and may need to be adjusted for different wire gauges and wire type and insulation thickness and insulation material.

9.0 PACKAGING

Parts shall be packaged to protect against damage during normal handling, transit and storage. Refer to the Molex.com webpage for the specific part number to get the exact packaging document.

Receptacle, Plug, TPA Receptacle, TPA, and TPA Plug: Bulk Packaged
 Headers: Tray or Tape-and-Reel Packaging available, see individual drawings
 Crimp terminals: Available in chain form on reels or loose in bulk packaging.

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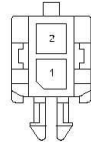


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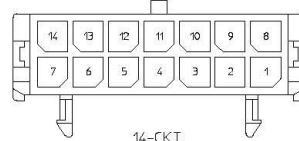
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10.0 POLARIZATION & KEYING OPTIONS

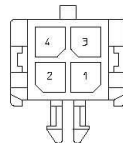
10.1 STANDARD POLARIZATION FOR HEADERS AND PLUGS (HEADERS ARE SHOWN)



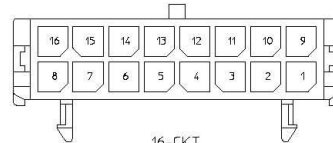
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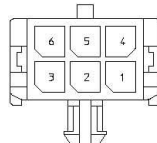
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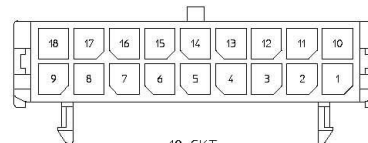
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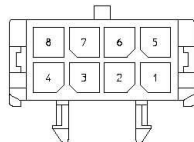
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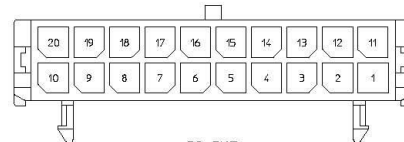
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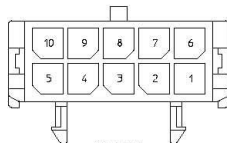
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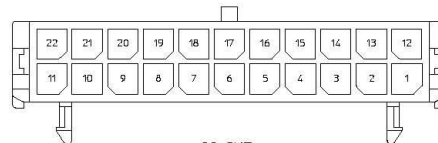
8-CKT.



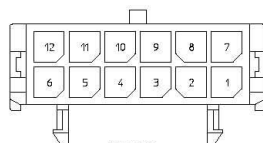
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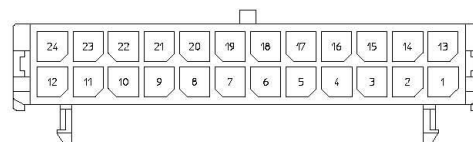
10-CKT.



22-CKT.



12-CKT.



24-CKT.

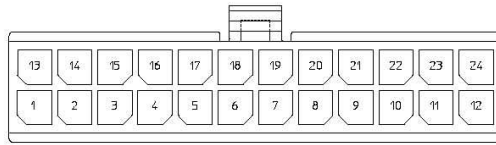
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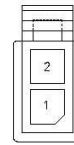
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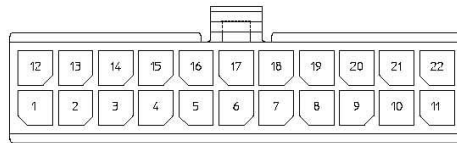
10.2 STANDARD POLARIZATION FOR RECEPTACLES



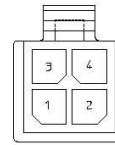
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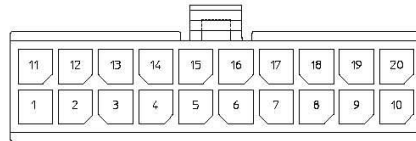
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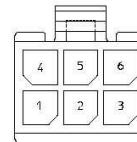
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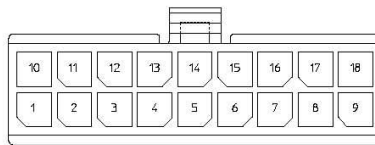
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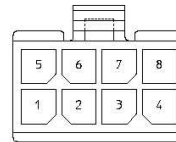
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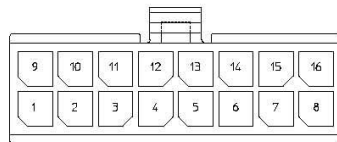
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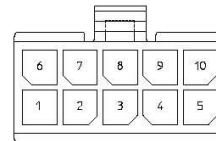
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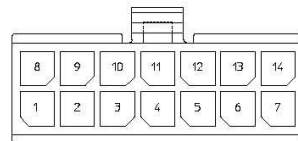
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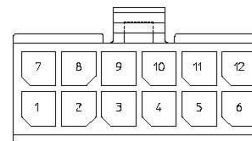
16-CKT.



10-CKT.



14-CKT.



12-CKT.

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