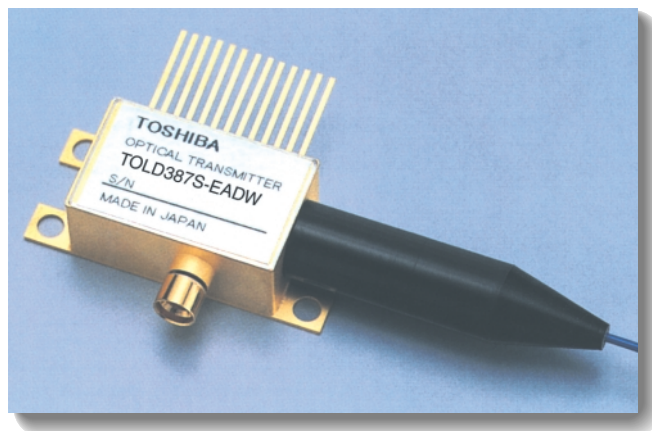
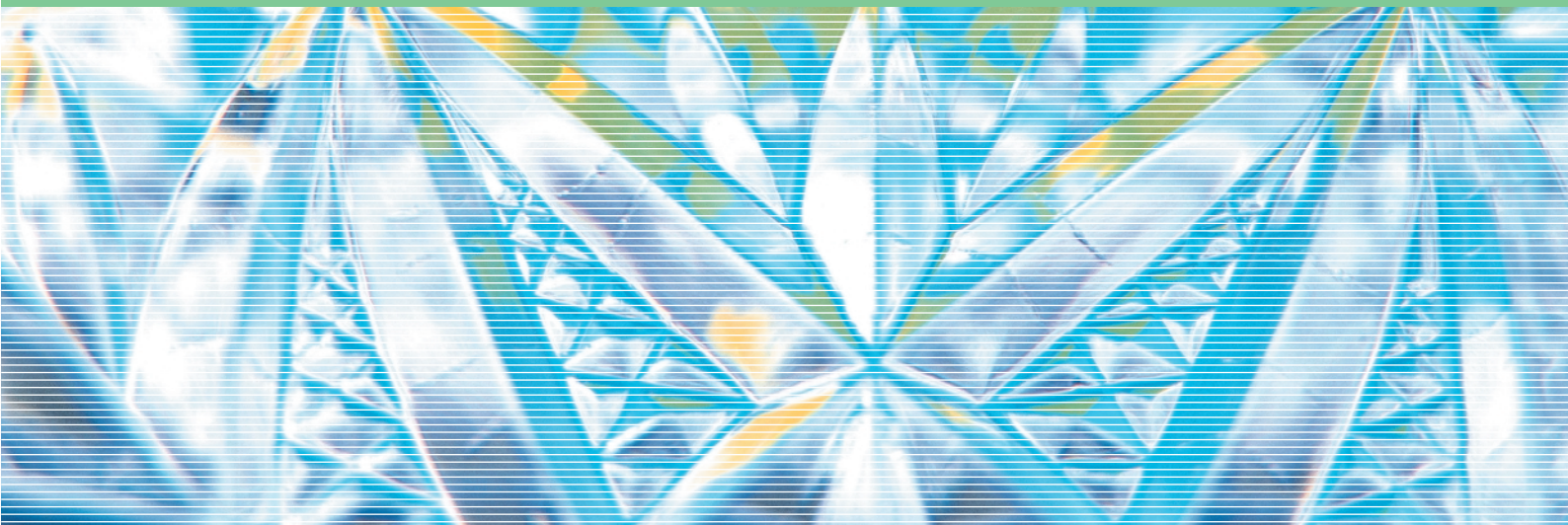


Optical Communication Devices

10 Gb/s Optical Transmitter

TOLD387S-EADW Series



APPLICATIONS

- SONET / SDH (OC-192 / STM-64) applications
- 10 Gb/s DWDM applications
 - TOLD387S-EADW1 : 40 km application
 - TOLD387S-EADW2 : 60 km application

FEATURES

- 1.55 μm EML and Driver IC
- Optical isolator and thermoelectric cooler
- Wavelength stability: $\pm 0.5 \text{ pm} / ^\circ\text{C}$
- GPO compatible RF input
- Dispersion penalty : < 2 dB
- Fiber output power
 - TOLD387S-EADW1 : - 2 dBm(min), + 2 dBm (max)
 - TOLD387S-EADW2 : - 5 dBm(min)

TOLD387S-EADW Series

ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Min	Max	Unit
Storage temperature	Tstg	-40	+85	°C
Operating case temperature	Topr	-5	+70	°C
Laser forward current	If	—	150	mA
Laser reverse voltage	Vr	—	2	V
Monitor diode (PIN-PD) bias voltage	Vm	-15	2	V
Supply voltage to the driver IC	Vss	-6.5	0.3	V
Cross-point reference voltage	Vref	Vss-4.8	Vss+2.4	V
Cross-point control voltage	Vxp	(min: -6.5)	(max: 0.3)	
Output amplitude control voltage	Voa	-6.5	Vss+1.2 (max: 0.3)	V
Output bias control voltage	Vob	-6.5	Vss+2.4 (max: 0.3)	V
Input data amplitude	Vin	—	1.6	Vpp
Soldering temperature	Tsol	—	260	°C
Soldering time	tsol	—	5	s

Note: Case temperature should be measured on heat spreader directly.

ELECTRICAL AND OPTICAL CHARACTERISTICS (Case temperature : Tc = -5 to +70 °C)

Item	Symbol	Min	Typ.	Max	Unit	Note	
Laser set temperature	Tset	20	—	35	°C		
Threshold current	Ith	—	—	40	mA		
Operating current	Iop	50	75	100	mA		
Laser diode forward voltage	Vf	—	—	2	V		
RF input impedance	Zin	—	50	—	Ω		
Input data amplitude	Vin	0.5	—	1.0	Vpp		
Supply voltage to the driver IC	Vss	-5.5	-5.2	-5.0	V		
Supply current to the driver IC	Iss	—	0.2	0.3	A		
Cross-point reference voltage	Vref	Vss+1.1	Vss+1.3	Vss+1.5	V	(1)	
Cross-point control voltage	Vxp	Vref-0.3	—	Vref+0.3	V	(1)	
Output amplitude control voltage	Voa	Vss	—	Vss+1.0	V	(2)	
Output bias control voltage	Vob	Vss	—	Vss+2.2	V	(3)	
Fiber output power change with case temperature	ΔPf	-0.5	—	0.5	dB	(4)	
Peak wavelength	λ	ITU-T Grid, 100 GHz Spacing, from 1528.77 to 1560.61 nm					(4)
Wavelength change with case temperature	dλ/dTc	-0.5	—	0.5	pm/°C	(4)	
Side mode suppression ratio	SMSR	30	—	—	dB	(4)	
Extinction ratio	ER	9	—	—	dB	(4)	
RF return Loss (up to 7GHz)	S ₁₁	10	—	—	dB		
Monitor diode current	Im	0.05	—	—	mA		
Thermoelectric cooler current (Tc = 70°C)	Itec	—	—	1.3	A		
Thermoelectric cooler voltage (Tc = 70°C)	Vtec	—	—	2.6	V		
Thermistor resistance (Tset = 25°C)	Rth	9.5	10.0	10.5	kΩ		
Thermistor B constant	B	—	3450	—	K		

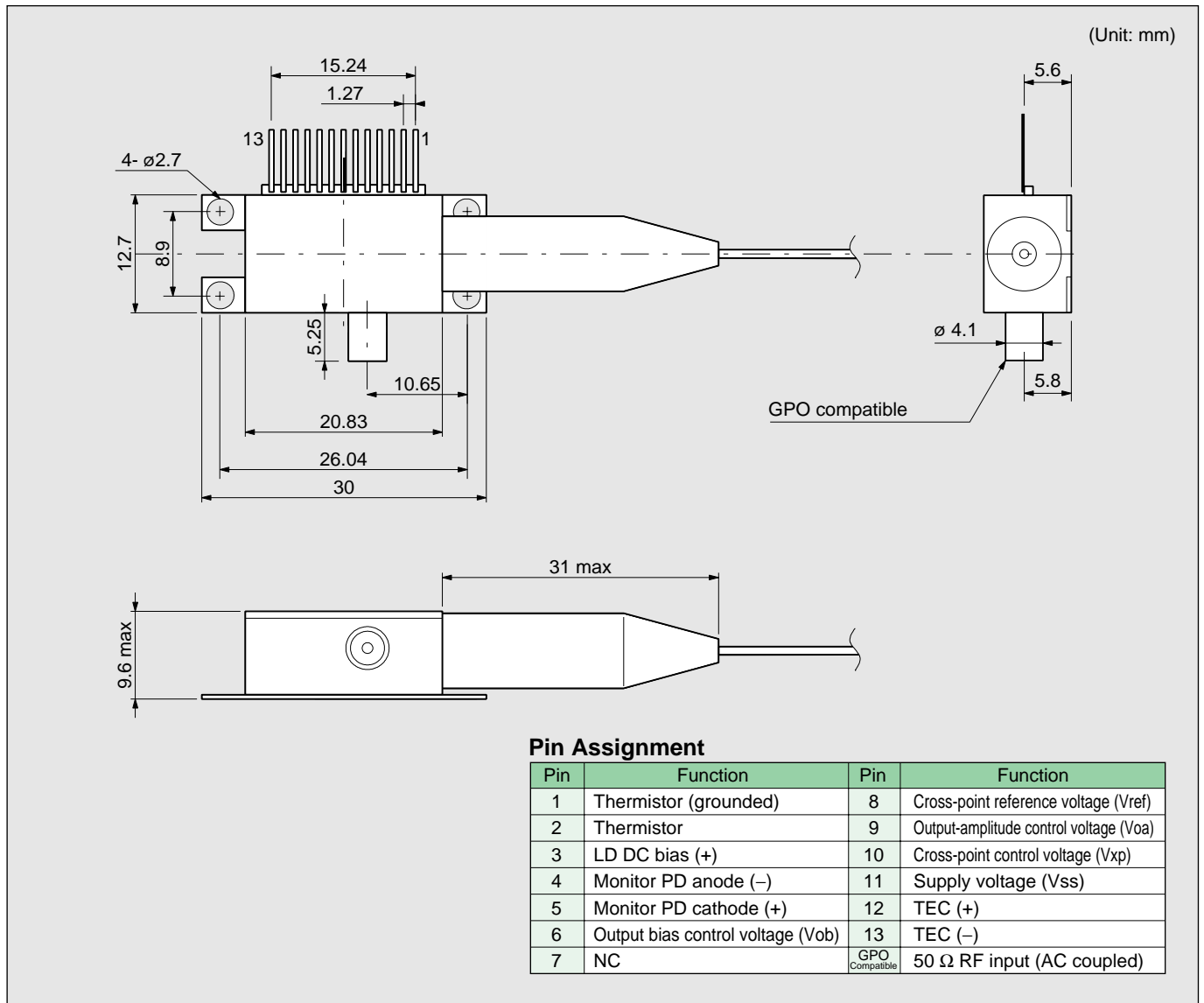
Notes:

- (1) When Vref is open, self-bias voltage of about Vss+1.3V is applied to Vref. To prevent dependence of Vref on the supply voltage Vss, use a regulated voltage source for Vref, or control the voltage of Vxp, so that the voltage difference, Vxp-Vref, is constant.
- (2) To prevent dependence of the output amplitude on the supply voltage Vss, control the voltage of Voa, so that the voltage difference, Voa-Vss, is constant.
- (3) To prevent dependence of the output bias level on the supply voltage Vss, control the voltage of Vob, so that the voltage difference, Vob-Vss, is constant.
- (4) 10 Gb/s, NRZ, PRBS 2²³-1 modulated

TOLD387S-EADW series products lineup

Part Number	Fiber output power (dBm)		Maximum dispersion (ps / nm)	Target distance (km)	Dispersion penalty (dB)
	Min	Max			
TOLD387S-EADW1	-2	+2	800	40	< 2
TOLD387S-EADW2	-5	-	1200	60	< 2

DIMENSIONAL OUTLINE AND PIN ASSIGNMENT



Notes: The body of the module has to be grounded.

The grounded pin #1 should be used for temperature sensing circuit only.

PRECAUTIONS

- (a) Power supply: Transient electric spike may cause a damage to the laser, 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 the power off.
- (b) The product should be grounded for obtaining the performance.
- (c) Safety: The laser emits invisible light harmful to the human eyes. Direct viewing should be avoided.

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(As of August, 2001)

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In Touch with Tomorrow
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Printed in Japan