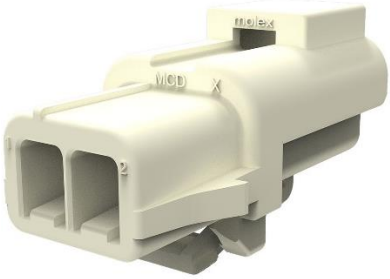
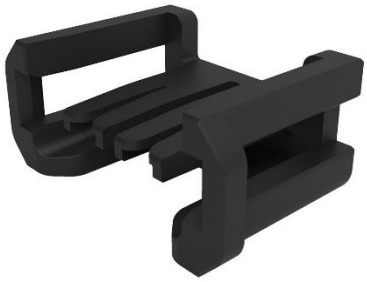
DITTO™ WIRE TO WIRE INTERCONNECTS

DITTO GENDERLESS CRP TER	DITTO GENDERLESS CRP HSG
	
Series: 150200	Series: 150201

DITTO POSITIVE LOCK TPA HT V-0

Series: 150212

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1.0 SCOPE

This Product Specification covers the 3.0 mm (.118 inch) centerline (pitch) connector series terminated with 20 to 26 AWG wire using Crimp technology with Gold plating.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER (S)

Description	Series Number
DITTO GENDERLESS CRP TER Cu-Ni 20-22AWG	1502000011
DITTO GENDERLESS CRP TER Cu-Ni 24-26AWG	1502000012
DITTO GENDERLESS CRP HSG POSLOCK 1X2 HT	1502010012
DITTO GENDERLESS CRP HSG POSLOCK 1X3 HT	1502010013
DITTO GENDERLESS CRP HSG POSLOCK 1X4 HT	1502010014
DITTO GENDERLESS CRP HSG POSLOCK 1X5 HT	1502010015
DITTO GENDERLESS CRP HSG POSLOCK 1X6 HT	1502010016
DITTO GENDERLESS CRP HSG POSLOCK 1X7 HT	1502010017
DITTO GENDERLESS CRP HSG POSLOCK 1X8 HT	1502010018
DITTO POSITIVE LOCK TPA HT 1X2 V-0	1502120012
DITTO POSITIVE LOCK TPA HT 1X3 V-0	1502120013
DITTO POSITIVE LOCK TPA HT 1X4 V-0	1502120014
DITTO POSITIVE LOCK TPA HT 1X5 V-0	1502120015
DITTO POSITIVE LOCK TPA HT 1X6 V-0	1502120016
DITTO POSITIVE LOCK TPA HT 1X7 V-0	1502120017
DITTO POSITIVE LOCK TPA HT 1X8 V-0	1502120018

2.2 DIMENSIONS, MATERIALS, PLATING AND MARKINGS

REFER 1502000000-SD, 1502010000-SD AND 1502120010-SD.
Material: RoHS compliant materials*.
**Refer to the "Product Environmental Compliance" section in Molex.com to know the individual PN RoHS compliance status*

2.3 SAFETY AGENCY APPROVALS

UL FILE NUMBER: E29179
CSA FILE NUMBE: 80058117
IEC FILE NUMBER: 47893744146
CB FILE NUMBER: 47893744146

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3.0 APPLICABLE DOCUMENTS AND SPECIFICATION

3.1 MOLEX DOCUMENTS

Ditto Interconnects Test summary TS-1502000000-000
Ditto Application Specification AS-1502000000-00
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

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

4.0 ELECTRICAL PERFORMANCE RATINGS

4.1 VOLTAGE

350 Volts AC/DC

4.2 APPLICABLE WIRES

Refer Application Tooling Specification Sheets (see section 3.1) for details.

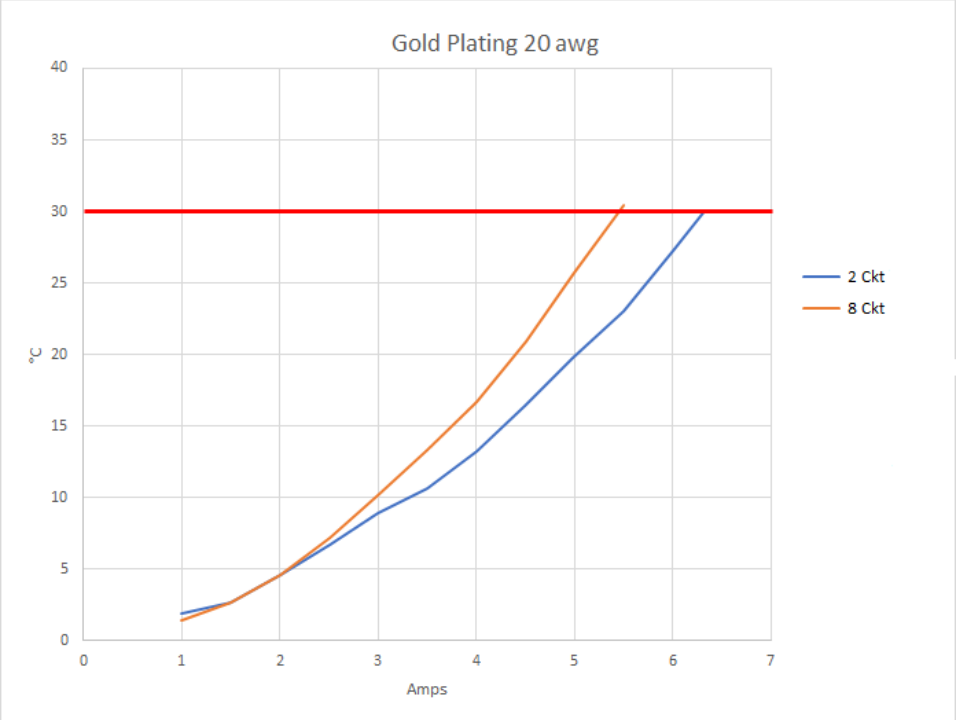
AWG	Insulation Diameter
20	1.35-1.70 mm (.053-.067 inch)
22	
24	1.05-1.50 mm (.041-.059 inch)
26	

4.3 MAXIMUM CURRENT RATING

Ratings shown below represent maximum current carrying capacity of a fully loaded connector with all circuits powered using UL3132 stranded wire. Ratings are based on a 30 °C maximum temperature rise limit over ambient (see section 6.1.4 for specification) with derating. Current is dependent on connector size, ambient temperature and related factors. Actual current rating is application dependent and should be evaluated for each use.

	2 CIRCUIT	3 CIRCUIT	4 CIRCUIT	5 CIRCUIT	6 CIRCUIT	7 CIRCUIT	8 CIRCUIT
20 AWG	6.0 A	5.9 A*	5.8 A*	5.8 A*	5.7 A*	5.6 A*	5.5 A
22 AWG	5.5 A	5.4 A*	5.3 A*	5.3 A*	5.2 A*	5.1 A*	5.0 A
24 AWG	4.5 A	4.4 A*	4.3 A*	4.3 A*	4.2 A*	4.1 A*	4.0 A
26 AWG	4.0 A	3.9 A*	3.8 A*	3.8 A*	3.7 A*	3.6 A*	3.5 A

*Estimated Values.



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4.4 TEMPERATURE

Operating: - 40 °C to + 150 °C

4.5 DURABILITY

Gold Plated: 100 mating cycles

As tested in accordance with EIA-364-1000 test method (see sec 6.2.8 of this specification). Durability per EIA-364-09

5.0 QUALIFICATION

Laboratory conditions and sample selection are in accordance with EIA-364-1000

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6.0 PERFORMANCE

6.1 ELECTRICAL PERFORMANCE

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	**Contact Resistance (Low Level)** (Initial)	Mate connectors: apply a maximum voltage of **20** mV and a current of **100** mA. EIA-364-23C	**10.0** milliohms MAXIMUM [initial]
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
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
4	**Temperature Rise**	Mate connectors: measure the temperature rise at the rated current. EIA-364-70, Method 2	Temperature rise: **+30**°C MAXIMUM (above ambient)

6.2 MECHANICAL PERFORMANCE

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5	**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	**27.0** N (**6.06** lbf) MAXIMUM Mate force & **5.0** N (**1.12** lbf) MINIMUM Unmate force
6	**Connector Mate and Unmate Forces** (Latch activated)	Mate and unmate connector (male to female) at a rate of **25 ± 6** mm (**1 ± ¼** inch) per minute. EIA-364-13E	**27.0** N (**6.06** lbf) MAXIMUM Mate force & **50** N (**11.24** lbf) MINIMUM Unmate force
7	**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.	**25** N MINIMUM (**5.62** lb_f) MINIMUM
8	**Durability** EIA-364-1000 Test Group 7 (See section 7.0)	Mate and unmate connectors up to **100** cycles at a rate of **300** cycles per hour. EIA-364-09	**10** milliohms MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No breakdown; current leakage < **5** mA & Visual: No Damage
9	**Vibration (Random)** EIA-364-1000 Test Group 3	Mate connectors and vibrate per EIA 364-28, test condition VII. Letter D. (Acceleration 3.1 g)	**10** milliohms MAXIMUM (change from initial) & Discontinuity < **1** microsecond
10	**Shock (Mechanical)** EIA-364-1000 Test Group 3	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** milliohms MAXIMUM (change from initial) & Discontinuity < **1** microsecond
11	**Wire Pullout Force (Axial)**	Apply an axial pullout force on the wire at a rate of **25 ± 6** mm (**1 ± ¼** inch). UL1977 Edition 2	**AWG** / **MINIMUM Pullout force** 20 — **36** N (**8** lbf) 22 — **36** N (**8** lbf) 24 — **26.7** N (**6** lbf) 26 — **17.8** N (**4** lbf)

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6.2 MECHANICAL PERFORMANCE (Continued)

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
12	**Terminal Insertion Force (into Housing)**	Apply an axial insertion force on the terminal at a rate of **25 ± 6** mm (**1 ± ¼** inch).	**15** N MAXIMUM (**3.37** lb_f)
13	**Housing Latch Mechanism Strength**	Exert an axial force at a rate of **13** mm per minute (**0.5** inch per minute) to separate the housing halves. EIA-364-98	**50** N MINIMUM (**11.24** lb_f)
14	**TPA installation to housing**	Install the TPA to the Housings at a rate of **25 ± 6** mm (**1 ± ¼** inch) per minute	**18** N MAXIMUM (**4.04** lb_f)
15	**TPA Latch strength test**	Axial Pullout force at a rate of 13 mm/ minute (0.5 inch per minute)	**60** N MINIMUM (**13.48** lb_f)

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6.3 ENVIRONMENTAL PERFORMANCE

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
16	**Shock (Thermal)** EIA-364-1000 Test Group 2 (See Section 7.0)	Mate connectors; expose to **10** cycles of: Temperature °C — Duration (Minutes) **-40 +0/-3** — **30** **+25 ±10** — **5** MAXIMUM **+150 +3/-0** — **30** **+25 ±10** — **5** MAXIMUM EIA-364-32E Test condition IV.	**10** milliohms MAXIMUM (change from initial) & Visual: No Damage
17	**Cyclic Temperature & Humidity** EIA-364-1000 Test Group 2 (See section 7.0)	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.	**10** milliohms MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No Breakdown at **500** VAC & Insulation Resistance: **1000** Megohms MINIMUM & Visual: No Damage
18	**Temperature Life** EIA-364-1000 Test Group 1 (See section 7.0)	Mate connectors; expose to: **584** hours at 150 **± 2°**C. EIA-364-17, Method A, Table-8.	**20** milliohms MAXIMUM (change from initial) & Visual: No Damage

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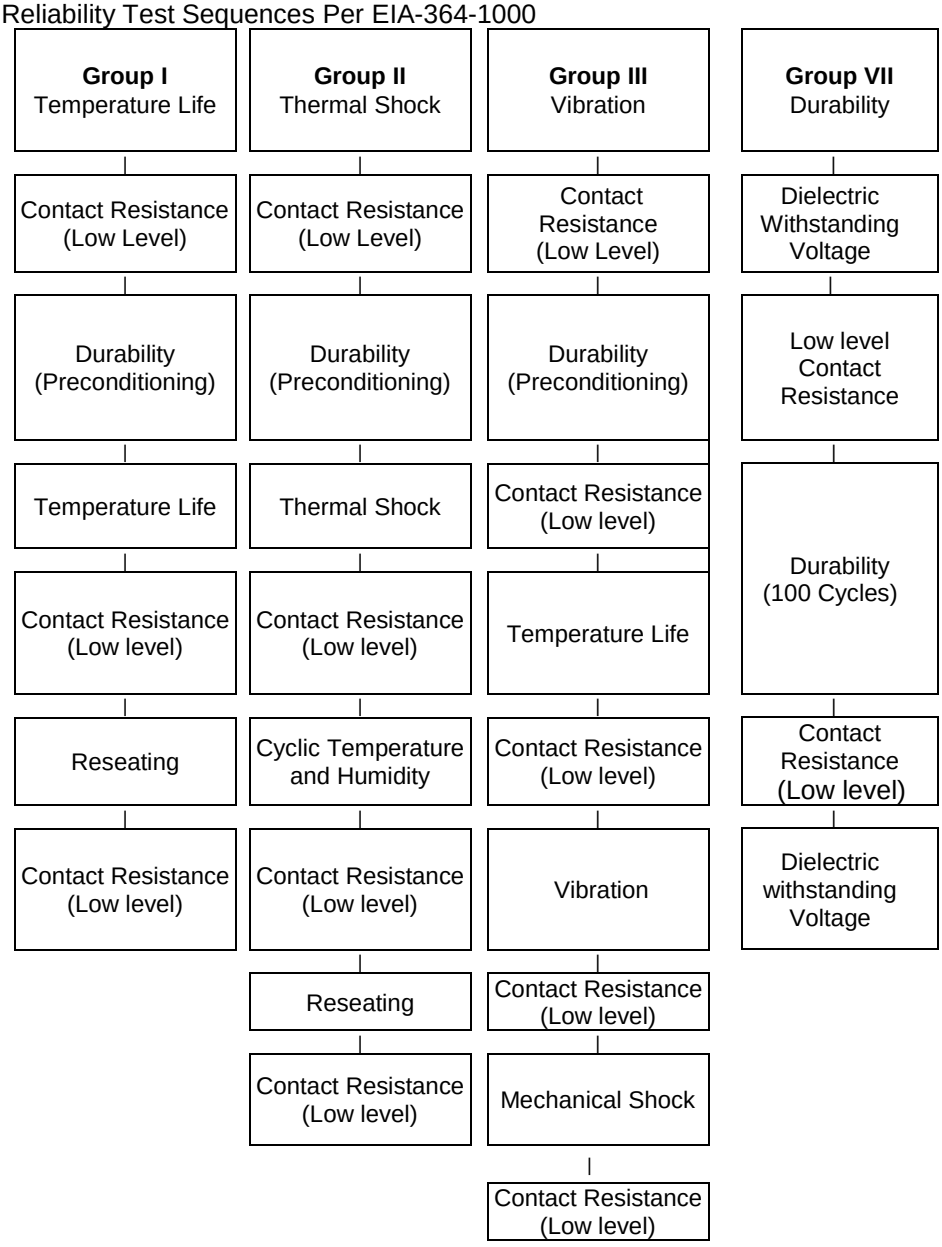
7.0 TEST SEQUENCE GROUPS

Reliability Test Sequences Per EIA-364-1000



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Individual Tests
Connector Mating / Unmating Force
Terminal Insertion force
Terminal Retention force
Wire Pullout force
Housing Latch Mechanism Strength
TPA installation to housing
TPA Latch strength test

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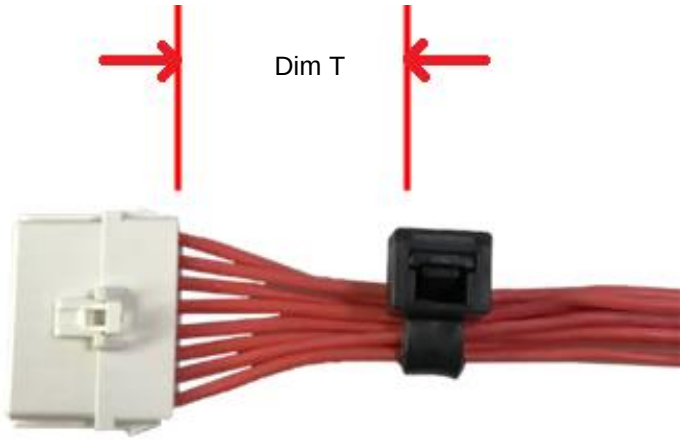
8.0 PACKAGING

Parts shall be packaged to protect against damage during normal handling, transit and storage. Palletized shipment is the recommended method over single box/ single reel shipment. Refer Molex.com specific part number webpage to get the exact packaging document for that item

9.0 CABLE TIE AND/OR TWIST LOCATION

Circuit Sizes	Dimension T Minimum
2 to 4	0.50” (12.7mm)
5 to 8	0.75” (19.1mm)



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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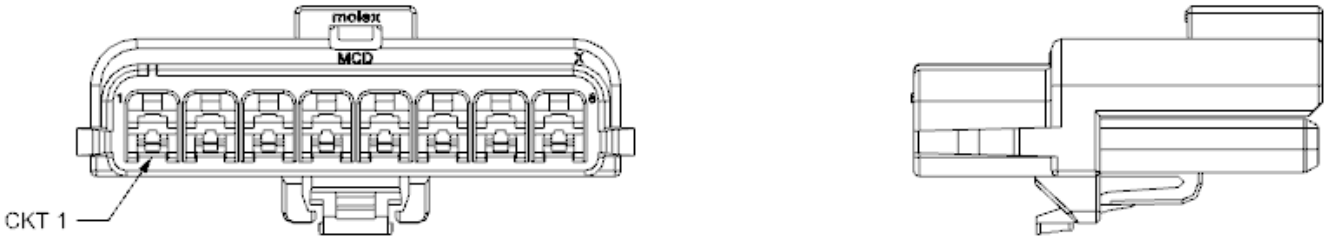
10.0 POLARIZATION AND KEYING OPTIONS

10.1 DITTO GENDERLESS CRP HSG POSLCK HT (Series: 150201)



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