MEGA FIT

WIRE TO WIRE

CONNECTOR SYSTEM

Plug Terminal	Receptacle Terminal
	
Series: 105417, 105418	Series: 76823, 172063

Dual Row Receptacle Housing	Single Row Receptacle Housing
	
Series: 171692	Series: 200456

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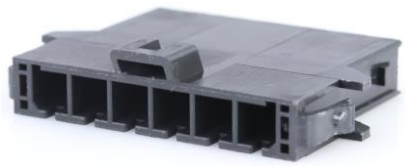
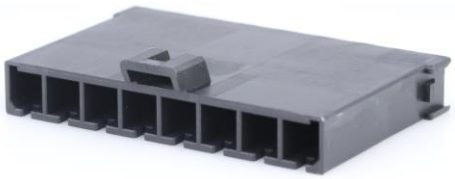
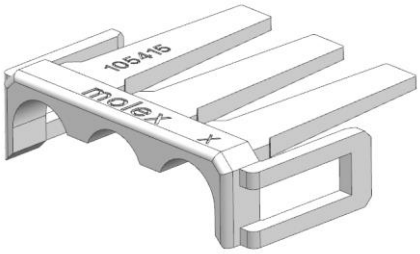
Dual Row Panel Mount Plug	Dual Row Free Hang Plug
	
Series: 105411	Series: 105411

Single Row Panel Mount Plug	Single Row Free Hang Plug
	
Series: 213814	Series: 213815

TPA	Back Shell
	
Series: 105415	Series: 200122

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1.0 SCOPE

This product specification covers the performance requirements for the 5.70mm Pitch “Mega-Fit W-to-W” connector system terminated with 16 to 12AWG wire using Crimping termination technology.

2.0 PRODUCT DESCRIPTION

2.1 DESCRIPTION, SERIES NUMBER, AND LINKS

DESCRIPTION	SERIES NUMBER
Male Crimp Terminal	105417,105418
Female Crimp Terminal	76823,172063
Dual Row Receptacle Hsg	171692
Single Row Receptacle Hsg	200456
Dual Row Panel Mount Plug Hsg	105411
Dual Row Free Hang Plug Hsg	105411
Single Row Panel Mount Plug Hsg	213814
Single Row Free Hang Plug Hsg	213815
TPA	105415
Backshell	200122

2.2 DIMENSIONS, MATERIALS, PLATINGS

Refer to sales drawings 768230200(SD), 1054170100(SD), 1054150001(SD), 1716920200(SD), 1054110100(SD), 1054110200(SD), 2001220000-SD, 2138140001-SD, 2138150001-SD, 200456 1000(SD)

2.3 ENVIRONMENTAL CONFORMANCE

To fine 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
CSA File Number: TBD
IEC Compliance: TBD

3.0 APPLICABLE DOCUMENTS AND SPECIFICATION

3.1 MOLEX DOCUMENTS

Test Summary 1054171000-TS(TBD)
Application Specification 768232000-AS
Molex Quality Crimping Handbook Order No. 203702-4200(UL11028), for 10AWG
Molex Quality Crimping Handbook Order No. 63904-3700(UL1015), for 12AWG
Molex Quality Crimping Handbook Order No. 63904-3800(UL1007), for 12AWG
Molex Quality Crimping Handbook Order No. 63904-3500(UL1015), for 14-16AWG
Molex Quality Crimping Handbook Order No. 63904-3600(UL1007), for 14-16AWG
Molex Quality Crimping Handbook Order No. 200218-0900(UL1015/1007), for 12AWG
Molex Quality Crimping Handbook Order No. 213309-1300(UL1015/1007), for 14AWG
Molex Quality Crimping Handbook Order No. 213309-1400(UL1015/1007), for 16AWG
Molex Quality Crimping Handbook Order No. 63800-0029
Molex Moisture Technical Advisory AS-45499-001
Molex Package Handling Specification 454990100-PK
ATS-Application Tooling Specification *

**Application tooling Specification differs with Terminals. ATS shall be available in the respective Terminal part number page.*

3.2 INDUSTRY DOCUMENTS

EIA-364-1000
SAE/USCAR-2
UL-60950-1
UL-1977
CSA STD. C22.2 NO. 182.3-M1987
IEC / EN 61984

4.0 ELECTRICAL PERFORMANCE RATINGS

4.1 VOLTAGE

600 Volts AC (RMS) or 600 Volts DC max.

* 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

Wire Gauge (Stranded copper)	Insulation Diameter
10AWG	3.607mm MAXIMUM
12AWG	4.06mm MAXIMUM
14AWG	3.58mm MAXIMUM
16AWG	3.15mm MAXIMUM
1.5 mm^2	3.15mm MAXIMUM
2.5 mm^2	3.58mm MAXIMUM
4.0 mm^2	4.06mm MAXIMUM
6.0 mm^2	3.607mm MAXIMUM

4.3 CURRENT RATING (MAXIMUM AMPERES)

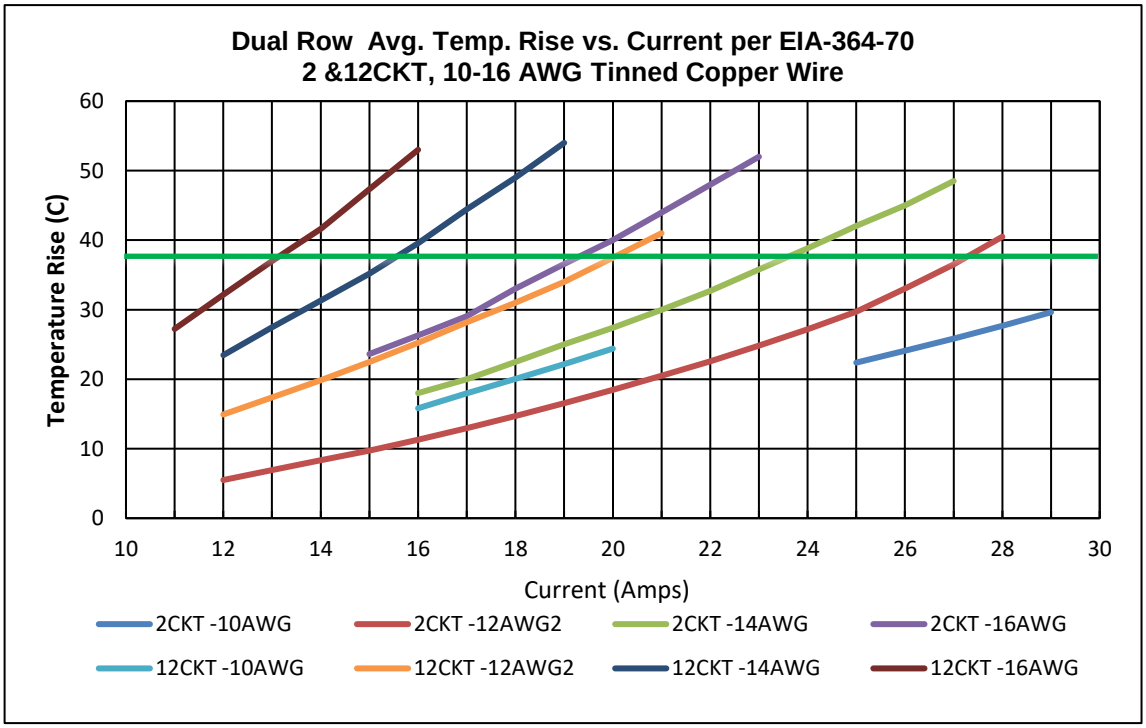
Note: Ratings shown represent *MAXIMUM* current carrying capacity of a fully loaded connector with all circuits powered in still air. Ratings are based on a 30°C maximum temperature rise limit over ambient (room temperature). Current rating is application dependent and below charts are intended as a guideline. Appropriate de-rating is required depending on factors such as higher ambient temperature, gross heating from adjacent modules or components and other factors that influence connector performance.

Dual Row Wire to Wire Current Rating (Amp Max.) (As tested with tinned awg copper wire and Tin-plated terminals)						
Connector fully loaded with all circuits Powered						
Ckt. Size / AWG & metric Wire Size	**2**	**4**	**6**	**8**	**10**	**12**
10AWG, 6.0mm^2	29	27*	25*	24*	22*	20.5
12 AWG, 4.0mm^2	25	23*	22*	20*	18*	17
14 AWG, 2.5mm^2	21	19*	17*	15*	14*	13.5
16 AWG, 1.5mm^2	17	15*	14*	13*	12*	11.5

*1)*Extrapolated from test data.*
2) Values are for REFERENCE ONLY.

Single Row Wire to Wire Current Rating (Amp Max.) (As tested with tinned awg copper wire and Tin-plated terminals)							
Connector fully loaded with all circuits Powered							
Ckt. Size / AWG & metric Wire Size	2	3	4	5	6	7	8
10AWG, 6.0mm²	30	29*	28*	27*	26.5*	26*	25
12 AWG, 4.0mm²	26	25*	24*	23*	22*	21*	21.5
14 AWG, 2.5mm²	21	20*	19*	19*	18*	18*	17
16 AWG, 1.5mm²	17	16*	16*	16*	15*	15*	15

*1)*Extrapolated from test data.*
2) Values are for REFERENCE ONLY.



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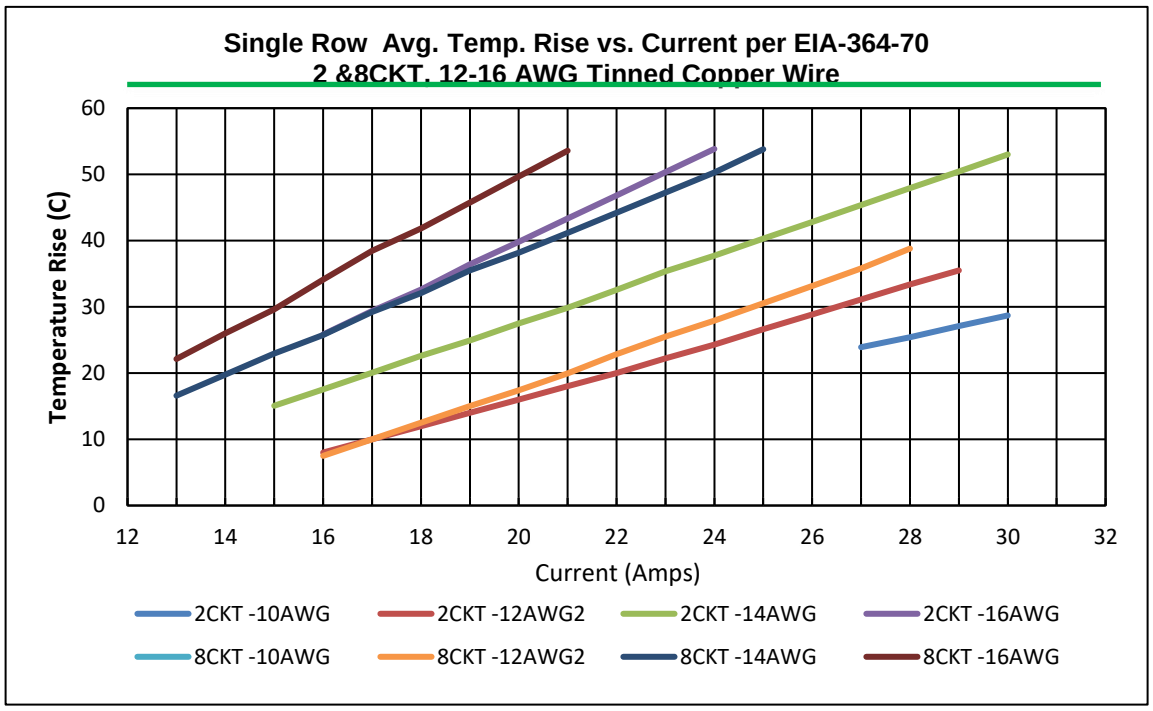

Note:

Voltage Drops Profile shown the *MAXIMUM* Voltage Drops with all circuits powered in still air. Appropriate de-rating is required depending on factors such as higher ambient temperature, gross heating from adjacent modules or components and other factors that influence connector performance.

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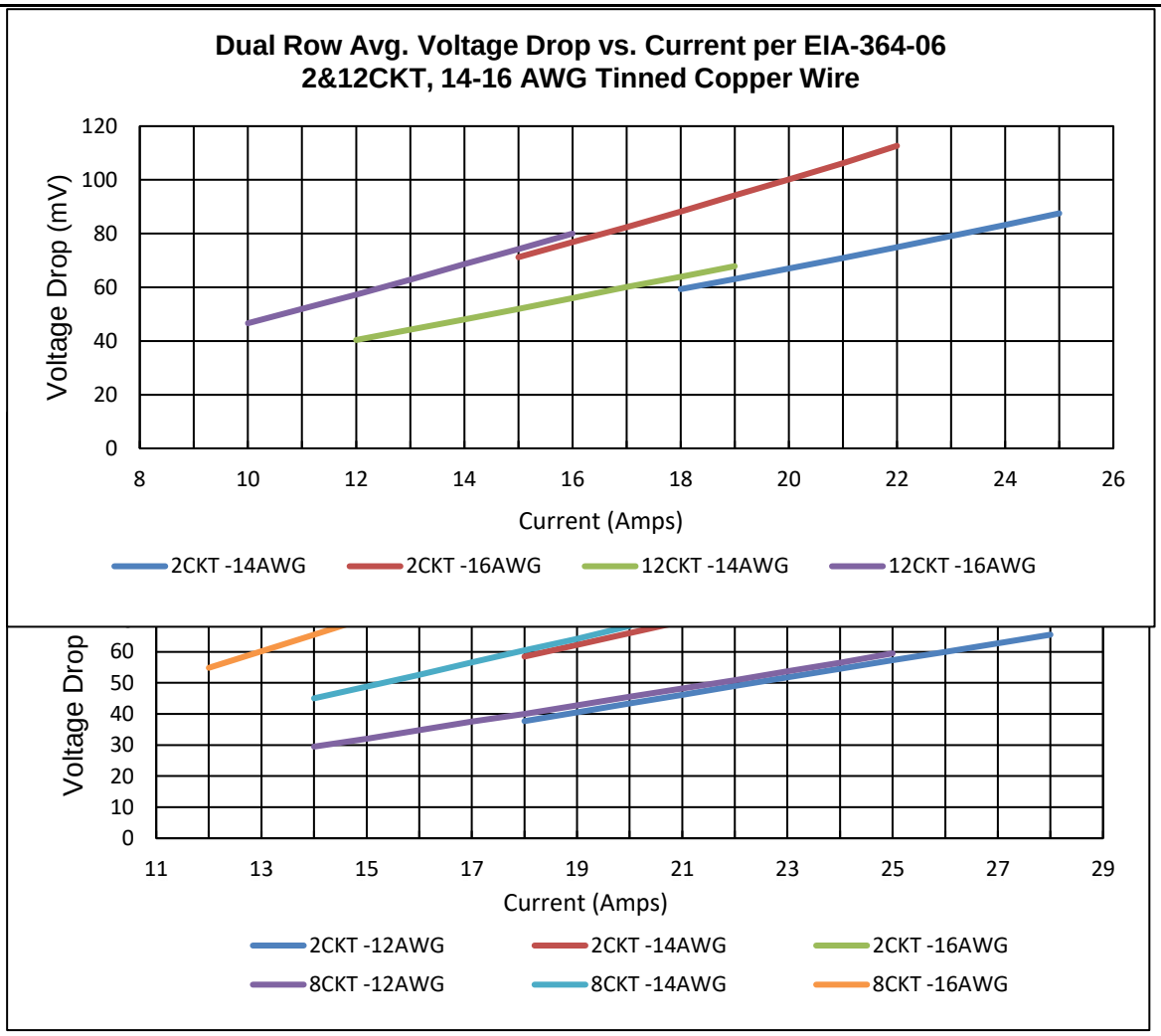

4.4 TEMPERATURE

Operating Temperature Range (includes T-Rise from applied current): - 40°C to + 105°C (for Tin Plated), - 40°C to + 120°C (for Gold Plated).
Non-Operating Temperature Range: - 40°C to + 105°C

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

Note: Temperature life test duration (section 6.3. item 3) is based on the assumption that the contact spends its entire life at the rated field maximum temperature (based on EIA-364-1000, table 8).

4.5 DURABILITY

Plating Type	Number of Cycles
Tin Plated	25
Gold Plated	200

As tested in accordance with EIA-364-1000 test method (see Sec. 6.2.6 of this specification). Durability per EIA-364-09.

4.6 GLOW WIRE SERIES

* TBD
The Following Series are Glow Wire Capable:171692,105411,105415, 200122, 213814, 213815. 200456. 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 / IRC 60335-1 750C/2 sec with no flaming.
VDE Glow wire approval file number: 569200-9020-0043/287028

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	Initial Contact Resistance	Per EIA-364-23 Mate connectors apply a maximum voltage of 20 mV and a current of 100mA Wire resistance shall be removed from the measured value.	2 milliohms MAXIMUM [initial]
	6.1.2	Insulation Resistance	Apply 500 VDC between adjacent terminals or ground. Per EIA-364-21.	1000 Megohms MINIMUM
	6.1.3	Dielectric Withstanding Voltage	Apply 2200 VAC for 1 minute between adjacent terminals. Per EIA-364-20	No breakdown; current leakage < 5 mA
	6.1.4	Temperature Rise & Voltage Drop@ Rated current	Mate connectors, measure T- Rise @ Rated Current After 96 Hours Per EIA-364-70 Voltage Drop Per EIA-364-06	Temperature rise: +30°C MAXIMUM

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6.2 MECHANICAL PERFORMANCE

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6.2.1	Connector Mating/ Unmate (latch disabled, per terminal)	Mate connectors at a rate of 25.4 +/- 6 mm per minute. Per EIA-364-37 Un-mate connectors with latch disabled at a rate of 25.4 +/- 6 mm per minute.	6.8 N (1.46 lbf) MAXIMUM mating force & 5.0 N (1.12 lbf) MINIMUM unmating force
6.2.2	Thumb Latch Yield Strength (Initial, D/R Hsg)	Mate loaded connectors fully. Pull connectors apart at a rate of 25.4 +/- 6 mm per minute.	68 N MIN.
6.2.3	Crimp Terminal to Housing Insertion	Insert terminal into housing at a rate of rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	20 N (4.50 lbf) MAXIMUM insertion force
6.2.4	Crimp Terminal to Housing Retention Force (with and w/o TPA)	Axial pullout force on the terminal in the housing at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	W/o TPA:36 N (8.10 lbf) With TPA:66 N (14.84 lbf) MINIMUM retention force
6.2.5	Panel Withdrawal Forces (for Dual Row Panel Mount Plug Hsg)	Insert a connector at a rate of 25.4 ± 6 mm (1 ± ¼ inch) per minute.	300N (67.44 lbf) MINIMUM withdrawal force
6.2.6	Panel Withdrawal Forces (for Single Row Panel Mount Plug Hsg)	Withdraw a connector at a rate of 25.4 ± 6 mm (1 ± ¼ inch) per minute.	200N (45.00 lbf) MINIMUM withdrawal force
6.2.7	Back Shell Insertion Force (Dual Row)	Insert a back shell at a rate of 25.4 ± 6 mm (1 ± ¼ inch) per minute.	20 N (4.50 lbf) MAXIMUM insertion force
6.2.8	Back Shell Retention Force (Dual Row)	Withdraw a back shell at a rate of 25.4 ± 6 mm (1 ± ¼ inch) per minute.	200N (45.00 lbf) MINIMUM retention force

6.2 MECHANICAL PERFORMANCE CONTINUED

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6.2.9	Durability	Mate connectors 25 cycles for tin plated and 200 cycles for gold plated connectors at a maximum rate of 10 cycles per minute. Per EIA-364-09	2 mΩ MAXIMUM (change from initial)
6.2.10	Durability with Environment (Preconditioning)	Mate connectors 5 cycles for tin plated and 20 cycles for gold plated connecters at a maximum rate of 10 cycles per minute. Per EIA-364-09.	2 mΩ MAXIMUM (change from initial)
6.2.11	Wire to Crimp Pullout Force	Apply an axial pullout force on the wire at a rate of 25 ± 6 mm (1 ± ¼ inch).	4.0mm² = 220 N Min. 12 Awg = 220 N Min. 2.5mm² = 220 N Min. 14 Awg = 220 N Min. 1.5mm² = 220 N Min. 16 Awg = 200 N Min. Values may vary depending on crimp tooling. Refer to Molex Applicator Tooling specification
6.2.12	Vibration (Random)	Mate connectors and vibrate per EIA-364-28 test condition VII-D Tin: 15 minutes each axis. Gold: 1.5 hours each axis.	Maximum Change from Initial:2 mΩ Discontinuity < 1 microsecond
6.2.13	Vibration/Mechanical Shock (SAE/USCAR-2) Tin Plated only	USCAR-2 Rev 6 per sequence M per section 5.9.6, Classification: V1, S1, T2 Shock: 35 G's, 10 shocks per axis Vibration: 8 hours per axis, 1.81 g	No discontinuity of 7mΩ or more for 1 microsecond maximum during Vibration & Shock Total Connector Resistance: Tin: 3 mΩ Max (less conductor resistance) Voltage drop was not evaluated
6.2.14	Reseating	Unmate/Mate connectors by hand three cycles	Maximum Change from Initial:2 mΩ

6.3 ENVIRONMENTAL PERFORMANCE

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6.3.1	Thermal Shock	Mate connectors expose to 10 cycles from -55°C to 85°C Per EIA-364-32 method A, condition 1	Maximum Change from Initial: 2 mΩ
6.3.2	Cyclic Temperature & Humidity	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.	2 milliohms MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No Breakdown at 500 VAC & Insulation Resistance: 1000 Megohms MINIMUM & Visual: No Damage
6.3.3	Temperature Life Tin Plated only	Mate Connectors expose to 240 hours at 105°C Per EIA-364-17 Method A	Maximum Change from Initial: 2 mΩ
6.3.4	Temperature Life Gold Plated Only	Mate Connectors expose to 1000 hours (Test LLCR Per 250 hours) at 120°C Per EIA-364-17 Method A	Maximum Change from Initial:2 mΩ
6.3.5	Temperature Life (Preconditioning)	Mate Connectors expose to 120 hours at 105°C Per EIA-364-17 Method A	Maximum Change from Initial: 2 mΩ
6.3.6	Thermal Cycling Tin Plated Only	Per EIA-364-1000 Test Group 5: Cycle mated connector between 15°C±3°C and 85°C±3°C as measured on the part. Ramps should be a minimum of 2°C per minute, and dwell times should ensure contacts reach the temperature extremes (minimum of 5 minutes). Humidity is not controlled. Perform 500 cycles.	Maximum Change from Initial:2 mΩ

6.3 ENVIRONMENTAL PERFORMANCE CONTINUED

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6.3.7	Mixed Flowing Gas	Expose unmated to 240 hours, then to 96 hours mated, Per EIA364-65, Condition IIA	Maximum Change from Initial: 2 mΩ
6.3.8	Dust	Per EIA364-91(Being dust composition), Both connector halves are to be exposed unmated to dust composition #1 for 1 hour.	No evidence of physical damage
6.3.9	Thermal Cycling disturbance	cycle mated connector between 15°C and 85°C for 10 cycles at a rate of 2°C /min, and dwell times should insure the contacts reach to the temperature extremes (a minimum of 5 minutes). humidity is not controlled. Per EIA364-110	Maximum Change from Initial: 2 mΩ
6.3.10	Salt Spray	Mate connectors: Duration: 48 hours exposure. Atmosphere: salt spray from a 5% solution. Temperature: 35 +1/-2°C	10 milliohms MAXIMUM (change from initial) & Visual: No Damage

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7.0 TEST SEQUENCE GROUPS

Reliability Test Sequences Based on EIA-364-1000 & USCAR-2

Group I Temperature Life	Group II Thermal Shock	Group III Vibration	Group IV Mixed Flow Gas	Group V Thermal Cycling
LLCR EIA-364-23	LLCR EIA-364-23	LLCR EIA-364-23	LLCR EIA-364-23	LLCR EIA-364-23
Durability Pre-conditioning EIA-364-09	Durability Pre-conditioning EIA-364-09	Durability Pre-conditioning EIA-364-09	Durability Pre-conditioning EIA-364-09	Durability Pre-conditioning EIA-364-09
LLCR	LLCR	LLCR	LLCR	LLCR
Temperature Life EIA-364-17	Thermal Shock EIA-364-32	Temperature Life (Pre-conditioning) EIA-364-17	Temperature Life (Pre-conditioning) EIA-364-17	Temperature Life (Pre-conditioning) EIA-364-17
LLCR	LLCR	LLCR	LLCR	LLCR
Reseating 3 cycles	Cyclic Temperature and Humidity EIA-364-31	Random Vibration EIA-364-28	Mixed Flow Gas Unmated exposure 240 hours	Thermal Cycling EIA-364-110
LLCR	LLCR	LLCR	LLCR	LLCR
	Reseating 3 cycles		Mixed Flow Gas mated exposure 96 hours	Reseating 3 cycle
	LLCR		LLCR	LLCR
			Reseating 3 cycle	
			LLCR	

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Reliability Test Sequences Based on EIA-364-1000 & USCAR-2(CONTINUED)

Group VI Dust	Group VII Durability	Group VIII Temperature Life		Group IX Uscar-2 Vibration and Shock
LLCR EIA-364-23	DWV EIA-364-20	LLCR EIA-364-23	LLCR	Visual Inspection / LLCR EIA-364-23
Durability Pre-conditioning EIA-364-09	LLCR EIA-364-23	Durability (Pre-conditioning) EIA-364-09	Temperature Life 120°C, 250 hrs EIA-364-17	Durability (Pre-conditioning) EIA-364-09
Dust	Durability Tin plated: 25 cycles Goldplated:200cyucles EIA-364-09	LLCR	LLCR	LLCR
LLCR	LLCR	Temperature Life 120°C, 250 hrs EIA-364-17	Crimped Terminal Retention Force in Housing	Mechanical Shock w/ Continuity Monitoring V1
Thermal Cycling (Disturbance) EIA-364-110	DWV EIA-364-20	LLCR		Random Vibration w/ Continuity Monitoring V1
LLCR		Temperature Life 120°C, 250 hrs EIA-364-17		LLCR
Reseating 3 cycles		LLCR		Voltage Drop was not Conducted due to Test Setup
LLCR		Temperature Life 120°C, 250 hrs EIA-364-17		Visual Inspection

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Reliability Test Sequences Based on EIA-364-1000 & USCAR-2(CONTINUED)

Individual Tests
Connector Mating / Unmating Force
Crimped Terminal Retention Force in Housing
Thumb Latch Yield Strength
Panel Retention Force
Wire pullout force from terminal (axial)
Back Shell Insertion/Retention Force
Temperature Rise / Voltage Drop

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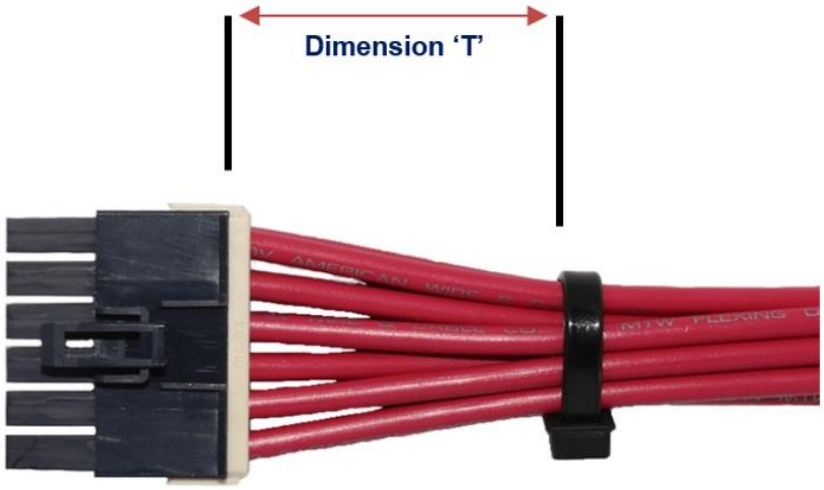
8.0 PACKAGING

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

9.0 CABLE TIE AND / OR TWIST TIE LOCATION

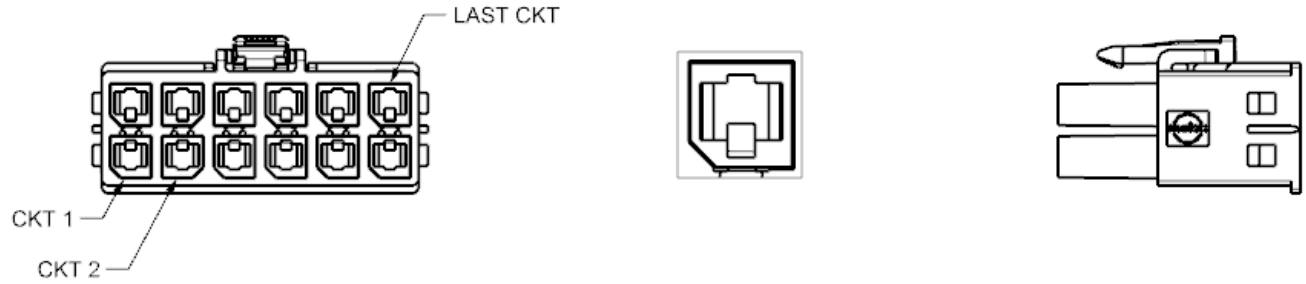
Circuit Sizes	Dimension T Minimum
2	.50” (12.7 mm)
4-6	.75” (19.1 mm
8	1.00” (25.4 mm
10-12	1.25” (31.75 mm



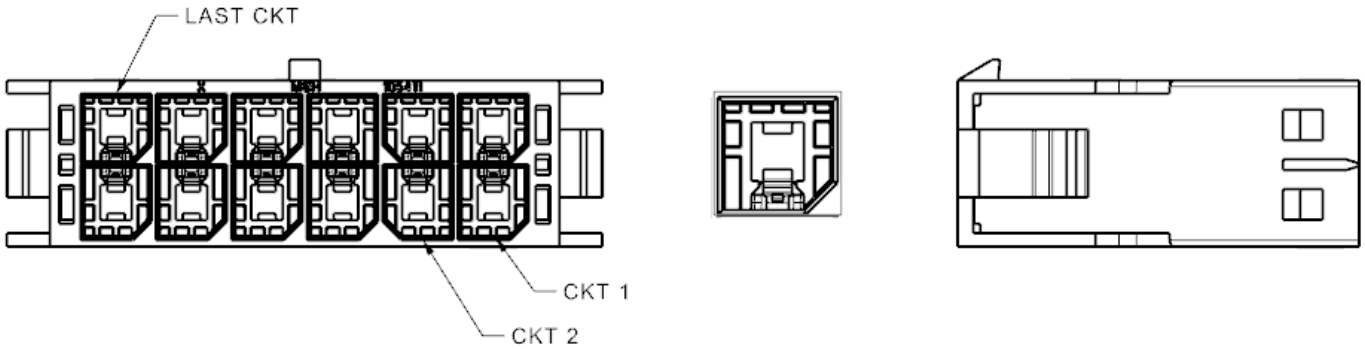
The “T” dimension defines a “free” length of wire, or a length of wire that is not subject to significant bias by external factors such as a wire tie, wire twisting, or other means of bending or deforming of the wires that repositions them from their natural relaxed state or location where they enter 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.

10.0 POLARIZATION AND KEYING OPTIONS

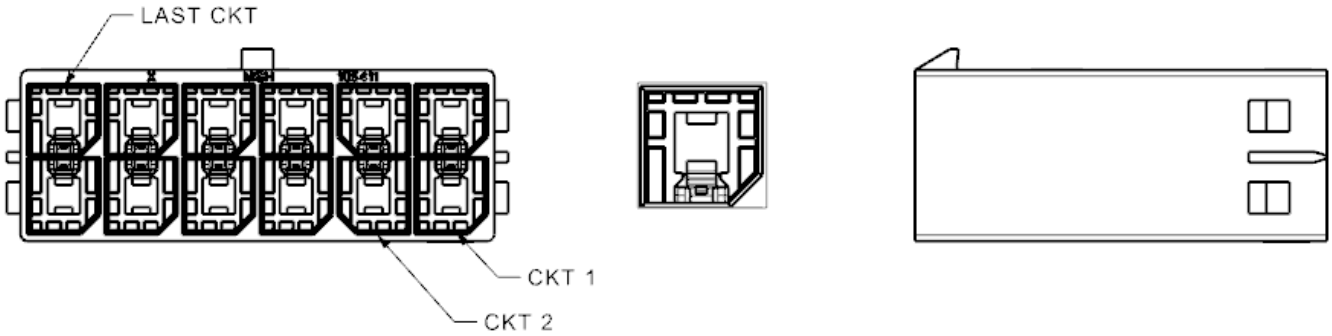
10.1 DUAL ROW RECEPTACLE (Series: 171692)



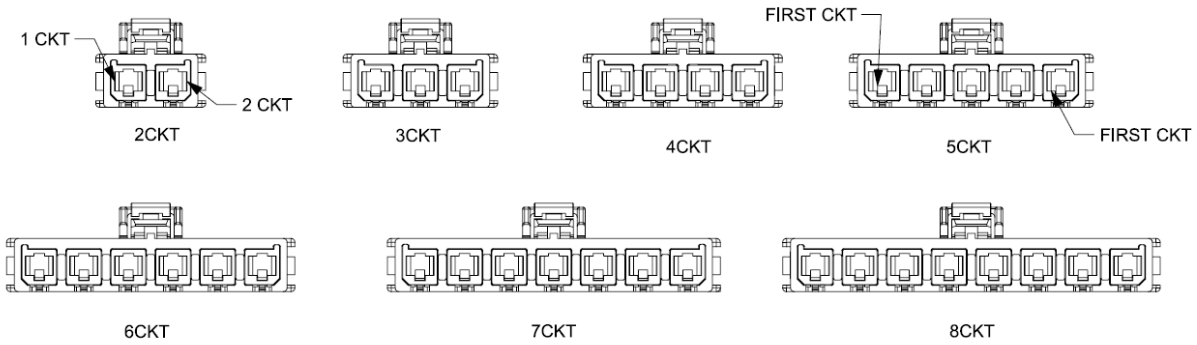
10.2 DUAL ROW PANEL MOUNT PLUG HOUSING (Series: 105411)



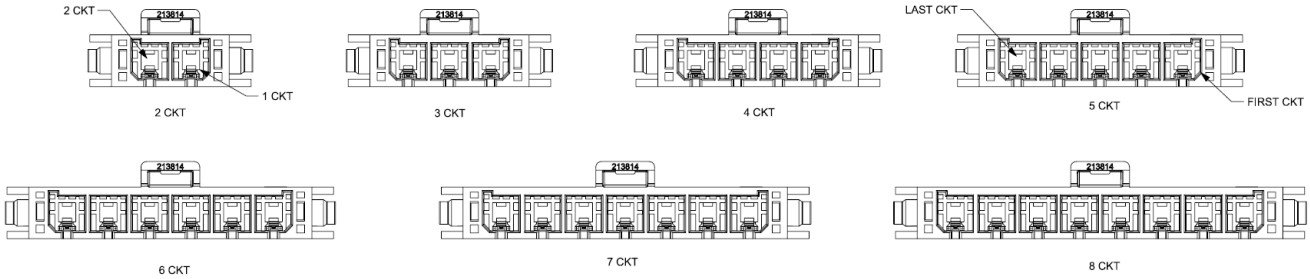
10.3 DUAL ROW FREE HANGING PLUG HOUSING (Series: 105411)



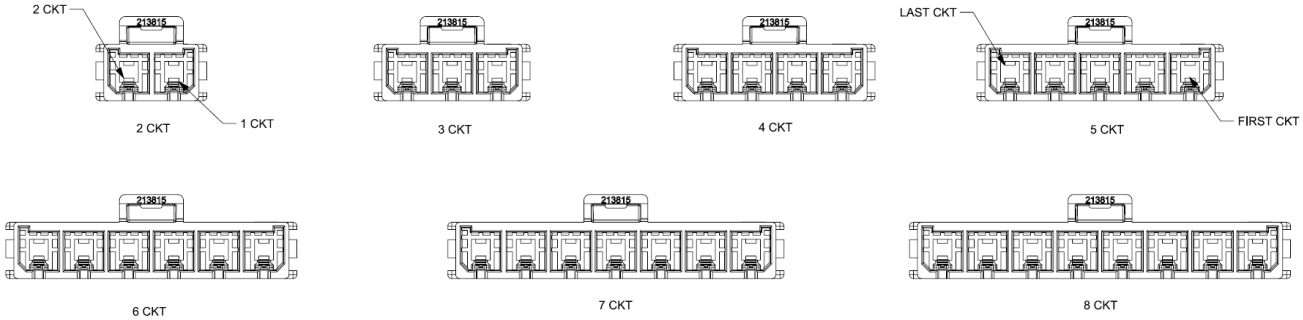
10.4 SINGLE ROW RECEPRACLE (Series: 200456)



10.5 SINGLE ROW PANEL MOUNT PLUG HOUSING (Series: 213814)



10.6 SINGLE ROW FREE HANGING PLUG HOUSING (Series: 213815)



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