

MITSUBISHI (OPTICAL DEVICES)
FU-311SPP-CV4

InGaAs PD PREAMP MODULE FOR THE 1.31 μm AND 1.55 μm WAVELENGTH RANGE

DESCRIPTION

FU-311SPP-CV4 is InGaAs pin photodiode module with Si preamplifier, designed for use in high-speed, long haul optical communication systems. The coaxial package contains InGaAs pin photodiode coupled with single-mode fiber pigtail and Si preamplifier.

FEATURES

- High-sensitivity (-32dBm typ)
- 4pin coaxial package
- Single power supply (+3.3V)
- Si preamplifier with AGC function
- Single ended output

APPLICATION

622Mbps optical receiver (OC-12, STM-4)
Extended reach datacom and telecom applications
Long haul optical communication systems

ABSOLUTE MAXIMUM RATINGS ($T_c=25^\circ\text{C}$)

Parameter	Symbol	Conditions	Rating	Unit
PD Reverse voltage	VPD	VCC=0V	15	V
PD Reverse current (CW)	I _r	-	0.7	mA
PD Forward current (CW)	I _f	-	2	mA
Power supply voltage	VCC	VEE=0V	0~4	V
Operating case temperature	T _c	-	-20~+85	°C
Storage temperature	T _{stg}	-	-40~+85	°C

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ELECTRICAL/OPTICAL CHARACTERISTICS ($T_c=25^\circ\text{C}$, $\lambda=1.3\mu\text{m}$, $V_{CC}=3.3\text{V}$, $V_{EE}=0\text{V}$ unless otherwise noted)

Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
Detection range	-	-	1000	-	1600	nm
Responsivity(Note 1)	R	CW	0.75	0.85	-	A/W
Transimpedance	Z _t	AC, f=1MHz AGC_off (Note 1)	-	6	-	k Ω
Cutoff frequency	f _c	AC, R _L =50 Ω (Note 2)	420	-	-	MHz
Average input equivalent noise current density	i _n	AC, R _L =50 Ω , 100kHz~420MHz (Note 2)	-	2.5	-	pA/ $\sqrt{\text{Hz}}$
Output impedance	Z _o	(Emitter follower) (Note 3)	-	Low	-	Ω
Sensitivity	Pr	AC, R _L =50 Ω , NRZ, 622.08Mbps., PRBS=2 ²³ -1, BER=10 ⁻¹⁰ , VPD=3.3V (Note 2)	-	-32	-28	dBm
Over load power	P _o	PRBS=2 ²³ -1, BER=10 ⁻¹⁰ , VPD=3.3V (Note 2)	-8	-5	-	
Power supply voltage	V _{CC}	V _{EE} =0V	3.135	3.3	3.465	V
Power supply current	I _{CC}	V _{CC} =3.3V	-	15	20	mA
Optical return loss	Pr _{tn}	-	25	-	-	dB

Note 1. Transimpedance value apply when AGC function is fully off.

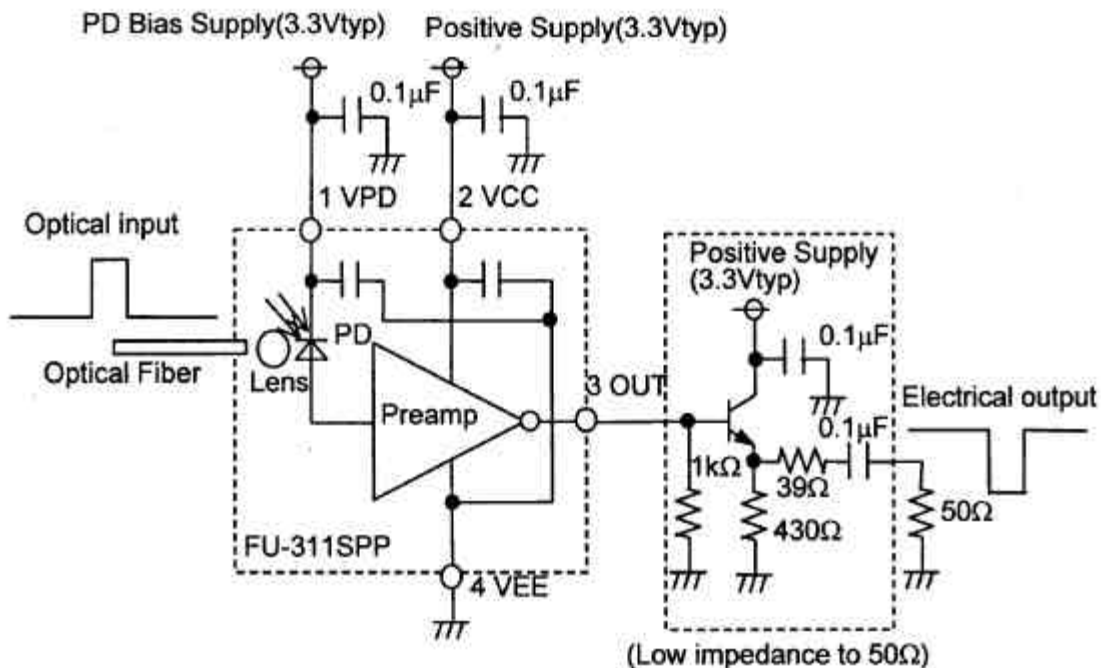
Note 2. Impedance changer (Emitter follower to 50 Ω) used.

Note 3. Preamp output buffer can not drive of the 50 Ω load. Please connect to the high impedance circuit.

OPTICAL FIBER SPECIFICATION

Parameter	Limits	Unit
Fiber type	Single mode	-
Mode field dia.	9.5 \pm 1	μm
Cladding dia.	125 \pm 2	μm
Jacket dia.	0.9 typ.	mm
Connector type	FC	-
Connector return loss	40(min)	dB

BLOCK DIAGRAM

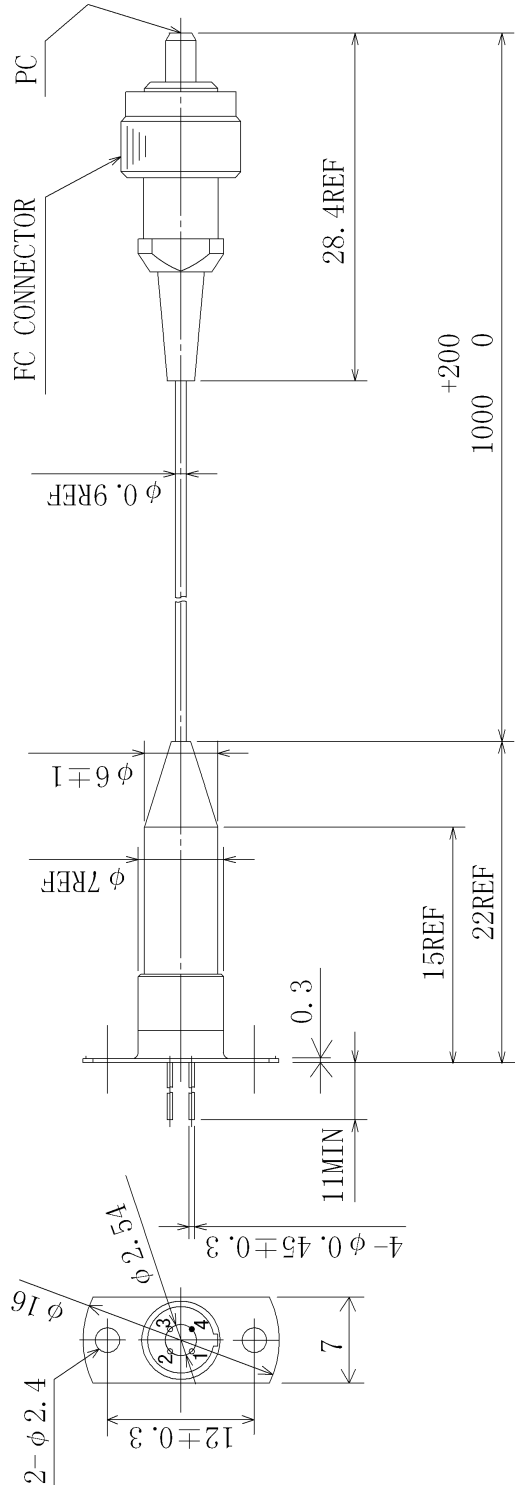


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OUTLINE DIAGRAM

(Unit : mm)



NOTE 1. TOLERANCES UNLESS NOTED ± 0.5

- 1: VPD
- 2: VCC
- 3: OUT
- 4: VEE (Isolated to the case)