

Optoelectronics Components Data Sheet

■ DE-0786

Preliminary

155Mbps APD-preamplifier Coaxial Module

Description

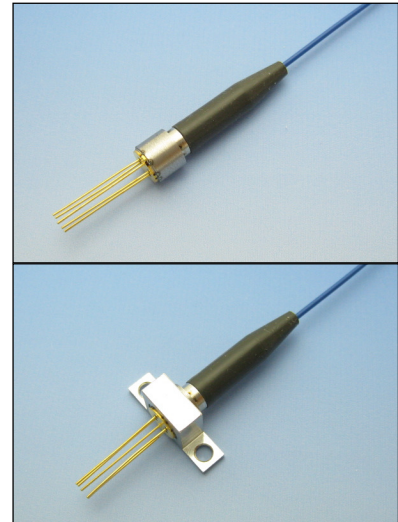
DE-0786 is a 155Mbps, optical receiver module of coaxial pigtail type. This module consists of an InGaAs avalanche photodiode (APD) with a trans-impedance amplifier (TIA), a single-mode fiber and a coaxial package. This module is suitable for building digital optical transmission systems up to 155Mbps.

Features

- ◆ Data rate : 155Mbps
- ◆ Optical sensitivity : -48dBm
- ◆ Differential output
- ◆ Built-in TIA
- ◆ Hermetically sealed APD-TIA device
- ◆ YAG laser spot welding for high reliability
- ◆ Coaxial Package
- ◆ -40 to +85 °C operating temperature range

Applications

- SONET OC-3/SDH STM1 applications
- Digital transmission systems



Absolute Maximum Ratings

(Tc=25°C, unless otherwise specified)

Parameter	Symbol	Ratings	Unit	Conditions
Power supply voltage	Vcc	4.5	V	---
Optical Input power	Pin	10	dBm	---
APD reverse voltage	Vrapd	Vbr (*1)	V	---
Storage temperature	Tstg	-40 ~ +85	°C	---
Operating temperature	Tc	-40 ~ +85	°C	---
Soldering temperature	Ts	260	°C	10sec, >2mm

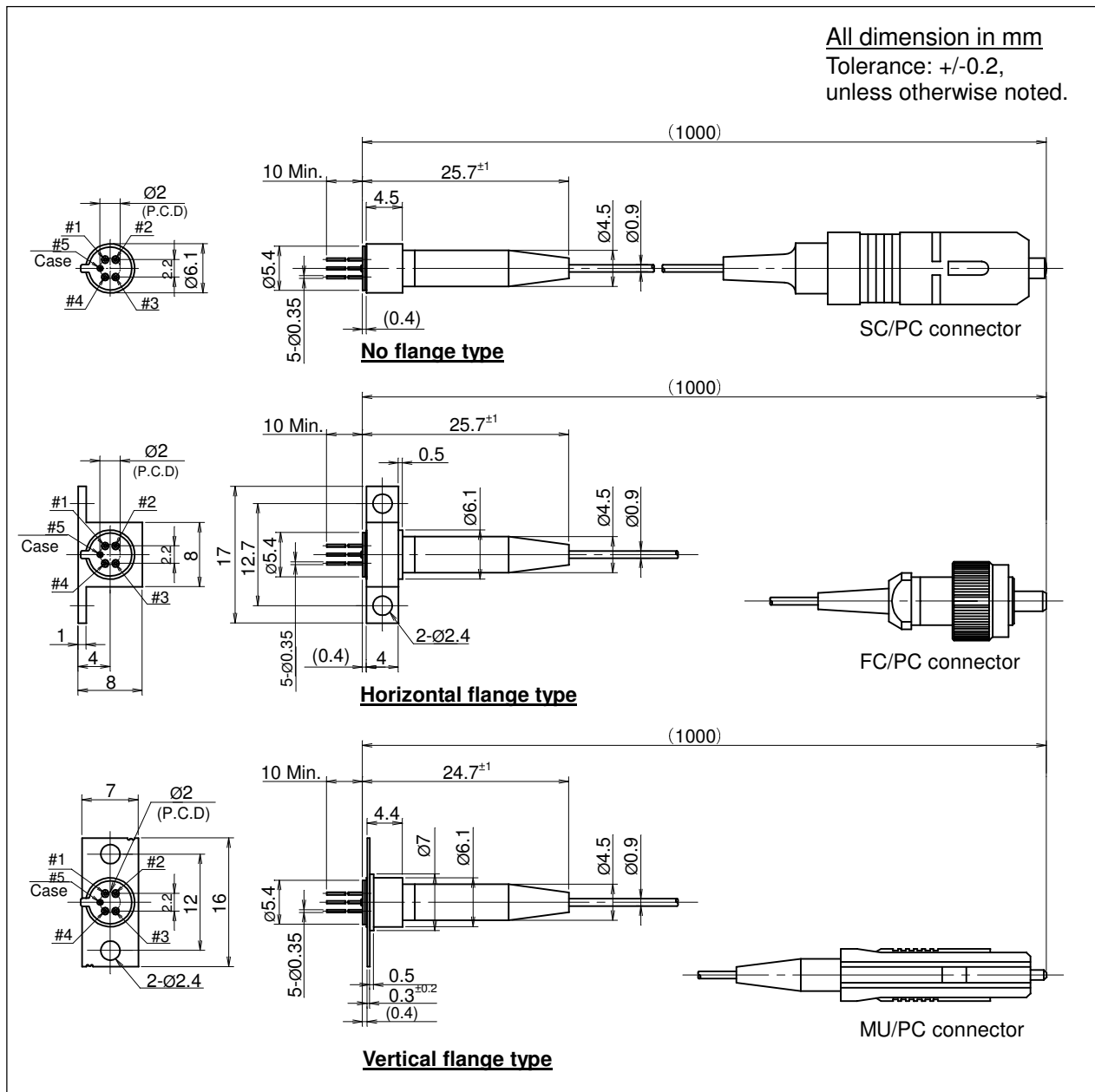
Note (*1) Vbr : APD breakdown voltage

Electrical and Optical Characteristics

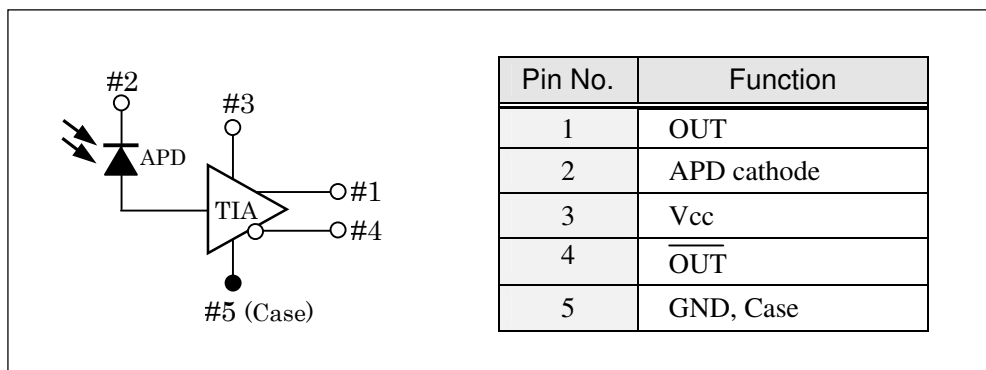
(Tc=-40 to 85°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Power supply voltage	Vcc	---	3	3.3	3.6	V
Power supply current	Icc	---	12	22	32	mA
APD responsivity	S	$\lambda=1310\text{nm}$, M=1, Pin=-30dBm	0.75	---	---	A/W
APD breakdown voltage	Vbr	Id=10 μ A, Tc=25°C	35	45	57	V
Output voltage (Differential)	Vout	RL>500 Ω , M=1	---	---	800	mVpp
Temperature coefficient of Vbr	γ	$\gamma=\Delta V_{br}/\Delta T_c$	0.08	0.1	0.12	V/°C
Responsivity (Differential)	R	$\lambda=1550\text{nm}$, RL>500 Ω , M=1 Pin= -36dBm(Ave.), 10MHz	---	50	---	kV/W
Bandwidth	BW	RL=50 Ω , Pin=-10dBm, -3dB	---	140	---	MHz
Operating bit rate	fop	---	---	---	156	Mbps
Rise & Fall time	t _r , t _f	20-80%	---	---	2	ns
Output impedance	Rout	Single ended	25	40	100	Ω
Sensitivity	Prmin	fop=155Mbps, ExR=10dB $\lambda=1550\text{nm}$, BER=10 ⁻¹⁰ PRBS 2 ²³ -1 NRZ, M=optimum	---	-48	---	dBm

Outline Drawings



Pin configuration

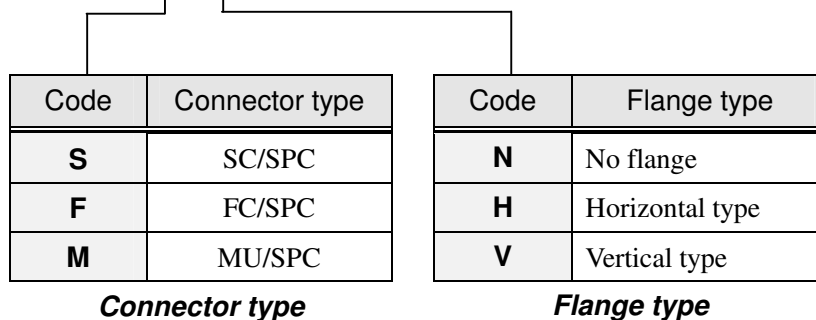


Optical Fiber Characteristics

Parameter	Min.	Typ.	Max.	Unit
Fiber type	Single mode			---
Mode field diameter	8	9	10	μm
Clad diameter	123	125	127	μm
Concentricity error	---	---	1	μm
Cladding non-circularity	---	---	2	%
Mode field non-circularity	---	---	6	%
Cut off wavelength	1270	---	---	nm
Jacket diameter	0.8	0.9	1	mm
Bending Radius	20	---	---	mm
Tensile strength fiber case	5	---	---	N
Length	---	(1000)	---	mm
Connector	FC type / SPC			
	SC type / SPC			
	MU type / SPC			

Ordering information

DE-0786-□□



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