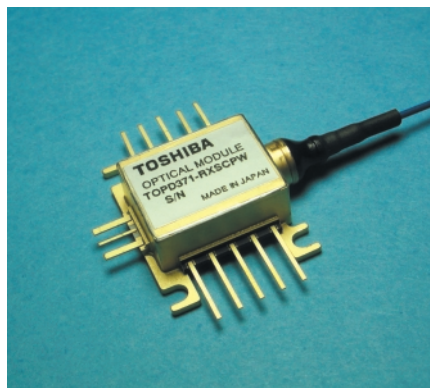
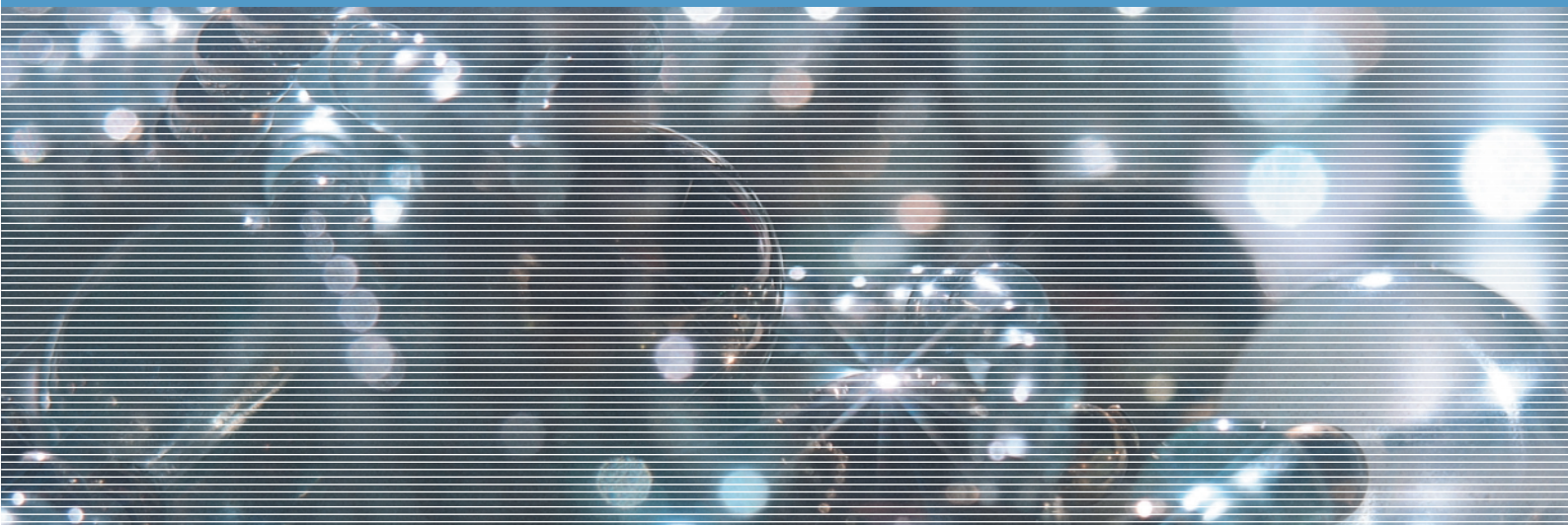


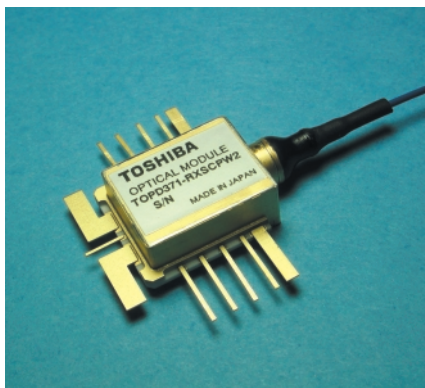
Optical Communication Devices

10 Gb/s Optical Receiver

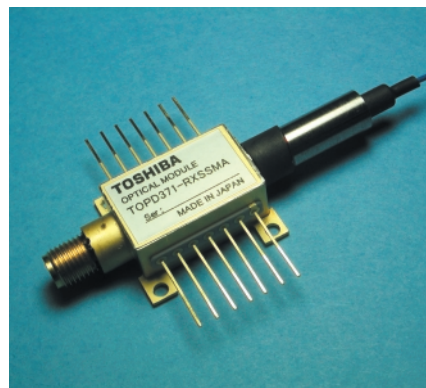
TOPD371-RXS Series



(Lead output type: TOPD371-RXSCPW)



(Lead output type without flange: TOPD371-RXSCPW2)



(SMA connector output type: TOPD371-RXSSMA)

APPLICATION

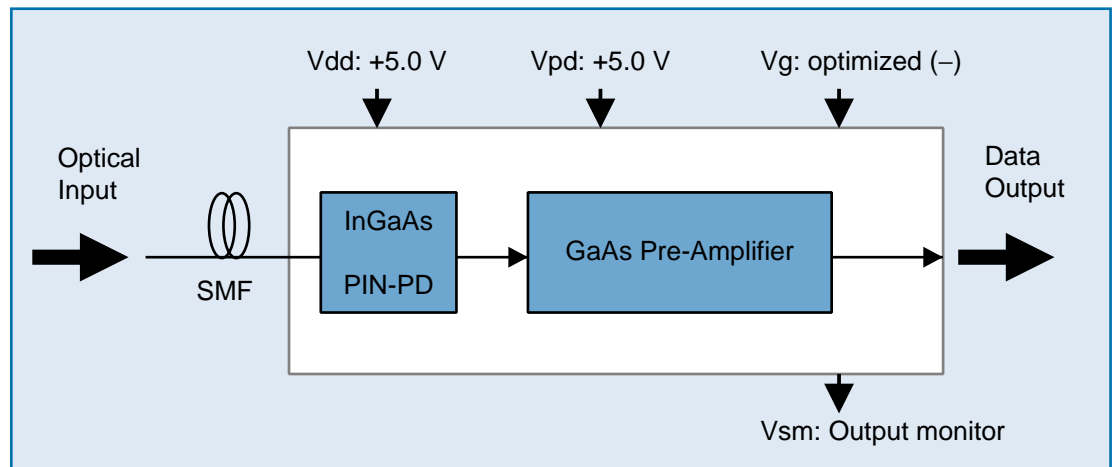
- SONET / SDH (OC-192 / STM-64) applications

FEATURES

- PIN-PD and Pre-Amplifier
 - TOPD371-RXSCPW : Lead (Coplanar waveguide) output type.
 - TOPD371-RXSCPW2 : Lead (Coplanar waveguide) output type without flange
 - TOPD371-RXSSMA : SMA connector output type
- Sensitivity: -20 dBm (Typ. @ BER = 1×10^{-10} , PRBS $2^{31}-1$)
- Overload: 0 dBm (Min @ BER = 1×10^{-10} , PRBS $2^{31}-1$)
- Transimpedance: 700 Ω (Typ.)
- Package size
 - TOPD371-RXSCPW : 12.7 mm (W) x 16.0 mm (D) x 7.0 mm (H)
 - TOPD371-RXSCPW2 : 12.7 mm (W) x 16.0 mm (D) x 7.0 mm (H)
 - TOPD371-RXSSMA : 12.7 mm (W) x 20.8 mm (D) x 9.5 mm (H)

TOPD371-RXS Series

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Rating	Unit
Storage temperature	Tstg	-40 to +85	°C
Operating case temperature	Tc	0 to +70	°C
PD forward current	If	3	mA
PD reverse current	Ir	2	mA
PD reverse voltage	Vpd	0 to +20	V
Positive voltage	Vdd	0 to +6	V
Positive current	Idd	100	mA
Gate voltage (Gain control voltage)	Vg	-3 to 0	V
Soldering temperature / time	Tsol / tsol	260 / 5	°C / s

ELECTRICAL AND OPTICAL CHARACTERISTICS

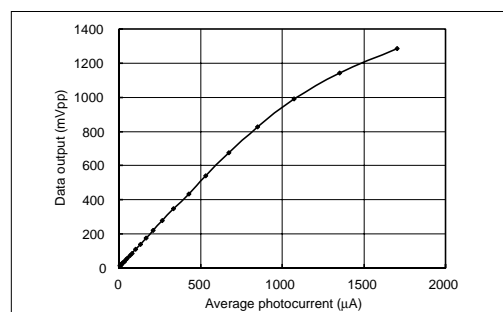
(Tc = 0 to +70 °C, $\lambda = 1.3/1.55 \mu\text{m}$, Vdd = +5 V, Vpd = +5 V) (Note 1)

Item	Symbol	Condition	Min	Typ.	Max	Unit
Positive current	Idd	Vg=0V	—	50	100	mA
Responsivity	R1.55	-10dBm, $\lambda = 1.55 \mu\text{m}$	0.6	0.75	—	A/W
Dark current	Id	—	—	—	10	nA
Cutoff frequency	fc	3 dB down from 10 MHz	7.5	9.0	—	GHz
Amplitude deviation	—	10 MHz to fc	—	—	3	dB
Transimpedance	Zt	—	500	700	—	Ω
Sensitivity	Ps	Note 2	—	-20	-18	dBm
Overload	Po	Note 2	0	—	—	dBm
Optical return loss	ORL	—	27	—	—	dB

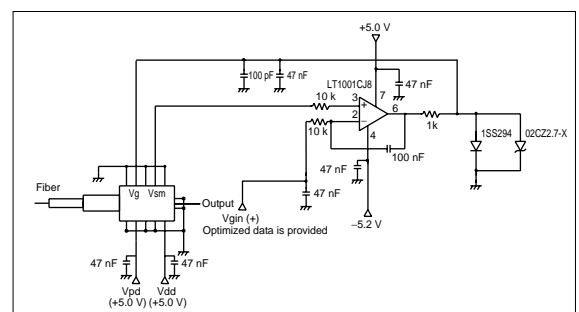
Note 1: To optimize frequency response, Vg should be controlled by using Vsm.
See a recommended gain control circuit shown below.

Note 2: 9.95328 Gb/s, NRZ, PRBS 2³¹-1, BER = 1 x 10⁻¹⁰

TYPICAL DATA OUTPUT AMPLITUDE VS. PIN PD PHOTOCURRENT

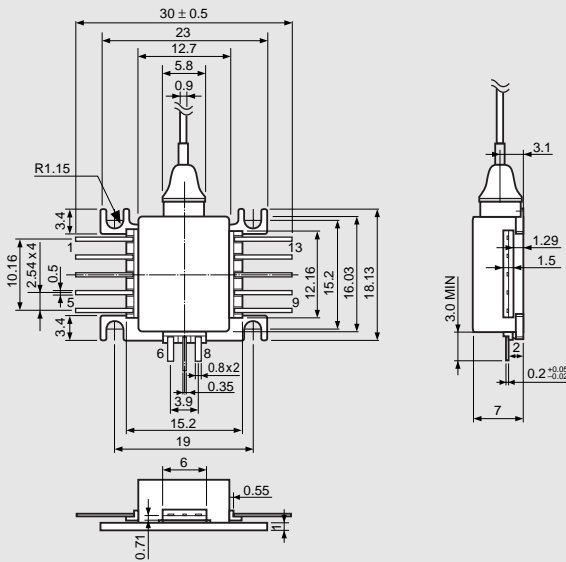


RECOMMENDED GAIN CONTROL CIRCUIT



DIMENSIONAL OUTLINE AND PIN ASSIGNMENT

TOPD371-RXSCPW: Lead output type with flange

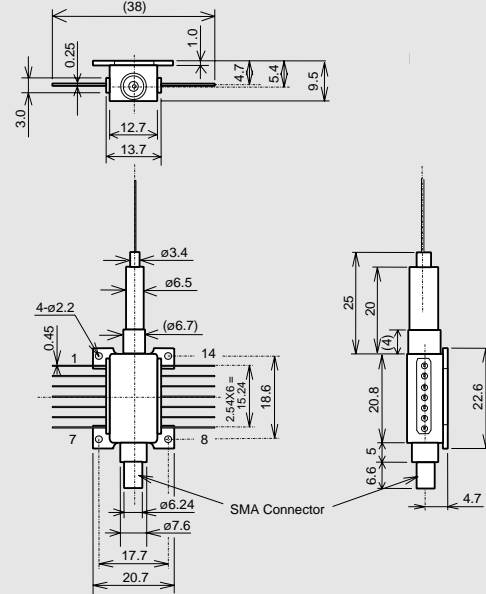


Pin Assignment

Pin	Function	Pin	Function
1	GND	8	GND
2	Vpd (+5 V)	9	GND
3	GND	10	Vsm (Output monitor)
4	GND	11	GND
5	Vdd (+5 V)	12	Vg (Gain control voltage)
6	GND	13	GND
7	Data output		

TOPD371-RXSSMA: SMA connector output type

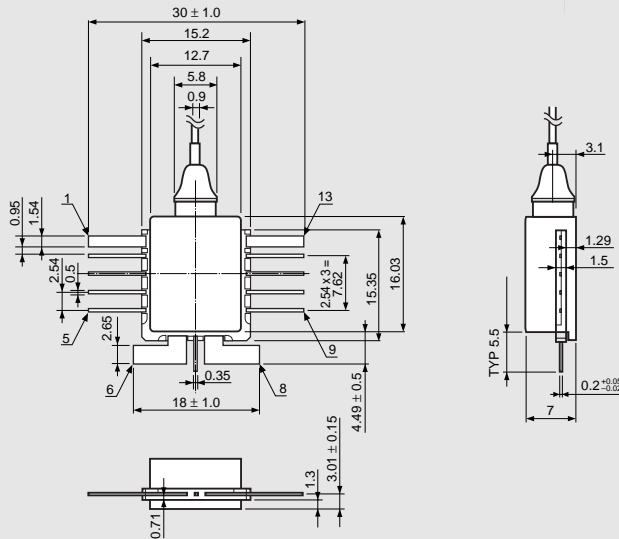
(Unit: mm)



Pin Assignment

Pin	Function	Pin	Function
1	GND	8	GND
2	Vpd (+5.0 V)	9	GND
3	NC	10	GND
4	NC	11	Vsm (Output monitor)
5	Vdd (+5.0 V)	12	GND
6	GND	13	Vg (Gain control voltage)
7	GND	14	GND

TOPD371-RXSCPW2: Lead output type without flange



Pin Assignment

Pin	Function	Pin	Function
1	GND	8	GND
2	Vpd (+5.0 V)	9	GND
3	GND	10	Vsm (Output monitor)
4	GND	11	GND
5	Vdd (+5.0 V)	12	Vg (Gain control voltage)
6	GND	13	GND
7	Data output		

PRECAUTIONS

- Power supply: Transient electric spike may cause a damage to the photodiode or IC chips. A surge-free power supply and a slow starter circuit should be used. To avoid causing an electrical surge, pins should not be connected or disconnected on the test fixture before turning power off.
- The product should be grounded for obtaining the performance.

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(As of August, 2001)

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