R768-Type OC-768/STM-256 Lightweight Receiver



The R768 Receiver is manufactured in a 16-pin, pigtailed surface-mount metal package with a single-ended V-connector.

Features

- High data rate capability, 40 Gbits/s
- PIN photodetector
- Fully operational through the L-band (1.6 µm) wavelength range
- Single-mode fiber pigtail with FC/PC optical connector
- Operating case temperature range: 0 °C to 65 °C
- Compact, butterfly package

Applications

- Line terminal equipment
- High-speed networks up to 40 Gbits/s
- SONET OC-768 and SDH STM-256 telecommunications applications
- Extended-reach datacom and telecom applications
- Digital video

Description

Receiver Operation

The R768 40 Gbits/s fiber-optic receiver consists of a high-speed photodetector (PIN) and a wide-band linear preamp in a pigtailed surface-mount metal package with a single-ended V-connector. It is designed for use in single-mode, high-speed telecommunication applications at the SONET OC-768 and the ITU-T SDH STM-256 data rate of 42.5 Gbits/s.

The operating case temperature range for the receiver is 0 °C to 65 °C.

The receiver is manufactured in a compact, 16-pin surface-mount package with a single-mode optical fiber pigtail. The fiber pigtail is internally beveled for low return loss and is available with an FC-PC optical connector.

The received data is dc-coupled.

The receiver requires only a 6 V power supply for operation, plus an optional V_{ADJUST} from –1.0 V to +1.0 V (see pin descriptions). The photodiode requires a separate bias voltage: for the PIN, a nominal reverse bias of 4 V is required.

Pin Information

Table 1. Pin Descriptions

Pin Number	Name
1	Not Used
2	GND
3	Alternate P_{IN} Bias
4	GND
5	GND
6	GND
7	V_{ADJUST} (optional)
8	GND
9	GND
10	GND
11	GND
12	V_{CC}
13	GND
14	PIN Bias
15	GND
16	NC

Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operations section of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Min	Max	Unit
Positive Supply Voltage	V_{CC}	5.0	7.0	V
Photodiode Forward Current*	I_{PD}	—	1	mA
Maximum Reverse Bias	V_B	—	5	V
Optical Input Power, PIN	P_{MAX}	—	8	dBm
Operating Case Temperature	T_C	0	65	°C
Storage Temperature	Tstg	–40	85	°C
Lead Soldering Temperature	—	—	250	°C
Lead Soldering Time	—	—	10	s

* Device is normally reverse biased. Forward biasing the photodiode can compromise device performance and reliability.

Optical Characteristics

Table 2. Optical Characteristics (T_A = 25 °C)

Parameter	Symbol	Min	Typ	Max	Unit
Optical wavelength for Rated Sensitivity	λ	1.480	—	1.610	µm
Sensitivity, PIN	P_{LOW}	—	–7	—	dBm
Maximum Optical Input Power, Average, PIN	P_{HIGH}	—	3	—	dBm
Optical Return Loss	—	–27	–30	—	dBm
Responsivity of PIN, λ = 1.55 µm	$\Re_{PIN}$	—	0.7	—	A/W
Total Dark Current	I_D	—	0.5	—	µA
Polarization-dependent Loss	PDL	—	—	0.5	dB

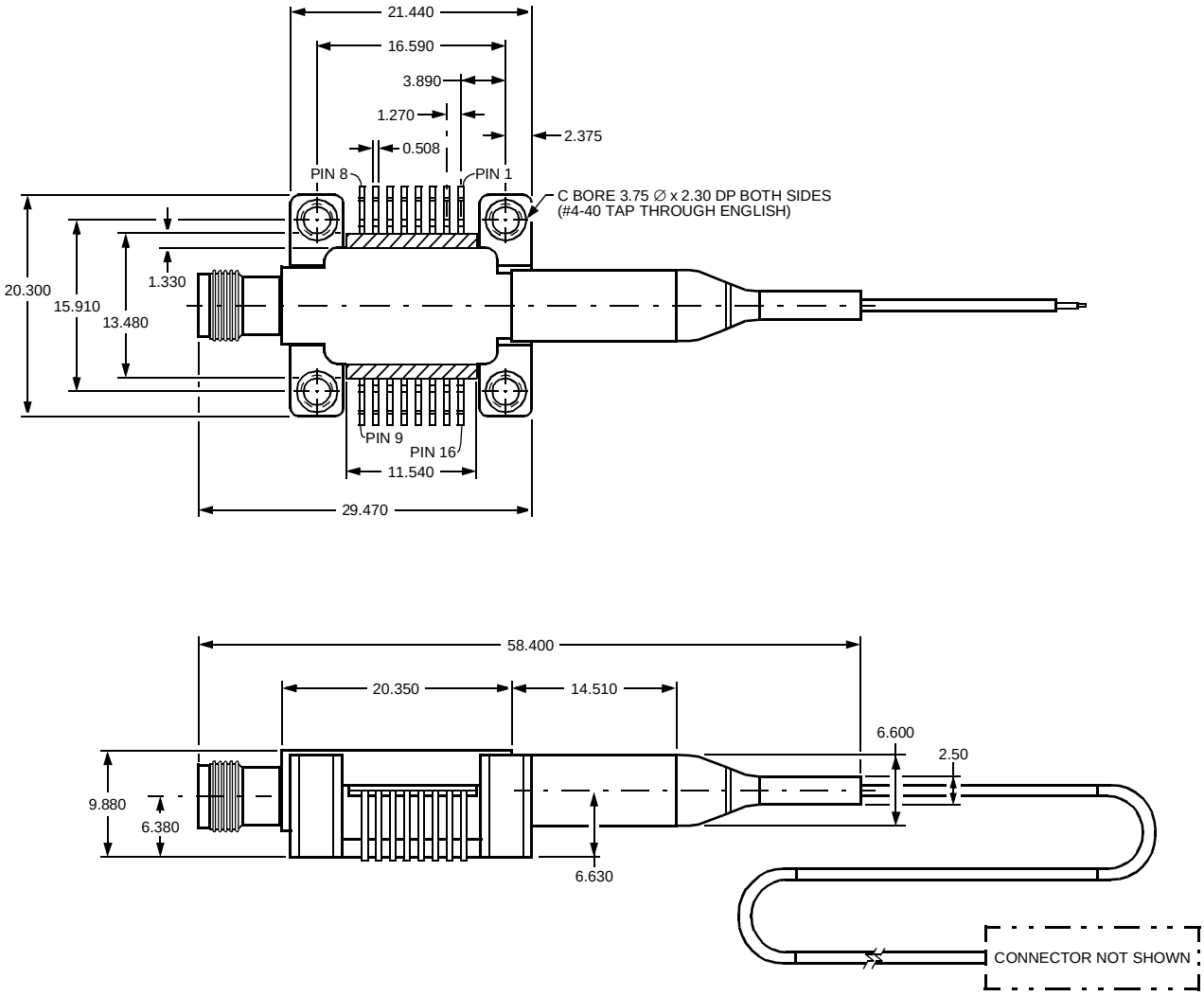
Electrical Characteristics

Table 3. Electrical Characteristics (T_A = 25 °C)

Parameter	Symbol	Min	Typ	Max	Unit
dc Power Supply Voltages:					
Positive Supply	V_{CC}	5.5	6.0	6.5	V
PIN Bias	V_{PIN}	3.5	4.0	4.5	V
Optional V_{ADJUST}	V_{ADJ}	–1.0	—	1.0	V
Positive dc Power Supply Current	I_{CC}	—	80	150	mA
Power Dissipation	P_{DISS}	—	—	0.975	W
Conversion Gain	—	—	60	—	V/W
Average Equivalent Input Noise Spectral Density	—	—	—	50	pA/√Hz
Low Frequency Cutoff (–3 dB)	f_L	—	100	—	kHz
Bandwidth	BW	—	45	—	GHz
Rolloff (3 dB + 5 GHz)	—	—	–10	—	dB
Peaking	—	—	—	2	dB
Deviation from Linear Phase:	—				
100 kHz—25 GHz		—	10	—	deg
25 GHz—40 GHz		—	20	—	deg
40 GHz—50 GHz		—	40	—	deg
Output Return Loss:	S_{22}				
100 kHz—20 GHz		—	—	–15	dB
25 GHz—40 GHz		—	—	–10	dB
40 GHz—50 GHz		—	—	–5	dB

Outline Diagram

Dimensions are in millimeters.



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Ordering Information

Table 4. Ordering Information

Description	Product Code	Photodiode	Connector	Comcode
R768-Type OC-768/STM-256 Lightwave Receiver	R768PGAA	PIN	FC	108894635
	R768PSAA	PIN	LC	108894643
	R768PDAA	PIN	SC	108727041
	R768PJAA	PIN	Test Ferrule	TBD

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