FU-427SLD-F1M51/F1M52

1.3 μm LD MODULE WITH SINGLEMODE FIBER PIGTAIL

DESCRIPTION

Module type FU-427SLD-F1M5X has been developed for coupling a singlemode optical fiber and a 1.3 μm wavelength InGaAsP LD (Laser diode).
FU-427SLD-F1M5X is suitable to light source for measuring instruments.(especially, OTDR)

FEATURES

- High optical output power
- Emission wavelength is in 1.3μm band

APPLICATION

OTDR

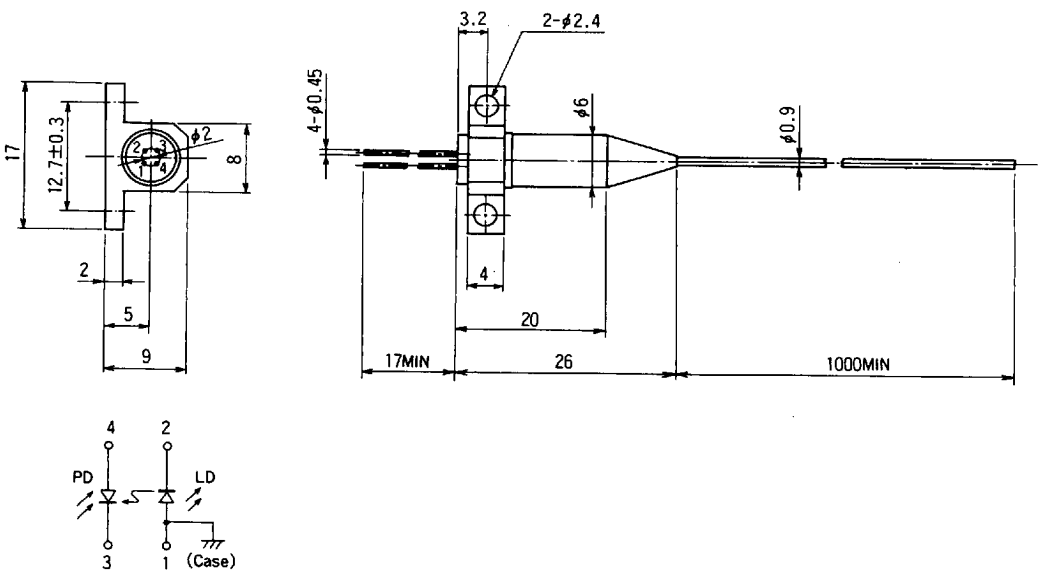
ABSOLUTE MAXIMUM RATINGS (Tc = 25℃)

Parameter		Symbol	Conditions	Rating	Unit
Laser diode	Reverse voltage	V_{RL}	–	2	V
	Forward current	I_{FL}	Pulse (Note 1)	250	mA
Photodiode for monitoring	Reverse voltage	V_{RD}	–	15	V
	Forward current	I_{FD}	–	2	mA
Operating case temperature		Tc	–	0～+60	℃
Storage temperature		T_{stg}	–	−40～+70	℃

Note 1. Pulse condition : Pulse width ≦ 10μs, Duty ratio ≦ 1%

OUTLINE DIAGRAM

(Unit : mm)



FU-427SLD-F1M51/F1M52

CW CHARACTERISTICS

Parameter	Symbol	Test conditions	Limits						Unit
			FU-427SLD-F1M51			FU-427SLD-F1M52			
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Threshold current	I_{th}	CW, Tc = 25℃	–	6	15	–	6	15	mA
Operating current	I_{OP}	CW, APC, P_f = 2mW, Tc = 25℃	–	18	35	–	18	35	mA
Operating voltage	V_{OP}	CW, APC, P_f = 2mW, Tc = 25℃	–	1.2	1.6	–	1.2	1.6	V
Centoral wavelength (Note 3)	λ_C	CW, APC, P_f = 2mW, Tc = 25℃	1290	1305	1320	1280	1305	1330	nm
Spectral width (RMS) (Note 3)	$\Delta\lambda$	CW, APC, P_f = 2mW, Tc = 25℃	–	1.2	4	–	1.2	4	nm
Rise and fall times	t_r, t_f	I_B = I_{th}, 10~90% Tc = 25℃ (Note 2)	–	0.4	1	–	0.4	1	ns
Tracking error (Note 4)	E_r	CW, APC, I_{mon}(P_f(25℃) = 2mW), Tc = 0~60℃	–	0.4	1.0	–	0.4	1.0	dB
Monitor current	I_{mon}	CW, P_f = 2mW, V_{RD} = 5V Tc = 25℃	0.1	0.6	1.5	0.1	0.6	1.5	mA
Dark current (Photodiode)	I_D	V_{RD} = 5V Tc = 25℃	–	0.1	1	–	0.1	1	μA

Note 2. I_B : Bias current (LD)

3. $\lambda c = (\Sigma(ai * \lambda i)) / (\Sigma ai)$

$\Delta\lambda = (1/(\Sigma ai) * (\Sigma ai * (\lambda i - \lambda c)^2))^{1/2}$

where $ai \geqq ap \times 0.01$

ai : Relative intensity of laser spectral emission modes

ap : Peak of laser spectral emission modes

4. $Er = MAX \mid 10 * \log(P_F(Tc) / P_F(25℃)) \mid$

PULSE CHARACTERISTICS

Parameter	Symbol	Test conditions (Note 5, 6)	Limits						Unit
			FU-427SLD-F1M51			FU-427SLD-F1M52			
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Threshold current	I_{th}	Pulse, Tc = 25℃	–	6	15	–	6	15	mA
Operating current	I_{OPP}	Pulse, Tc = 25℃	–	150	200	–	150	200	mA
Operating voltage	V_{OPP}	Pulse, I_F = I_{OPP} Tc = 25℃	–	–	3.5	–	–	3.5	V
Optical output power from fiber end	P_{FP}	Pulse, I_F = I_{OPP} Tc = 25℃	20	–	–	20	–	–	mW
		Pulse, I_F = I_{OPP} Tc = 60℃	15	–	–	15	–	–	
Central wavelength (Note 8)	λ_{CP}	Pulse, I_F = I_{OPP} Tc = 25℃	1300	1310	1320	1290	1310	1330	nm
Spectral bandwidth (RMS) (Note 8)	$\Delta\lambda_P$	Pulse, I_F = I_{OPP} Tc = 25℃	–	–	10	–	–	10	nm
Pulse droop (Note 9)	ΔP_{FP}	Pulse, I_F = I_{OPP} Tc = 25℃	–	–	20	–	–	20	%
Rise and fall times	t_r, t_f	I_B = I_{th}, 10~90% Tc = 25℃ (Note 7)	–	0.5	2	–	0.5	2	ns

Note 5. Pulse condition : Pulse width ≦ 10 μs, Duty ratio ≦ 1 %

6. I_F : Forward current (LD)

7. I_B : Bias current (LD)

8. $\lambda_{CP} = (\Sigma(ai * \lambda i)) / (\Sigma ai)$

$\Delta\lambda_P = (1/\Sigma ai) * (\Sigma ai * (\lambda i - \lambda c)^2))^{1/2}$

where $ai \geqq ap \times 0.01$

ai : Relative intensity of laser spectral emission modes

ap : Peak of laser spectral emission modes

9. $\Delta P_{FP} = (P_{F1} - P_{F2}) / P_{F1} * 100$

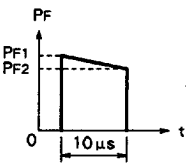
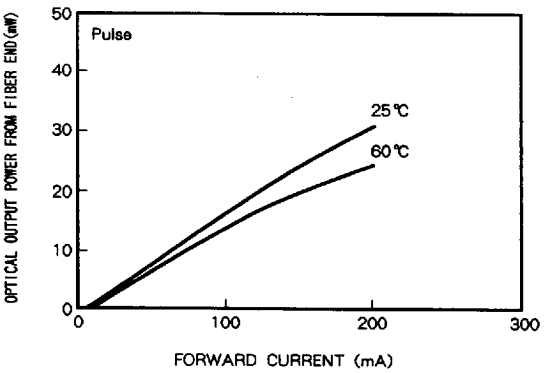


Fig.1

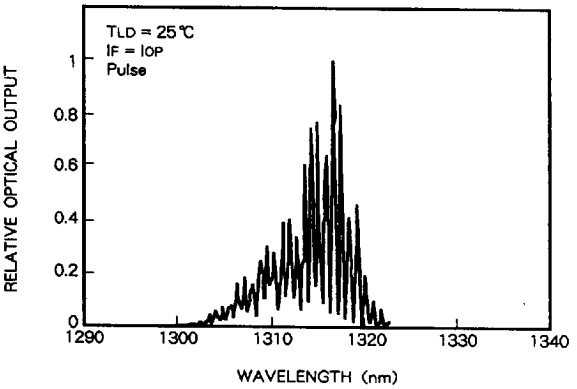
OPTICAL-FIBER SPECIFICATIONS

Parameter	Limits	Unit
Type	SM	–
Mode field dia.	10 ± 1	μm
Cladding dia.	125 ± 2	μm
Jacket dia.	0.9 typ.	mm

TYPICAL CHARACTERISTICS



FORWARD CURRENT (PULSE) VS. OPTICAL OUTPUT POWER



LIGHT-EMISSION SPECTRUM