



Ordering Information

MFR62340-JO	MPO/MTP Connector
MFR62340-JOS	With EMI shield
MFR62340-JX	MPX Connector

Applications

- High-speed interconnects
- Switches, Routers, Transport equipment
- Interconnects within and between equipment
- Rack-to-rack
- Shelf-to-shelf
- Board-to-board
- Board-to-optical backplane

Features

- Data rate 155Mbps to 2.5Gbps per channel
- 12 parallel channels, total 30Gbps capacity
- Differential CML (Current-Mode Logic) interface
- Link length up to 300m (with 500MHz·km fiber)
- Channel BER 10^{-12} when used with MFT62340
- Designed for multimode fiber ribbon
- MPO/MTP or MPX connector options
- Surface-mount package
- Pick-and-placeable, reflow soldering
- Matches the MFT62340 Transmitter
- EMI shield available

Description

The MFT62340 and MFR62340 is a very high speed transmitter and receiver pair for parallel fiber applications. This pair, together with a multimode parallel fiber ribbon cable, constitute a complete parallel fiber link. The link provides high-speed interconnects for use within and between large capacity switches, routers and data transport equipment. The transmitter and receiver have a differential CML interface and support MPO/MTP and MPX fiber connectors. An EMI shield is available for the MPO/MTP connector for use in front panel applications.

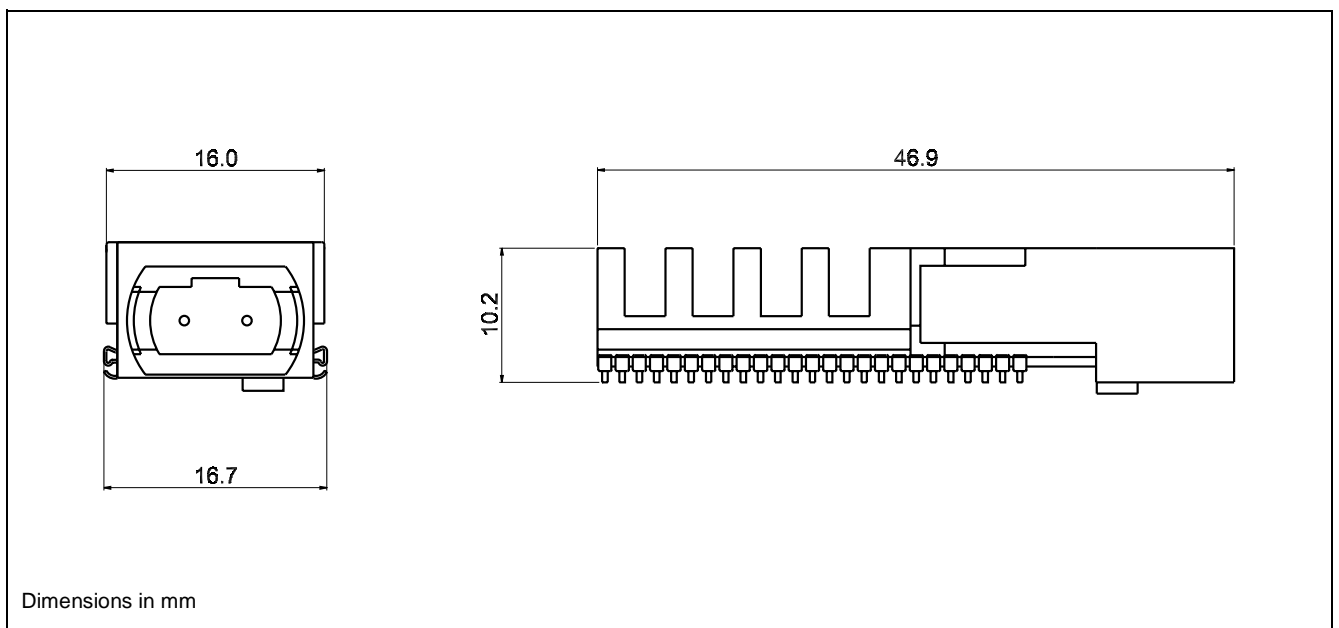


Figure 1 - MFR62340-JO: MPO/MTP Connector Option

Absolute Maximum Ratings*

	Parameter	Symbol	Min	Max	Unit
1	Supply voltage	V_{CC}	-0.5	4.0	V
2	Voltage on any pin	V_{PIN}	-0.5	$V_{CC}+0.3$	V
3	Operating and storage moisture	M_{OS}	20	85	%
4	Storage temperature	T_{STG}	-20	100	°C
5	ESD resistance all I/O**	V_E	-2	2	kV

* Exceeding these values may cause permanent damage. Functional operation under these conditions is not implied.

** Human body model.

Recommended Operating Conditions*

	Parameter	Symbol	Min	Max	Unit
1	Case temperature	T_{CASE}	0	80	°C
2	Supply voltage	V_{CC}	3.3-5%	3.3+5%	V
3	Data rate per channel	f_D	0.155	2.5	Gbps
4	Optical wavelength	λ	800	860	nm
5	CML differential load impedance (Fig. 2)	Z_O	80	120	Ω
6	Extinction Ratio	ER	6		dB
7	Power supply noise (1MHz to 2GHz)	V_{NPS}		100	mV _{p-p}

* Maximum run length: 72 consecutive 1's or 0's; DC balance to be maintained within 144 bits. Fiber: 50/125 μ m or 62.5/125 μ m.

Characteristics*

	Parameter	Symbol	Min	Typ	Max	Unit
1	Power consumption (0.155 to 2.5 Gbps)	P_D		1.8	2.4	W
2	Power supply current	I_{CC}		550	760	mA
3	Saturation (average power)	P_{SAT}	-3			dBm
4	Sensitivity (BER 10^{-12})**	P_{S12}			-15	dBm
5	Deterministic jitter	DJ			50	ps _{p-p}
6	Random jitter ($P_F = -10$ dBm)	RJ			7.6	ps _{rms}
7	CML differential output rise/fall time (20-80%, Fig. 3)	t_{RC}, t_{FC}			160	ps
8	CML differential output voltage (Fig. 2,3)	V_{OCML}	250	350	450	mV
9	CML differential output reflection coefficient	S_{22}			-5	dB
10	Channel skew	t_{SK}			175	ps
11	NMOS output voltage low ($I_{sink} = 3$ mA)	$V_{LN MOS}$			0.4	V
12	NMOS output voltage high	$V_{HN MOS}$	2.4			V

* Operating conditions are as per Recommended Operating Conditions. Test pattern PRBS $2^{31}-1$ at 2.5Gbps and 50% duty cycle unless otherwise specified.

** Measured back to back with minimum extinction ratio and both adjacent channels operating.

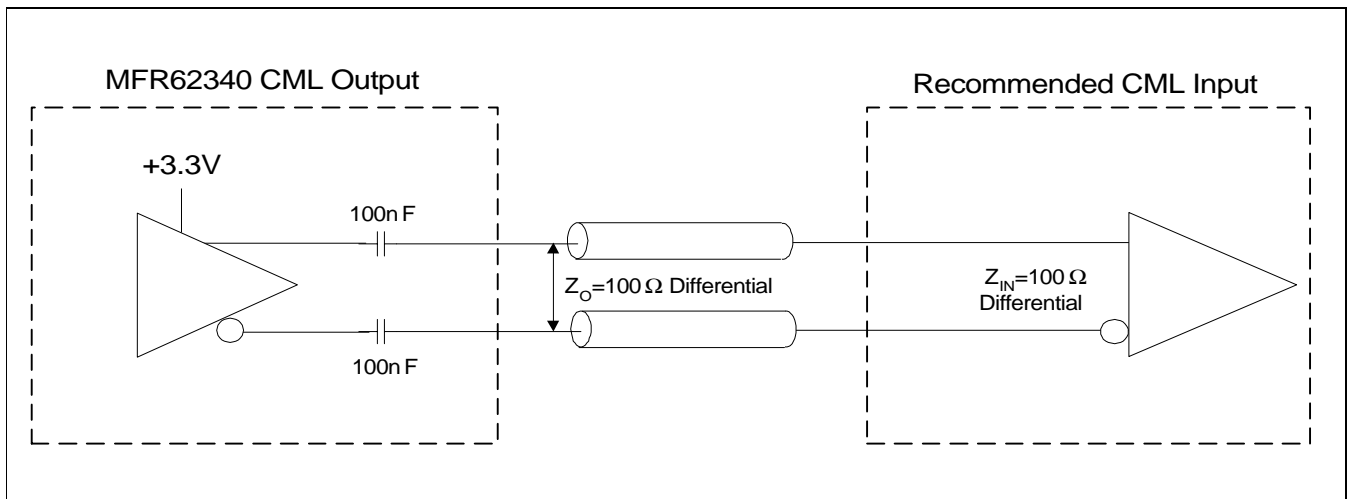


Figure 2 - Differential CML Interface

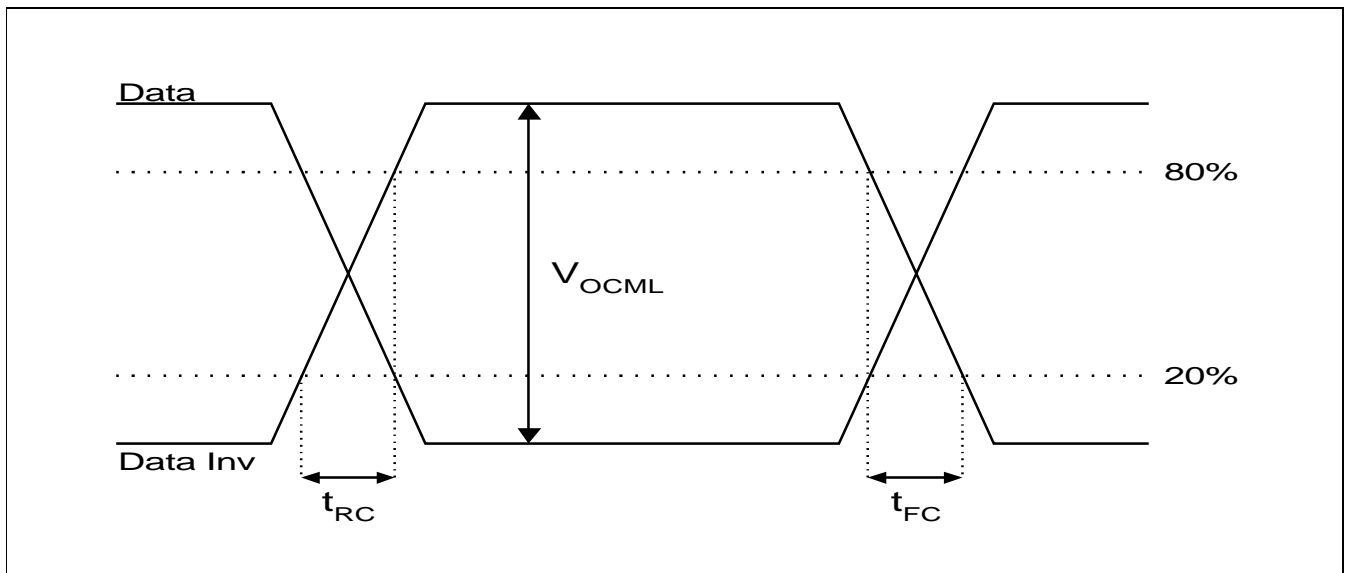


Figure 3 - Differential CML Timing Diagram

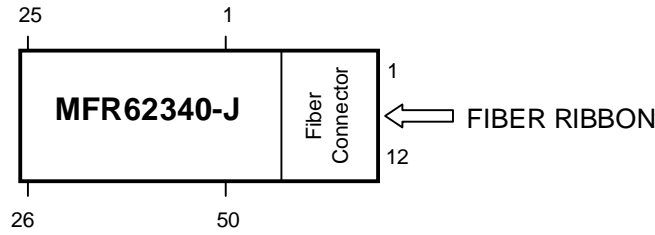


Figure 4 - Pin Assignment (Top View)

Pin Description

No	Name	Logic	Description	No	Name	Logic	Description
1	Gnd		Ground	50	Gnd		Ground
2	V _{CC}		Positive power supply	49	V _{CC}		Positive power supply
3	V _{CC}		Positive power supply	48	V _{CC}		Positive power supply
4	LOS _{1,4}	NMOS	Loss of signal ch. 1,4 ¹	47			Not Connected
5	LOS _{5,8}	NMOS	Loss of signal ch. 5,8 ¹	46			Not Connected
6	LOS _{9,12}	NMOS	Loss of signal ch. 9,12 ¹	45			Not Connected
7	Gnd		Ground	44	Gnd		Ground
8	DO1	CML	Data output No 1.	43	DO12C	CML	Data output No 12, inv.
9	DO1C	CML	Data output No 1, inv.	42	DO12	CML	Data output No 12.
10	Gnd		Ground	41	Gnd		Ground
11	DO2	CML	Data output No 2.	40	DO11C	CML	Data output No 11, inv.
12	DO2C	CML	Data output No 2, inv.	39	DO11	CML	Data output No 11.
13	Gnd		Ground	38	Gnd		Ground
14	DO3	CML	Data output No 3.	37	DO10C	CML	Data output No 10, inv.
15	DO3C	CML	Data output No 3, inv.	36	DO10	CML	Data output No 10.
16	Gnd		Ground	35	Gnd		Ground
17	DO4	CML	Data output No 4.	34	DO9C	CML	Data output No 9, inv.
18	DO4C	CML	Data output No 4, inv.	33	DO9	CML	Data output No 9.
19	Gnd		Ground	32	Gnd		Ground
20	DO5	CML	Data output No 5.	31	DO8C	CML	Data output No 8, inv.
21	DO5C	CML	Data output No 5, inv.	30	DO8	CML	Data output No 8.
22	Gnd		Ground	29	Gnd		Ground
23	DO6	CML	Data output No 6.	28	DO7C	CML	Data output No 7, inv.
24	DO6C	CML	Data output No 6, inv.	27	DO7	CML	Data output No 7.
25	Gnd		Ground	26	Gnd		Ground

¹Low = Loss of signal detected. Open drain with internal pull-up resistor 40kΩ. All LOS pins may be tied together (wired OR) to create one loss of signal (LOS) output.

Mechanical Drawings

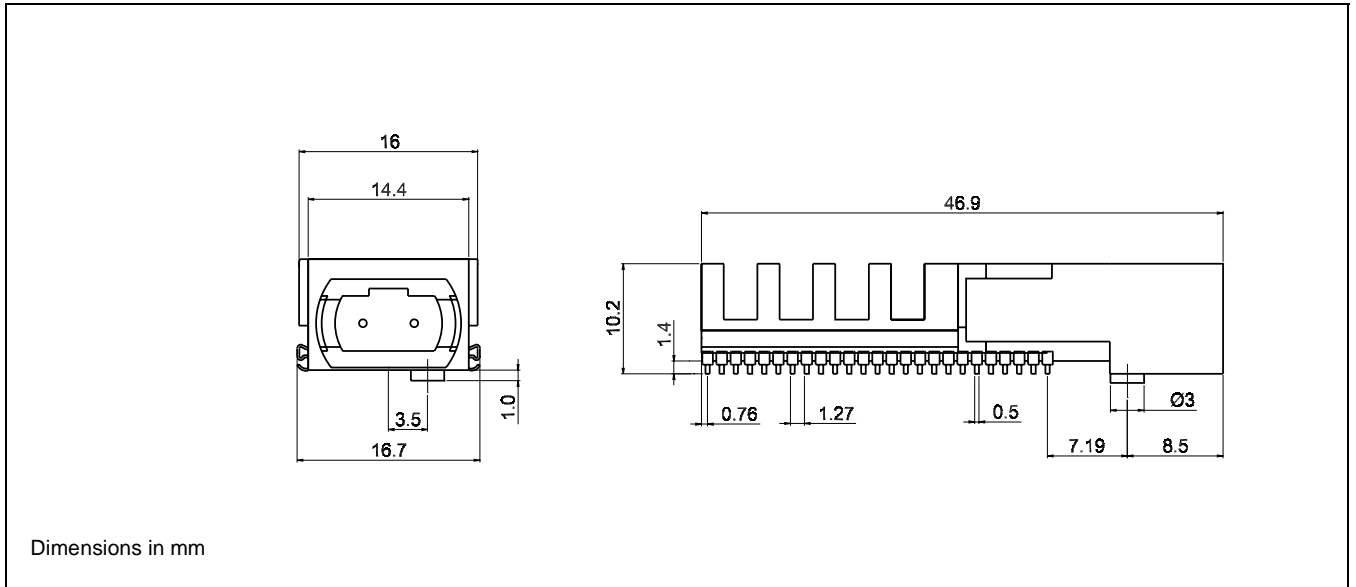


Figure 5 - MFR62340-JO: MPO/MTP Connector Option

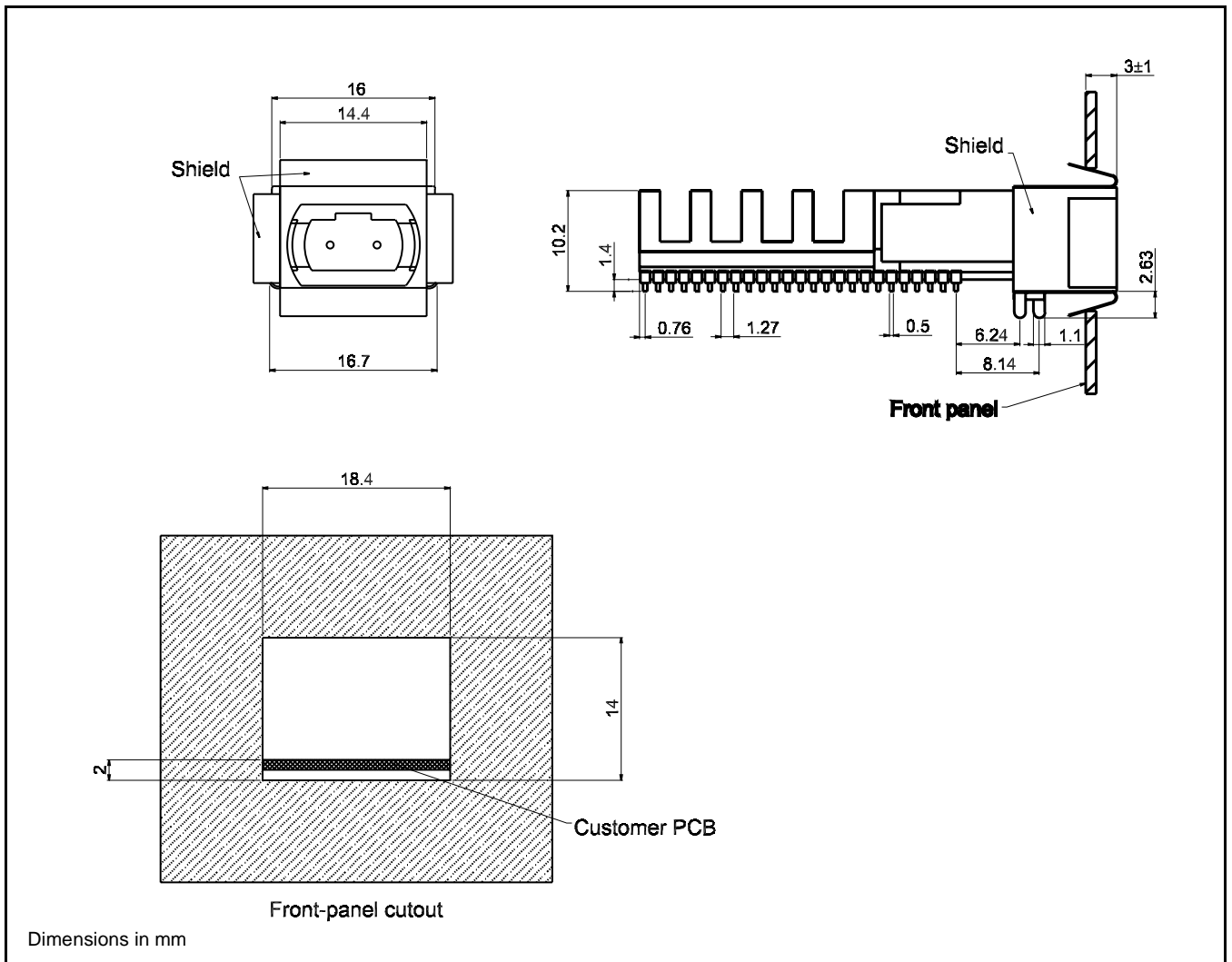


Figure 6 - MFR62340-JOS: MPO/MTP Connector Option With EMI Shield

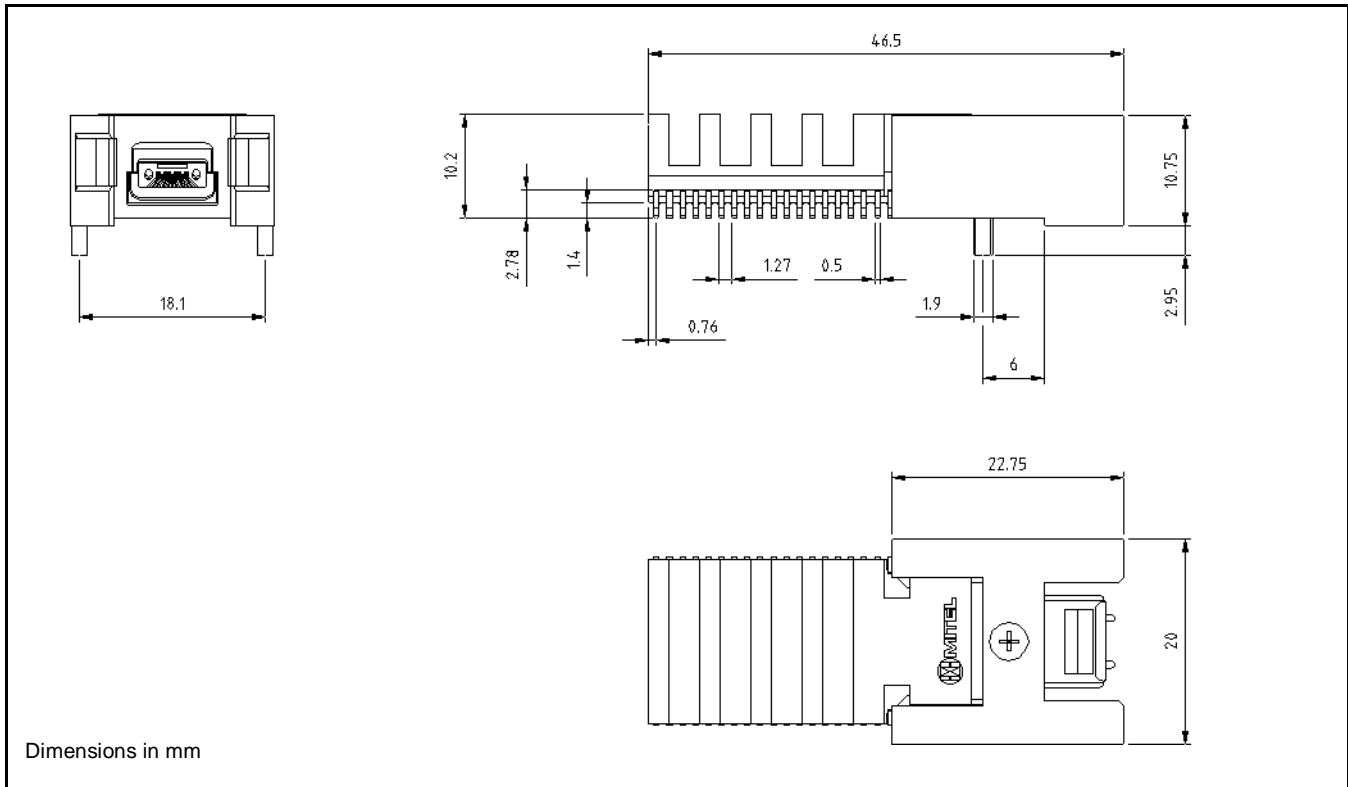


Figure 7 - MFR62340-JX: MPX Connector Option

PCB Footprints

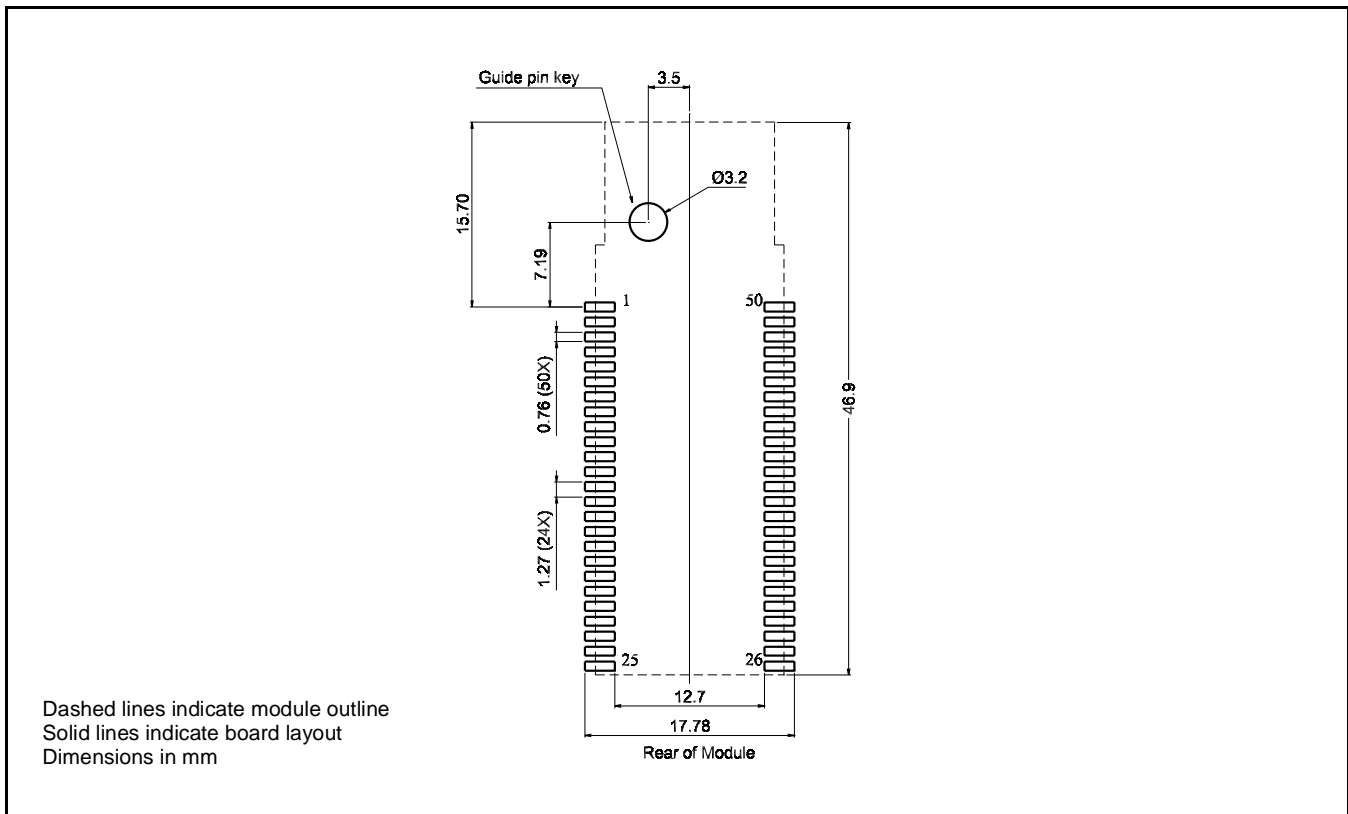


Figure 8 - MFR62340-JO: MPO/MTP Connector Option (Top View)

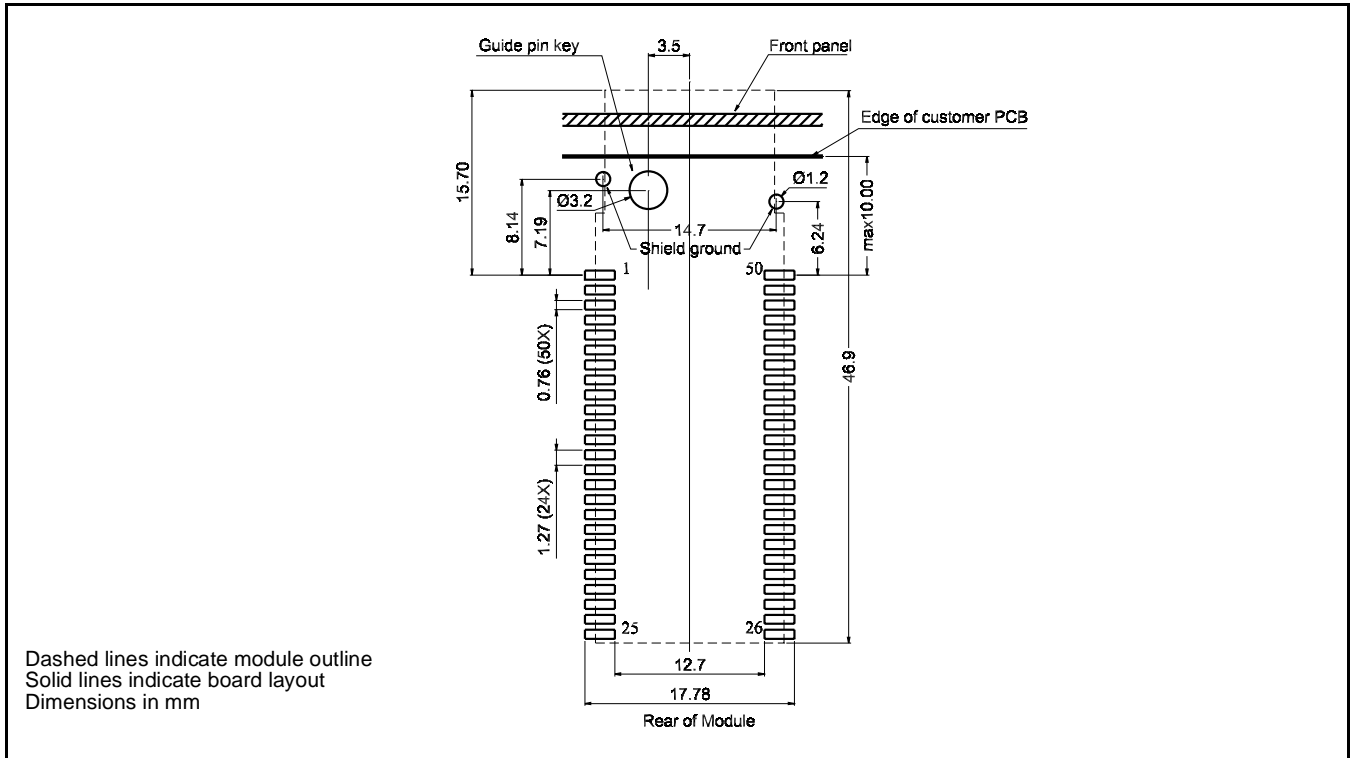


Figure 9 - MFR62340-JOS: MPO/MTP Connector Option With EMI Shield (Top View)

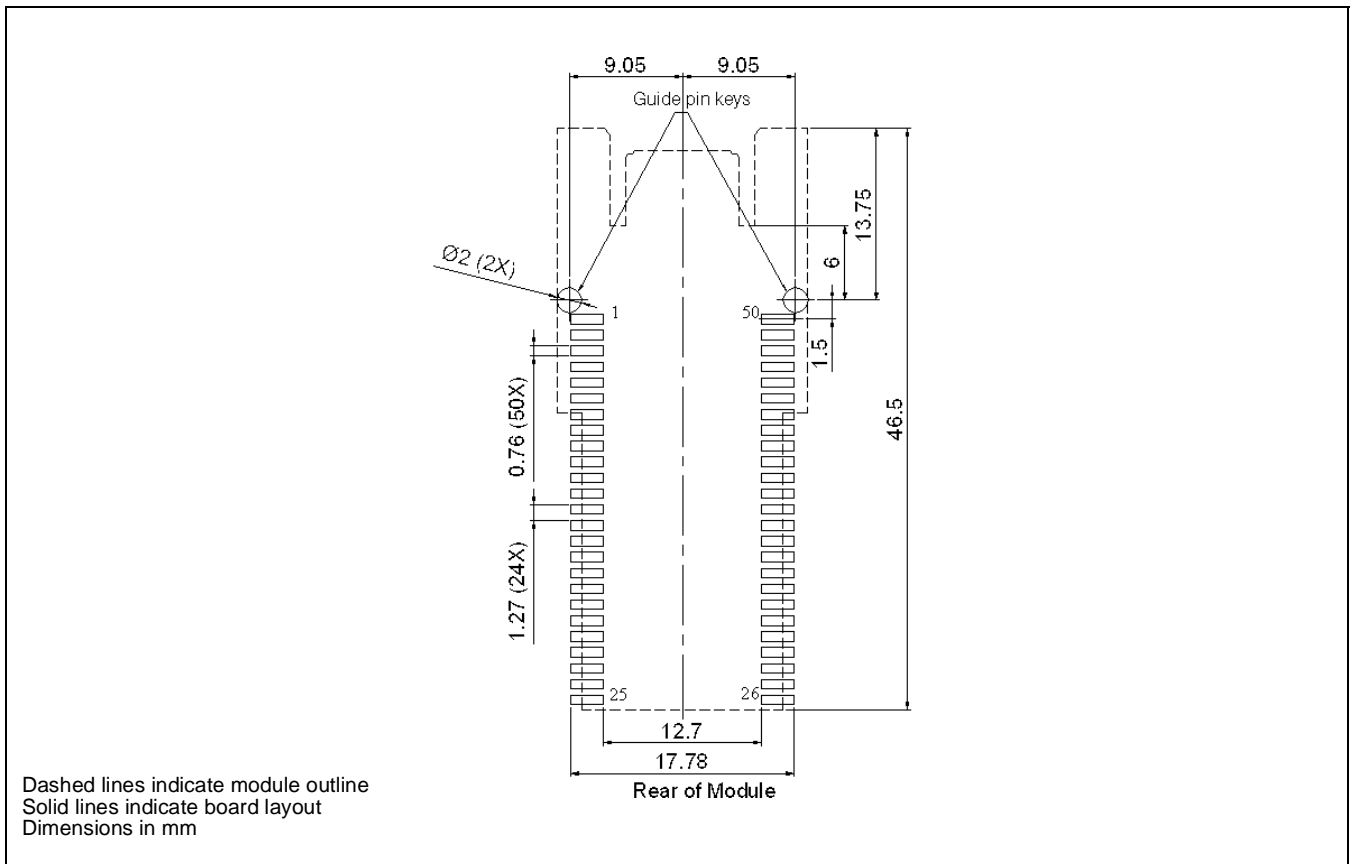


Figure 10 - MFR62340-JX: MPX Connector Option (Top View)

Electrical Connections

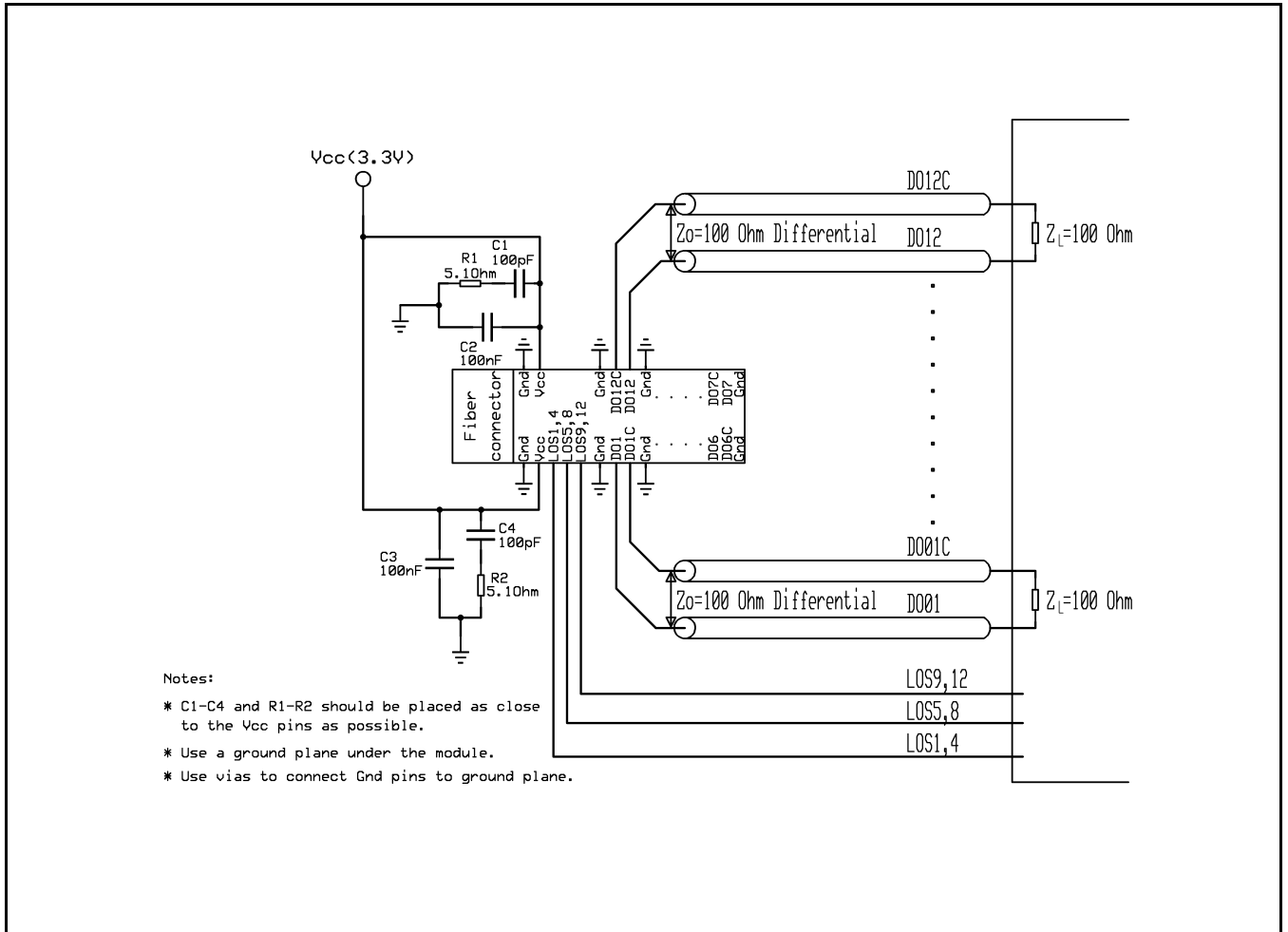


Figure 11 - Recommended Electrical Connections



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