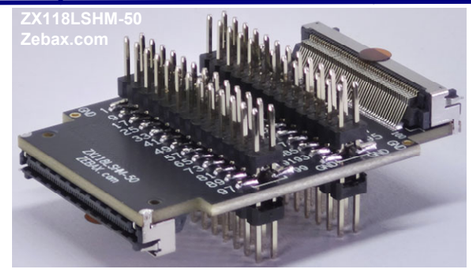
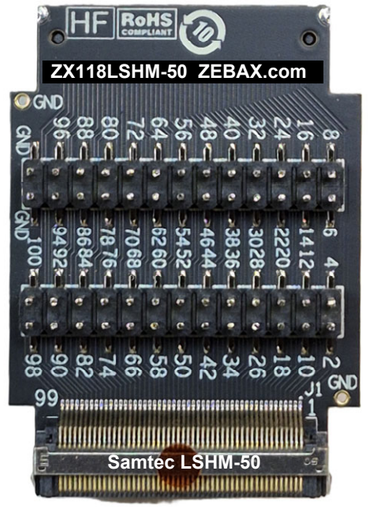
Product Name: ZX118LSHM-50 Samtec Breakout Adapter Rugged Hermaphroditic Razor Beam – Page 1 OF 3

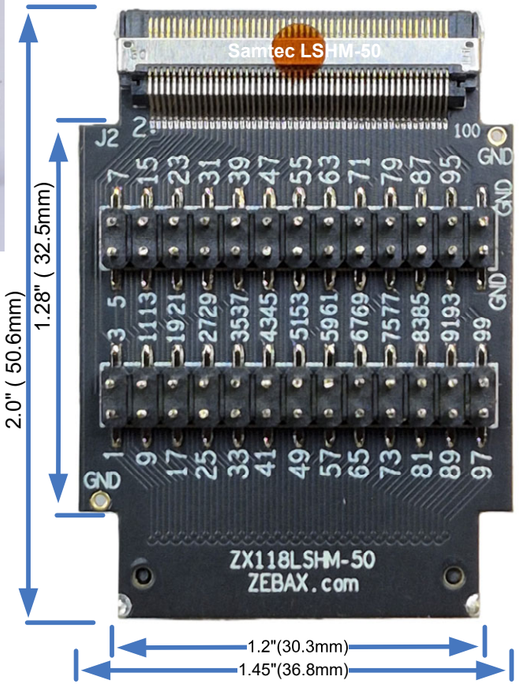


Product Description: **ZX118LSHM-50** is Samtec LSHM connector breakout adapter. ZX118LSHM-50 is designed for real-time electrical test & measurements, signal integrity , characterization, manufacturing loopback test applications.

ZX118LSHM-50 is breakout adapter, supporting Samtec LSHM Rugged Hermaphroditic Razor Beam 0.5mm (0.02") pitch connectors, providing full access to all LSHM connector signals for purpose of test & measurement. ZX118LSHM-50 designed configured where J1 pin 1 is connected to J2 pin 2. The ZX118LSHM-50 would be transparent when mated with Host & Target due to its design by swapping the J1 to J2 pins. Please refer to figures 2.1 and 2.2 on **page 2** for detailed pin to pin configuration.

1- Provides access to all Samtec LSHM signals via onboard standard 0.1" pitch headers.
2- Passthrough design where J1 pin 1 is connected to pin 2 of J2.
3- Listed number adjacent to each Header's pin would be in reference to the Host system's Samtec LSHM connector pin numbering.
4- All traces are 50 Ohms impedance controlled.
5- Four, 4, layers PCB design, inner layers are GND planes.
6- Accessible GND test point, The test point is connected to inner GND planes as well as the connector's shield.
7- Ease of interface with single channel and differential scope probes.
8- Flying lead wire assembly may be used for board to board interface – See ordering information

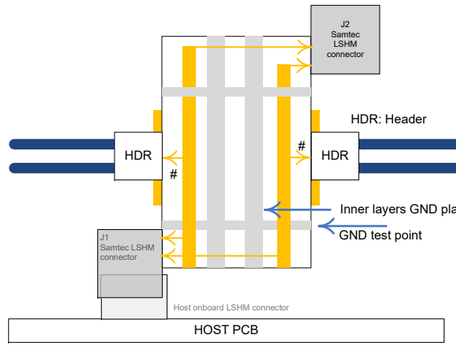




Electrical: Insertion loss > -3dB @6GHz
Trace impedance: 50 Ω
Operating Temperature: -55°C to +125°C
Samtec Connector:
- Onboard Connector: LSHM-DH Shielded - 2 rows per 50 pins/row
- Mates with: Any Samtec LSHM -DV -DH -RH formfactor Hermaphroditic connector
- Pitch: 0.020" (0.50mm) pin to pin pitch
- Plating: 10µ" (0.25µm)

Header:
- Pitch: 0.1" (2.54mm) pin to pin pitch
- Pin: Square 0.025" (0.635mm)
- Height: 0.24" (6mm)
- Plating: Gold Flash

ZX118LSHM-50 simplified cross section diagram



Note:
Signal layers
Ground layers, Please note – The GND test point is connector to:
1- Top/Bottom GND fill
2- The inner layers ground planes
LSHM signals path to headers and to/from LSHM connector's pins.

ZX100ACC-SS
Flying leads wire assembly

Application: Manufacturing test measurement & re-use, bringup, testing , debugging

Mates with : Samtec Rugged Hermaphroditic Razor Beam LSHM
Mates with any height & formfactor LSHM connector / cable assembly such as DV (Straight) DH (Right Angle) or RH (Reverse Right Angle).
LSHM-150-01-F-DV-A-S LSHM-150-01-L-DV-A-S
LSHM-150-01-F-DH-A-S LSHM-150-01-L-DH-A-S
LSHM-150-01-F-RH-A-S LSHM-150-01-L-RH-A-S

Breakout Access : All ZX118LSHM-50 breakout adapters provide access to all Samtec LSHM connector via onboard headers.

ZX118LSHM-50 header pin assignments

Bottom Headers	J5	8	16	24	32	40	48	56	64	72	80	88	96	GND
		6	14	22	30	38	46	54	62	70	78	86	94	GND
	J4	4	12	20	28	36	44	52	60	68	76	84	92	100
		2	10	18	26	34	42	50	58	66	74	82	90	98
Top Headers	J3	7	15	23	31	39	47	55	63	71	79	87	95	GND
		5	13	21	29	37	45	53	61	69	77	85	93	GND
	J2	3	11	19	27	35	43	51	59	67	75	83	91	99
		1	9	17	25	33	41	49	57	65	73	81	89	97

Header pin numbers refer to the SAMTEC LSHM connectors' pin numbers

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

ZX118LSHM-50 package includes:

Part number	Quantity	Description
ZX118LSHM-50	1	Breakout Adapter module
ZX100ACC-SS	0	Flying leads wire assembly

ZX100ACC-SS site page for ordering additional flying leads wire assembly

Note
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SPECIFIED DIMENSIONS ARE INCHES (MM).
ROHS COMPLIANT

ASSEMBLY DRAWING
ITEM: ZX118LSHM-50

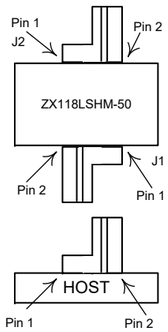
DESCRIPTION: Samtec rugged LSHM Hermaphroditic Razor Beam Breakout Adapter

CHECKED: M. MAHIN
DRAWN: KADIJEH
REVISSION: 1.0
SHEET: 1 OF 3

Product Name: ZX118LSHM-50 Samtec Breakout Adapter Rugged Hermaphroditic Razor Beam – Page 2 of 3

LSHM Hermaphroditic connector mating configuration: LSHM connector is Hermaphroditic, self mating connector series, therefore ZX118LSHM-50 module would be transparent to any design using LSHM -DV or -DH connector series. Please see figure 2.1 exhibiting "Mated pin configuration details". ZX118LSHM-50 utilizes LSHM-DH connector series where the J1 LSHM connector pin 1 is connected to the J2 LSHM connector pin 2. When the ZX118LSHM-50 is mated with Host & Target (Host & Target using -DV or -DH connector series), it would be transparent since the ZX118LSHM-50 does pin swapping between the onboard LSHM connectors. If using LSHM-RH connector series, please use figure 2.2 as reference identifying pin numbering on your host & target.

Figure 2.1: ZX118LSHM-50 mated pin configuration details



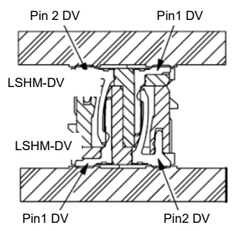
Mating configuration is with LSHM-DV on HOST

ZX118LSHM-50 Pin numbering: The listed Shunts pin numbering are listed as reference to the host LSHM connector. Since the ZX118LSHM-50 would be transparent to user (see "**LSHM Hermaphroditic connector mating configuration"** section above) the LSHM connector's pin numbers would be identical to the host LSHM connector pin numbers as seen from ZX118LSHM-50's J2 connector. Special care must be given if special rework required between the J1 & J2 LSHM connectors pins as the pin 1 , 3, 5, 7, 9, .. of J1 LSHM connector are connected to pin 2, 4, 6, 8, 10, .. of the J2 LSHM connector.

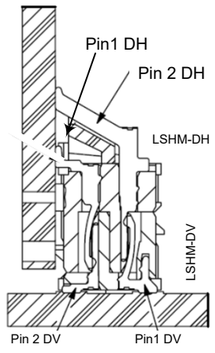
Mated Pin Details: Figure 2.2 exhibits LSHM connector family mated pin interface. -DV connectors are Straight , -DH connector series are Right Angle and the -RH are Reverse Right Angle connectors. All LSHM connector series mate with each other. However; attention must be paid to pin to pin interface ensuring expected design interface configuration. Below diagrams are provided as standard pin to pin interface configuration using LSHM Hermaphroditic connector series.

Figure 2.2 – LSHM Mated Pin Details – LSHM connector formactors are: **-DV** Straight , **-DH** : Right Angle , **-RH** : Reverse Right Angle

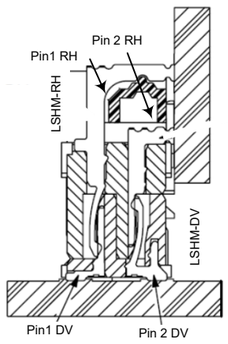
LSHM-DV to LSHM-DV



LSHM-DV to LSHM-DH



LSHM-DV to LSHM-RH



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SPECIFIED DIMENSIONS ARE INCHES (MM). ROHS COMPLIANT	ASSEMBLY DRAWING
	ITEM: ZX118LSHM-50
DESCRIPTION:	Samtec rugged LSHM Hermaphroditic Razor Beam Breakout Adapter
CHECKED: M. MAHIN	DRAWN: KADIJEH
	REVISSION: 1.0
	SHEET: 2 OF 3

Product Name: **ZX118LSHM-50 Samtec Breakout Adapter Rugged Hermaphroditic Razor Beam – Page 3 of 3**

Signal Access : All LSHM-05 connector's signals are accessible via onboard headers.

Ground : ZX118LSHM-50 is 4 layers PCB design where the inner layers are Ground layers. They are connected to the GND test points as well as top & bottom GND fills. For improved signal integrity, please connect the GND test point to system GND reference point. See Cross Section diagram for details.

Typical Application: ZX118LSHM-50 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- Real-Time test and measurements, ability to interface DUT with test equipment or evaluation board for validation purposes.
3- Interface DUT with evaluation board for validation and pre-bringup.

Scope Probe wire Installation:

1- In order to avoid ground loop problems, please use the shortest Ground probe wire interfacing to the nearest GND reference point. ZX118LSHM-50 provides GND test point to be utilized as GND reference interface with host.

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