HSGQ-SFP28 25G BIDI Modle

HSGQ-SFP28-25G-10LR-33B
25G Tx1330/Rx1270nm 10km BIDI
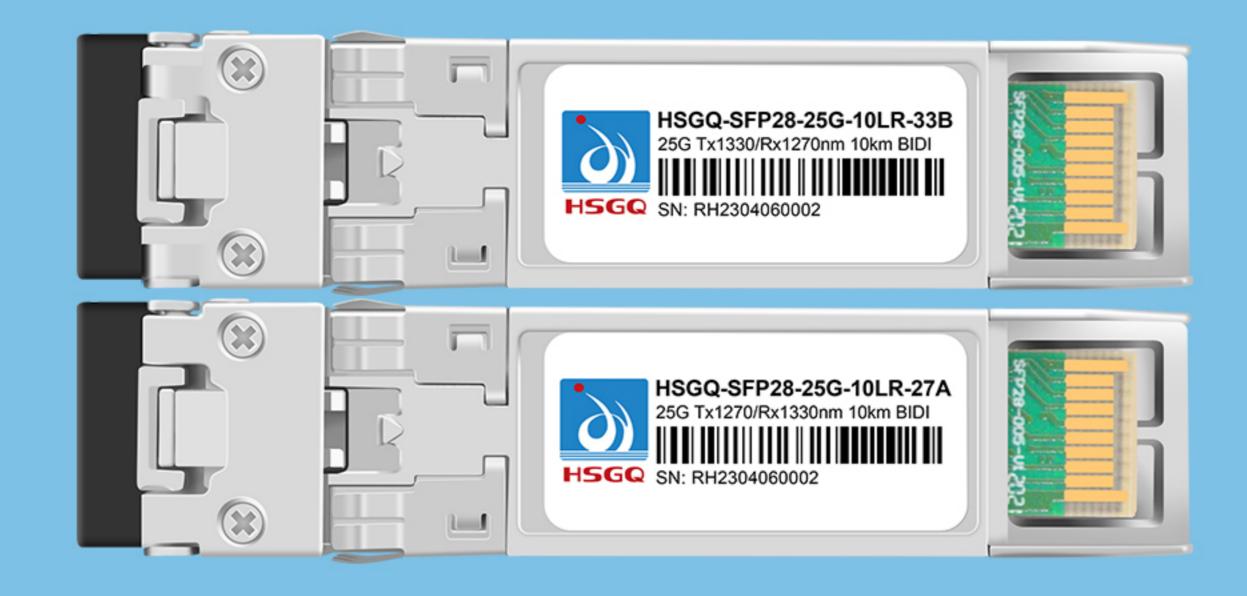SN: RH2304060002

HSGQ-SFP28-25G-10LR-27A
25G Tx1270/Rx1330nm 10km BIDI
SN: RH2304060002

Product Features

- Compliant with SFF-8431 andSFF-8472
- Compliant with SFP28 MSA Specification
- Digital Diagnostic Monitoring available
- Uncooled 1270nm DFB Laser
- Uncooled 1330nm DFB Laser
- Up to 25.78Gb/s bi-directional data links
- Up to 10km on 9/125μm SMF
- Simplex LC connector compliant
- Single +3.3V DC power supply
- Hot-pluggable SFP footprint
- Class 1 laser safety certified
- Low power dissipation
- RoHS compliance
- Operating temperature Options: Commercial: 0 to 70℃; Industrial: -40 to 85℃

General Description

- HSGQ-SFP28-25G-10LR-33B/ HSGQ-SFP28-25G-10LR-27A is a high performance, cost effective module, which is transmission distance up to 10km. The transceiver consists of two sections:

- The transmitter of HSGQ-SFP28-25G-10LR-27A section incorporates a 1270nm DFB driver.

- The transmitter of HSGQ-SFP28-25G-10LR-33B section incorporates a 1330nm DFB driver.

- The receiver section consists of a PIN photodiode integrated with a transimpedance preamplifier (TIA).

- The module is hot pluggable into the 20-pin connector.

- All modules satisfy class I laser safety requirements. Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8472, which allows real-time access to device operating parameters such as transceiver temperature,laser bias current, transmitted optical power,received optical power and transceiver supply voltage.

Absolute Maximum Rating

Parameter	Symbol	Min	Max	Unit
Storage Temperature	TS	-40	+85	℃
Supply Voltage	Vcc3	3.1	3.6	V
Relative Humidity (Non-condensing)	RH	5	95	%

Note:
Exceeding any of these values may immediately damage the device.

Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Units
Temperature1	Tc	0		70	℃
Temperature2	Tc	-40		85	℃
Power Supply Voltage	Vcc3	3.135	3.3	3.465	V
	Icc3			450	mA
Power Dissipation	P_D			1.5	W
Data Rate			25.78		Gbps
Transmission Distance				10	km

Note:
Applicable to HSGQ-SFP28-25G-10LR-33B/ HSGQ-SFP28-25G-10LR-27A

Receiver Operating Characteristic-Optical, Electrical

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Center Wavelength	λc	1250	1270	1290	nm	Rx1270nm
Center Wavelength	λc	1310	1330	1350	nm	Rx1330nm
Receiver Sensitivity	S			-12	dBm	
LOS Assert	LOS A	-35			dBm	
LOS Dessert	LOS D			-13	dBm	
LOS Hysteresis	LOSH	0.5		6	dB	
Overload	Pov	+1			dBm	
Rx Output Diff Swing	Vo	300		850	mVpp	

Note:
Minimum average optical power measured at ER=4 dB,2^31-1 PRBS data pattern,BER<5E-5

Transmitter Operating Characteristic-Optical, Electrical

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Center Wavelength	λc	1250	1270	1290	nm	Tx1270nm
Center Wavelength	λc	1310	1330	1350	nm	Tx1330nm
Laser Off Power	Poff			-30	dBm	
Average Optical Power	Pavg	-4		+2	dBm	
Spectral Width (-20dB)				1	nm	DFB Laser
Side Mode Suppression Ratio	SMSR	30			dB	
Extinction Ratio	ER	3.5			dB	
Tx Input Diff Swing	VI	180		700	mVpp	
Tx_Disable	Disable		2	VCC	V	
	Enable		VEE	VEE+ 0.8	V	

Control and Status I/O Timing Characteristics

Parameter	Symbol	Min	Max	Unit	Notes
TX Disable Assert Time	t_off		100	μs	1
TX Disable Negate Time	t_on		1	ms	2
Time to initialize including reset of TX_Fault	t_init		300	ms	3
TX Fault Assert Time	t_fault		100	us	4
Tx_Fault Reset	t_reset	10		μs	5
LOS Assert Time	t_loss_on		100	μs	6
LOS Deassert Time	t_loss_off		100	μs	7
Serial ID Clock Rate	f_serial_clock	100	400	kHz	8

Note:
1. Time from rising edge of TX Disable to when the optical output falls below 10% of nominal.
2. Time from falling edge of TX Disable to when the modulated optical output rises above 90% of nominal.
3. From power on or negation of TX Fault using TX Disable.
4. Time from fault to TX fault on.
5. Time TX Disable must be held high to reset TX_fault.
6. Time from LOS state to RX LOS assert.
7. Time from non-LOS state to RX LOS deassert.
8. Time from rising or falling edge of Rate Select input until receiver bandwidth is in conformance with appropriate specification.

Pin Assignment and Description

PIN	Symbol	Description	Notes
1	VeeT	Module Transmitter Ground	1
2	Tx Fault	Module Transmitter Fault	2
3	Tx Disable	Transmitter Disable; Turns off transmitter laser output	3
4	SDL	2-wire Serial Interface Data Line (Same as MOD-DEF2 as defined in the INF-8074i)	4
5	SCL	2-wire Serial Interface Clock (Same as MOD-DEF1 as defined in the INF-8074i)	4
6	MOD-ABS	Module Absent, connected to VeeT or VeeR in the module	5
7	RS0	Rate Select, optionally controls SFP module receiver. When High input data rate 10.3GBd and when LOW input data rate 1.25GBd.	6
8	LOS	Receiver Loss of Signal Indication (In FC designated as RX_LOS, in SONET designated as LOS, and in Ethernet designated at Signal Detect)	2
9	RS1	Module Receiver Ground	1
10	VeeR	Module Receiver Ground	1
11	VeeR	Module Receiver Ground	1
12	RD-	Receiver Inverted Data Output	
13	RD+	Receiver Non-Inverted Data Output	
14	VeeR	Module Receiver Ground	1
15	VccR	Module Receiver 3.3 V Supply	
16	VccT	Module Transmitter 3.3 V Supply	
17	VeeT	Module Transmitter Ground	1
18	TD+	Transmitter Non-Inverted Data Input	
19	TD-	Transmitter Inverted Data Input	
20	VeeT	Module Transmitter Ground	1

Note:
1. The module signal ground pins, VeeR and VeeT, shall be isolated from the module case
2. This pin is an open collector/drain output pin and shall be pulled up with 4.7k-10kohms to Host_Vcc on the host board. Pull ups can be connected to multiple power supplies, however the host board design shall ensure that no module pin has voltage exceeding module VccT/R + 0.5V.
3. This pin is an open collector/drain input pin and shall be pulled up with 4.7k-10kohms to VccT in the module.
4. See sff-8472 4.2 2-wire Electrical Specifications.
5. This pin shall be pulled up with 4.7k-10kohms to Host_Vcc on the host board.
6. If implementing SFF-8079 pin 7 are used for RS0 not use.