

MITSUBISHI (OPTICAL DEVICES)

# FU-318AP-M6/FU-318SAP-M6

InGaAs APD MODULE FOR LONG WAVELENGTH BAND

## DESCRIPTION

The FU-318AP-M6/318SAP-M6 series avalanche photodiode(APD) modules are designed for use in fiber testing equipment and high-speed, long haul optical communication systems.

The coaxial package contains an InGaAs APD coupled into either singlemode or multimode fiber pigtail.

## FEATURES

- High-responsivity (0.8A/W at 1300nm)
- High-speed response ( $f_c=3\text{GHz}$ )

## APPLICATION

Fiber testing equipment(OTDRs)  
Long haul optical communication systems



## ABSOLUTE MAXIMUM RATINGS (Tc=25°C)

Parameter	Symbol	Conditions	Rating	Unit
Reverse current (CW)	I <sub>r</sub>	-	500	μA
Forward current (CW)	I <sub>f</sub>	-	2	mA
Operating case temperature	T <sub>c</sub>	-	-40~+85	°C
Storage temperature	T <sub>stg</sub>	-	-40~+85	°C

MITSUBISHI (OPTICAL DEVICES)

# FU-318AP-M6/FU-318SAP-M6

InGaAs APD MODULE FOR LONG WAVELENGTH BAND

**ELECTRICAL/OPTICAL CHARACTERISTICS** ( $T_c = -25^\circ\text{C}$ ,  $\lambda = 1.3\mu\text{m}$  unless otherwise noted)

Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
Detection range	-	-	1000	-	1600	nm
Responsivity(Note 1)	R	M=1(Note 2)	0.75	0.8	-	A/W
		$\lambda = 1.55\mu\text{m}$ , M=1(Note 2)	0.85	0.9	-	
Breakdown voltage	Vbr	$I_d = 100\mu\text{A}$	50	-	100	V
Temp. coefficient of Vbr(note 4)	$\beta$	$I_d = 100\mu\text{A}$ , $T_c = -40 \sim 85^\circ\text{C}$	0.1	0.17	0.25	%/ $^\circ\text{C}$
Dark current	$I_d$	$V_r = 0.9V_{br}$ , $T_c = 25^\circ\text{C}$	-	-	60	nA
		$V_r = 0.9V_{br}$ , $T_c = 70^\circ\text{C}$	-	-	700	
		$V_r = 0.9V_{br}$ , $T_c = 85^\circ\text{C}$	-	-	1000	
Excess noise factor	F	M=10(Note 2)	-	5	-	-
Minimum multiplication	Mmin	$I_{po} = 1\mu\text{A}$ , $V_r = V$ (@ $I_d = 1\mu\text{A}$ ) (Note 3)	30	-	-	-
Cut-off frequency (-3dB)	fc	M=10, $R_I = 50\Omega$ (Note 2)	1	3	-	GHz
Capacitance	Ct	M=10, $f = 1\text{MHz}$	-	0.6	1	pF

Note 1. Measured by single-mode fiber : SM9.5/125

Note 2. M : Multiplication ratio

Note 3.  $I_{po}$  : Photo current with an incident optical power

Note 4.  $\beta = \frac{V_{br}(25^\circ\text{C} + \Delta T) - V_{br}(25^\circ\text{C})}{V_{br}(25^\circ\text{C})} \times \Delta T \times 100$  [%/ $^\circ\text{C}$ ]

**OPTICAL FIBER SPECIFICATION**

Parameter	Limits		Unit
	FU-318AP-M6	FU-318SAP-M6	
Type	GI	SM	-
Core dia.	50 $\pm$ 1	-	$\mu\text{m}$
Mode field dia.	-	9.5 $\pm$ 1	$\mu\text{m}$
N.A.	0.2	-	-
Cladding dia.	125 $\pm$ 3	125 $\pm$ 2	$\mu\text{m}$
Jacket dia.	0.9 typ.	0.9 typ.	mm

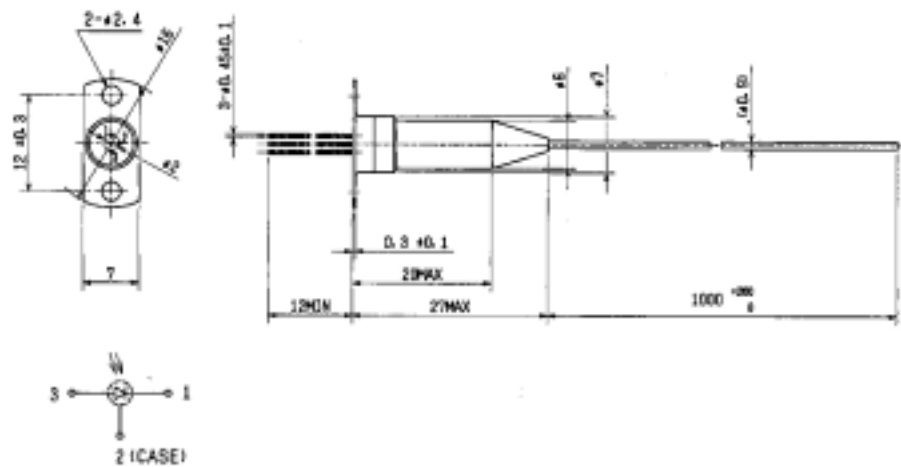
MITSUBISHI (OPTICAL DEVICES)  
**FU-318AP-M6/FU-318SAP-M6**

InGaAs APD MODULE FOR LONG WAVELENGTH BAND

OUTLINE DIAGRAM

(Unit : mm)

NOTE. TOLERANCE UNLESS NOTED  $\pm 0.5$



FU-318AP-M6/FU-318SAP-M6