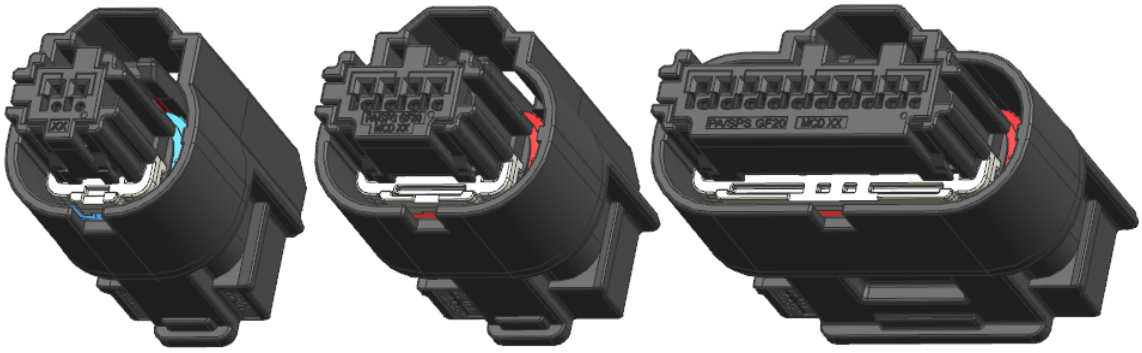
molex®

PRODUCT SPECIFICATION

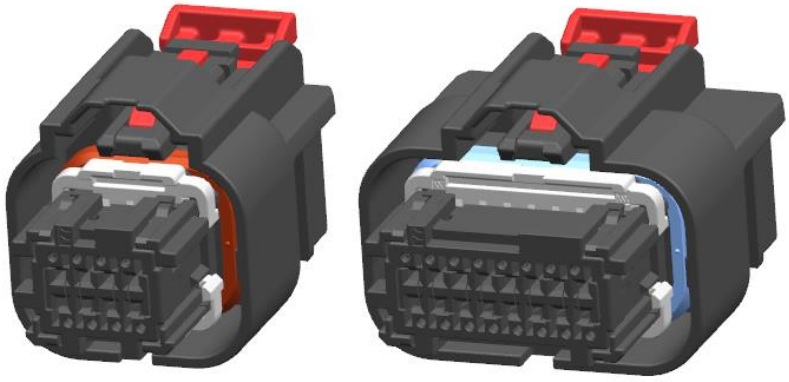
MINI50 SEALED RECEPTACLE CONNECTOR SYSTEM

SINGLE ROW ASSEMBLY



1x2 1x4 1x10

DUAL ROW ASSEMBLY



2x4 2x8

REVISION:	ECR/ECN INFORMATION:	TITLE:	SHEET No.
A7	EC No: **647278** DATE: **10/16/2020**	**MINI50 SEALED ASSEMBLY MAT SEAL**	**1** of **12**

DOCUMENT NUMBER:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
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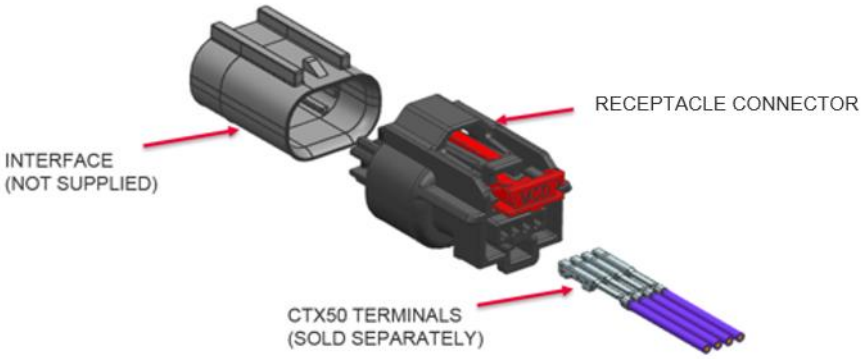
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1.0 SCOPE

This Product Specification covers the Mini50 Sealed connector series for use with 0.5mm terminals spaced on a 1.80 mm centerline (pitch) terminated with 0.13 mm^2 to 0.35 mm^2 (22 to 26 AWG) wire using crimp technology with tin or silver plating.

2.0 PRODUCT DESCRIPTION

2.1 DIRECT CONNECT (WIRE TO BOARD APPLICATION)



Product Name and Series Number

Product Name	Document Number	Series
Mini50 Sealed Receptacle 1X2 Assembly	349672000	34967
Mini50 Sealed Receptacle 1X4 Assembly	349674000	
Mini50 Sealed Receptacle 1X10 Assembly	349671000	
Mini50 Sealed Receptacle 2X4 Assembly	348940001	34894
Mini50 Sealed Receptacle 2X8 Assembly		

Refer to listed document number for part availability, dimensions, material, marking information, packaging information, interface definition, and configuration options etc.

2.2 MATERIALS AND MARKINGS

Housing material:
- 1x2, 2x4 & 2x8: PA66 NYLON Glass Filled 35%
- 1x4 & 1x10: SPS/PA66 Glass Filled 20%

ISL material: SPS Glass Filled 30%
CPA material: PBT Glass Filled 30%
Seals: Inherently Lubricated Silicon

Plastic components have material and cavity ID molded into the plastic. Build information is printed on the housing.

3.0 INTEGRAL COMPONENTS AND ACCESSORIES

Integral components and accessories are sold separately.

3.1 RECEPTACLE TERMINALS

The Mini50 Sealed connectors must use Molex CTX50 Sealed receptacle terminals. For part numbers and detail information see Molex drawing 349050400. For crimping information see the Terminal Application Specification AS-34905-001.

3.2 WIRES

Insulation diameter must be between 0.95mm to 1.40mm. Must meet GMW15626 February 2008. See Terminal Application Specification AS-34905-001.

3.3 BACKSHELL

Backshell is required for IPX9K and S3. 1x10 backshell part number: 349671020, for detail information see Molex drawing 349671020-SD. For backshell for use with other circuit sizes please contact a sales engineer for availability.

3.4 TERMINAL SERVICE TOOL

Molex part number 638247500. For servicing instructions see the Connector Application Specification AS-34894-0001.

3.5 LOOSE PIECE CAVITY (SEAL) PLUG

For part number and detail information see Molex drawing 349670002. For application information see Application Specification AS-34894-0001.

4.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

Document Title	Document Number
IMDS Report	Available upon request
Environmental Compliance	Available on molex.com
Interface Specification 1x2	349682800
Interface Specification 1x4	349684800
Interface Specification 1x10	349681800
Interface Specification 2x4 & 2x8	348950800
Connector Application Specification	AS-34894-0001
Receptacle CTX50 Terminal Product Specification	PS-34905-0001
Receptacle CTX50 Terminal Application Specification	AS-34905-001
Connector Test Summary	349670001-TS

5.0 RATINGS

5.1 VOLTAGE - OPERATING
Operating Voltage: 14 Volts DC Maximum

5.2 VOLTAGE - ISOLATION RESISTANCE
100MΩ Minimum when 500 Volts DC between adjacent terminals and terminals to ground.

5.3 CURRENT
Actual maximum current rating is application dependent and should be evaluated for each use. Current is dependent on connector size, ambient temperature, blade size and related factors. For CTX50 terminal current capacity curve see product specification for terminal PS-34905-0001.

5.4 TEMPERATURE
Non-operating: - 40º C to maximum ambient temperature in the chart.
Operating: - 40º C to maximum ambient temperature in the chart.

TERMINAL PART NUMBER	TOP LAYER PLATING TYPE	MAXIMUM AMBIENT TEMPERATURE
See Molex Drawing 349050400	Ag	125°C
	Sn	105°C

5.5 SEALING

Meets Sealing Class 2 per USCAR 2 Rev 6 and GMW3191 2012
Meets IPX8 per ISO 20653 2013
Meets Sealing Class 3 per USCAR 2 Rev 6 and GMW3191 2012 only when used with Large Wire, Backshell, CPA and Convoluted Conduit
Meets IPX9K per ISO 20653 2013 only when used with Large Wire, Backshell, CPA and Convoluted Conduit

5.6 FLAMMABILITY

All materials of the connectors are either UL 94 HB rated or equivalent, with burn rate not to exceed 100 mm/min.

5.7 MATE FORCE

Receptacle Connector	USCAR 25 Class	Maximum Allowed Mate Force
1x2	1	25 N
1x4	2	45 N
1x10 2x4 2x8	3	75 N

6.0 PERFORMANCE

- For a list of completed tests see the test summary document 349670001-TS. Product is tested with specifications from USCAR-2 Rev. 6 and GMW3191 2012.
- Performance met when used in the manner described in the Application Specification with integral components as described in this document, and when applicable mated to interface according to Interface Specification.
- Additional circuit sizes added to the product family are validated per USCAR-2 Rev. 6 Appendix D.

6.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT	TEST RESULTS
1	**Contact Resistance (Low Level)**	Mate connectors: apply a maximum voltage of **20** mV and a current of **100** mA.	**20** milliohms MAXIMUM [initial]	**Meets requirement**
2	**Contact Resistance @ Rated Current**	Mate connectors: apply a maximum voltage of **20** mV at rated current.	**20** milliohms MAXIMUM [initial]	**Meets requirement**
3	**Insulation Resistance**	Un-mate & unmount connectors: apply a voltage of **500** VDC between adjacent terminals and between terminals to ground.	**100** MΩ MINIMUM	**Meets requirement**
4	**Dielectric Withstanding Voltage**	Un-mate connectors: apply a voltage of **1000** VAC for **1** minute between adjacent terminals and between terminals to ground.	No breakdown; current leakage < **5** mA	**Meets requirement**

6.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT	TEST RESULTS
5	**Terminal Insertion Force (into Housing)**	Apply an axial insertion force on the terminal at a rate of **50 ± 6** mm/min.	**15** N MAXIMUM insertion force	**Meets requirement**
6	**Terminal Retention Force (in Housing)**	Axial pullout force on the terminal in the housing at a rate of **50 ± 6** mm per minute.	**20** N MINIMUM retention force dry as molded ISL in pre-lock	**Meets requirement**
			60 N MINIMUM retention force dry as molded ISL in final lock	
			60 N MINIMUM retention force ISL in final lock post moisture	
			40 N MINIMUM retention force ISL in final lock post environments	
7	**Forward Stop**	Apply an axial insertion force on the wire at a rate of **50 ± 6** mm/min.	**35** N MINIMUM insertion force	**Meets requirement**
8	**ISL Engage Force**	The force to engage the ISL from the pre-load (as shipped) position to the final position at a rate of **50 ± 6** mm	**60 N** MAXIMUM with terminals installed **15 N** MINIMUM without terminals installed	**Meets requirement**
9	**ISL Disengage Force**	The force to disengage the ISL from the final position to the pre-load position at a rate of **50 ± 6** mm	**18 N** MINIMUM after two cycles **45 N** MAXIMUM	**Meets requirement**
10	**ISL Extraction Force**	The force to extract the ISL from the pre-load to removal at a rate of **50 ± 6** mm	**25 N** MINIMUM	**Meets requirement**

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT	TEST RESULTS
11	**Connector Mate and Un-mate Forces**	Mate and un-mate connector (male to female) at a rate of **50 ± 6** mm per minute.	**1x2: 25 N** MAXIMUM insertion force	**Meets requirement**
			1x4: 45 N MAXIMUM insertion force	**Meets requirement**
			1x10: 75 N MAXIMUM insertion force	**Meets requirement**
			2x4: 75 N MAXIMUM insertion force	**Meets requirement**
			2x8: 75 N MAXIMUM insertion force	**Meets requirement**
			110 N MINIMUM withdrawal force lock engaged	**Meets requirement**
			6 N MINIMUM **51 N** MAXIMUM Lock disengage force	**Meets requirement**
			75 N MAXIMUM withdrawal force lock disengaged	**Meets requirement**
12	**Connector Audible Feedback**	The connector lock must provide audible feedback during connector mating at a rate of **50 ± 6** mm/min	For information only. Dry as molded and post moisture conditioning data available in test summary	**Meets requirement**
13	**Keying and Polarization Features Effectiveness**	Connector must be keyed and polarized to prevent mating with similar connectors or incorrect orientation.	**1x4: 86 N** (3X Max. expected mate force) MINIMUM	**Meets requirement**
			1x2, 1x10, 2x4 & 2x8: 150N MINIMUM	**Meets requirement**

14	**CPA Blocking**	The force to move the CPA from the pre-load (as shipped) position to the final position at a rate of **50 ± 6** mm while not mated to header.	**60** N MINIMUM	**Meets requirement**
15	**CPA Engage Force**	The force to move the CPA from the pre-load (as shipped) position to the final position at a rate of **50 ± 6** mm while fully mated to header.	**22 N** MAXIMUM	**Meets requirement**
16	**CPA Disengage Force**	The force to disengage the CPA from the final position to the pre-load position at a rate of **50 ± 6** mm while fully mated to header.	**10 N** MINIMUM **30 N** MAXIMUM	**Meets requirement**
17	**CPA Extraction Force**	The force to disengage the CPA from the final position to the pre-load position at a rate of **50 ± 6** mm	**30 N** MINIMUM	**Meets requirement**

6.3 ENVIRONMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION*	REQUIREMENT	TEST RESULTS
18	**Thermal Shock To Max Temperature (Electrical)**	Mated connector pairs expose to **300** cycles of the following per GMW3191 2012: Temperature °C / Duration (Minutes) **-40 +0/-3 30** **+Max +3/-0 30**	**Dry Circuit Resistance**: 20 mΩ MAX. **Continuity**: no instance where the resistance exceeds 7.0 Ω for more than 1 microsecond. **Visual**: No Damage.	**Meets requirement**
19	**Thermal Aging At Max Temperature (Electrical)**	Mated connector pairs expose to following per USCAR-2 REV6: **1008** hours at **Max ± 2°**C	**Dry Circuit Resistance**: 20 mΩ MAX. **Voltage Drop**: 50mV/A MAX **Visual**: No Damage	**Meets requirement**

20	**Temperature/Humidity Cycling (Electrical)**	Mate connectors expose to 40 times of 8-hour cycle of combined heating and humidity exposure per USCAR-2 REV6: **-40 °C to Max °C** (uncontrolled) to **90 ± 10**% relative humidity	**Dry Circuit Resistance**: 20 mΩ MAX. **Voltage Drop**: 50mV/A MAX **Isolation Resistance**: 100MΩ MIN @ 500 VDC **Visual**: No Damage	**Meets requirement**
21	**Vibration/Mechanical Shock (Electrical)**	Mated connectors expose to vibration per GMW 3191 2012 and USCAR 2 REV 6, Vibration **Class 1**	**Dry Circuit Resistance**: 20 mΩ MAX. **Continuity**: no instance where the resistance exceeds 7.0 Ω for more than 1 microsecond. **Voltage Drop**: 50mV/A MAX **Visual**: No Damage.	**Meets requirement**
22	**Thermal Aging At Max Temperature (Sealing)**	Mated connector pairs expose to following per USCAR-2 REV6: **1008** hours at **125 ± 2°**C	**Pressure Leak**: No bubbles **Isolation Resistance**: 100MΩ MIN @ 500 VDC **Visual**: No Damage	**Meets requirement**
23	**Temperature/Humidity Cycling (Sealing)**	Mate connectors expose to 40 times of 8-hour cycle of combined heating and humidity exposure per USCAR-2 REV6: **-40 °C to Max °C** (uncontrolled) to **90 ± 10**% relative humidity	**Pressure Leak**: No bubbles **Isolation Resistance**: 100MΩ MIN @ 500 VDC **Visual**: No Damage	**Meets requirement**

*All test parts have been through mate and un-mate cycling 10 times before environmental conditioning. See chart in 5.4 for Max Temperature.

7.0 PACKAGING

- Molex packaging drawing numbers are located on the Assembly Drawing listed in section 2.1.
- Parts should be packaged to protect against damage during handling, transit and storage.

8.0 GAGES AND FIXTURES

All applicable gages and fixtures are referenced in the appropriate control plans.

9.0 OTHER INFORMATION

1x4, 1x10, 2x4 and 2x8 can be offered with any circuit locations plugged directly from Molex.

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