

DATA SHEET

MODULETEK: SFP-GE-40KM-1550NM-C10

1.25Gb/s 40km SFP Transceiver

SFP-GE-40KM-1550NM-C10 Overview

ModuleTek's SFP-GE-40KM-1550NM-C10 SFP Transceivers are a high performance, cost effective module which have a duplex LC optics interface. Standard AC coupled CML for high speed signal and LVTTTL control and monitor signals. The product implements digital diagnostics via a 2-wire serial bus ,compliant with the SFF-8472 standard.

Product Features

- Up to 1.25Gb/s data links
- Hot-Pluggable
- Duplex LC connector
- Up to 40km on 9/125µm SMF
- 1550nm DFB laser transmitter
- Single power supply 3.3V
- Monitoring Interface Compliant with SFF-8472
- Low power dissipation <1W
- RoHS Compliant
- Operating case temperature range:0°C to 70°C

Applications

- Metro/Access Networks
- 1.25 Gb/s 1000Base-EX Ethernet
- 1×Fibre Channel
- Other Optical Links

Ordering Information

Part Number	Description	Color on Clasp
SFP-GE-40KM-1550NM-C10	1.25G SFP Transceiver, LC Connectors, Single Mode Fiber 40km	green
For More Information: ModuleTek Limited Web: www.moduletek.com Email: sales@moduletek.com		

General Specifications

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Data Rate	DR		1.25		Gb/s	
Bit Error Rate	BER			10^{-12}		
Operating Temperature	T _{OP}	0		70	°C	1
Storage Temperature	T _{STO}	-40		85	°C	2
Supply Current	I _S			250	mA	3
Input Voltage	V _{CC}	3.14		3.46	V	
Maximum Voltage	V _{MAX}	-0.5		4	V	3

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}	-9.5		-3	dBm	1
Optical Center Wavelength	λ_C	1530	1550	1570	nm	
Extinction Ratio	ER	9			dB	
Spectral Width	$\Delta\lambda$			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Optical Rise/Fall Time	t_r/t_f			260	ps	
Output Eye Mask	Compliant with IEEE802.3 z					

Notes:

1.Average Launch Power

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
Optical Center Wavelength	λ_C	1270		1610	nm	
Receiver Overload	P_{OL}	0			dBm	1
Receiver Sensitivity	R_{X_SEN}			-24	dBm	1
LOS Assert	LOS_A	-40			dBm	
LOS De-Assert	LOS_D			-25	dBm	
LOS Hysteresis	LOS_H	0.5			dB	

Notes:

1.Measured with PRBS 2^7-1 at 10^{-12} BER

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}	90	100	110	Ω	
Single ended data input swing	V_{IN_PP}	250		1200	mV	
Transmit disable voltage	V_D	$V_{CC}-1.3$		V_{CC}	V	
Transmit enable voltage	V_{EN}	V_{EE}		$V_{EE}+0.8$	V	

Electrical – Characteristics – Receiver

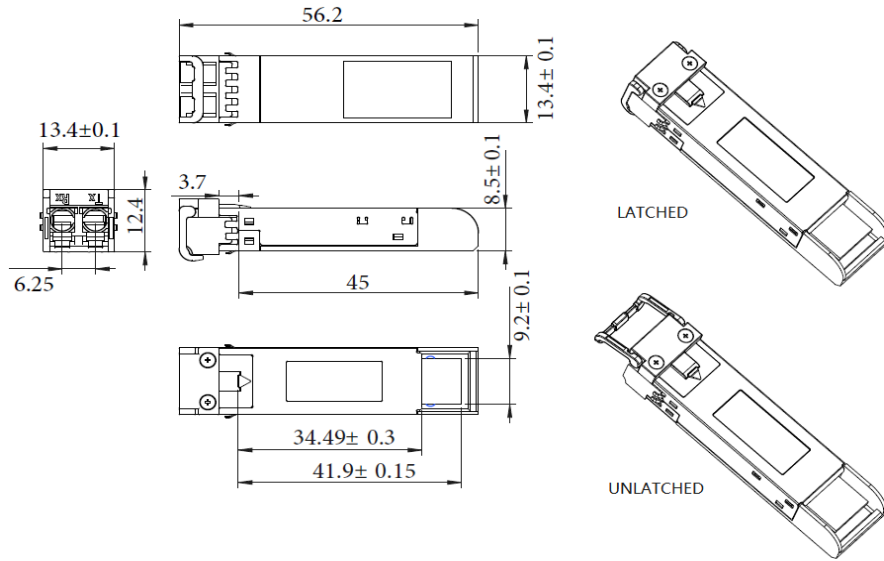
$V_{CC}=3.14V$ to $3.46V$, $T_C=0^{\circ}C$ to $70^{\circ}C$

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Single ended data output swing	V_{OUT_PP}	250		800	mV	
LOS asserted	V_{LOS_A}	$V_{CC}-0.5$		V_{CC_HOST}	V	
LOS de-asserted	V_{LOS_D}	V_{EE}		$V_{EE}+0.5$	V	

Digital Diagnostic Functions

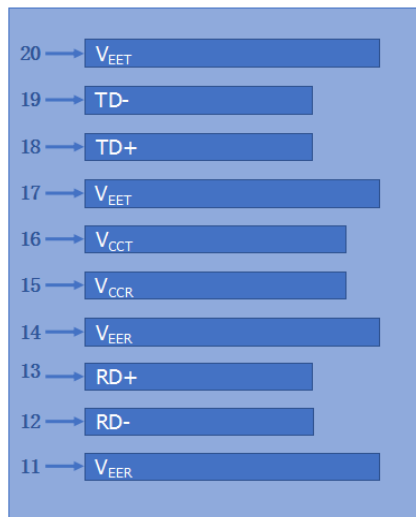
SFP-GE-40KM-1550NM-C10 supports the 2-wire serial communication protocol as defined in SFF-8472. Digital diagnostic information is accessible over the 2-wire interface at the address 0xA2. Digital diagnostics for SFP-GE-40KM-1550NM-C10 are internally calibrated by default. The internal micro control unit accesses the device operating parameters in real time, Such as transceiver temperature, laser bias current, transmitted optical power, received optical power and transceiver supply voltage. The module implements the alarm function of the SFF-8472, alerts the user when a particular operating parameter exceeds the factory-set normal range.

Dimensions

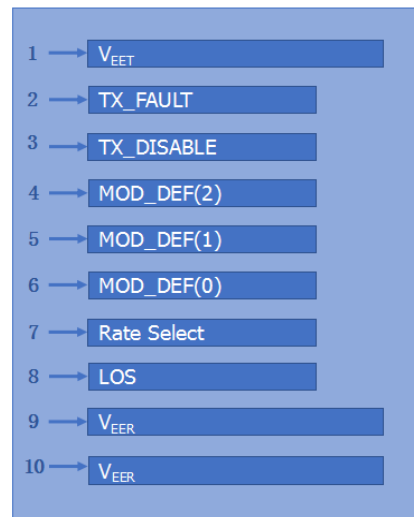


ALL DIMENSIONS ARE ±0.2mm UNLESS OTHERWISE SPECIFIED
UNIT: mm

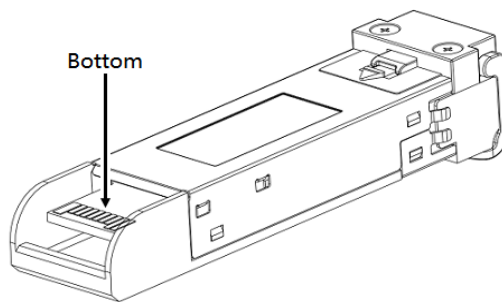
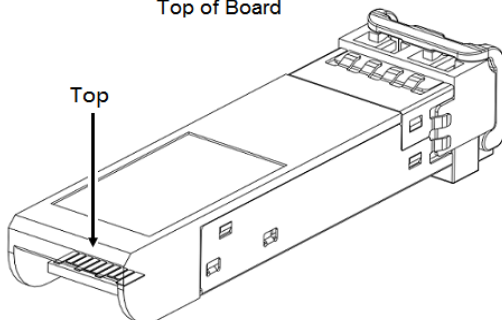
Electrical Pad Layout



Top of Board



Bottom of Board



Pin Assignment

PIN #	Symbol	Description	Remarks
1	V _{EET}	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 _{EER}	Receiver ground (common with transmitter ground)	1
10	V _{EER}	Receiver ground (common with transmitter ground)	1
11	V _{EER}	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 _{EER}	Receiver ground (common with transmitter ground)	1
15	V _{CCR}	Receiver power supply	
16	V _{CCT}	Transmitter power supply	
17	V _{EET}	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 _{EET}	Transmitter ground (common with receiver ground)	1

Notes:

1. Circuit ground is isolated from chassis ground
2. Disabled: T_{DIS} > 2V or open, Enabled: T_{DIS} < 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), September 2000.
2. Digital Diagnostics Monitoring Interface for Optical Transceivers – SFF-8472.