Available with or without detect switch, Molex's micro-SIM card sockets offer maximum PCB and vertical space-savings with added anti-short and polarized card-insertion features for ultra-slim handheld devices at the end of the USP

micro-SIM Card Sockets, Push-Pull Style, 6- and 8-Circuit, 1.40 and 1.45mm Height, Halogen-free, Lead-free

78727 1.40mm Height, with Detect Switch

78646 1.45mm Height, without Detect Switch

6-Circuit, Push-Pull Style, micro-SIM Card Sockets Series 78646 (left) and 78727 (right)

Since the introduction of the Subscriber Identification Module (SIM) card technology, the size of smart cards has greatly shrunk to pack more on-chip memory for provider applications; increased security, control and data processing functions; and to fit newer but smaller future devices.

The migration of developing markets from 2G and older networks to advanced SIM-based 3G networks led to the development of a new SIM card format that enabled smartphones, tablet PCs or other devices to transfer digital photos and huge data files over high-speed 3G networks. This format is known as 3FF (3rd form factor), Mini-UICC (Universal Integrated Circuit Card) or more popularly as micro-SIM.

Measuring only 12 by 15mm, the micro-SIM card is 52% smaller than its 15 by 25mm predecessor, the Mini-SIM (or 2FF) card. It retains the same electric contacts and circuitry of previous SIM cards, has added functionality and is backward compatible with larger SIM card holders and readers via additional surrounding plastic cut-outs.

Ideal for ultra-slim smartphones, tablet PCs, GSM/UMTS* modems, PC cards, WLAN (Wireless LAN) cards, as well as Machine-to-Machine (M2M) systems, Molex's micro-SIM Card Sockets are developed for optimum PCB real estate and vertical space savings.

A distinguishing feature of Molex's micro-SIM Card Sockets is its built-in anti-short design. The risk of electrical shorting is particularly high when users of larger SIM cards attempt to force-fit these into the shape of a micro-SIM card by trimming around the plastic edges of the contact pads (the actual working area of all SIM cards). This may leave the pared SIM card with an exposed pad which may potentially cause shorts with all other contact pads when inserted into the metal socket.

Shorting is prevented in Molex's series 78646 socket by a shell design feature that confines any lateral movements of the SIM card when inserted even if improperly cut. The series 78727 socket has raised plastic walls that act as contact barriers to insulate the pads of the inserted SIM card from the metal shell of the socket. The socket also has a card polarization feature to prevent the card from being inserted in the wrong direction; and a detect switch to enable card detection when fully inserted.

The sockets' round contact terminals provide excellent electrical contact; their reverse terminal design with gradual lead-in enables smooth card insertion and withdrawal.

The sockets have LCP housings that can withstand hightemperatures and feature wide 'finger' areas for push-pull actions on the SIM card. Available in 6-or 8-circuit options, these sockets are ELV- and RoHS-certified for environmental sustainability.

For more information, visit our website at: www.molex.com/link/micro-sim.html

*GSM/UMTS - Global System for Mobile Communications/Universal Mobile Telecommunications System

FEATURES AND BENEFITS

- Compact card sockets with small footprint and low profile height offers optimum PCB real estate and vertical space savings
- Reversed terminal-beam design with gradual lead-in prevents contact stubbing during card insertion and ensures easy card withdrawal as well
- Built-in anti-shorting feature eliminates any risk of shorting between metal shield and contact pads of micro-SIM cards
- Card polarization feature (78727 only) and 'chamfered edge' icon indication on metal shell prevents micro-SIM card from being inserted in the wrong direction
- Soldering features on metal shell and additional dummy solder tabs (78646 only) provide robust PCB hold-down applicable of socket
- Optional 8-circuit socket option supports applications requiring additional pin assignments
- Detect Switch with First-Mate-Last-Break capability (78727 only) detects micro-SIM card when inserted

micro-SIM Card Sockets, Push-Pull Style, 6- and 8-Circuit, 1.40 and 1.45mm Height, Halogen-free, Lead-free

SPECIFICATIONS

Reference Information

Packaging: Embossed Tape on Reel

Use With: micro-SIM card

Designed In: mm

RoHS: Yes

Halogen Free: Yes

Glow Wire Compliant: No

Electrical

Voltage (max.):
10V DC (78727); 15V DC (78646)

Current (max.): 0.5A per contact

Low Level Contact Resistance (max.):
50 milliohm (78646)
100 milliohms (78727)

Dielectric Withstanding Voltage:
500 VAC

Insulation Resistance (min.):
1000 megaohms

Mechanical

Contact Normal Force (min.):
0.35N initial (78727)
0.20N at min. deflection (78646)

Card Insertion Force (max.):
10N (78727)

Card Withdrawal Force (min.):
0.5N (78646 and 78727)

Durability (max.):
500 cycles at 100 milliohms (78727)
1500 cycles at 100 milliohms (78646)

Physical

Housing:
LCP (glass-filled), UL94V-0, Black

Contact: Copper Alloy

Plating:
Contact Area —
0.38µm (15µ") Gold (Au)
Solder Tail —
1.27µm (50µ") Matte Tin (Sn)
Underplating —
1.27µm (50µ") Nickel (Ni)

Shell Solder Tab:
1.27µm (50µ") Matte Tin (Sn) over 1.27µm (50µ") Nickel (Ni) underplate

Detect Contact:
0.127µm (5µ") Gold (Au) over 1.27µm (50µ") Nickel (Ni) underplate (78727)

Detect Spring:
0.127µm (5µ") Gold (Au) over 1.27µm (50µ") Nickel (Ni) underplate (78727)

Operating Temperature:
-40 to +85°C (78727)
-30 to +85°C (78646)

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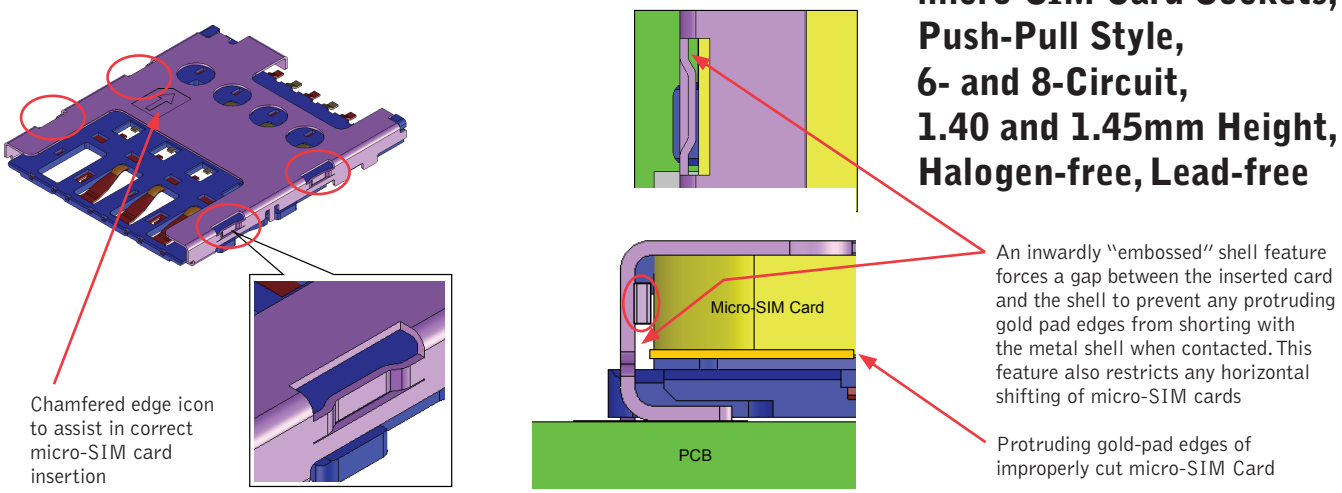
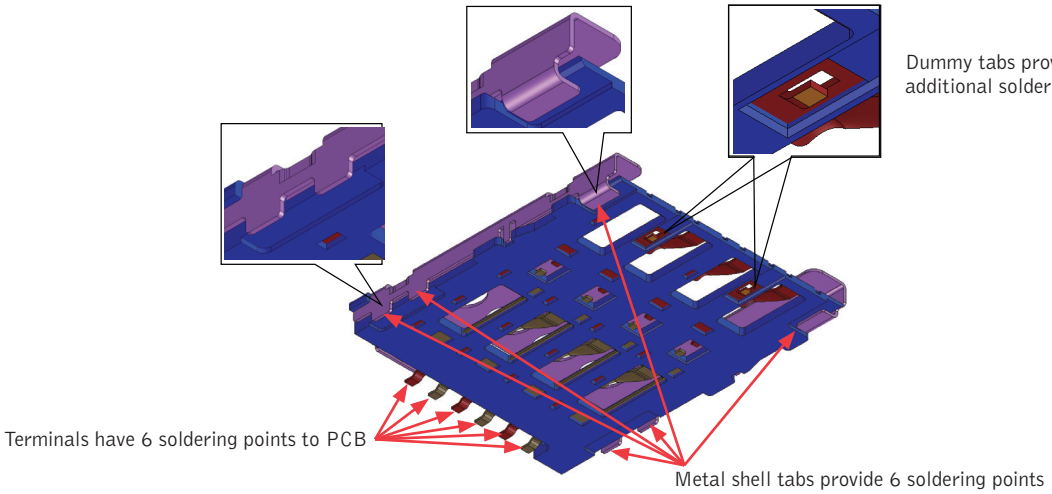
Anti-short feature: 1.45mm Height micro-SIM Card Socket (Series 78646)

micro-SIM Card Sockets, Push-Pull Style, 6- and 8-Circuit, 1.40 and 1.45mm Height, Halogen-free, Lead-free



Anti-short feature on metal shell of 78646 micro-SIM Card Socket

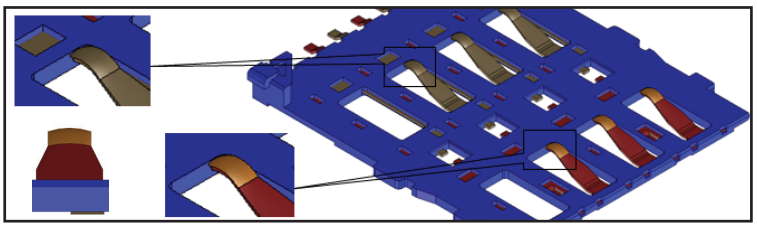
Soldering Points: 1.45mm Height micro-SIM Card Socket (Series 78646)

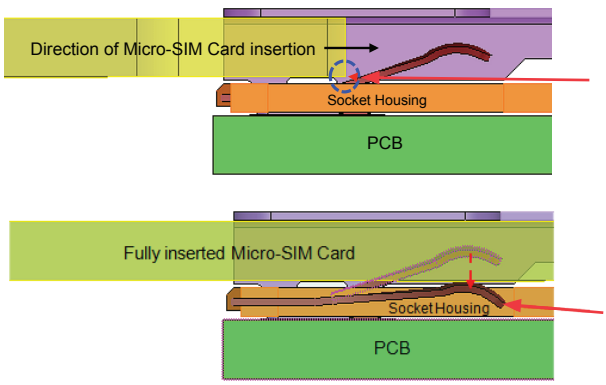


Underside of series 78646 micro-SIM card socket soldering points for robust PCB hold-down

Reverse Terminal Design: 1.45mm Height micro-SIM Card Socket (Series 78646)

The rounded geometry of the terminal contact tips enable smooth gliding action of the inserted micro-SIM card while providing excellent electrical contact.





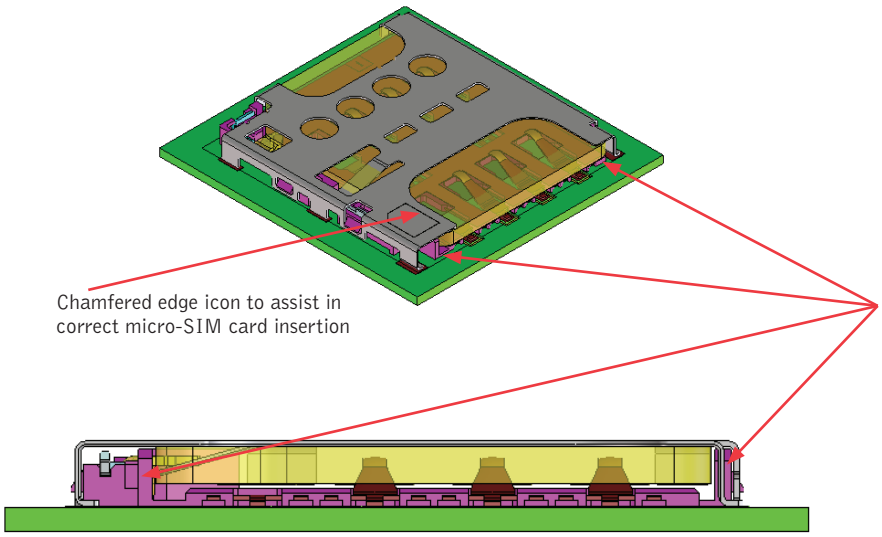
1. Reverse terminal design favors the direction in which the micro-SIM card is inserted.
2. The card makes contact with the body of terminal first before reaching the latter's contact point.
3. This gradual lead-in eliminates any possibility of contact crush or stubbing upon insertion of card.
4. This terminal design eliminates the need for any cavity to be created surface of the PCB to accommodate the profile of the contact tip.
5. The contact tip is 'hidden' within the (insert-molded) housing cavity, leaving the PCB intact. This poses no constraints to the PCB which would otherwise require a certain thickness to accommodate these contacts.

Series 78646 micro-SIM Card Socket's reverse terminal design with gradual lead-in for smooth card insertion

ADDITIONAL PRODUCT FEATURES

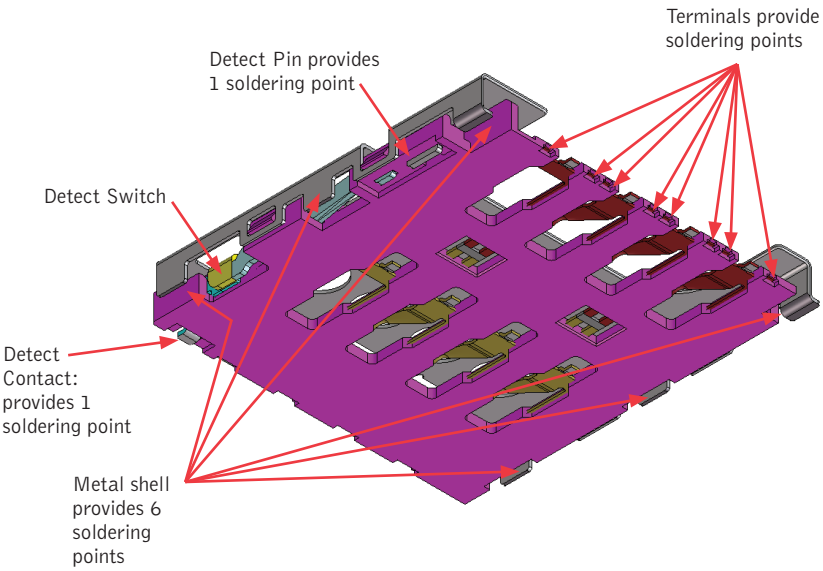
Anti-short feature: 1.40mm Height micro-SIM Card Socket (Series 78727)

micro-SIM Card Sockets, Push-Pull Style, 6- and 8-Circuit, 1.40 and 1.45mm Height, Halogen-free, Lead-free

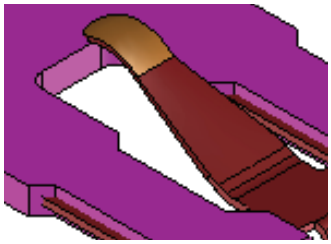


Cross-section view of Series 78727 micro-SIM Card Socket showing its anti-short features

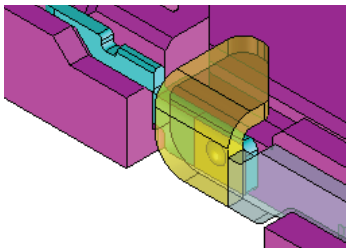
Soldering points and reverse terminal design of 1.40mm Height micro-SIM Card Socket (Series 78727)



Underside of Series 78727 micro-SIM Card Socket showing soldering points for reinforced PCB hold-down

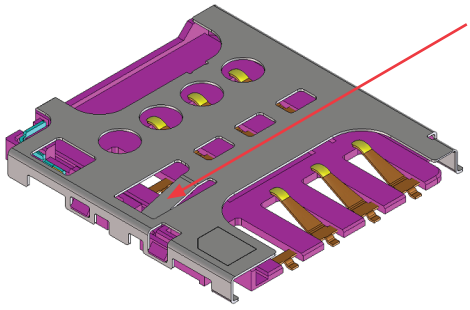


Rounded geometry of the terminal contact tip

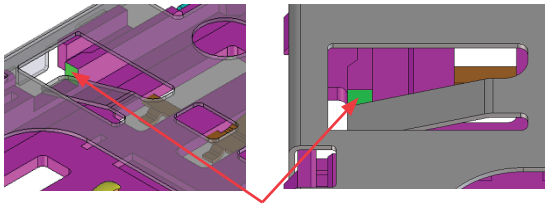


Detect Switch (red circle in the diagram on the left) for First-Mate-Last-Break capability

Card Polarization Feature: 1.40mm Height micro-SIM Card Socket (Series 78727)



Card Orientation Spring blocks wrongly oriented micro-SIM card from being inserted fully into the socket. It blocks the card mid-way preventing damage to socket



Card-Stopper (Patent Number SPSR11035) prevents the Card Orientation Spring from deformation when an incorrectly inserted micro-SIM card is pushed too hard or deeply into the socket

0.67mm vertical clearance shown accommodates the thinnest known (0.68mm) micro-SIM card used in the industry

Card Polarization feature of Series 78727 micro-SIM Card Socket

APPLICATIONS

- Consumer
  - Mobile phones
  - Ultra-slim smart phones
  - Tablet PCs
  - GSM/UMTS modems
  - PC cards
  - Wireless LAN cards

micro-SIM Card Sockets, Push-Pull Style, 6- and 8-Circuit, 1.40 and 1.45mm Height, Halogen-free, Lead-free

Tablet PCs, mobile and smart phones

GSM / UMTS modems

ORDERING INFORMATION

Connector

Order No.	Profile Height	Detect Switch	Circuits
78646-3001	1.45mm	Without Detect Switch	6 (Comment: Please contact Global Product Manager for 8-circuit version enquiries)
78727-0001	1.40mm	With Detect Switch	

Order No. 987650-6901

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