

L1NK 396

Wire-To-Board CONNECTOR


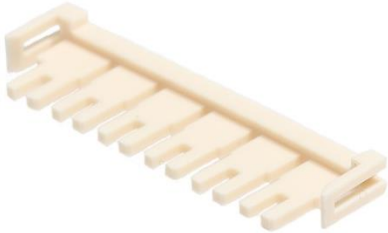
Crimp Terminal	Receptacle Housing
	
Series: 45570	Series: 207458
Unshrouded Header with Peg	Unshrouded Header Without Peg
	
Series: 207478	Series: 207478

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Shrouded Header	TPA
	
Series: 207479	Series: 207459

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1.0 SCOPE

This Product Specification covers 3.96 mm centerline (pitch) connector series terminated with 18 to 20 AWG wire using Crimp technology with tin plating.

2.0 PRODUCT DESCRIPTION

2.1 DESCRIPTION, SERIES NUMBER, AND LINKS

DESCRIPTION	SERIES NUMBER
3.96mm Pitch MarKK Crimp Terminal	45570
L1NK 396 Receptacle Housing	207458
L1Nk 396 Unshrouded Header with Peg	207478
L1Nk 396 Unshrouded Header without Peg	207478
L1Nk 396 shrouded Header	207479
L1NK 396 TPA	207459

2.2 DIMENSIONS, MATERIALS, PLATINGS

Refer to sales drawings 2074790000-SD, 2074781000-SD, 2074580000-SD, 2074590000-SD and SD-45570-001.

2.3 ENVIRONMENTAL CONFORMANCE

To find product compliance information:

- [Go to molex.com](#)
- Enter the part number in the search field.
- 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: TBE
 IEC File Number: TBE
 VDE File Number: TBE

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3.0 APPLICABLE DOCUMENTS AND SPECIFICATION

3.1 MOLEX DOCUMENTS

- [L1NK 396 Connector System Test summary 2074580000-TS-000](#)
- [L1NK 396 Connector System Application summary 2074580000-AS-000](#)
- [Molex Quality Crimping Handbook Order No. 63800-0029](#)
- [Molex Solderability Specification SMES-152](#)
- [Molex Heat Resistance Specification AS-40000-5013](#)
- [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

- EIA-364-1000
- UL-60950-1
- IEC-60695-2-11
- IEC-60335-1

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4.0 ELECTRICAL PERFORMANCE RATINGS

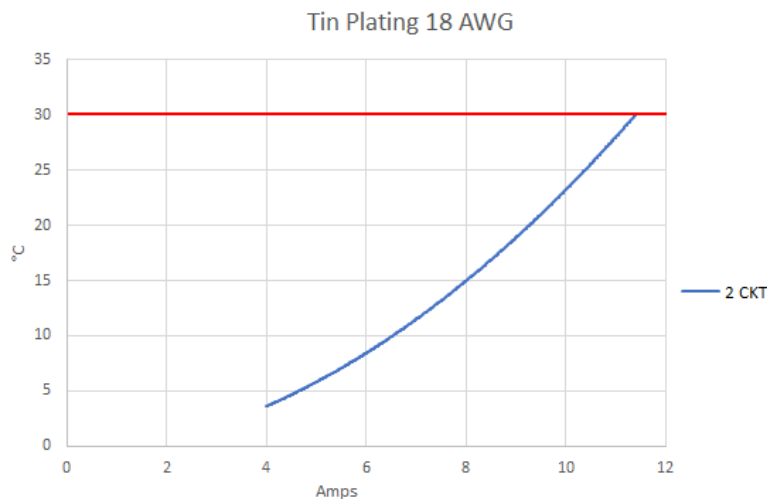
4.1 VOLTAGE

350 Volts AC/DC

4.2 CURRENT AND APPLICABLE WIRES

Item	CIRCUIT	2	3	4	5	6
Rated current (Max.) and applicable wire	AWG. #18	11.0 A	10.5 A*	10.0 A*	9.5 A*	9.0 A
	AWG. #20	10.0 A	9.5 A*	9.0 A*	8.5 A*	8.0 A

*Estimated

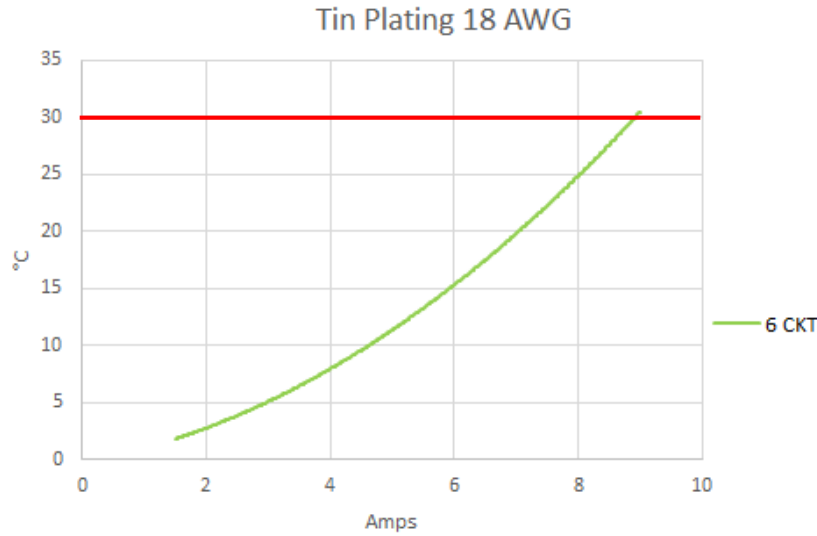


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4.3 TEMPERATURE

Operating Temperature Range (includes T-Rise from applied current): - 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 6.3.1) 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).

4.4 DURABILITY

Plating Type	Number of Cycles
Tin Plated	25

As tested in accordance with EIA-364-1000 test method (see sec 6.2.9 of this specification). Durability per EIA-364-09

4.5 GLOW WIRE SERIES

207458, 207459, 207478 and 207479

5.0 QUALIFICATION

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

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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-364-23C	10 mΩ MAX [initial]
6.1.2	Insulation Resistance	Mate connectors: Apply a voltage of 500 VDC between adjacent terminals and between terminals to ground. EIA-364-21C	1000 Megohms MINIMUM
6.1.3	Dielectric Withstanding Voltage	Apply a voltage of 1700 VAC for 1 minute between adjacent terminals and between terminals to ground. EIA-364-20D	No breakdown; current leakage < 5 mA
6.1.4	Temperature Rise	Mate connectors: measure the temperature rise at the rated current. EIA-364-70B, Method 2	Temperature rise: +30°C MAXIMUM (above 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]

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6.2 MECHANICAL PERFORMANCE

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT	
6.2.1	Connector Mate and Unmate Forces (Latch deactivated)	Mate and unmate connector (male to female) at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute. EIA-364-13E	10.7 N MAX./ CIRCUIT Mate force & 3.4 N MIN./ CIRCUIT Unmate force	
6.2.2	Terminal Insertion Force (In Housing)	Insert the crimped terminal to housing at the speed rate of 25±6 mm (1 ± ¼ inch) per minute.	14.7 N 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.	35.6 N MINIMUM Retention force	
6.2.4	Wire Pullout Force (Axial)	Apply an axial pullout force on the wire at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	AWG	MINIMUM pullout force
			18	89.0 N
			20	57.0 N
6.2.5	Housing Latch Mechanism Strength	Mate connectors apply axial pull out force at the speed rate of 13 mm (0.5 inch) per minute.	70.00 N MINIMUM	
6.2.6	Header Pin Retention (Header Housing)	Apply axial push force on the Header pin in the header housing at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	17.5 N MINIMUM	
6.2.7	TPA installation to housing	Install the TPA to the Housings at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	7.40 N MAXIMUM	
6.2.8	TPA Latch strength test	Apply an axial Pullout force at a rate of 13 mm (0.5 inch) per minute.	37.00 N MINIMUM	
6.2.9	Durability	Mate and unmate connectors up to 5 cycles (to meet application requirement of up to 25 cycles over the life of the connector) at a maximum rate of 10 cycles per minute prior to Environmental Tests. EIA-364-09C	10 mΩ MAXIMUM (change from initial)	

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6.2 MECHANICAL PERFORMANCE (CONTD.)

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6.2.10	Vibration (Random) Test group 3, EIA-364-1000	Mate connectors and vibrate per EIA 364-28, test condition VII. Letter D. (Acceleration 3.1 g)	10 mΩ MAXIMUM (change from initial) & Discontinuity < 1 microsecond
6.2.11	Shock (Mechanical) Test group 3, EIA-364-1000	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-364-27, Test Condition A	10 mΩ MAXIMUM (change from initial) & Discontinuity < 1 microsecond

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6.3 ENVIRONMENTAL PERFORMANCE

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT										
6.3.1	Temperature Life EIA-364-1000 Test Group 1	Mate connectors; expose to: 228 hours at 105 ± 2°C. with the field temperature of 65 °C and field life of 10 years EIA-364-17, Method A	10 mΩ MAXIMUM (change from initial) & Visual: No Damage										
6.3.2	Thermal shock EIA-364-1000 Test Group 2	Mate connectors; expose to 5 cycles of: <table border="1"> <thead> <tr> <th>Temperature °C</th> <th>Duration (Minutes)</th> </tr> </thead> <tbody> <tr> <td>-40 +0/-3</td> <td>30</td> </tr> <tr> <td>+25 ±10</td> <td>5 MAXIMUM</td> </tr> <tr> <td>+105 +3/-0</td> <td>30</td> </tr> <tr> <td>+25 ±10</td> <td>5 MAXIMUM</td> </tr> </tbody> </table> EIA-364-32E Test condition I	Temperature °C	Duration (Minutes)	-40 +0/-3	30	+25 ±10	5 MAXIMUM	+105 +3/-0	30	+25 ±10	5 MAXIMUM	10 mΩ MAXIMUM (change from initial) & Visual: No Damage
Temperature °C	Duration (Minutes)												
-40 +0/-3	30												
+25 ±10	5 MAXIMUM												
+105 +3/-0	30												
+25 ±10	5 MAXIMUM												
6.3.3	Cyclic Temperature & Humidity EIA-364-1000 Test Group 2	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.	10 mΩ MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No Breakdown at 500 VAC & Insulation Resistance: 1000 Megohms MINIMUM & Visual: No Damage										
6.3.4	Solderability	Per SMES-152	Solder coverage: 95% MINIMUM										
6.3.5	Resistance to Soldering Heat (Wave solder)	Dip connector terminal tails into solder molten; Soldering Time: 5±0.5 sec. Solder Temperature: 260±5°C	Visual: No damage in appearance of the connector										
6.3.6	Resistance to Soldering Heat (Reflow solder)	See table – Section 8	Visual: No damage in appearance of the connector										
6.3.7	Thermal Cycling with lubrication (NYOGEL 760G) EIA-364-1000 Test Group 5	Cycle the connector between 15°C ± 3°C and 85°C ± 3°C. Humidity is not controlled. EIA-364-1000, Table 5	10 mΩ MAXIMUM (change from initial) & Visual: No Damage										

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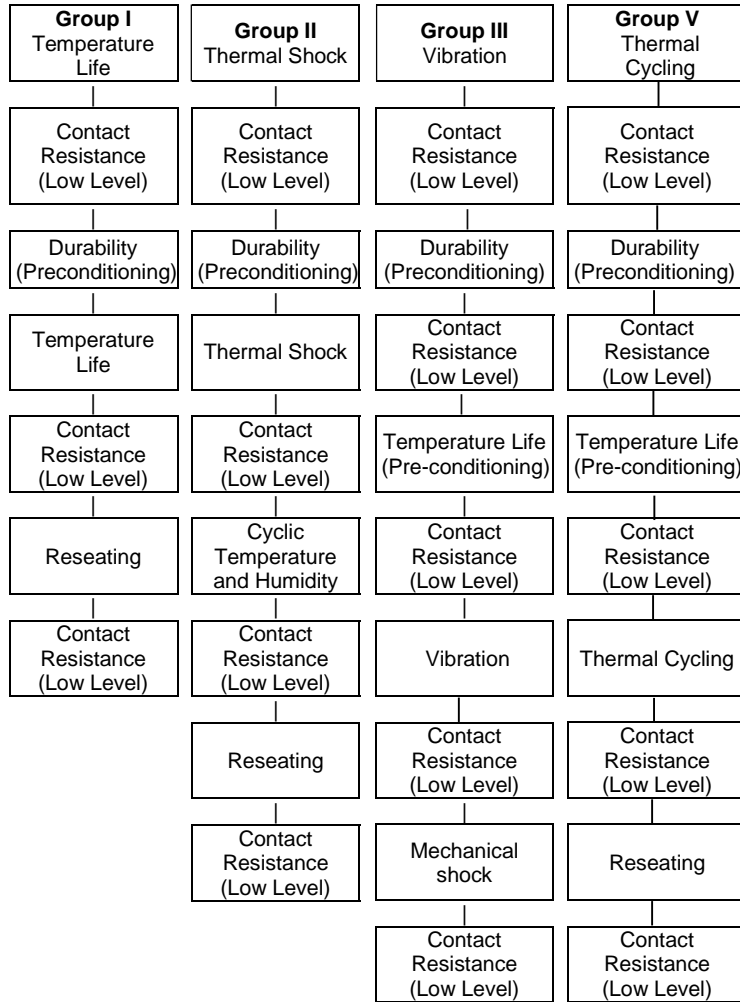
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7.0 TEST SEQUENCE GROUPS

Reliability Test Sequences per EIA-364-1000

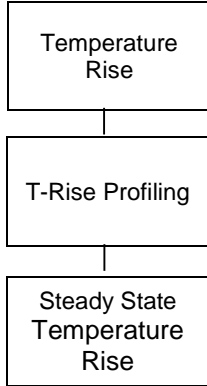


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- Individual Tests**
- Connector Mate / Un-mate Force
 - Crimp Terminal Insertion force
 - Crimp Terminal Retention force
 - Wire Pullout force (Axial)
 - Housing Latch Mechanism Strength
 - Header Pin Retention
 - TPA Installation to Housing
 - TPA Latch Strength Test

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8.0 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.

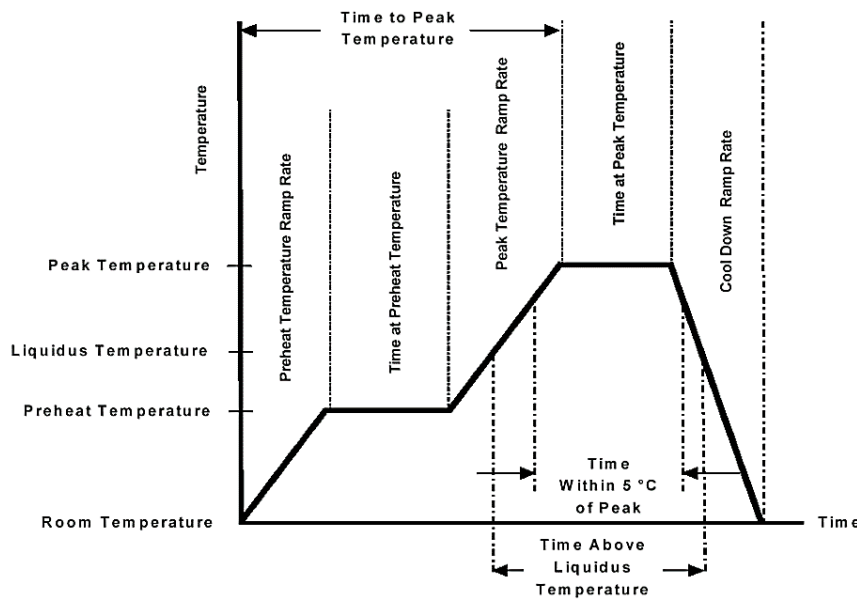
8.1 SOLDER PROCESS TEMPERATURES *

Wave Solder Temperature: 260°C Maximum
 Reflow Solder Temperature: 260°C Maximum

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

8.2 REFLOW SOLDERING PROFILE *

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



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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

9.0 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.

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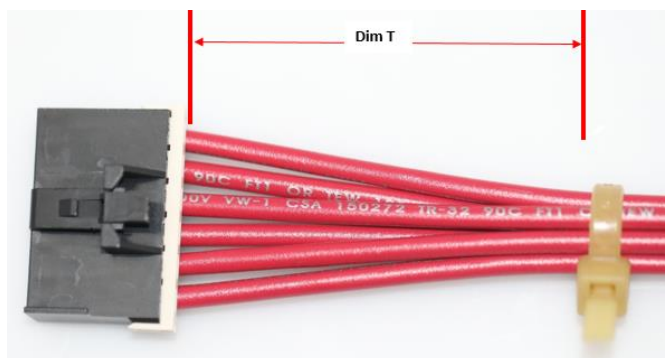
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10.0 CABLE TIE AND / OR TWIST TIE LOCATION

CKT Size	Dim T Min.
2	16.50mm
3	21.00mm
4	27.50mm
5	34.00mm
6	38.50mm



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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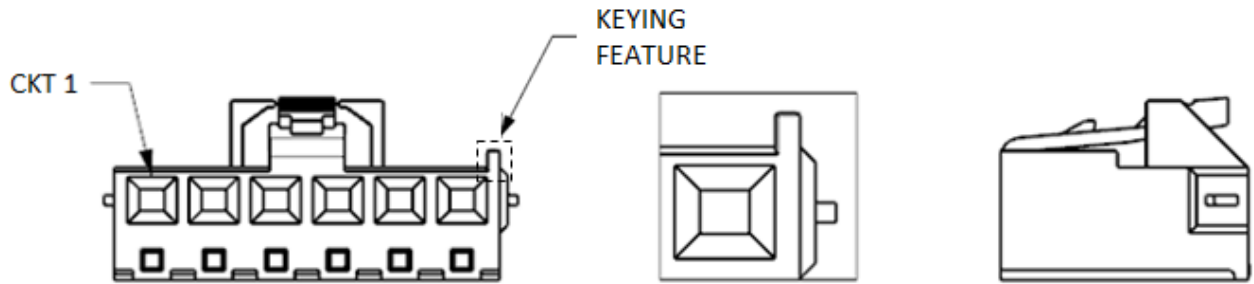
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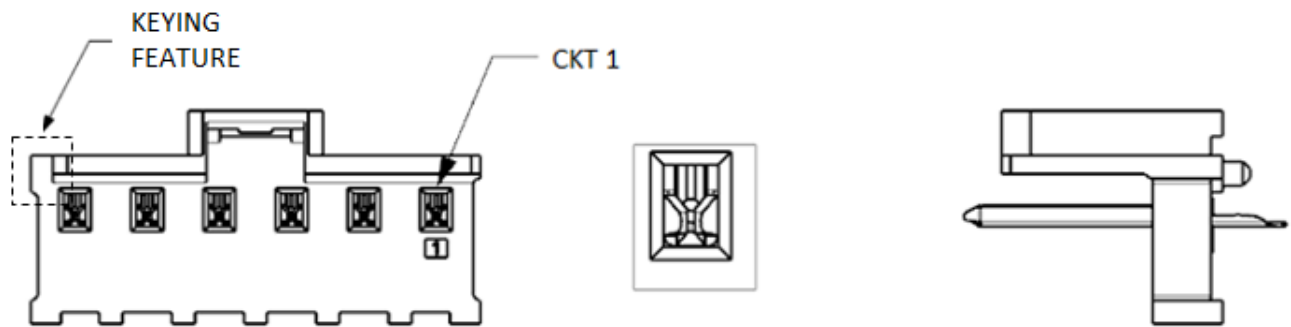
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11.0 POLARIZATION AND KEYING OPTIONS

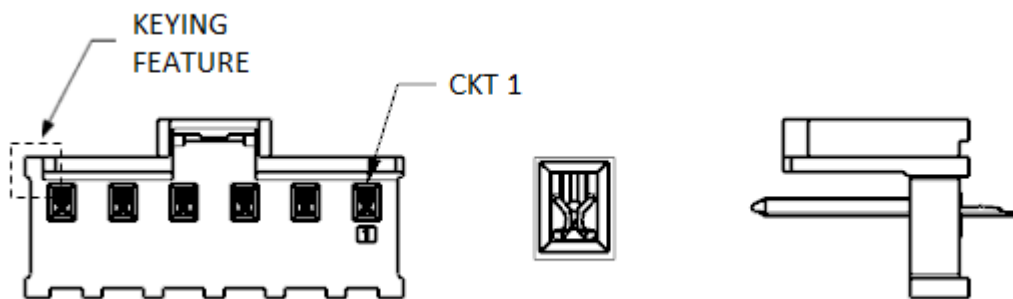
11.1 Receptacle Housing (Series: [207458](#))



11.2 Unshrouded Header With Peg (Series: [207478](#))



11.3 Unshrouded Header Without Peg (Series: [207478](#))



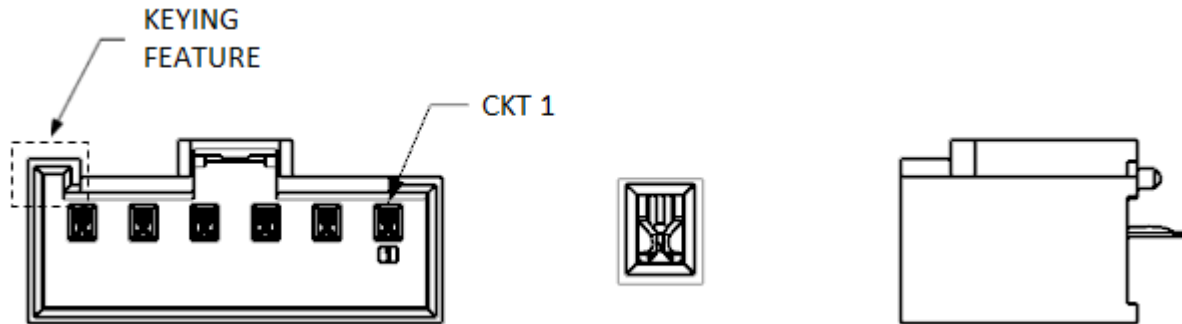
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11.4 Shrouded Header (Series: [207479](#))



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