



PRODUCT SPECIFICATION

MX150 2X6 Panel Mount Connector

1.0 SCOPE

This specification covers the 3.50 mm (0.138 inch) centerline (pitch) MX150 2x6 Panel Mount connection system terminated with 14 to 22 AWG or ISO 0.35mm² to 1.5mm² wire using crimp technology with Sn(Tin), Ag(Silver), Au(Gold) terminals, see section 4.4(vibration class) for terminal plating selection.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME

MX150 2X6 Panel Mount Connector

SERIES NUMBER

47725

2.2 DIMENSIONS, MATERIALS AND MARKINGS

For the products, please see sales drawing listed in below form for information on dimensions, material and marking

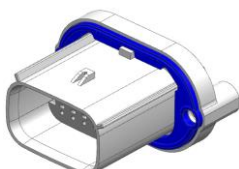
Part Numbers	Drawing
477251310, 477251330, 477251340	SD-47725-130
477252010, 477252030, 477252040, 477252110 477252130, 477252140	SD-47725-210
477256010, 477256030, 477256040, 477257010, 477257030, 477257040 477259010, 477259020 477259030, 477259040	SD-47725-601

2.3 SAFETY AGENCY APPROVALS

UL File Number	20170523-E29179
CSA File Number	Not Applicable
TUV License Number	Not Applicable



Polarization A



Polarization B



Polarization C



Polarization D

Application	Part numbers				Gasket Color
	Key A / Black	Key B / Light Gray	Key C / Dark Gray	Key D / Stone Gray	
UL HB	477251310	477251320	477251330	477251340	Gray
	477252010	477252020	477252030	477252040	Black
	477252110	477252120	477252130	477252140	Gray
	477256010	477256020	477256030	477256040	Blue
	477257010	477257020	477257030	477257040	Blue
UL V0	477259010	477259020	477259030	477259040	Blue

REVISION:

ECR/ECN INFORMATION:

TITLE:

SHEET No.

E1

EC No: 627093

DATE: 2019/11/12

MX150 2X6 Panel Mount Connector

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DOCUMENT NUMBER:

PS-47725-000

CREATED / REVISED BY:

Walker He

CHECKED BY:

Elvis Song

APPROVED BY:

Jun Deng



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3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

Description	Document Number
MX150 2X6 Panel Mount Connector	SD-47725-130
	SD-47725-210
	SD-47725-601
Packaging specification	RPK-47725-001
Application specification	AS-47725-001
Terminal Product Specification	PS-33012-002
MX150 Blade Terminal	SD-33000-001
MX150 2x6 Receptacle Connector	SD-33472-0002
MX150 Receptacle Terminal	SD-33012-002
Connector Test Summary	477250001-TS

4.0 RATINGS

4.1 VOLTAGE

4.1.1 LOW VOLTAGE TYPE 1 APPLICATION: Voltage \leq 14 V

Connector - Typical operating voltage not to exceed 14 Volts peak.

Terminal - Maximum single line current dependent on terminal and wire.

See terminal product specification PS-33012-002.

Low voltage type 1 information applicable to all connector applications.

4.1.2 LOW VOLTAGE TYPE 2 APPLICATION: 14 V \leq Voltage \leq 60 V

Terminal - Maximum single line current dependent on terminal and wire.

See terminal product specification PS-33012-002

Information

This interconnect system **is not** designed for hot mating. Extra signal circuits or HVIL is needed for hot mating/unmating application. The information provided in this section is based on the connector only. For high voltage application, please consult with related safety agency or engineer with customer's particular safety spec.

4.1.3 Smallest Clearance and Creepage Values of MX150 2x6 Panel Mount

Connector (S/N: 47725):

Clearance (in X direction) = **1.67** mm

Clearance (in Y direction) = **3.90** mm

Creepage (in X direction) = **1.90** mm

Creepage (in Y direction) = **5.10** mm

4.1.4 Material Group (CTI) Information

HB Material Group II (400<CTI< 599)

V0 Material Group IIIa (175<CIT<400)

4.1.5 Operating Voltage (According to IEC60664-1)

Application Pollution Degree	HB Connector Voltage (R.M.S.)	V0 Connector Voltage (R.M.S.)
Pollution degree 1	V < 320V (Creepage =0.75mm)	V < 320V (Creepage =0.75mm)
Pollution degree 2	V < 63V (Creepage =0.90mm)	V < 63V (Creepage =1.25mm)
Pollution degree 3	V < 10V (Creepage =1.00mm)	V < 10V (Creepage =1.00mm)

*All information in section 4.1.3 - 4.1.5 is based on IEC 60664-1 data and pending validation testing.

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4.2 CURRENT AND APPLICABLE WIRES

See the Terminal Product Specification listed in section 3.0

4.3 TEMPERATURE

Ambient Operating Temperature: - 40°C to + 125°C (On Engine)

4.4 VIBRATION CLASS

Validation Mechanical Shock & Vibration per USCAR-2 (Rev 5) as below table shown.

Flammability	Vibration Class	Insulation Wire Range	Recommend Wire Type	Recommend Terminal Plating Type
HB	V1(Not Coupled to Engine)	1.20-2.69mm	TXL	Sn
HB	V2(Coupled to Engine)	1.20-2.69mm	TXL	Ag or Au
V0	V2(Coupled to Engine)	1.20-2.69mm	TXL	Au

4.5 SEALING CLASS

GMW3191 December 2007 Sealing Class 2, (Class 3 with CPA, Backshell and Convuluted Conduit)

*(See PS-33472-000 sealing performance section for receptacle connector conditions)

5.0 PERFORMANCE

Performance is based on the 'panel mount connector' 'bolted to a 'machined aluminum fixture' with a Torque of 1.5~1.7 Nm per AS-47725-001. Aluminum fixture characteristics is according to AS-47725-001.

Bolt is EJOT P/N – 4239412801.

Since specific characteristics of the 'Panel' and installation can influence the performance of the panel seal, end user is required to ensure the chosen 'Panel characteristics' are appropriate and validate for their individual applications.

5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Dry circuit resistance	Apply the open circuit voltage of 20mV and 100mA current limit. (GMW3191 section 4.17)	R _{Total Connection} Dry circuit 8 mΩ Max
2	Isolation resistance	Apply a voltage of 500VDC between adjacent terminals. (GMW3191 section 4.19)	All measured isolation resistance shall be > 100 MΩ.
3	Dielectric strength	Apply an AC rms voltage of 1000 Volts at 50 or 60 Hz or a DC voltage of 1600 Volts across each adjacent cavity for at least 60 seconds, and between the terminals and the metal foil for at least 60 seconds. (GMW3191 section 4.20)	No breakdown or flash over occur

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5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
4	Terminal to connector engagement force	Apply an axial insertion force on the terminal at a uniform rate of 50 ± 10 mm/min. (GMW3191 section 4.7)	30N Max.(TPA in open position)
			30N Min.(TPA in fully seated position)
5	Terminal from connector extraction force	Apply an axial pullout force on the terminal in the housing at a uniform rate of 50 ± 10 mm/min (GMW3191 section 4.9)	50N Min.(TPA in open position)
			80N Min.(TPA in fully seated position)
			80N Min.(Moisture conditioning, TPA in fully seated position)
			70N Min.(Thermal aging, Temperature humidity cycling, TPA in fully seated position)
6	Miscellaneous component engage/disengage force (TPA)	Insert and pull TPA at a uniform rate of 50 ± 10 mm/min (GMW3191 section 4.12)	20N Min.(TPA pre-lock force without terminal)
			60N Max.(TPA closing force with properly assembled terminal)
			60N Min.(TPA closing force with one improperly assembled terminal)
			25N Min.(Closed TPA locking)
7	Connector to connector engagement force	Mate connector together at a uniform rate of 50 ± 10 mm/min (GMW3191 section 4.11)	75N Max.
8	Locked connector disengagement force	Pull the mated connector apart at a rate of 50 ± 10 mm/min (GMW3191 section 4.13)	120N Min
9	Unlocked connector disengagement force	Pull the mated connectors apart at a rate of 50 ± 10 mm/min (GMW3191 section 4.14)	100N Max. (locking feature disengaged)
			100N Max. (locking feature engaged)

5.3 ENVIRONMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
10	Thermal aging	Expose mated connectors to 125°C for 1008 hours (GMW3191 section 4.21)	1. Total connection Resistance 8 mΩ Max. 2. Appearance: no damage

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11	Thermal shock	Mate connectors per durability, expose to 300 cycles of: <u>Temperature °C</u> <u>Duration (Minutes)</u> -40 30 +125 30 (GMW3191 section 4.22)	1. No discontinuities > 7Ω for more than 1μS 2. Total connection resistance 8mΩ Max 3. Appearance: no damage						
12	Temperature /humidity cycling	Mate connectors per durability and expose connector system to ten 24 -hour cycles of combined heating and humidity exposure -40°C and 125°C at 95% to 99% RH (GMW3191 section 4.23)	1. Total connection Resistance 8mΩ Max. 2. Appearance: no damage						
13	Mechanical shock	Expose mated connectors to shock with half sine wave: <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Acceleration[g]</td> <td>35</td> </tr> <tr> <td>Nominal shock Duration [ms]</td> <td>7.5</td> </tr> <tr> <td>Number of shocks per axis, (positive)</td> <td>10</td> </tr> </table> (USCAR Rev 5 section 5.4.6.3)	Acceleration[g]	35	Nominal shock Duration [ms]	7.5	Number of shocks per axis, (positive)	10	Samples are evaluated only after completion of the vibration test
Acceleration[g]	35								
Nominal shock Duration [ms]	7.5								
Number of shocks per axis, (positive)	10								
14	Vibration	Test duration: 8 hours per axis (USCAR Rev 5 section 5.4.6.3-D) Vibration Class: see section 4.4	1. No discontinuities > 7Ω for more than 1μS 2. Total connection resistance 10mΩ Max 3. Appearance: no damage						
15	Submersion	Heat the samples for 30 minutes at 125°C , then immerse the heated test samples into 23±5°C de-ionized water to a depth of 100 mm for 1 hour (GMW3191 section 4.29)	1. The leakage current 5 μA Max. 2. Appearance: no damage						
16	Pressure/ vacuum leak	Pressure/Vacuum 48kPa before environment test and Pressure/Vacuum 28kPa after environment test (GMW3191 section 4.30)	1. No loss in the applied Pressure and no bubbles visible(positive pressure) 2.Isolation resistance 100 MΩ Min(Negative pressure) 3. Appearance: no evidence of water present in the interior of either mated connector						
17	High- pressure spray ((with CPA, Backshell and Convuluted Conduit)	Temperature: +80±5°C Flow rate: 14 ~ 16 l/min Pressure: 8000~10000 kPa (measured as near as possible to the nozzle aperture) (GMW3191 section 4.31)	1. All measured isolation resistances shall be > 100 MΩ . 2. No trace of water inside connectors						

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18	Fluid resistance	Submerge connector assemblies in the following fluids: brake fluid, oil, *gasoline, engine coolant, automatic transmission fluid, windshield washer solvent, power steering fluid, *diesel fluid, E85 ethanol fuel.	Submersion for 30 minutes & Isolation Resistance of 100 MΩ @ 500 VDC minimum
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* Silicone seals swell in the presence of gasoline and diesel fuel. This condition may cause excessive connector mate/unmate forces and/or reduce the Grommet Cap retention

6.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage. For more information refer to appropriate packaging drawing.

MOLEX REPRESENTS AND WARRANTS TO BUYER FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF DELIVERY OF THE PRODUCTS TO BUYER THAT

- 1) THE PRODUCTS SHALL CONFORM TO THE MOLEX SPECIFICATIONS FOR THE PRODUCTS IN FORCE AT THE DATE OF DELIVERY OF THE PRODUCTS TO BUYER, AND
- 2) THE PRODUCTS SHALL BE OF FREE FROM MATERIAL DEFECTS IN MATERIALS AND MANUFACTURING.

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