

MITSUBISHI (OPTICAL DEVICES)  
**FU-436SDF-F1M1**

1.3  $\mu\text{m}$  DFB-LD MODULE WITH SINGLEMODE FIBER PIGTAIL

**DESCRIPTION**

Module type FU-436SDF-F1M1 has been developed for coupling a singlemode optical fiber and a 1.3  $\mu\text{m}$  wavelength InGaAsP DFB LD (Laser diode). FU-436SDF-F1M1 is suitable to light source for high-speed short haul and long haul digital optical communication systems.

**FEATURES**

- MQW-DFB laser diode module
- High-speed response
- Emission wavelength is in 1.3 $\mu\text{m}$  band
- Built-in optical isolator

**APPLICATION**

High-speed short haul and long haul digital optical communication systems.



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

Parameter		Symbol	Conditions	Rating	Unit
Laser diode	Optical output power from fiber end	Pf	CW	5	mW
	Reverse voltage	Vrl	-	2	V
Photodiode for monitoring	Reverse voltage	Vrd	-	20	V
	Forward current	lfd	-	2	mA
Operating case temperature		Tc	-	0~+85	$^\circ\text{C}$
Storage temperature		Tstg	-	-40~+85	$^\circ\text{C}$

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**OPTICAL CHARACTERISTICS**( $T_c=0\sim 85^\circ\text{C}$  unless otherwise noted)

Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
Threshold Current	I <sub>th</sub>	CW, $T_c=25^\circ\text{C}$	-	-	25	mA
		CW	2	-	50	
Operating Current	I <sub>op</sub>	CW, APC, I <sub>m</sub> (P <sub>f</sub> (25 $^\circ\text{C}$ )=4mW)	-	-	90	mA
Modulation Current	I <sub>mod</sub>	CW, APC, I <sub>m</sub> (P <sub>f</sub> (25 $^\circ\text{C}$ )=4mW)	8	-	65	mA
Operating Voltage	V <sub>op</sub>	CW, APC, I <sub>m</sub> (P <sub>f</sub> (25 $^\circ\text{C}$ )=4mW)	-	1.2	1.7	V
Threshold Output Power	P <sub>th</sub>	CW, I <sub>f</sub> =I <sub>th</sub> (Note 1)	-	-	0.15	mW
Differential Efficiency	$\eta$	CW, APC, I <sub>m</sub> (P <sub>f</sub> (25 $^\circ\text{C}$ )=4mW)	0.04	-	-	mW/mA
Central Wavelength	$\lambda_c$	CW, APC, I <sub>m</sub> (P <sub>f</sub> (25 $^\circ\text{C}$ )=4mW)	1290	1310	1330	nm
Spectral Width (-20dB)	$\Delta\lambda$ (-20dB)	CW, APC, I <sub>m</sub> (P <sub>f</sub> (25 $^\circ\text{C}$ )=4mW)	-	-	1.0	nm
Side Mode Suppression Ratio	SMSR	CW, APC, I <sub>m</sub> (P <sub>f</sub> (25 $^\circ\text{C}$ )=4mW)	30	-	-	dB
Rise and Fall Time	t <sub>r</sub> , t <sub>f</sub>	P <sub>f</sub> peak=4mW, I <sub>b</sub> =I <sub>th</sub> (Note 2) 10-90%(Note 1)	-	-	1	ns
Tracking Error (Note 3)	E <sub>r</sub>	CW, APC, I <sub>m</sub> (P <sub>f</sub> (25 $^\circ\text{C}$ )=4mW)	-	0.4	1.0	dB
Monitor Current	I <sub>mon</sub>	CW, P <sub>f</sub> =4mW, V <sub>rd</sub> =5V	0.1	-	-	mA
Dark Current (Photodiode)	I <sub>d</sub>	V <sub>rd</sub> =5V, T <sub>c</sub> =25 $^\circ\text{C}$	-	0.01	1	$\mu\text{A}$
Capacitance (Photodiode)	C <sub>t</sub>	V <sub>rd</sub> =5V, f=1MHz	-	-	25	pF

Note 1. I<sub>f</sub> : Forward current(LD)

Note 2. I<sub>b</sub> : Bias current(LD)

Note 3. E<sub>r</sub>=MAX | 10 $\times$ log(P<sub>f</sub>(T<sub>c</sub>)/P<sub>f</sub>(25 $^\circ\text{C}$ ) |

**OPTICAL FIBER SPECIFICATION**

Parameter	Limits	Unit
Type	Single Mode	-
Mode field dia.	9.5 $\pm$ 1	$\mu\text{m}$
Cladding dia.	125 $\pm$ 2	$\mu\text{m}$
Jacket dia.	0.9typ.	mm
Connector type	FC/PC	-

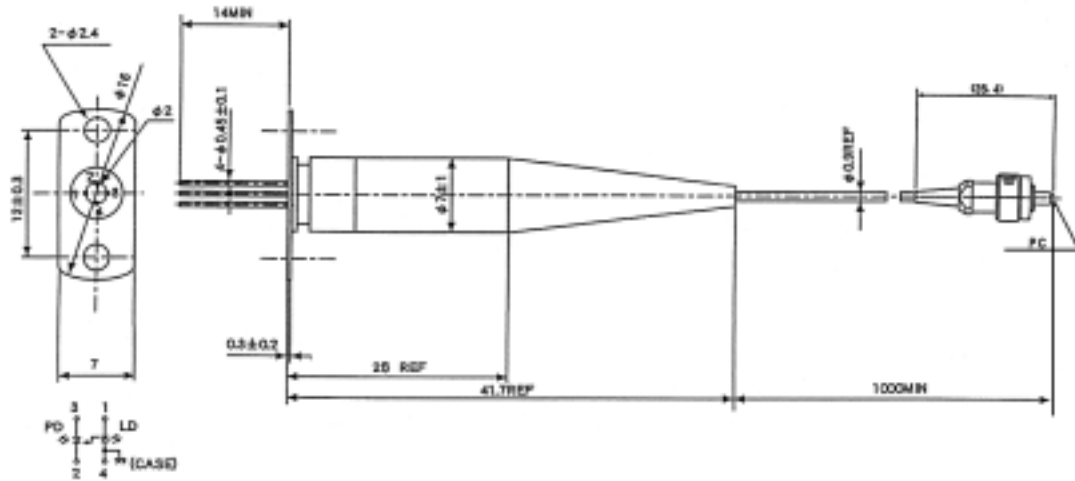
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OUTLINE DIAGRAM

(Unit : mm)

NOTE. TOLERANCE UNLESS NOTED  $\pm 0.5$



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