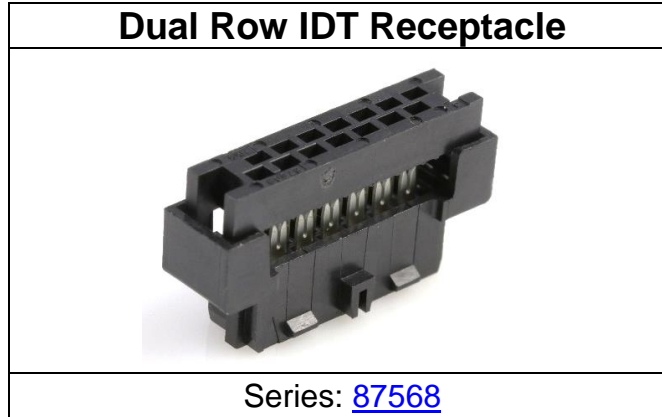


MILLIGRID

Wire to Board

CONNECTOR SYSTEM



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1.0 SCOPE

This specification covers Insulation Displacement Terminal (IDT) for ribbon cable on 1.00 mm centers with single-beam contact terminal connection for 0.50 mm square pins on dual row 2.00 mm grid.

2.0 PRODUCT DESCRIPTION

2.1 DESCRIPTION, SERIES NUMBER, AND LINKS

| DESCRIPTION | SERIES NUMBER |
|-----------------------------------|-----------------------|
| 2.00 mm "Milli-Grid" Dual Row IDT | 87568 |

The connector is supplied to the customer with the terminals pre-assembled in a lower housing and pre-loaded with an upper housing. The ribbon cable may be inserted into the pre-loaded upper housing and assembled to the lower housing with the use of hand tool or bench press.

The ribbon cable connector will mate with any Milli-Grid header with a mating pin length between 2.50 mm to 4.20 mm.

2.2 DIMENSIONS, MATERIALS, PLATINGS

See sales drawings for details on dimensions, materials and platings.

2.3 ENVIRONMENTAL CONFORMANCE

To fine 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 Number : LR19980

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3.0 APPLICABLE DOCUMENTS AND SPECIFICATION

3.1 MOLEX DOCUMENTS

MilliGrid BMI Connectors Test Summary TS
[MilliGrid BMI Connectors Application Specification 50394-0001-AS](#)
[Molex Moisture Technical Advisory AS-45499-001](#)
[Molex Package Handling Specification 454990100-PK](#)

The following documents form part of this specification to the extent specified herewith. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and reference documents, this specification shall take precedence.

| | |
|--------------|--|
| MIL-STD-202 | Test methods for Electronic and Electrical component parts. |
| MIL-STD-1344 | Test methods for Electrical Connectors. |
| EIA-364-1000 | Environmental Test methodology for Assessing the performance of Electrical Connectors and Sockets. |

3.2 INDUSTRY DOCUMENTS

EIA-364-1000
 MIL-STD-202
 MIL-STD-1344
 UL-60950-1
 CSA STD. C22.2 NO. 182.3-M1987

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4.0 ELECTRICAL PERFORMANCE RATINGS

4.1 VOLTAGE

125 Volts AC (RMS) / DC Max

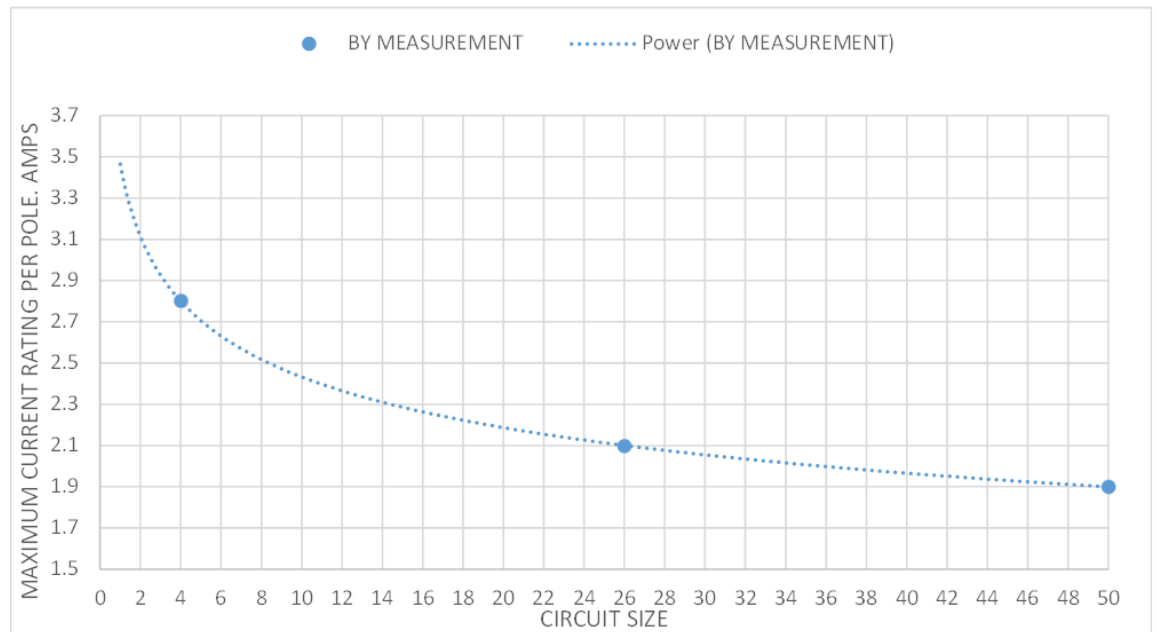
4.2 APPLICABLE WIRES

1.00mm PITCH FLAT CABLE, 7 STRANDS, AWG #28, UL2651 AND UL2678.

4.3 CURRENT RATING (MAXIMUM AMPERES)

Current rating is application dependent and each application should be evaluated by the end user for compliance to specific safety agency requirements. The ratings listed in the chart below are per Molex test method based on a 30 °C maximum temperature rise over ambient temperature and are provided as a guideline. Appropriate de-rating is required based on circuit size, ambient temperature, copper trace size on the PCB, AWG WIRE, 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.

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4.4 TEMPERATURE

Operating Temperature Range : - 45 °C to + 105 °C

Field Temperature and Field Life: 105°C for 3 years (based EIA-364-1000, table 8)

Note: Temperature life test duration (section 6.3. item 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).

4.5 DURABILITY

| Plating Type | Number of Cycles |
|--------------|------------------|
| Gold Plated | 100 |

*As tested in accordance with EIA-364-1000 test method (see Sec. 6.2 item 6 of this specification).
Durability per EIA-364-09.*

5.0 QUALIFICATION

Laboratory condition, sample selection and test sequences are in accordance with EIA-364-1000, MIL-STD-202 & MIL-STD-1344.

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6.0 PERFORMANCE

6.1 ELECTRICAL PERFORMANCE

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|-------|-----------------------|---|-------------------------------|
| 6.1.1 | Contact Resistance | Mated samples subjected to 20 mV open circuit & 10 mA max. (MIL-STD-1344A, Method 3004) | 30 mΩ max. |
| 6.1.2 | Insulation Resistance | Measurements taken between adjacent contacts of unmated connectors where 500V DC is applied. (MIL-STD-1344A, Method 3003) | 5,000 MΩ min. |
| 6.1.3 | Dielectric Strength | Unmated samples subjected to 500 V AC rms for 5 seconds. between adjacent contacts (MIL-STD-1344A, Method 3001) | No breakdown. |
| 6.1.4 | Temperature Rise | Mate connectors and measure the temperature rise of contact when the maximum DC rated current is passed. | 30 °C max. rise over ambient. |

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6.2 MECHANICAL PERFORMANCE

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|-------|---|--|---|
| 6.2.1 | Cable Retention without strain Relief (Upper Housing Retention) | An axial force is applied to the cable at the rate of 25.4 mm per minute till the upper housing is removed from the lower housing | 0.25 kgf min. per ckt |
| 6.2.2 | Terminal Retention Force | Dislodge the terminal from the housing at the rate of 25.4 mm per minute. | 0.20 kgf min. per terminal |
| 6.2.3 | Engagement / Disengagement Forces (per ckt) | SQ pin 0.52 +/- 0.005 mm (Engagement) SQ pin 0.48 +/- 0.005 mm (Disengagement) at the rate of 25.4 mm per minute. | Engaging: 200 gf max. Disengaging: 10 gf min. |
| 6.2.4 | Mate & Unmate Force | Mate & Unmate connector with applicable shrouded headers at the rate of 25.4 mm/min. | Mate force: 200 g per ckt max. Unmate force: 40 g per ckt min. |
| 6.2.5 | Strain Relief Retention (Optional) | An axial force is applied to the cable at the rate of 25.4 mm per minute till the strain relief is removed from the lower housing. | 7.5 kgf min. |
| 6.2.6 | Durability | 100 cycles of mating and unmating at a rate of 600 cycles per hour | Contact Resistance: 30 mΩ max. |
| 6.2.7 | Vibration | 1.52 mm peak to peak, 10-55-10 Hz traversed in 1 min, each 1 hour from X, Y, & Z directions. | Discontinuity 1 μsec max. Contact Resistance: 30 mΩ max. |
| 6.2.8 | Mechanical Shock | 100 G's 6 ms, half sine with 3 shocks in each X, Y & Z axis. | Discontinuity 1 μsec max. Contact Resistance: 30 mΩ max. |

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6.3 ENVIRONMENTAL PERFORMANCE

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|-------|------------------|---|--|
| 6.3.1 | Temperature Life | Temperature: 125 +/- 2 °C for 582 hours. (Per, EIA-364-1000) | Contact Resistance: 30 mΩ max. No Damage. |
| 6.3.2 | Thermal Shock | 30 minutes of -55 °C and 30 minutes of 85 °C for 5 cycles (MIL-STD-1344A, Method 1003.1, Condition A) | Contact Resistance: 30 mΩ max. No Damage. |
| 6.3.3 | Salt Spray | Temperature: 35 +/- 2 °C Solution: 5 +/- 1% Spray Time: 48 hours (MIL-STD-202F, Method 101D, Condition B) | Contact Resistance: 30 mΩ max. |
| 6.3.4 | Humidity | Temperature: 40 °C Relative Humidity: 90-95% Duration: 240 hrs (MIL-STD-1344A, Method 1002.2, Type 1, Condition A) | No Damage Contact Resistance: 30 mΩ max. Insulation Resistance: 5000 MΩ min. Dielectric Strength: No Break Down. |

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Individual Tests

Cable Retention without strain relief

Terminal Retention Force

Engagement / Disengagement Force

Mate & Unmate Force

Strain Relief Retention

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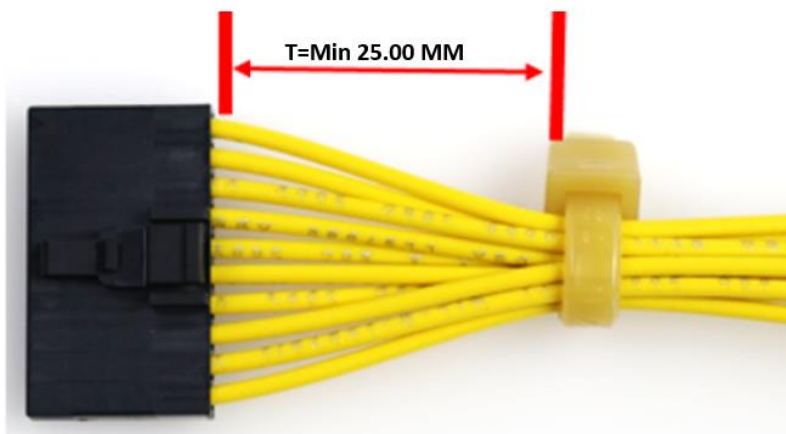


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7.0 PACKAGING

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.

8.0 CABLE TIE AND / OR TWIST TIE LOCATION



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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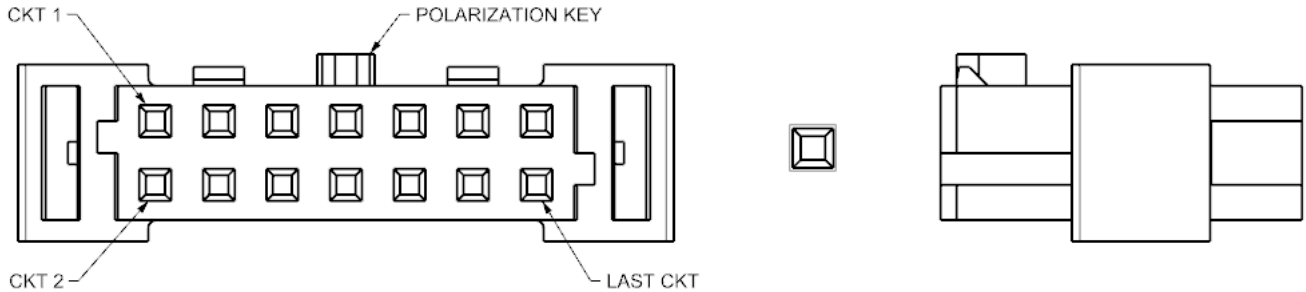
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9.0 POLARIZATION AND KEYING OPTIONS

9.1 VERTICAL HEADER (Series: [87568](#))



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