

# SO-SFP-MR25-BX15D-43

SFP BIDI, 100Mbps-2.7Gbps, TX/RX=1490/1310nm, SM, DDM, 13dB, 15km, LC

## OVERVIEW

The SO-SFP-MR25-BX15D-43 series are small form factor pluggable module for OC-48 / STM-16 and Fiber Channel single fiber communications by using 1310nm/1490nm transmitter and 1490nm/1310nm receiver. It is with the SFP 20-pin connector to allow hot plug capability. The transmitter section uses a Distributed feedback laser and is a class 1 laser compliant according to International Safety Standard IEC 60825. The receiver section PIN or APD mounted in an optical header and a limiting post-amplifier IC. The SO-SFP-MR25-BX15D-43 series are designed to be compliant with SFF-8472 SFP MSA.

## PRODUCT FEATURES

- Support up to 2.5Gbps data links
- B type: 1490nm DFB Tx/1310nmRx
- 15km with 9/125  $\mu$ m SMF
- Single 3.3V power supply and TTL logic interface
- Hot-Pluggable SFP footprint simplex LC connector interface
- Class 1 FDA and IEC60825-1 laser safety compliant
- Operating case temperature
  - Standard: 0°C ~ +70°C
  - Industrial: -40°C ~ +85°C
- Compliant with SFP MSA
- Compliant with SFF-8472

## APPLICATIONS

- Single fiber SAN, WAN, WDM links
- Sonet / SDH
- Fibre Channel / Ethernet
- Equipment connectivity

## ORDERING INFORMATION

Part Number	Description
SO-SFP-MR25-BX15D-43	SFP BIDI, 100Mbps-2.7Gbps, TX/RX=1490/1310nm, SM, DDM, 13dB, 15km, LC
SO-SFP-MR25-BX15D-43-I	SFP BIDI, 100Mbps-2.7Gbps, TX/RX=1490/1310nm, SM, DDM, 13dB, 15km, LC, ind. temp

Subject to change without notice.

For more information, visit [smaroptics.com](http://smaroptics.com).

## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Max	Unit
Storage Temperature	$T_s$	-40	+85	°C
Supply Voltage	$V_{cc}$	-0.5	3.6	V
Operating Relative Humidity			95	%

## RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Unit
Case Operating Temperature	$T_A$	SO-SFP-MR25-BX15D-43	0	+70	°C
		SO-SFP-MR25-BX15D-43-I	-40	+85	
Power Supply Voltage	$V_{cc}$	3.15	3.3	3.45	V
Power Supply Current	$I_{cc}$			300	mA
Data rate	FC		1.063		Gbps
	2xFC		2.125		
	OC-48/STM-16		2.5		

## PERFORMANCE SPECIFICATIONS – ELECTRICAL TRANSMITTER

Parameter	Symbol	Min	Typ	Max	Unit	Notes
LVPECL Compatible Inputs(Differential)	$V_{IN}$	400		2000	mVpp	AC coupled inputs
Input Impedance (Differential)	$Z_{IN}$	85	100	115	ohms	$R_{in} > 100 \text{ kohms @ DC}$
TX Disable	Disable	2		$V_{cc}$	V	
	Enable	0		0.8		
TX FAULT	Fault	2		$V_{cc}+0.3$	V	
	Normal	0		0.5		

## PERFORMANCE SPECIFICATIONS – ELECTRICAL RECEIVER

Parameter	Symbol	Min	Typ	Max	Unit	Notes
CML Outputs (Differential)	$V_{out}$	370		2000	mVpp	AC coupled outputs
Output Impedance (Differential)	$Z_{out}$	85	100	115	ohms	
Rx_LOS Output Voltage – High		2		$V_{cc}+0.3$	V	
Rx_LOS Output Voltage – Low		0		0.8	V	
MOD_DEF ( 2:0 )	$V_{oH}$	2.5			V	With Serial ID
	$V_{oL}$	0		0.5	V	

## OPTICAL AND ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Min	Typ	Max	Unit
9µm Core Diameter SMF	L		15		km
Data Rate		1.063		2.5	Gbps

## OPTICAL AND ELECTRICAL CHARACTERISTICS TRANSMITTER

Parameter	Symbol	Min	Typ	Max	Unit
Centre Wavelength	$\lambda_c$	1480	1490	1500	nm
Spectral Width (RMS)	$\Delta\lambda$			1	nm
Average Output Power	$P_{out}$	-5		0	dBm
Extinction Ratio	ER	8.2			dB
Side Mode Suppression Ratio	SMSR	30			dB
Rise/Fall Time(20%~80%)	$t_r/t_f$			150	ps
Output Optical Eye		Compatible with ITU-T G.957			
TX Disable Assert Time	$t_{off}$			10	us
Pout@TX Disable Asserted	$P_{out}$			-45	dBm

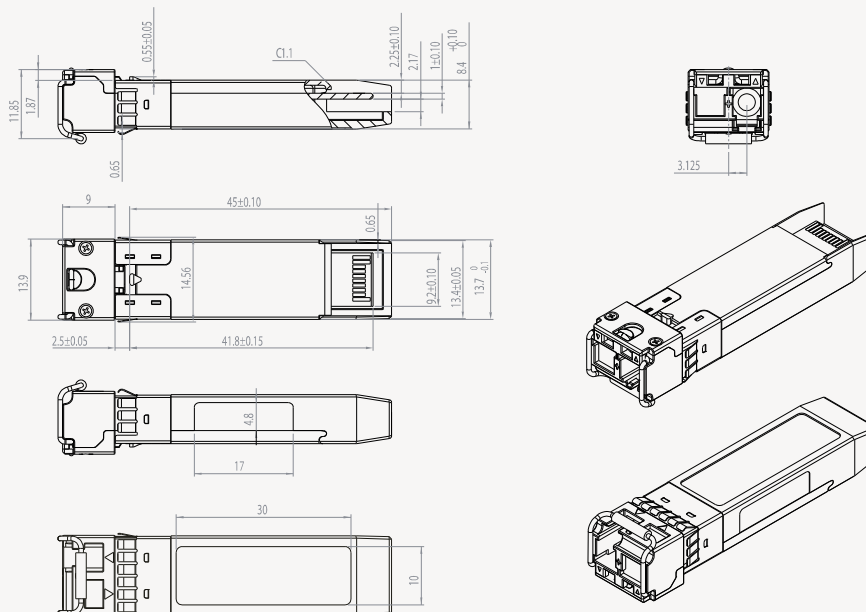
## OPTICAL AND ELECTRICAL CHARACTERISTICS RECEIVER

Parameter	Symbol	Min	Typ	Max	Unit
Centre Wavelength	$\lambda_c$	1260	1310	1360	nm
Receiver Sensitivity@1250Mbps	$P_{min}$			-20	dBm
Receiver Overload	$P_{max}$	-3			dBm
Reflection				-27	dB
LOS De-Assert	LOSD			-21	dBm
LOS Assert	LOSA	-45			dBm
LOS Hysteresis		0.5			dB

**PIN ASSIGNMENT ACCORDING TO MSA**

PIN	Signal Name	Description	PIN	Signal Name	Description
1	V <sub>EE</sub> T	Transmitter Signal Ground	11	V <sub>EE</sub> R	Receiver Signal Ground
2	TX_Fault	Transmitter Fault Indication. Logic "1" Output = Laser Fault. Logic "0" Output = Normal Operation	12	RD-	Inverse Receiver Data Out
3	TX_Disable	Logic "1" Input (or no connection) = Laser off, Logic "0" = Laser on.	13	RD+	Receiver Data Out
4	SDA	Modulation Definition 2 – Two wires serial ID Interface	14	V <sub>EE</sub> R	Receiver Signal Ground
5	SDL	Modulation Definition 1 – Two wires serial ID Interface	15	V <sub>CC</sub> R	Receiver Power – 3.3V±5%
6	MOD-ABS	Modulation Definition 0 – Ground in Module	16	V <sub>CC</sub> T	Transmitter Power – 3.3V±5%
7	RS0	RX Rate Select (LVTTTL). This pin has an internal 30k pull-down to ground. A signal on this pin will not affect module performance.	17	V <sub>EE</sub> T	Transmitter Signal Ground
8	RX_LOS	Loss of Signal Out (OC).	18	TD+	Transmitter Data In
9	RS1	TX Rate Select (LVTTTL). This pin has an internal 30k pull-down to ground. A signal on this pin will not affect module performance.	19	TD-	Inverse Transmitter Data In
10	V <sub>EE</sub> R	Receiver Signal Ground	20	V <sub>EE</sub> T	Transmitter Signal Ground

**MECHANICAL DIMENSIONS**



Subject to change without notice.

For more information, visit [smaroptics.com](http://smaroptics.com).