

Product Name: ZX146CS Samtec Connector Saver - Breakout Adapter QSE – QTE 040 (DP -028) - Page 1/3
 TE Mictor SB 0.8mm (0.032") centerline 80 Breakout Adapter

Product Description: 40pins x 2 rows, 80 pins Samtec Connector Saver - breakout adapter, supporting both Samtec and TE Mictor SB connector series :
 1- Samtec's HI-SPEED Header / Socket QTE QSE Q-Strip Blade & Beam Design connectors.
 2- Tyco Electronics, TE, Mictor SB 0.80mm centerline (pitch) 80 positions Mictor-Strip connectors. Please refer to **Page 3** for TE compatibility list
 Offering **both** QSE and QTE connectors on connector saver module with debug access point providing full feature breakout adapter for purpose of test and measurements.

QSE is Samtec Socket connector - TE Mictor SB 0.8mm centerline (pitch) counterpart is commonly referred to Receptacle
 QTE is Samtec Header connector - TE Mictor - SB 0.8mm centerline (pitch) counterpart is commonly referred to Plug.
 For simplicity, this document uses QSE / QTE in reference to the Samtec: Socket / Header (TE: Receptacle / Plug) naming convention.

- 1- Each QSE signal is routed to associated QTE connector through board to board via. Pin 1 of QTE is connected to pin 1 of QSE connector.
- 2- All signals have 0.3" (7.6mm) trace length on both top and bottom layers of the PCB.
- 3- All traces have 10mils (0.26mm) width, enabling soldering of any probe wires (36AWG solid copper – See package includes)
- 4- All traces are designed 50 Ohms impedance controlled.
- 5- Four, 4, layers PCB design, inner layers are GND planes with direct connection to QSE-QTE ground blades.
- 6- Two accessible GND test points, The test points are connected to module GND planes.
- 7- Offering Extended height QTE connector (0.286" – 7.26mm) , providing interface clearance from host components.
- 8- Mated QSE-QTE (Host with ZX146CS) height 0.315" (8.00mm)
- 9- Ease of interface with single ended and differential scope probes.
- 10- User may relocate any QTE signal by cutting trace before the via and solder to new location or external test equipment.
- 11- Fully compatible with Single Ended , SE, and Differential Pair, DP, Samtec connector QSE QTE series as well as cable assemblies; SQCD .
- 12- Mates with any height and formfactor QSE QTE connector series such as -DP, -RA, -EM, -DP-RA configurations.
- 13 – Accessible GND test point with direct interface to the integral metal plane (GND blade)
- 14- The module is shipped with 12pc of probing wires – See ordering information, see [ZX00BC2PH1](#)

Electrical: Insertion loss -2dB @8GHz
 Trace impedance: 50 Ω
 Operating Temperature: -55°C to +125°C
 Trace width: 10mils (0.26mm)
 Trace to Trace Spacing: 22mils (0.558mm)
 Trace Length: 0.3" (7.6mm)
 Trace to Trace via: 30mils (0.8mm) from end of PCB trace
 PCB Clearance : 8mm from Host PCB (QSE on host)
 36AWG Bare copper wire : 0.028mm diameter - See package includes for details - [ZX00BC2PH1](#)

Application: Manufacturing test and re-use, bringup, testing , debugging

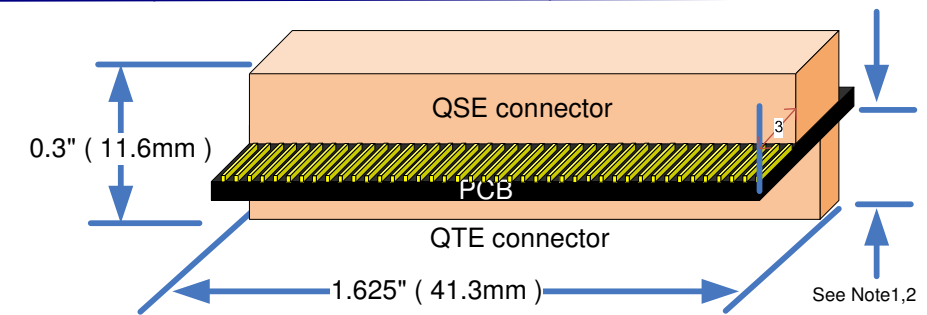
Mates with : Any height and formfactor of Samtec QTE040 QSE040 QSE028(DP) QTE028(DP), SQCD cable assembly. Compatible with – differential Pair (DP), unused signal can be left unconnected or Grounded for improved noise immunity. *Samtec QTE-040-L-D QSE-040-L-D QTE-028-01-DP QSE-028-01-DP connectors EQCD EQSD EQDP EQRF cable assembly and any 2 banks of QTE-060 QSE-060 (-042 Differential pair, -DP), QTE-080 QSE-080 (-056) connectors.*

TE Mictor SB 0.8mm (0.032") centerline 80 positions (2 rows, 40 positions / row) Plug and Receptacles. Table 1 lists 80 positions - 2 Rows x 40 Pins/Row TE Mictor SB 0.8mm (0.032") Pitch Connectors Part numbers – See Page 3
ZX146CS mates with all listed Plug and Receptacles of TE Mictor SB 0.80mm (0.032") centerline 80 positions connectors. Table 2 lists cross matrix compatibility between Samtec and TE Mictor SB 0.8mm (0.032) 40 positions connector.

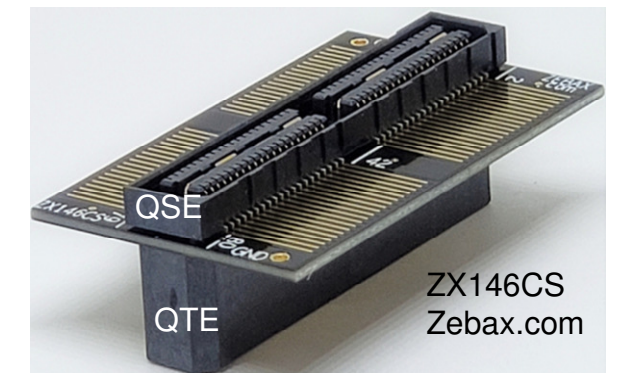
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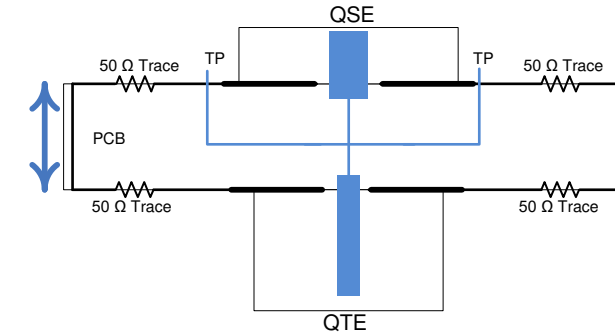
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- Notes:
 1- QTE height 0.286" (7.26mm)
 2- Mated QTE – QSE height 0.315" (8.00mm)
 3- PCB Extends 0.3" (7.6mm) from the QSE connector

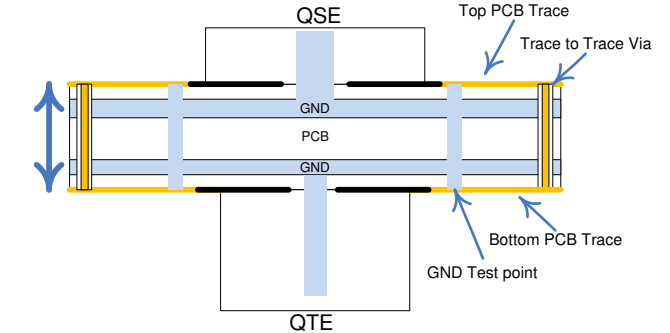


ZX146CS - Simplified Circuit Diagram



All traces are controlled 50 Ω impedance
 The GND Test Point , has direct connection to QSE QTE ground power blades

ZX146CS Cross section view



4 Layers PCB- where 2 inner layers are Ground planes
 GND Test Point provides direct connection to QSE QTE Blades.

Compliance:

- ISO2001 certified
- RoHs - Lead Free
- EU RoHS2
- UL E111594 document
- ELV- Vehicle Directive (Directive 2000/EC)
- European Union Directive (203/11/EC)
- Halogen Free per IEC-61249-2.21 : 2003
- RoHs Directive 2011/65/EU
- WEEE Directive (2012/12/EU)

- Certificate of Compliance for Radioactive substances
- Certificate of Compliance for Asbestos
- Certificate of Compliance for Ozone Depleting Substances, ODS
- Certificate REACH SVHC
- Certificate of Compliance RoHS_EN_CoC

ZX146CS package includes:

Part number	Quantity	Description
ZX146CS	1	Connector Saver Breakout Adapter module
ZX00BC2PH1	12	36AWG Bare Copper wire to pin header wire assembly

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SPECIFIED DIMENSIONS ARE INCHES (MM). ROHS COMPLIANT	ASSEMBLY DRAWING ITEM: ZX146CS	
DESCRIPTION: Samtec Connector Saver - breakout adapter QSE QTE 040 - TE Mictor SB 0.80mm 80		
CHECKED: M. MARINA	DRAWN: MATTHEW	REVISION: 1.0 SHEET: 1 OF 3

Product Name: ZX146CS Samtec Connector Saver - Breakout Adapter QSE – QTE 040 (DP -028) - Page 2/3
TE Mictor SB 0.8mm (0.032") centerline 80 Breakout Adapter

Pitch: Samtec QSE QTE connector 0.6350mm (0.0315") Q-Strip Blade & Beam High Speed connector
TE Mictor SB 0.8mm (0.032") centerline

Access: For signal measurements: 1- Recommendation: Use 36AWG solid copper wire with pin header, see [ZX00BC2PH1](#)
For signal relocation: 1- Cut the trace to the connecting via (30 mils [0.8mm] before end of trace)
2- Using 36AWG solid copper wire, make the required connections. See figure below

Typical Application: ZX146CS is designed for purpose of test and debugging at full connector's bandwidth. It provides new approach in usage of breakout adapters by :
1- Utilizing single or differential scope probe.
2-Enabling design changes, by re-assignment of any signal by means of cut and solder, where any signal may be cut and assigned to new location by jumper wires.

Scope Probe wire Installation:

- 1- It is recommended to keep the probe wire length at 0.5" (1.2cm) long.
- 2- In order to avoid ground loop problems, please use the shortest Ground probe wire interfacing to the nearest GND reference. ZX146CS provides two GND test points for reference.
- 3- Both Keysight as well as Tektronix offer variety of single ended as well as differential probes along with their accessories, below are few probes from each vendor:

- a) Keysight differential probe or similar N2795A, N2796A, 1168V, 1134B along with E2677B differential Solder-in probe, N5426A ZIF Tip, N2884A Fine Wire ZIF Tip and more – See the figure "probe head accessories".
- b) Tektronix offers several single-ended as well as differential probes such as : P6245, P6248, P6247, P6246 or any of TDP7000 series and more

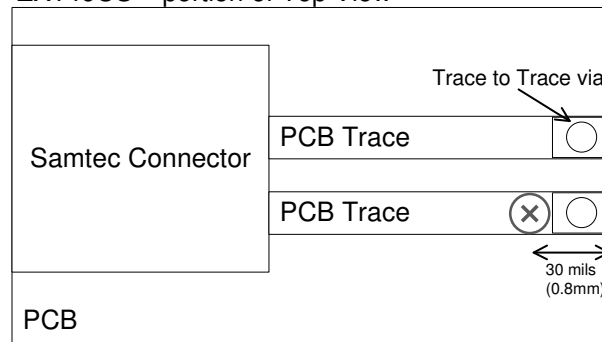
4- Please follow your vendor's guideline in installation of probe wires & accessories.

Signal Access & re-route:

Any signal re-routing on ZX146CS may be implemented by cutting the trace min. of 30 mils (0.8mm) before end of the trace on top or bottom side of the PCB. The Via (inner connecting via) at end of the trace connects the top layer's signal (trace) to bottom layer's signal (trace).The inner connecting via may not be visible on most of our design. The via has clearance of 30mils from end of the trace.

ZX146CS module has 4 layer PCB where the inner layers are Ground layers. They are connected to connector ground power blade. Please see Cross Section View figure on Page 1 for details.

ZX146CS – portion of Top View

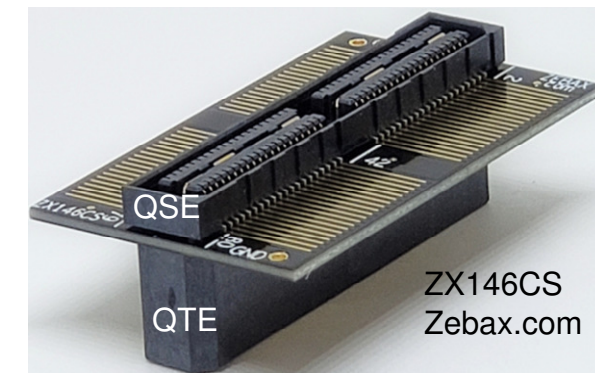


Note: The hole for the Via may not be visible on Zebax Connector Saver breakout adapter designs. The via is located 30 mils (0.8mm) from end of the trace as marked

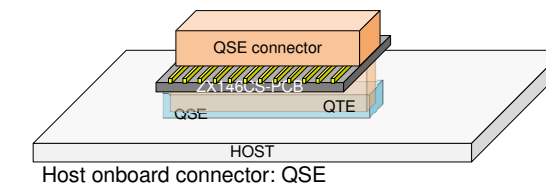
(X) Ideal location to cut the trace



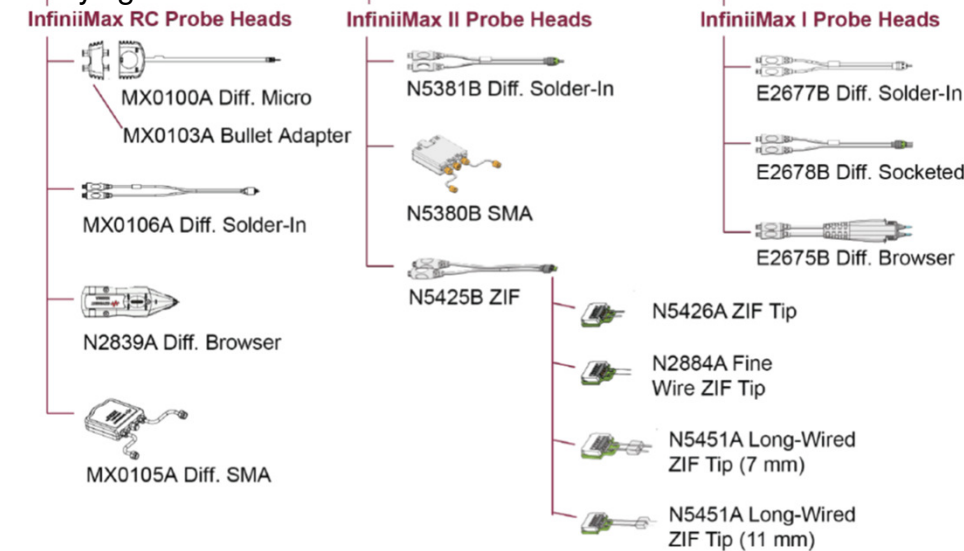
ZX146CS Top View



Typical ZX146CS interface with host



Keysight Probe Head accessories



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		ITEM: ZX146CS	
DESCRIPTION: Samtec Connector Saver - breakout adapter QSE QTE 040 - TE Mictor SB 0.80mm 80			
CHECKED:	DRAWN:	REVISION: 1.0	
M. MARINA	MATTHEW	SHEET: 2 OF 3	

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 TE Mictor SB 0.8mm (0.032") centerline 80 Breakout Adapter

Cross compatible: Table 1 and Table 2 provides cross compatibility part numbers list between Samtec QSE QTE connector series and TE Mictor SB 0.80mm centerline (pitch) .
 Samtec's HI-SPEED Header / Socket QTE QSE Q-Strip Blade & Beam Design connectors
 Tyco Electronics, TE, Mictor SB 0.80mm centerline (pitch) 80 positions Mictor-Strip connectors.

Table 1 – TE Mictor SB 0.8mm (0.032") Pitch connectors

80 positions - 2 Rows x 40 Pins/Row TE Mictor SB 0.8mm (0.032") Pitch Connectors Part numbers		
TE Mictor SD 0.8mm (0.032")	Description	Mated Stack Height
1658043-2 2-1658043-2 1658012-2 2-1658012-2 1658462-2 2-1658462-2	Receptacle	
4-1658043-2 6-1658043-2 4-1658012-2 6-1658012-2 4-1658462-2 6-1658462-2		
1658044-2 2-1658044-2 1658013-2 2-1658013-2 1658463-2 2-1658463-2	Plug	5mm (0.197")
4-1658044-2 6-1658044-2 4-1658013-2 6-1658013-2 4-1658463-2 6-1658463-2		8mm (0.315")
1658045-2 2-1658045-2 1658014-2 2-1658014-2 1658464-2 2-1658464-2		11mm (0.433")
4-1658045-2 6-1658045-2 4-1658014-2 6-1658014-2 4-1658464-2 6-1658464-2		14mm (0.551")
1658046-2 2-1658046-2 1658015-2 2-1658015-2 1658465-2 2-1658465-2		16mm (0.63")
4-1658046-2 6-1658046-2 4-1658015-2 6-1658015-2 4-1658465-2 6-1658465-2		19mm (0.748")
1658437-2 2-1658437-2 1658438-2 2-1658438-2 1658439-2 2-1658439-2		22mm (0.866")
4-1658437-2 6-1658437-2 4-1658438-2 6-1658438-2 4-1658439-2 6-1658439-2		25mm (0.984")
1658047-2 2-1658047-2 1658016-2 2-1658016-2 1658466-2 2-1658466-2		30mm (1.181")
4-1658047-2 6-1658047-2 4-1658016-2 6-1658016-2 4-1658466-2 6-1658466-2		
1658048-2 2-1658048-2 1658017-2 2-1658017-2 1658467-2 2-1658467-2		
4-1658048-2 6-1658048-2 4-1658017-2 6-1658017-2 4-1658467-2 6-1658467-2		
1658049-2 2-1658049-2 1658018-2 2-1658018-2 1658468-2 2-1658468-2		
4-1658049-2 6-1658049-2 4-1658018-2 6-1658018-2 4-1658468-2 6-1658468-2		
1658050-2 — 1658019-2 — 1658469-2 —		
1658051-2 — 1658020-2 — 1658470-2 —		

All above listed TE Mictor SB 0.80mm (0.032") centerline (pitch) are compatible with Samtec QStrip QTE QSE connectors

Table 2

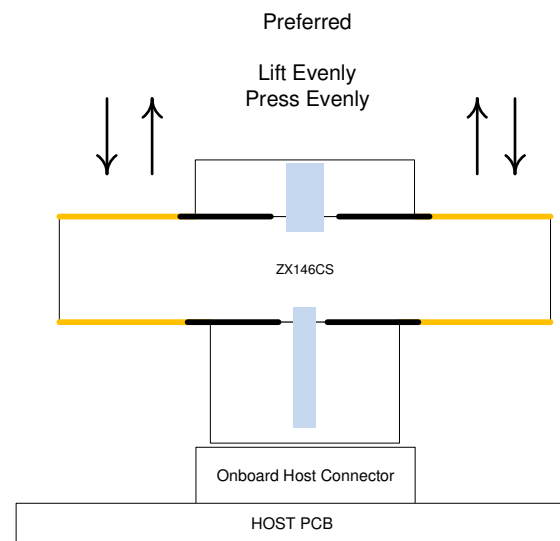
ZX146 Samtec Qstrip QTE QSE cross matrix compatability with TE Mictor SB 0.8mm (0.032") Pitch Connectors							
TE Mictor SD 0.8mm (0.032")			Samtec QStrip QTE QSE			Description	Mated Stack Height
Gold Flashing	10 μ" Gold Plating	30 μ" Gold Plating	Gold Flashing	10 μ" Gold Plating	30 μ" Gold Plating		
1658043-2	1658012-2	1658462-2	QSE-040-01-F-D-A	QSE-040-01-L-D-A	QSE-040-01-C-D-A	Receptacle	
1658044-2	1658013-2	1658463-2	QTE-040-01-F-D-A	QTE-040-01-L-D-A	QTE-040-01-C-D-A	Plug	5mm (0.197")
1658045-2	1658014-2	1658464-2	QTE-040-02-F-D-A	QTE-040-02-L-D-A	QTE-040-02-C-D-A		8mm (0.315")
1658046-2	1658015-2	1658465-2	QTE-040-03-F-D-A	QTE-040-03-L-D-A	QTE-040-03-C-D-A		11mm (0.433")
1658437-2	1658438-2	1658439-2	QTE-040-09-F-D-A	QTE-040-09-L-D-A	QTE-040-09-C-D-A		14mm (0.551")
1658047-2	1658016-2	1658466-2	QTE-040-04-F-D-A	QTE-040-04-L-D-A	QTE-040-04-C-D-A		16mm (0.63")
1658048-2	1658017-2	1658467-2	QTE-040-05-F-D-A	QTE-040-05-L-D-A	QTE-040-05-C-D-A		19mm (0.748")
1658049-2	1658018-2	1658468-2	QTE-040-07-F-D-A	QTE-040-07-L-D-A	QTE-040-07-C-D-A		22mm (0.866")
1658050-2	1658019-2	1658469-2	QTE-040-07-F-D-A	QTE-040-07-L-D-A	QTE-040-07-C-D-A		25mm (0.984")
1658051-2	1658020-2	1658470-2					30mm (1.181")

Note:

- Stack Height : Receptacle with the listed Plug
- Any listed Samtec QTE Plug is compatible with Any TE Mictor SD 0.8mm (0.032") pitch Receptacle connector.
- Any Listed TE Mictor SD 0.8mm (0.032") pitch Plug is compatible with Any Samtec QStrip QSE connector.

Mating and Un-mating:

Uneven or off—angle forces during mating and un-mating of ZX146CS from host or daughter card may cause overstress and damage to the contacts, housing or solder joints. Severe side-to-side rocking motions should be prohibited.
 Un-mating ZX146CS by lifting one end of the connector (peeling) is permitted. However, this should only be done to initiate separation of the mated contacts at one end of the interfaced connector. The separation angle should be kept as low as possible as the contacts continue to un-mate, thereby spreading out the un-mating forces over the length of the interface connectors. The connectors should not be "peeled" beyond a 20° angle. See Figure below.



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