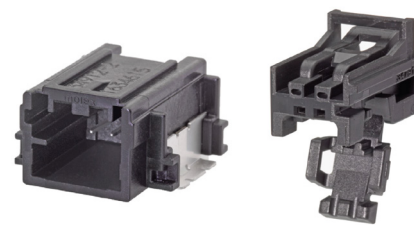


# Mini50 Unsealed Connector System

Delivering 50% space savings over traditional USCAR 0.64mm connectors with smaller terminals to fit more signals into vehicle interiors, the Mini50 Unsealed Connector System is approved as the industry's only USCAR 050 interface.



Mini50 Two-Circuit SMT Header and Receptacle

## FEATURES AND BENEFITS

Addition of 2 circuit-size SMT headers and receptacles

Delivers the only two-circuit connector with a 0.50mm terminal interface in the industry. Tested to full USCAR specifications. Enhances design flexibility

Designed and tested to USCAR 050 specifications

Industry's only interface that meets USCAR 050 specifications. Offers from 4 to 24 circuits. Larger circuit versions also comply with USCAR specifications

50% smaller than USCAR 0.64mm unsealed interfaces

Minimizes PCB footprint for design flexibility and space saving

Independent secondary lock (ISL) terminal-retention feature

Secures terminal inside the housing; one piece design for applied cost savings

Orientation features molded into the header

Provides wire-routing and module-design flexibility for both vertical and right-angle connectors. Retains the header to the PCB during the soldering process

Board alignment and retention features

Simplifies header placement on the PCB and retains the header to the PCB during soldering operation(s). Protects adhesive joints during connector mating and unmating

High-temperature thermoplastic housings

Withstands infrared (IR) and wave lead-free solder processing per ES-40000-5013 Molex specification, up to a maximum temperature of +260°C

Gold plating option

Better conductivity and corrosion resistance and lower insertion force than standard tin plating

Three polarization options

Enables limited customization and enforces like-to-like mating via three discrete mechanical, visual, and colored polarizations

CTX50 terminal wire grip design

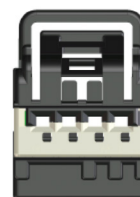
Offers harness manufacturers the ability to reduce wire gauge sizes while maintaining retention strength

Connector position assurance (CPA) feature available

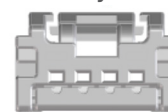
An optional mating assurance feedback device that prevents accidental un-mating

### Female Receptacle

USCAR 1-by-4



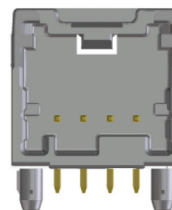
Mini50 1-by-4



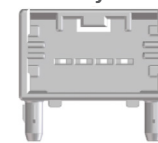
Approximate 51% reduction in frontal area for 4-circuit receptacle

### Male Right-Angle Header

USCAR 1-by-4



Mini50 1-by-4

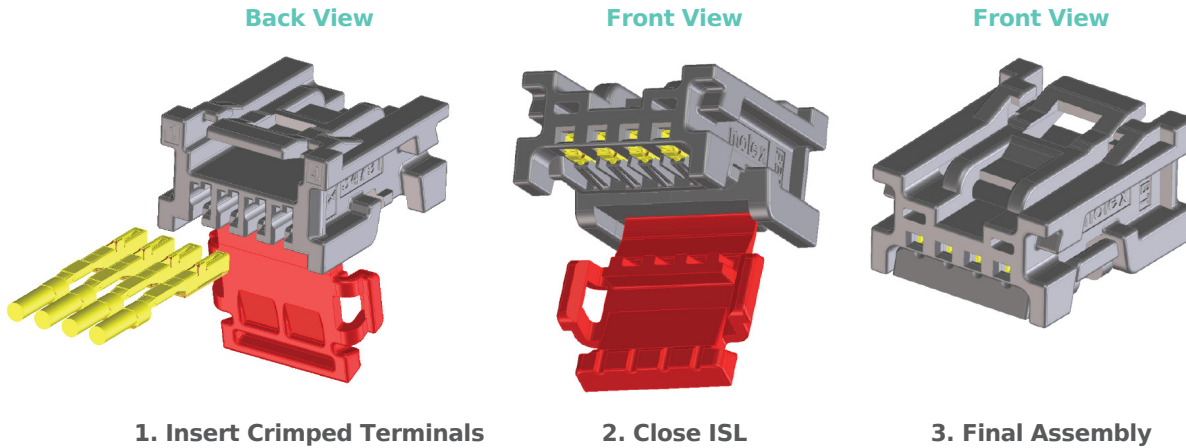


Approximate 50% reduction in frontal area for 4-circuit right-angle header

# Mini50 Unsealed Connector System >

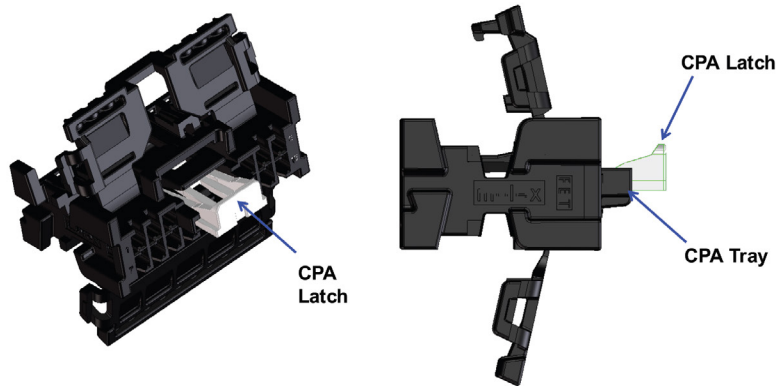
## MINI50 HARNESS ASSEMBLY COMPLEXITY REDUCTION

The independent secondary lock (ISL) is molded as part of the housing, reducing the number of components and cost.



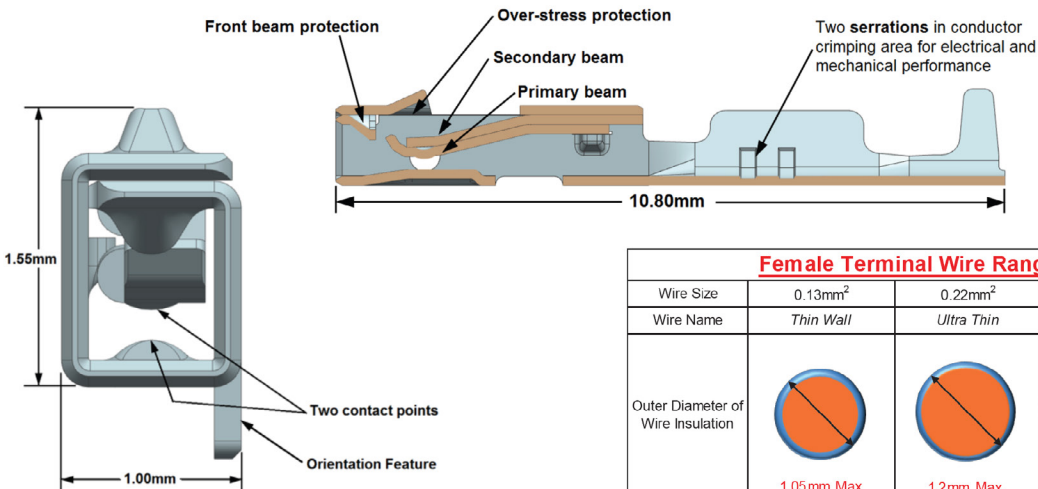
## PRODUCT IMPROVEMENTS - OPTIONAL CPA ADDITION -

this is available on all sizes from 4 to 24 circuits



## CTX50 FEMALE RECEPTACLE TERMINAL:

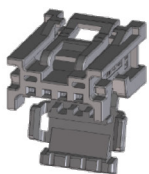
All dimensions shown in millimeters



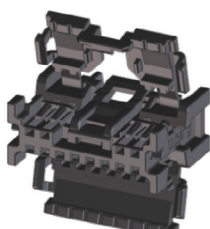
Female Terminal Wire Range			
Wire Size	0.13mm <sup>2</sup>	0.22mm <sup>2</sup>	0.35mm <sup>2</sup>
Wire Name	Thin Wall	Ultra Thin	Thin Wall
Outer Diameter of Wire Insulation	1.05mm Max	1.2mm Max	1.4mm Max
Recommended Grip Size	Grip S	Grip M	Grip L

# Mini50 Unsealed Connector System

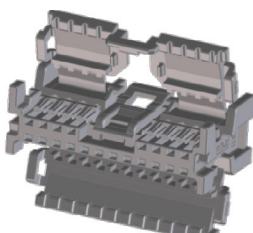
## Mini50 Receptacles\*



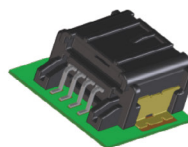
4 Circuit  
Polarization A  
Housing



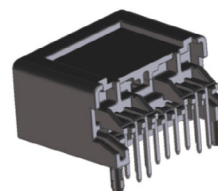
12 Circuit  
Polarization A  
Housing



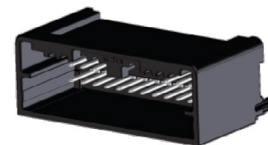
20 Circuit  
Polarization A  
Housing



4 Circuit  
Polarization A  
SMT Header



12 Circuit  
Polarization A  
R/A Header



20 Circuit  
Polarization A  
Vertical Header

## USCAR 050 SPECIFICATIONS

### Reference Information

#### Packaging:

Housings – Bulk pack

Terminals – Reel and loose piece

#### Mates With:

Receptacles Series: 34791, 34824

Vertical Headers Series: 34792, 34824, 34825

Right-Angle Header Series:

34793, 34912, 34826, 34897

#### Use With Terminals:

Female Series 560023

Designed in: Millimeters

### Physical

Header Housings: High-Temperature Thermoplastic

Receptacle Housings: High Temperature

Thermoplastic

Contact: Copper (Cu) Alloy

#### Plating:

Contact Area — Tin (Sn)

Underplating — Nickel (Ni)

Wire Gauge: 0.13 to 0.35mm<sup>2</sup> (22 to 26 AWG)

Insulation Diameter: 0.89 to 1.40mm  
(0.035 to 0.055")

Operating Temperature: -40 to +105°C

### Electrical

Voltage (max.): 500V

Current (max.): 4.0A

Contact Resistance (max.): 20 Milliohms

Dielectric Withstanding Voltage (min.): 1500V AC

Isolation Resistance (min.): 100 Megohms

### Electrical / Mechanical

Over-Current Loading: No Degradation

Durability (max.): 20 milliohms

Tin (Sn) Plating – 10 Mating Cycles

Gold (Au) Plating – Over 10 Mating cycles

High-Temperature Exposure, 1008 hours

(USCAR-2, GMW3191):

Post test resistance (max.) –

20 Milliohms @ 500V DC

Isolation resistance (max.) – 100 Megohms

Connector Retention Force (min.) = 60N

Temp / Humidity Cycling, 240 hours

(USCAR-2, GMW3191):

Post test resistance (max.) –

20 Milliohms @ 500V DC

Isolation resistance (max.) – 100 Megohms

Connector Retention Force (max) = 60N

Terminal Retention (min.) = 30N

Thermal Shock; class 2, 300& 600 cycles

(USCAR-2):

Post test resistance (max.) –

20 Milliohms @ 500V DC

Isolation resistance (max.) – 100 Megohms

Connector Retention Force (max.) = 60N

Terminal Retention (min.) = 30N

Chemical Resistance: (RSA 36-05-019) :

Post test resistance (max.) –

20 Milliohms @ 500V DC

Isolation resistance (max.) –

100 Megohms Connector

Terminal Retention (min.) = 30N

Current Capability: (USCAR-2, Fiat 7-Z8260):

Temperature rise over ambient < 55C

Post test resistance (max.) –

20 Milliohms @ 500V DC

Terminal Retention (min.) = 30N

Terminal – Connector Insertion Force

(USCAR-2, GMW3191):

Insertion Force (max.) = 5N

Primary Retention Force (min.) = 10N

Secondary Retention Force (min.) = 50N

### Electrical / Mechanical

Mating Force (USCAR-2) (max.): 22N

Unmating Force (USCAR-2) (max.): 22N

Connector Drop Test:

(USCAR-2, RSA 36-05-019):

Post test visual inspection

Connector Pry Resistance: (USCAR-2):

Post test resistance (max.) –

20 Milliohms @ 500V DC

Repetitive Mating / Unmating: (USCAR-2):

Post test resistance (max.) –

30 Milliohms @ 500V DC

Polarization Feature Effectiveness (USCAR-2):

min = 3\* avg. mate force

Header Pin Retention (min.): 15N

Solderability Requirements: (SMES-152) :

Dip Coat Method– min 95% coverage

Connector Heat Resistance: (ES-40000-5013) :

Lead-free IR reflow processing =

3 cycles, max temperature +260°C

Random Vibration with Thermal Cycling/ Mechanical

Shock (Not Coupled to Engine):

(USCAR-2, GMW3191, RSA 36-05-019)

Random vibration with Thermal Cycling:

Post test resistance (max.) –

20 Milliohms @ 500V DC

Connector Retention Force (min.) = 60N

Corrosion Resistance:

(USCAR-2, GMW3191, RSA 36-05-019) :

Post test resistance (max.) –

20 Milliohms @ 500V DC

Isolation resistance (max.) –

100 Megohms Connector

Connector Retention Force (min.) = 60N

Terminal Retention (min.) = 30N

# Mini50 Unsealed Connector System >

## APPLICATIONS

### Automotive and Commercial Vehicle

Headliners  
Clusters and Navigation  
Radios  
Cameras and Sensors  
HVAC  
Switches  
Lighting  
Mirrors



Mirrors/Cameras



Panels / Navigation



HVAC

## ORDERING INFORMATION

### Receptacles

Series No.	Component	Row	Circuit Sizes
<u>34791</u>	Receptacles	Single	2, 4 and 8
<u>34824</u>		Dual	12, 16, 20 and 24
<u>34959</u>		Three	34 Hybrid and 38

### CTX50 Terminals

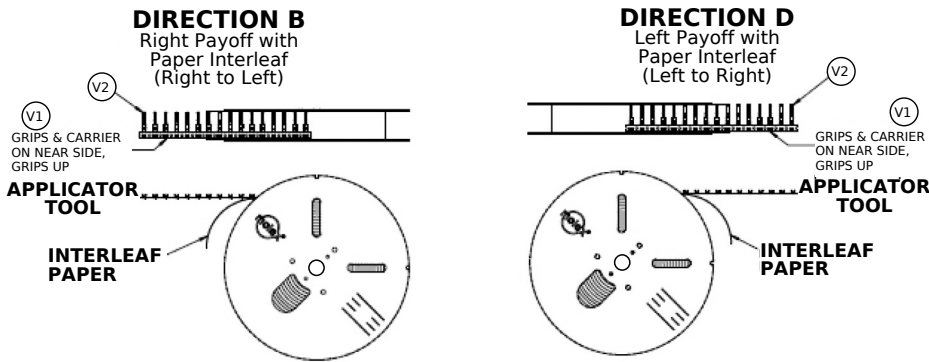
Series No.	Plating	Wire Gauge (mm <sup>2</sup> )	Wound Direction / Payoff Direction
<u>560023</u>	Tin	0.08 to 0.13, 0.22, 0.35	D=Left; B=Right
<u>560023-05xx</u>	Gold	0.13 to 0.35	D=Left; B=Right

Note: Reference PS-34791-000 for all validated wire types.

# Mini50 Unsealed Connector System >

## ORDERING INFORMATION

### Pay-Off Direction



### Headers

Series No.	Plating	Rows	Orientation	Termination Style	Circuit Sizes
<a href="#">34792</a>	Tin	Single	Vertical	Through-Hole	4 and 8
<a href="#">34793</a>			Right Angle		
<a href="#">34912</a>		Dual	Vertical	SMT	2, 4 and 8
<a href="#">34825</a>				Through-Hole	
<a href="#">34826</a>				SMT	
<a href="#">34897</a>		Three	Vertical	Through-Hole	34 Hybrid and 38
<a href="#">34958</a>					
<a href="#">34961</a>				Through-Hole	
<a href="#">34960</a>				Two-Bay Stacked	
<a href="#">34912-60xx</a>	Gold	Single	Right Angle	SMT	2, 4 and 8
<a href="#">34897-6xxx</a>	Gold	Dual	Right Angle	SMT	12, 16, 20 and 24

[www.molex.com/link/mini50.html](http://www.molex.com/link/mini50.html)