

## DATA SHEET

### MODULETEK: SFP-OC3-SR0-C10

OC-3/STM-1 SFP (Small Form Pluggable) MultiMode Transceiver

### SFP-OC3-SR0-C10 Overview

ModuleTek's SFP-OC3-SR0-C10 SFP optical transceivers are designed to comply with ATM/SONET/SDH standards at OC-3/STM-1 (155 Mb/s) and Fast Ethernet standards at 125Mb/s data rate. SFP-OC3-SR0-C10 with digital diagnostics monitoring functionality provide a quick and reliable interface for OC-3/STM-1 multimode application. In addition, they comply with the Small Form Factor Pluggable Multi-Source Agreement (MSA).

### Product Features

- Up to 155Mb/s bi-directional data links
- Compliant with ANSI-T1.646, ATM and SONET and SDH for OC-3/STM-1 (155Mb/s)
- Compliant with Fast Ethernet standards at 125Mb/s
- Compliant with SFP MSA
- Hot-pluggable SFP footprint
- 1310nm LED transmitter
- Duplex LC connector
- Up to 2km on MMF
- Single power supply 3.3V
- RoHS Compliant
- Class 1 laser product complies with EN 60825-1
- Operating temperature range: 0°C to 70°C

### Applications

- SONET OC-3 SR-0/SDH STM-1
- 125Mb/s Fast Ethernet

## Ordering Information

Part Number	Description	Color on Clasp
SFP-OC3-SR0-C10	SONET OC-3 SR-0/STM-1 and 100BASE-FX, SFP LC Connectors 1310nm MultiMode 2KM	Gray
<b>For More Information:</b> ModuleTek Limited Web: <a href="http://www.moduletek.com">www.moduletek.com</a> Email: <a href="mailto:sales@moduletek.com">sales@moduletek.com</a>		

## General Specifications

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Data Rate	DR	125		155	Mb/s	
Bit Error Rate	BER			$10^{-12}$		
Operating Temperature	T <sub>C</sub>	0		70	°C	1
Storage Temperature	T <sub>STO</sub>	-40		85	°C	2
Supply Current	I <sub>CC</sub>		165	300	mA	3
Input Voltage	V <sub>CC</sub>	3.14	3.3	3.46	V	

### Notes:

1. Case temperature
2. Ambient temperature
3. For electrical power interface

## Optical – Characteristics – Transmitter

$V_{CC}=3.14V$  to  $3.46V$ ,  $T_C=0^{\circ}C$  to  $70^{\circ}C$

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Output Optical Power	$P_{TX}$	-20		-14	dBm	
Optical Center Wavelength	$\lambda_C$	1300	1310	1320	nm	
Extinction Ratio	ER	10			dB	
Optical Rise/Fall Time (20%-80%)	$t_r / t_f$		1000	3000	ps	
Relative Intensity Noise	RIN			-120	dB/Hz	
Generated Jitter (peak to peak)	$GJ_{PP}$			0.07	UI	
Generated Jitter (RMS)	$GJ_{RMS}$			0.007	UI	
Output Eye	Comply with SONET OC-3/SDH STM-1 standard					

## Optical – Characteristics – Receiver

$V_{CC}=3.14V$  to  $3.46V$ ,  $T_C=0^{\circ}C$  to  $70^{\circ}C$

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Receiver Overload	$P_{OL}$	0			dBm	1
Optical Center Wavelength	$\lambda_C$	1270		1600	nm	
Receiver Sensitivity@ 155Mb/s	$R_{X\_SEN1}$			-30	dBm	2
Receiver Sensitivity@125Mb/s	$R_{X\_SEN2}$			-31	dBm	2
Optical Return Loss	ORL	12			dB	
Receiver Electrical 3dB Upper cutoff frequency				1500	MHz	
LOS Assert	$LOS_A$	-45			dBm	
LOS De-Assert	$LOS_D$			-33	dBm	
LOS Hysteresis	$LOS_H$	0.5			dB	

### Notes:

1.  $BER < 10^{-12}$
2. PRBS  $2^{-23}-1$

## Electrical – Characteristics – Transmitter

$V_{CC}=3.14V$  to  $3.46V$ ,  $T_C=0^{\circ}C$  to  $70^{\circ}C$

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Input differential impedance	$R_{IN}$		100		$\Omega$	
Single ended data input swing	$V_{IN\_PP}$	250		1200	mV	
Transmit disable voltage	$V_D$	2		$V_{CC}$	V	
Transmit enable voltage	$V_{EN}$	$V_{EE}$		$V_{EE}+0.8$	V	

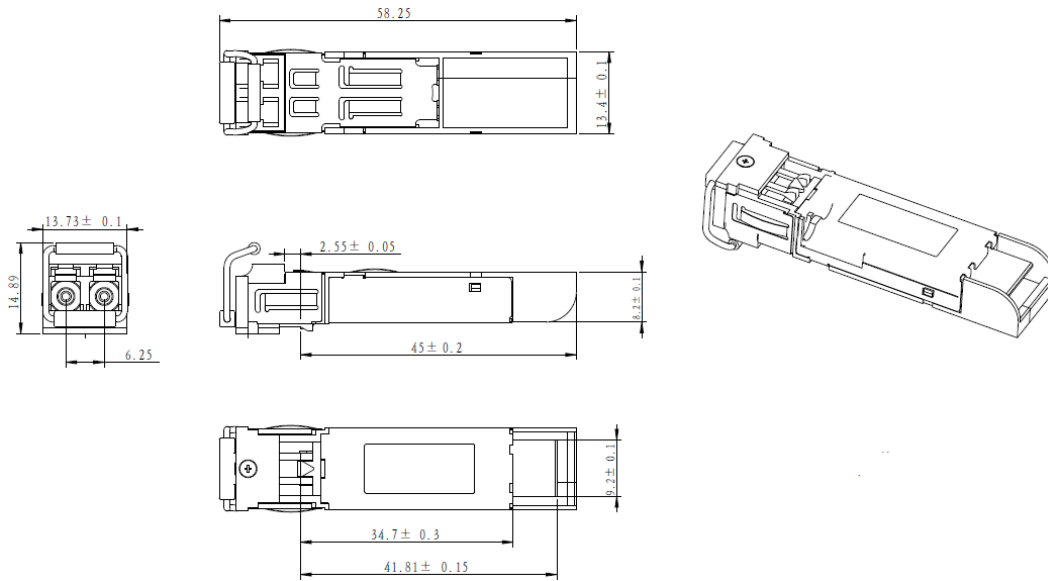
## Electrical – Characteristics – Receiver

$V_{CC}=3.14V$  to  $3.46V$ ,  $T_C=0^{\circ}C$  to  $70^{\circ}C$

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Single ended data output swing	$V_{OUT\_PP}$	250	450	900	mV	
Data output rise/fall time (20%-80%)	$t_r/t_f$	0.6		5	ns	
LOS Assert	$V_{LOS\_A}$	2		$V_{CC\_HOST}$	V	
LOS De-Assert	$V_{LOS\_D}$	$V_{EE}$		$V_{EE}+0.5$	V	

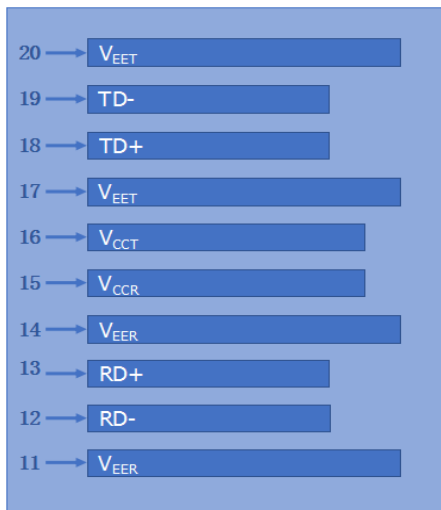


## Dimensions

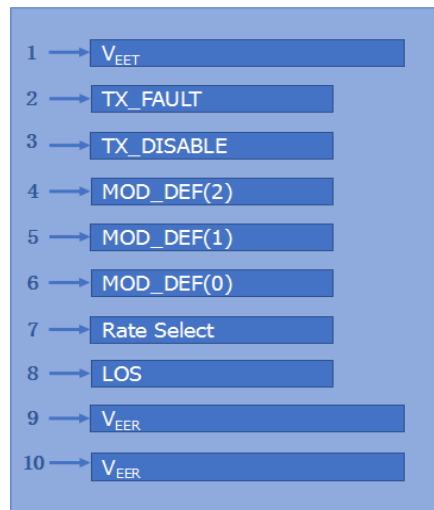
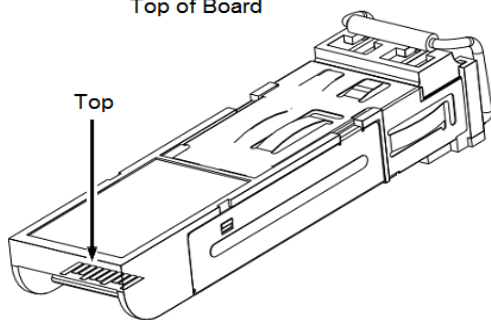


ALL DIMENSIONS ARE  $\pm 0.2$ mm UNLESS OTHERWISE SPECIFIED  
UNIT: mm

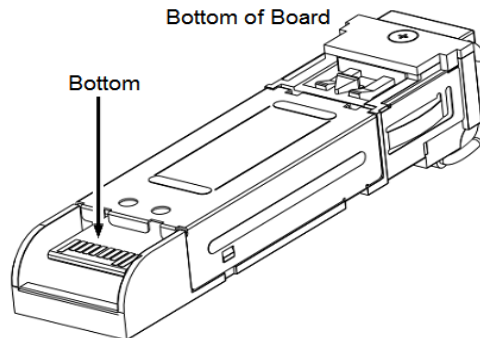
## Electrical Pad Layout



Top of Board



Bottom of Board



## Pin Assignment

PIN #	Symbol	Description	Remarks
1	V <sub>EET</sub>	Transmitter ground (common with receiver ground)	1
2	TX_FAULT	Transmitter Fault. Not supported	
3	TX_DISABLE	Transmitter Disable. Laser output disabled on high or open	2
4	MOD_DEF(2)	Module Definition 2. Data line for serial ID	3
5	MOD_DEF(1)	Module Definition 1. Clock line for serial ID	3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module	3
7	Rate Select	No connection required	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation	4
9	V <sub>EER</sub>	Receiver ground (common with transmitter ground)	1
10	V <sub>EER</sub>	Receiver ground (common with transmitter ground)	1
11	V <sub>EER</sub>	Receiver ground (common with transmitter ground)	1
12	RD-	Receiver Inverted DATA out. AC coupled	
13	RD+	Receiver Non-inverted DATA out. AC coupled	
14	V <sub>EER</sub>	Receiver ground (common with transmitter ground)	1
15	V <sub>CCR</sub>	Receiver power supply	
16	V <sub>CCT</sub>	Transmitter power supply	
17	V <sub>EET</sub>	Transmitter ground (common with receiver ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC coupled	
19	TD-	Transmitter Inverted DATA in. AC coupled	
20	V <sub>EET</sub>	Transmitter ground (common with receiver ground)	1

### Notes:

1. Circuit ground is isolated from chassis ground
2. Disabled: T<sub>DIS</sub> > 2V or open, Enabled: T<sub>DIS</sub> < 0.8V
3. Should Be pulled up with 4.7k – 10k ohm on host board to a voltage between 2V and 3.6V
4. LOS is open collector output

## References

1. Small Form Factor Pluggable (SFP) Transceiver Multi-Source Agreement (MSA), INF-8074i.
2. ISO/IEC 9314-3 “Information Processing Systems–Fiber Distributed Data Interface (FDDI), Part 3, Physical Layer Medium Dependent (PMD).” 1990.
3. ANSI T1.416.01-1999. “Network to Customer Installation Interfaces–Synchronous Optical NETwork (SONET) Physical Media Dependent Specification: Multi-Mode Fiber” ANSI, 1999.