

MITSUBISHI (OPTICAL DEVICES)  
**FU-319SPP-C6**

**InGaAs PD PREAMP MODULE FOR THE 1.31  $\mu\text{m}$  AND 1.55  $\mu\text{m}$  WAVELENGTH RANGE**

**DESCRIPTION**

FU-319SPP-C6 is InGaAs pin photodiode module with GaAs preamplifier, designed for use in high-speed, long haul optical communication systems. The coaxial package contains an InGaAs pin photodiode coupled with single-mode fiber pigtail and GaAs preamplifier.

**FEATURES**

- High-sensitivity (-23dBm typ)
- 5pin coaxial package
- Selectable single power supply voltage (+5V or -5.2V). (InGaAs pin photodiode and GaAs preamplifier are isolated from the case.)
- GaAs preamplifier with AGC function
- Differential output (50 $\Omega$ )

**APPLICATION**

2.5Gbps optical receiver (OC-48, STM-16)  
Extended reach datacom and telecom applications  
Long haul optical communication systems

**ABSOLUTE MAXIMUM RATINGS (Tc=25°C)**

Parameter	Symbol	Conditions	Rating	Unit
PD Reverse voltage	VPD	VSS=0V	20	V
PD Reverse current (CW)	I <sub>r</sub>	-	4	mA
PD Forward current (CW)	I <sub>f</sub>	-	2	mA
Power supply voltage	VDD	VSS=0V	0~7	V
Operating case temperature	T <sub>c</sub>	-	-40~+85	°C
Storage temperature	T <sub>stg</sub>	-	-40~+85	°C

# FU-319SPP-C6

## InGaAs PD PREAMP MODULE FOR THE 1.31 $\mu\text{m}$ AND 1.55 $\mu\text{m}$ WAVELENGTH RANGE

**ELECTRICAL/OPTICAL CHARACTERISTICS** ( $T_c=25^\circ\text{C}, \lambda=1.3\mu\text{m}, V_{DD}=5\text{V}, V_{SS}=0\text{V}$  unless otherwise noted)

Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
Detection range	-	-	1000	-	1600	nm
Responsivity(Note 1)	R	CW	0.70	0.85	-	A/W
Transimpedance	Zt(off)	AC, f=100MHz AGC_off (Note 1)	-	1.5	-	k $\Omega$
	Zt(on)	AC, f=100MHz AGC_on	-	0.2	-	
Cutoff frequency	fc_High	AC, RL=50 $\Omega$	1.8	-	-	GHz
	fc_Low	AC, RL=50 $\Omega$	-	-	100	kHz
Average input equivalent noise current density	in	AC, RL=50 $\Omega$ , 1MHz~1.8GHz	-	6.5	-	pA/ $\sqrt{\text{Hz}}$
Output impedance	Zo	(Differential output)	-	50	-	$\Omega$
Sensitivity	Pr	AC, RL=50 $\Omega$ , NRZ, 2.48832Gbps., PRBS=2 <sup>23</sup> -1, BER=10 <sup>-10</sup> , VPD=5V (Note 2)	-	-23	-21	dBm
Over load power	Po		0	2	-	
Power supply voltage	VDD	VSS=0V	4.75	5	5.46	V
Power supply current	IDD	VDD=5V	-	35	60	mA
Optical return loss	Prtn	-	25	-	-	dB

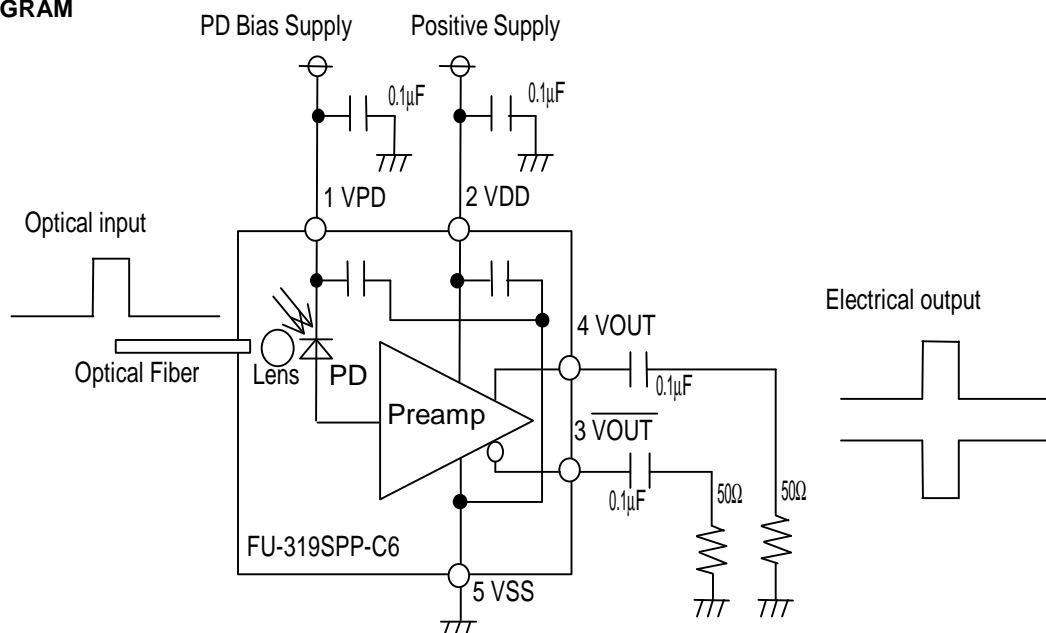
Note 1. Transimpedance value apply when AGC(Bit by bit) function is fully off.

Note 2. Used post-amp bandwidth is 1.8GHz, Laser source extinction ratio is 10dB.

### OPTICAL FIBER SPECIFICATION

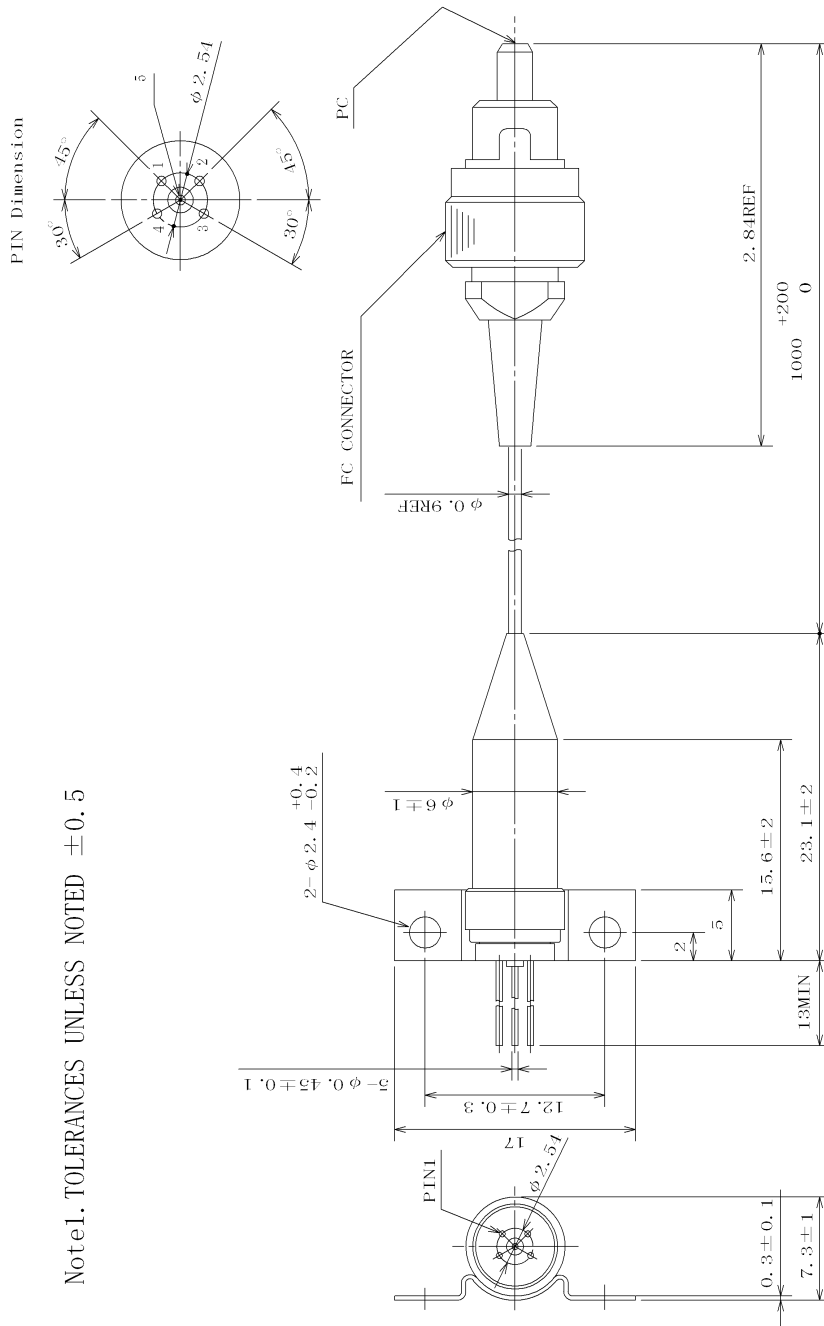
Parameter	Limits	Unit
Type	SM	-
Mode field dia.	9.5 $\pm$ 1	$\mu\text{m}$
Cladding dia.	125 $\pm$ 2	$\mu\text{m}$
Jacket dia.	0.9 typ.	mm
Connector return loss	40(min)	dB

### BLOCK DIAGRAM



OUTLINE DIAGRAM (FC Connector type)

(Unit : mm)



Note1. TOLERANCES UNLESS NOTED ±0.5

- 1 : VPD
- 2 : VDD (
- 3 : VOUT
- 4 : VOUT
- 5 : VSS (Isolated to the case)