

FU-424SHL-12M21/12M22/18M21/18M22

1.3 μ m LD MODULE WITH SINGLEMODE FIBER PIGTAIL

DESCRIPTION

Module type FU-424SHL-XXMXX has been developed for coupling a singlemode optical fiber and a 1.3 μ m wavelength InGaAsP LD (Laser diode).

FU-424SHL-XXMXX is suitable to light source for measuring instruments.(especially, OTDR)

FEATURES

- High optical output power
- Emission wavelength is in 1.3 μ m band
- Built-in thermal electric cooler
- Dual-in-line package

APPLICATION

OTDR

ABSOLUTE MAXIMUM RATINGS (T_{LD} = 25°C)

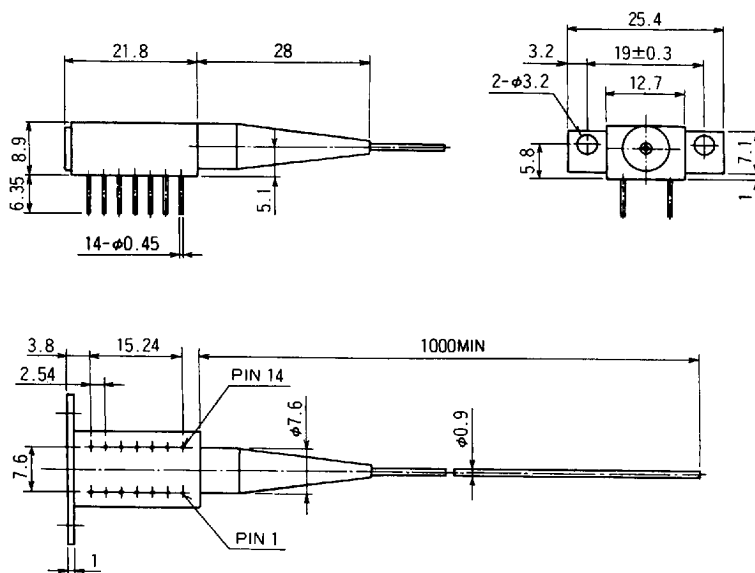
Parameter	Symbol	Conditions	Rating	Unit
Laser diode	Reverse voltage	V _{RL}	—	2
	Forward current	I _{FL}	Pulse (Note 1)	1
Cooler	Voltage	V _{pem}	—	2.4
	Current	I _{pem}	—	1.2
Operating case temperature	T _c	—	—20 ~ +65	°C
Storage temperature	T _{stg}	—	—40 ~ +70	°C

Note 1. Pulse condition : Pulse width $\leq$ 10 μ s, Duty ratio $\leq$ 1 %

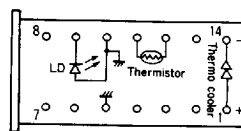
2. Even if the thermo-electric cooler (TEC) is operated within the rated conditions, uncontrolled current loading or operation without heatsink may easily damage the module by exceeding the storage temperature range. Thermistor resistance should be properly monitored by the feedback circuit during TEC operation to avoid the catastrophic damage.

OUTLINE DIAGRAM

(Unit : mm)



PIN	FUNCTION
1	COOLER ANODE
2	NC
3	NC
4	NC
5	LASER ANODE, GND
6	NC
7	NC
8	NC
9	LASER CATHODE
10	LASER ANODE, GND
11	THERMISTOR
12	THERMISTOR
13	NC
14	COOLER CATHODE



BOTTOM VIEW

FU-424SHL-12M21/12M22/18M21/18M22

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CHARACTERISTICS (T_{LD} = 25 °C, T_c = 25 °C, Unless otherwise noted)

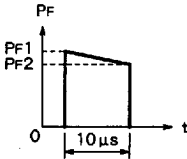
Parameter		Symbol	Test conditions	Limits						Unit
				FU-424SHL-12M2X (Note 4)			FU-424SHL-18M2X (Note 4)			
				Min.	Typ.	Max.	Min.	Typ.	Max.	
Threshold current		I _{th}	—	—	20	50	—	20	50	mA
Operating current		I _{OP}	Pulse (Note 1)	500	700	900	500	700	900	mA
Operating voltage		V _{OP}	I _F = I _{OP} , Pulse (Note 1)	—	—	5	—	—	5	V
Optical output power from fiber end		P _F	I _F = I _{OP} , Pulse (Note 1)	120	150	—	180	—	—	mW
-XXM21	Central wavelength (Note 4)	λ _c	I _F = I _{OP} , Pulse (Note 1)	1300	1310	1320	1300	1310	1320	nm
-XXM22				1290	1310	1330	1290	1310	1330	
Spectral width (RMS)		Δλ	I _F = I _{OP} , Pulse (Note 1)	—	—	10	—	—	10	nm
Pulse droop (Note 3)		ΔP _F	I _F = I _{OP} , Pulse (Note 1)	—	—	20	—	—	20	%
Rise and fall time		t _r , t _f	I _B = I _{th} , 10~90 % (Note 2)	—	1	2	—	1	2	ns

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

2. I_b : Bias current (LD)

3.

$$\Delta P_F = \frac{P_{F1} - P_{F2}}{P_{F1}} \times 100$$



4.

Type number	P _F (25 °C)	λ _c (25 °C)
FU-424SHL-12M21	120mW(min)	1310 ± 10nm
FU-424SHL-12M22		1310 ± 20nm
FU-424SHL-18M21	180mW(min)	1310 ± 10nm
FU-424SHL-18M22		1310 ± 20nm

THERMAL CHARACTERISTICS (T_{LD} = 25 °C, T_c = - 20 ~ + 65 °C)

Parameter	Symbol	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
Thermister resistance	R _{th}	T _{LD} = 25 °C	9	10	11	k Ω
B constant of thermistor resistance	B	—	—	3950	—	K
Cooking capacity	ΔT	T _c = 65 °C	40	—	—	°C
Cooler current	I _{pe}	ΔT = 40 °C	—	0.6	1	A
Cooler voltage	V _{pe}	ΔT = 40 °C	—	1.6	2	V

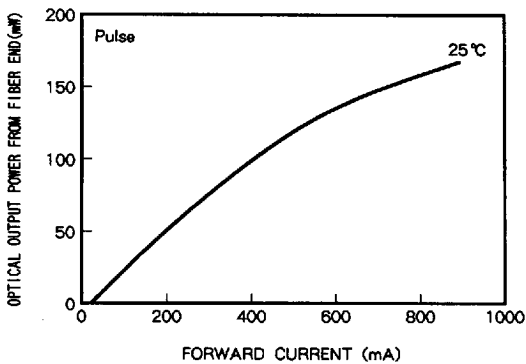
OPTICAL-FIBER SPECIFICATIONS

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

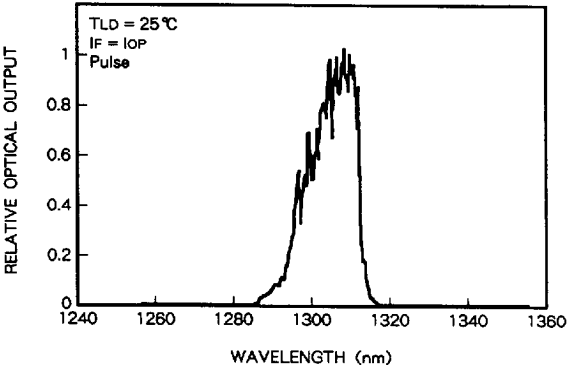
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TYPICAL CHARACTERISTICS



FORWARD CURRENT (PULSE) VS. OPTICAL OUTPUT POWER



LIGHT-EMISSION SPECTRUM

