

## R2860D Digital Receiver OC-192/STM-64

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### Features

- Linear output up to 0 dBm optical input power
- High sensitivity, <math>-18</math> dBm typical
- High overload, >2 dBm typical
- Transimpedance, 500  $\Omega$  typical
- dc-coupled output
- Hermetically sealed

### Applications

- 10 Gbits/s short, intermediate, and long-haul systems
- DWDM equipment
- SONET/SDH equipment
- Datacom equipment

### Description

The R2860D receiver module incorporates a high-speed planar PIN diode and an HBT preamplifier to provide exceptionally high linearity. The receiver is designed to provide very clean pulse response at 10 Gbits/s that results in high-quality eye patterns (see Figure 1).

Agere Systems Inc. offers several 1R and 2R high-speed receiver components for 10 Gbits/s and 12.5 Gbits/s applications. APD and PIN versions are available in a 6-pin hermetic package with coaxial output. In addition, Agere Systems also offers a PIN receiver with coplanar waveguide in a multisource agreement form-factor or a smaller, space sensitive package. For more information about the complete line of high-speed receiver products, please visit the Agere Systems' website at [www.agere.com/opto](http://www.agere.com/opto).

## 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 operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Min	Max	Unit
Operating Temperature Range	TOP	-5	70	°C
Storage Case Temperature Range	Tstg	-40	85	°C
Preamp Supply Voltage	VCC	—	8.5	V
Photodiode Bias Voltage	VPD	—	20	V
Optical Input Power	PIN	—	4	dBm

## Electrical/Optical Characteristics

**Table 1. Electrical and Optical Characteristics** (25 °C Case Temperature. Test Conditions: 10 Gbits/s, NRZ, TA = 25 °C)

Parameter	Symbol	Min	Typ	Max	Unit
Optical Wavelength Range	$\lambda$	1280	—	1580	nm
Sensitivity ( $10^{-10}$ BER, PRBS $2^{23} - 1$ )	—	—	-18	-15	dBm
Overload ( $10^{-13}$ BER, PRBS $2^{23} - 1$ )	—	0	2	—	dBm
Responsivity	R	0.7	0.8	—	A/W
Dark Current	ID	—	—	1.0	nA
High-Frequency Cutoff	—	8.5	10.0	—	GHz
Low-Frequency Cutoff	—	—	—	30	kHz
Group Delay (0.5 GHz—10 GHz)	—	—	$\pm 20$	—	ps
Transimpedance	Z	400	500	600	$\Omega$
Average Equivalent Input Noise (30 KHz—8 GHz)	—	—	13	15	pA/rt Hz
RF Output Return Loss* (0.1 GHz—8 GHz)	RLRF	—	—	9	dB
Optical Return Loss	RL	27	—	—	dB
Logic Sense	—	—	Noninverting	—	—
Preamp Supply Voltage	VCC	7.6	8.0	8.4	V
Photodiode Supply Voltage	VPD	7	8	12	V
Supply Current	ICC	—	110	130	mA

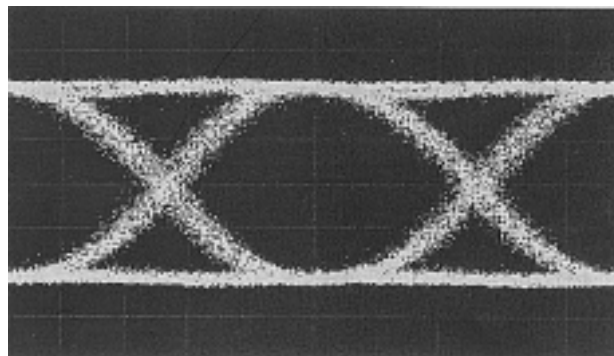
\* External dc block required on RF output.

## Pin Information

Table 2. Pin Descriptions

Pin No.	Description
1	NC
2	8 V (Vcc)
3	8 V (VPD)
4	NC
5	NC
6	Ground

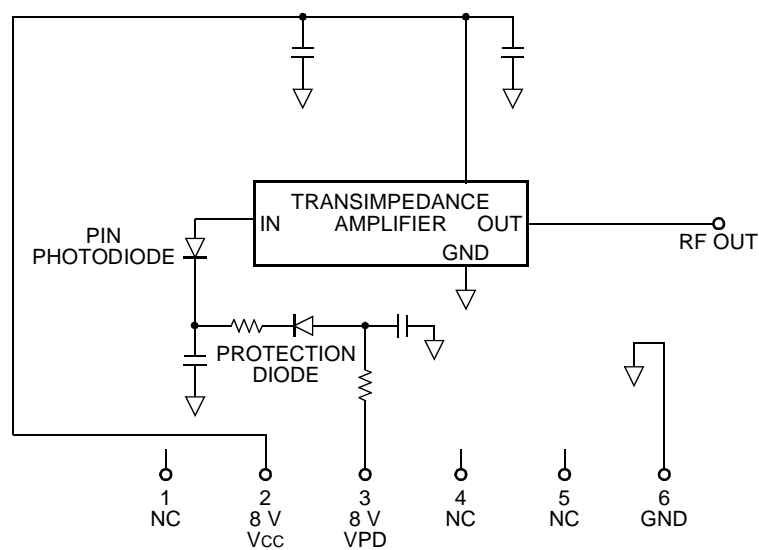
## Characteristic Curve



1-1174(F)

Figure 1. Eye Pattern at 10 Gbits/s

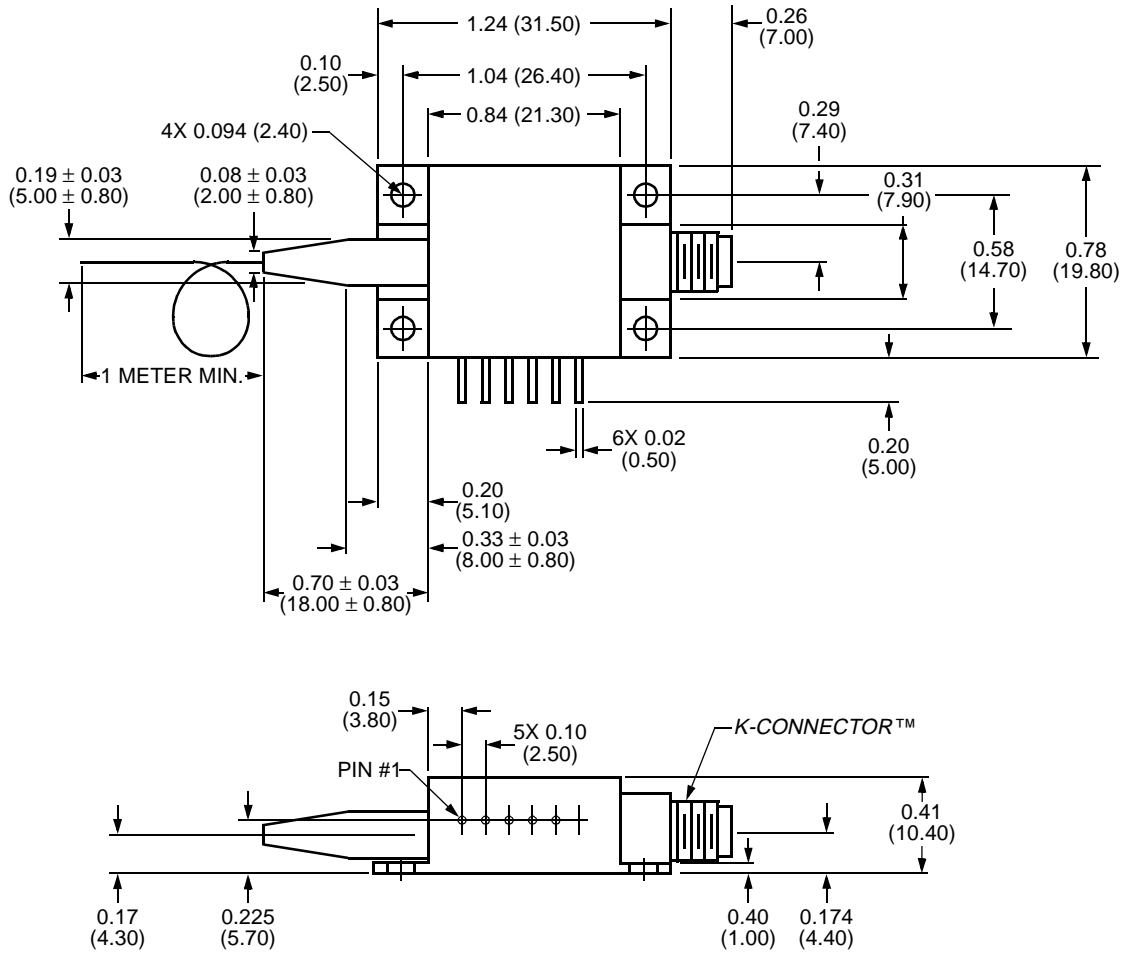
## Block Diagram



1-1173(F)

### Outline Diagram

Dimensions are in inches and (millimeters).



Note: External dc block required on RF output.

1-1169(F)b

## Ordering Information

Table 3. Ordering Information<sup>1</sup>

Device Code	Description	Connector	Pigtail	Comcode
R2860D023	Digital Receiver 400 $\Omega$ min. TIA gain, dc-coupled output	FC/SPC, Standard	SMF-28™ (1 m min.)	108870213
R2860D040	Digital Receiver 400 $\Omega$ min. TIA gain, dc-coupled output	SC/UPC	SMF-28 (1 m min.)	108870239

1. Other options available. For additional ordering information, please contact an account manager at Opto West, Agere Systems Inc., 1-800-362-3891 (for sales staff, please press option 2).

*K-Connector* is a trademark of Anritsu Company.  
*SMF-28* is a trademark of Corning Incorporated.

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For additional information, contact your Agere Systems Account Manager or the following:

INTERNET: <http://www.agere.com>

E-MAIL: [docmaster@agere.com](mailto:docmaster@agere.com)

N. AMERICA: Agere Systems Inc., 555 Union Boulevard, Room 30L-15P-BA, Allentown, PA 18109-3286

**1-800-372-2447**, FAX 610-712-4106 (In CANADA: **1-800-553-2448**, FAX 610-712-4106)

ASIA: Agere Systems Hong Kong Ltd., Suites 3201 & 3210-12, 32/F, Tower 2, The Gateway, Harbour City, Kowloon

**Tel. (852) 3129-2000**, FAX (852) 3129-2020

CHINA: **(86) 21-5047-1212** (Shanghai), **(86) 10-6522-5566** (Beijing), **(86) 755-695-7224** (Shenzhen)

JAPAN: **(81) 3-5421-1600** (Tokyo), KOREA: **(82) 2-767-1850** (Seoul), SINGAPORE: **(65) 778-8833**, TAIWAN: **(886) 2-2725-5858** (Taipei)

EUROPE: **Tel. (44) 7000 624624**, FAX (44) 1344 488 045

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