

CP 6.5MM PITCH

Wire to Wire CONNECTOR SYSTEM

| Receptacle Crimp Terminal (16 AWG to 20 AWG) | Receptacle Crimp Terminal (22 AWG to 24 AWG) |
|--|--|
| | |
| Series: 50597 | Series: 50598 |

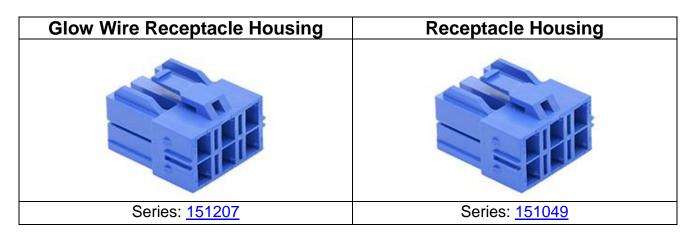


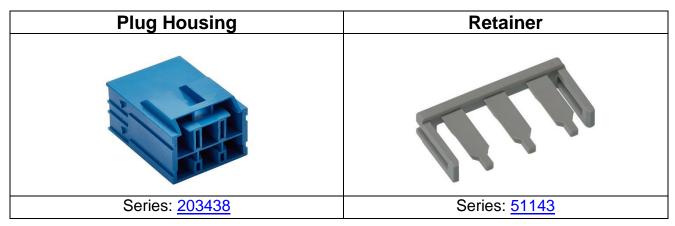
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1.0 SCOPE

This Product Specification covers the performance requirements CP 6.5mm CENTER SPACING wire to wire series.

2.0 PRODUCT DESCRIPTION

2.1 DESCRIPTION, SERIES NUMBER, AND LINKS

| DESCRIPTION | SERIES NUMBER | PART NUMBER |
|---|------------------|----------------|
| 6.5 mm Pitch Glow Wire Receptacle Housing | <u>151207</u> | 151207**** |
| 6.5 mm Pitch Receptacle Housing | <u>151049</u> | 151049-*** |
| 6.5 mm Pitch Plug Housing | <u>203438</u> | 203438**** |
| Receptacle Crimp Terminal | <u>50597</u> | 505978*10 |
| Receptacle Chilip Terminal | <u>50598</u> | 505988*10 |
| Plug Crimp Torminal | <u>205033</u> | 2050338000 |
| Plug Crimp Terminal | <u>205032</u> | 2050328000 |
| Retainer | <u>51143</u> | 51143**05 |

2.2 DIMENSIONS, MATERIALS, PLATINGS

Refer Sales Drawings 2034380000-SD, 1512070001-SD, SD-151049-0001, 505978010-SD, 505988010-SD, 2050328000-SD, 2050338000-SD, SD-51143-XX05 for information on dimensions, materials, plating and markings.

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 File Number: E29179 CSA File Number: 70056261 VDE File Number: 257792

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3.0 APPLICABLE DOCUMENTS AND SPECIFICATION

3.1 MOLEX DOCUMENTS

<u>CP 6.5 Connector System Test summary 2034380001-TS-000</u> CP 6.5 Connector System Application summary 2034380001-AS-000

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 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

JIS C5402, JIS C60068 & MIL-STD-1344. UL-60950-1 CSA-STD. C22.2 NO. 182.3-M1987 IEC-60695-2-11 IEC-60335-1

4.0 ELECTRICAL PERFORMANCE RATINGS

4.1 VOLTAGE

600 Volts AC (rms) / DC

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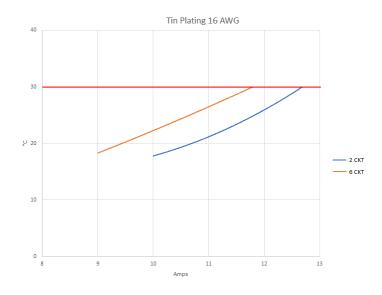


4.2 RATINGS AND APPLICABLE WIRES

| Item | Standard | | | | | | | | | | |
|--|----------|---------|---------|--------|--------------------------|--|--|--|--|--|--|
| Rated Current (MAX.) and Applicable wires | СКТ | 2 | 4 | 6 | | | | | | | |
| | AWG. #16 | 12.5 A | 11.8 A* | 11.0 A | AWG # 16 ~ # 20 | | | | | | |
| | AWG. #18 | 11.3 A* | 10.5 A* | 9.7 A* | Ф3.3~Ф2.0 Ins. O.D. | | | | | | |
| | AWG. #20 | 10.0 A | 9.2 A* | 8.3 A | AWG # 22 ~# 24 | | | | | | |
| | AWG. #22 | 8.6 A* | 7.7 A* | 6.7 A* | Ф2.35∼Ф1.25 Ins. O.D. | | | | | | |
| | AWG. #24 | 7.0 A | 6.0 A* | 5.0 A | | | | | | | |

*Interpolated

Note: Ratings shown represent *MAXIMUM* current carrying capacity of a fully loaded connector with all circuits powered using UL1015 stranded wire. Ratings are based on a 30°C maximum temperature rise limit over ambient (see section 6.1.5 for specifications). Current is dependent on connector size, ambient temperature and related factors. Actual current rating is application dependent and should be evaluated for each use.



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4.3 **TEMPERATURE**

Operating Temperature Range (includes T-Rise from applied current): - 40°C to + 105°C# #Including terminal temperature rise

4.4 **DURABILITY**

| Plating Type | Number of Cycles |
|--------------|------------------|
| Tin Plated | 30 |

GLOW WIRE SERIES 4.5

151207 and 203438

5.0 **QUALIFICATION**

Laboratory condition, sample selection and test sequences are in accordance with JIS C5402, JIS C60068 & MIL-STD-1344.

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6.0 **PERFORMANCE**

6.1 **ELECTRICAL PERFORMANCE**

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|-------|---|--|--|
| 6.1.1 | Low Level Contact Resistance (LLCR) | Mate connectors with dry circuit (20 mV Max., 10 mA) on mated connector. (JIS C5402 5.4) | 10 mΩ MAX Value excludes bulk resistance of terminal |
| 6.1.2 | Insulation Resistance | Mate connectors, apply a voltage of 500 V DC between adjacent terminal or ground (JIS C5402 5.2/MIL-STD-202 Method 302) | 1000 ΜΩ ΜΙΝ |
| 6.1.3 | Dielectric Withstanding Voltage | Mated connectors apply 1500V AC (rms) for 1 minute between adjacent terminal or ground. (JIS C5402 5.1/MIL-STD-202 Method 301) | No voltage breakdown |
| 6.1.4 | Contact Resistance on Crimped Portion | Crimp the applicable wire on to the terminal, measure by dry circuit, 20mV MAX., 10mA. | 5 mΩ MAX |
| 6.1.5 | Temperature Rise | Mate connectors, carrying rated current load | Temperature Rise 30°C MAX. |

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6.2 **MECHANICAL PERFORMANCE**

| ITEM | DESCRIPTION | TEST CONDIT | ION | REQUIREMENT |
|-------|--|---|---------------------------------------|---|
| 6.2.1 | Insertion and Withdrawal Force | Insert and withdraw connectors of 25±3mm/min | | Refer to 7.0 |
| | | | AWG. #16 | 127.4 N MIN. |
| | Crimping Bull Out | Fix the crimped terminal, apply axial pull out force on | AWG. #18 | 107.8 N MIN. |
| 6.2.2 | Crimping Pull Out Force | the wire at the speed rate of 25±3mm/minute. | AWG. #20 | 58.8 N MIN. |
| | (Receptacle and Plug) | (JIS C5402 6.8) | AWG. #22 | 39.2 N MIN. |
| | | | AWG. #24 | 29.4 N MIN. |
| 6.2.3 | Terminal Insertion Force (Receptacle and Plug) | Insert the crimped terminal t speed rate of 25±3 m | 39.2 N MAX. | |
| 6.2.4 | Terminal / Housing Retention Force (Receptacle and Plug) | Apply axial pull out force at the speed rate of 25±3 mm/minute on the terminal assembled in the housing. | | 39.2 N MIN. |
| 6.2.5 | Lock Strength | Mate connectors, apply axial p speed rate of 25±3 mi | | 49.0 N MIN. |
| 6.2.6 | Retainer Insertion Force | Insert a retainer into the hour rate of 25±3 mm/n | | 29.4 N MAX. |
| 6.2.7 | Durability | Mate and un-mate connectors cycles/minute (a) Mate and un-mate conne (b) Mate and un-mate conne (c) Mate and un-mate conne | ectors to 4 cycles ctors to 23 cycles | Contact resistance 20 mΩ MAX |
| | Vila na ti a n | Amplitude: 1.5mn Sweep time: 10-55-10 Hz | | Contact resistance 20 mΩ MAX |
| 6.2.8 | Vibration | Duration: 2 hours in each (MIL STD-202 Meth | | Discontinuity < 1 μs Visual: No damage |
| 6.2.9 | Shock | 490m/s² {50G}, 3 strokes in each X.Y.Z. axes. (JIS C60068-2-27/MIL-STD-202 Method 213) DC1mA Contact resista 20 mΩ MAX Discontinuity < | | |

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6.3 **ENVIRONMENTAL PERFORMANCE**

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|-------|---------------------|--|---|
| 6.3.1 | Humidity | Mate connectors and expose into 60±2°C and 90-95%Relative Humidity for 96 hours. (expose to room temperature for 1~2hrs after pick up) (JIS C60068-2-3/MIL-STD-202 Method 103) | Contact resistance 20 mΩ MAX Insulation resistance 1000 MΩ MIN Dielectric Strength No voltage breakdown Visual: No damage |
| 6.3.2 | Heat Resistance | Mate connectors and expose into 105±2°C for 96 hours. (expose to room temperature for 1~2hrs after pick up) (JIS C60068-2-2/MIL-STD-202 Method 108) | Contact resistance 20 mΩ MAX Visual: No damage |
| 6.3.3 | Temperature Cycling | Mate connectors and expose into below condition 5 cycle of: a) -55°C 30 minutes b) +105°C 30 minutes c) 3 minutes transit time Expose to room temperature for 1~2hrs after pick up. (JIS C0025) | Contact resistance 20 mΩ MAX Visual: No damage |
| 6.3.4 | Cold Resistance | Mate connectors and expose into -40±2°C for 96 hours. (expose to room temperature for 1~2hrs after pick up) (JIS C60068-2-1) | Contact resistance 20 mΩ MAX Visual: No damage |
| 6.3.5 | Salt Spray | Mate connectors and expose into a salt spray from the 5±1% solution at 35±2 °C for 48±4 hours. Wash with water and dry after pick up. (JIS C60068-2-11/MIL-STD-202 Method 101) | Contact resistance 20 mΩ MAX Visual: No damage |
| 6.3.6 | SO₂ Gas | Mate connectors, and 24 hours expose to 50±5 ppm SO ₂ gas at 40±2°C | Contact resistance 20 mΩ MAX Visual: No damage |
| 6.3.7 | NH₃ Gas | Mate connectors, and exposure into NH₃ gas evaporating from 28% Ammonia solution for 40mins. (25milli liter in 1 liter) | Contact resistance 20 mΩ MAX Visual: No damage |

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INSERTION / WITHDRAWAL FORCE 7.0

| No. of ckt. | Unit | Inser | tion Force (M | 1AX.) | Withdrawal Force (MIN.) | | | |
|-------------|------|-------|---------------|-------|-------------------------|-----|------|--|
| | | 1st | 6th | 30th | 1st | 6th | 30th | |
| 2 | | 19.6 | 18.6 | 18.6 | 1.2 | 1.2 | 1.0 | |
| 4 | N | 24.5 | 22.5 | 22.5 | 2.4 | 2.4 | 2.0 | |
| 6 | | 29.4 | 26.4 | 26.4 | 3.6 | 3.6 | 3.0 | |

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TEST SEQUENCE 8.0

| Tool Crown A | Full Qualification Test | | | | | | | | | |
|---------------------------------------|-------------------------|------------------|------------------|------------------|------------------|------------------|-------|-------|-------|--------|
| Test Group → | Grp 1 | Grp 2 | Grp 3 | Grp 4 | Grp 5 | Grp 6 | Grp 7 | Grp 8 | Grp 9 | Grp 10 |
| Samples → | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Test or Examination Ψ | | | | | | | | | | |
| Examination of connector | 1,7 | 1,4 | 1,7 | 1,7 | 1,9 | 1,7 | 1,5 | 1,5 | 1,5 | 1,5 |
| Contact Resistance (LLCR) | | | 2,4,6 | 2,4,6 | 2,4,6,8 | 2,4,6 | 2,4 | 2,4 | 2,4 | 2,4 |
| Insulation Resistance | 2,5 | | | | | | | | | |
| Dielectric Withstanding Voltage | 3,6 | | | | | | | | | |
| Contact resistance on crimped portion | | | | | | | | | | |
| Insertion Force | | | | | | | | | | |
| Withdrawal Force | | | | | | | | | | |
| Crimping Pull Out Force | | | | | | | | | | |
| Terminal Insertion Force | | | | | | | | | | |
| Terminal/Housing Retention Force | | | | | | | | | | |
| Lock Strength | | | | | | | | | | |
| Retainer Insertion Force | | | | | | | | | | |
| Durability | | 2 ^(c) | 3 ^(c) | 3 ^(c) | 3 ^(c) | 3 ^(c) | | | | |
| Temperature Rise | | 3 | | | | | | | | |
| Vibration | | | | | 5 | | | | | |
| Shock | | | | | 7 | | | | | |
| Heat Resistance | | | 5 | | | | | | | |
| Cold Resistance | | | | | | 5 | | | | |
| Humidity | 4 | | | | | | | | | 3 |
| Temperature Cycling | | | | 5 | | | | | | |
| Salt Spray | | | | | | | 3 | | | |
| SO ₂ Gas | | | | | | | | 3 | | |
| NH₃ Gas | | | | | | | | | 3 | |

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| Test Group → | Screen Test | | | | | | |
|---------------------------------------|-------------|----------|-------------------------------------|------------------|----------|--|--|
| | Group 11 | Group 12 | Group 13 | Group 14 | Group 15 | | |
| Test or Examination Ψ | | | | | | | |
| Examination of connector | 1,4 | 1,4 | 1,12 | 1,4 | 1,3 | | |
| Contact Resistance (LLCR) | | | 3,11 | | | | |
| Insulation Resistance | | | | | | | |
| Dielectric Withstanding Voltage | | | | | | | |
| Contact resistance on crimped portion | | 2 | | | | | |
| Insertion Force | | | 2, 6, 9 | | | | |
| Withdrawal Force | | | 4, 7, 10 | | | | |
| Crimping Pull Out Force | | 3 | | | | | |
| Terminal Insertion Force | 2 | | | | | | |
| Terminal/Housing Retention Force | 3 | | | | | | |
| Lock Strength | | | | 3 | | | |
| Retainer Insertion Force | | | | | 2 | | |
| Durability | | | 5 ^(a) , 8 ^(b) | 2 ^(c) | | | |
| Temperature Rise | | | | | | | |
| Vibration | | | | | | | |
| Shock | | | | | | | |
| Heat Resistance | | | | | | | |
| Cold Resistance | | | | | | | |
| Humidity | | | | | | | |
| Temperature Cycling | | | | | | | |
| Salt Spray | | | | | | | |
| SO ₂ Gas | | | | | | | |
| NH₃ Gas | | | | | | | |

(a), (b) and (c) denote the number of durability cycle. (Refer to item 6.2.7)

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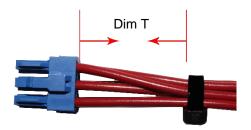


9.0 **PACKAGING**

Parts shall be packaging to protect the parts from damage during standard shipping, storage, and handling. For details kindly refer to Packaging specification 2034380001-PK,1512070001-PK, PK-151049-0001, 505978010-PK and 2050320000-PK.

10.0 CABLE TIE AND / OR TWIST TIE LOCATION

| C | KT Size | | Dim T Min. | | |
|---|---------|---|----------------|--|--|
| 2 | 4 | 6 | 0.50" (12.7mm) | | |



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.

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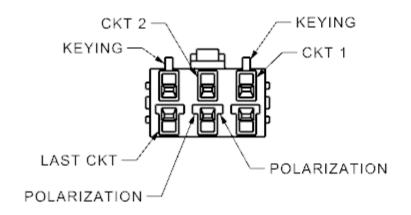


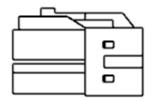
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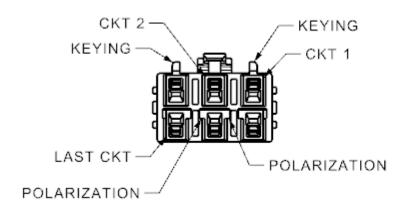
11.0 POLARIZATION AND KEYING OPTIONS

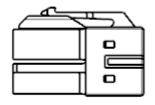
11.1 Glow wire Receptacle Housing (Series: 151207)





Receptacle Housing (Series: 151049) 11.2





CP 6.5 Connectors Web Page

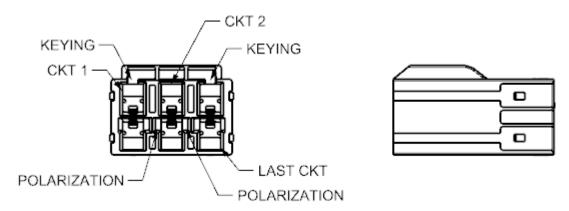


| REVISION: | ECM INFORMATION: | TITLE: | | | | | SHEET No. | |
|---|-------------------------|----------------------------------|------------------------|-----------------------|-------------|--------------|------------------------|--|
| C1 | EC No: 644315 | PRODUCT SPECIFICATION FOR CP 6.5 | | | | | 15 of 16 | |
| | DATE: 08/29/2020 | | WIRE TO WIRE CONNECTOR | | | | | |
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PRODUCT SPECIFICATION

11.3 Plug Housing (Series: <u>203438</u>)



NOTE: Each series number comes with different colored polarization, Refer respective part number sales drawing.

CP 6.5 Connectors Web Page



| REVISION: | ECM INFORMATION: EC No: 644315 | TITLE: | PRODUCT SPECIFICATION FOR CP 6.5 | | | | |
|------------------|-----------------------------------|------------------------|----------------------------------|-----------------------|-------------|--------------|--|
| C1 | DATE: 08/29/2020 | WIRE TO WIRE CONNECTOR | | | | | |
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