

Professional high-speed optical transceiver

OPN-S8G129-3D27SC / OPN-S8G129T-3D27SC
OPN-S8G129-3D27SC-EMG / OPN-S8G129T-3D27SC-EMG
OPN-S8G129-3D27ST / OPN-S8G129T-3D27ST
OPN-S8G129-3D27FC / OPN-S8G129T-3D27FC

CWDM 3.3V / 1.25 Gbps RoHS Compliant Optical Single-Mode Transceiver

PRODUCT FEATURES

- Duplex SC SM Transceiver: OPN-S8G129-3D27SC
- Duplex ST SM Transceiver: OPN-S8G129-3D27ST
- Duplex FC SM Transceiver: OPN-S8G129-3D27FC
 - Compliant with IEEE 802.3z Gigabit Ethernet
- 18-Wavelength CWDM DFB LD Transmitter from 1270 nm to 1610 nm, with step 20 nm
 - 27 dB Link Budget at Least
 - Industry Standard 1 x 9 Footprint
 - Single +3.3 V Power Supply
 - RoHS Compliant
- LVPECL Signal Detect Output: OPN-S8G129-3D27SC
- LVTTTL Signal Detect Output: OPN-S8G129T-3D27SC
 - Wave Solderable
- Class 1 Laser International Safety Standard IEC 60825 Compliant

APPLICATIONS

- Gigabit Ethernet Links
- SONET / SDH Equipment Interconnect
 - Fibre Channel Links
 - CWDM

PRODUCT DESCRIPTION

The OPN-S8G129-3D27SC series single mode transceiver is a low power, high performance CWDM module for bi-directional serial optical data communications such as Gigabit Ethernet and Fibre Channel. There are eighteen center wavelengths available from 1270 nm to 1610 nm, each step 20 nm. A guaranteed minimum optical link budget of 27 dB is offered. The transmitter section uses a multiple quantum well DFB laser and is a class 1 laser compliant according to International Safety Standard IEC 60825. The receiver section uses an integrated InGaAs detector preamplifier (IDP) mounted in an optical header and a limiting post-amplifier IC. A PECL logic interface simplifies interface to external circuitry.

ORDER INFORMATION

P/No.	Bit Rate (Mb/s)	1000 BASE	Power Budget (dB)	Wavelength (nm)	Voltage (V)	Package	Temp. (°C)	TX Power (dBm)	RX Sens. (dBm)	RoHS Compliant
OPN-S8G129-3D27SC	1250	ZX	> 27	CWDM*	3.3	1X9 SC/ST/FC	0 to 70	5 to 0	-27	Y

CWDM Wavelength (0 to 70°C)

Central Wavelength	Min. (nm)	Typ. (nm)	Max. (nm)	Central Wavelength	Min. (nm)	Typ. (nm)	Max. (nm)
-C270	1264.5	1270	1277.5	-C450	1444.5	1450	1457.5
-C290	1284.5	1290	1297.5	-C470	1464.5	1470	1477.5
-C310	1304.5	1310	1317.5	-C490	1484.5	1490	1497.5

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-C330	1324.5	1330	1337.5	-C510	1504.5	1510	1517.5
-C350	1344.5	1350	1357.5	-C530	1524.5	1530	1537.5
-C370	1364.5	1370	1377.5	-C550	1544.5	1550	1557.5
-C390	1384.5	1390	1397.5	-C570	1564.5	1570	1577.5
-C410	1404.5	1410	1417.5	-C590	1584.5	1590	1597.5
-C430	1424.5	1430	1437.5	-C610	1604.5	1610	1617.5

CWDM*: 18 Wavelengths from 1270 nm to 1610 nm, each step 20 nm.

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units	Notes
Storage Temperature	Tstg	-50	85	°C	
Operating Temperature	Topr	0	70	°C	With air flow 1m/sec
Soldering Temperature	---		260	°C	10 seconds on leads only
Power Supply Voltage	Vcc	0	3.6	V	
Input Voltage	---	GND	Vcc	V	
Output Current	Iout	0	30	mA	

Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Units
Power Supply Voltage	Vcc	3.1	3.3	3.5	V
Operating Temperature	Topr	0		70	°C / air flow 1m/sec
Data Rate			1250	1300	Mb/s
Power Supply Current	Icc		200	280	mA

Transmitter Specifications (0°C < Topr < 70°C, 3.1V < Vcc < 3.5V)

Parameter	Symbol	Min	Typ	Max	Units	Notes
Optical						
Optical Transmit Power	Po	0	---	5	dBm	1
Output Center Wavelength	λ	$\lambda-5.5$	λ	$\lambda+7.5$	nm	2
Output Spectrum Width	$\Delta\lambda$	---	---	1	nm	-20 dB Width
Side Mode Suppression Ratio	SMSR	30			dB	
Extinction Ratio	ER	9	---	---	dB	
Output Eye	Compliant with Bellcore TR-NWT-000253 and ITU recommendation G.957					
Optical Rise Time	tr			0.26	ns	20% to 80% Values
Optical Fall Time	tf			0.26	ns	20% to 80% Values
Relative Intensity Noise	RIN			-120	dB/Hz	
Total Jitter	TJ			0.227	ns	3
Electrical						
Data Input Current – Low	IL	-350			μA	
Data Input Current – High	I _H			350	μA	
Differential Input Voltage	V _{IH} - V _{IL}	300			mV	
Data Input Voltage – Low	V _{IL} - V _{CC}	-2.0		-1.58	V	4
Data Input Voltage -- High	V _{IH} - V _{CC}	-1.1		-0.74	V	4

Notes: 1. Output power is power coupled into a 9/125 μm single mode fiber.

2. ITU-T G.694.2 CWDM wavelength from 1270 nm to 1610 nm, each step 20 nm.

3. Measured with a 2⁻¹ PRBS.

4. These inputs are compatible with 10K, 10KH and 100K ECL and LVPECL inputs.

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Receiver Specifications (0°C < Topr < 70°C, 3.1V < Vcc < 3.5V)						
Parameter	Symbol	Min	Typ	Max	Units	Notes
Optical						
Sensitivity	---	---	---	-27	dBm	1
Maximum Input Power	Pin	-3		---	dBm	
Signal Detect – Asserted	Pa	---	---	-27	dBm	Transition: low to high
Signal Detect – Deasserted	Pd	-36	---	---	dBm	Transition: high to low
Signal detect -- Hysteresis		1.0	---		dB	
Wavelength of Operation		1100	---	1620	nm	
Electrical						
Data Output Voltage – Low	V _{OL} - V _{CC}	-2.0		-1.58	V	2
Data Output Voltage – High	V _{OH} - V _{CC}	-1.1		-0.74	V	2
Signal Detect Output Voltage -- Low	V _{OL} - V _{CC}	-2.0		-1.58	V	OPN-S8G129-3D27SC
Signal Detect Output Voltage -- High	V _{OH} - V _{CC}	-1.1		-0.74	V	
Signal Detect Output Voltage -- Low	V _{SDL}			0.5	V	OPN-S8G129T-3D27SC
Signal Detect Output Voltage -- High	V _{SDH}	2.0			V	

Notes: 1. Minimum sensitivity and saturation levels at BER=1E-12 for a 2⁷-1 PRBS at ER=9 dB.

2. These outputs are compatible with 10K, 10KH and 100K ECL and PECL outputs.

CONNECTION DIAGRAM

Receiver Signal Ground	1 (Rx GND)	N/C
Receiver Data Out	2 (RD+)	
Receiver Data Out Bar	3 (RD-)	
Signal Detect	4 (SD)	
Receiver Power Supply	5 (Rx Vcc)	TOP VIEW
Transmitter Power Supply	6 (Tx Vcc)	
Transmitter Data In Bar	7 (TD-)	
Transmitter Data In	8 (TD+)	
Transmitter Signal Ground	9 (Tx GND)	
		N/C

PIN	Symbol	Notes
1	Rx GND	Directly connect this pin to the receiver ground plane
2	RD+	See recommended circuit schematic
3	RD-	See recommended circuit schematic
4	SD	Active high on this indicates a received optical signal
5	Rx Vcc	+3.3V dc power for the receiver section
6	Tx Vcc	+3.3V dc power for the transmitter section
7	TD-	See recommended circuit schematic
8	TD+	See recommended circuit schematic
9	Tx GND	Directly connect this pin to the transmitter ground plane

2) ST Type



OPN-S8G129-3D27FC / OPN-S8G129T-3D27FC

Optowan Technology Co., Ltd www.optowan.ru OPN-S8G129-3D27SC