

AlGaAs laser diodes

RLD-78MIT / RLD-78PIT / RLD-78NIT

The RLD-78MIT, RLD-78PIT and RLD-78NIT are the world's first mass-produced laser diodes those are manufactured by molecular beam epitaxy. Modal noise is controlled by relaxation oscillation, and they are ideal for short-distance, high-speed optical communications.

● Applications

Short-distance optical communications

● Features

- 1) High oscillation relaxation frequency.
- 2) Little transmission loss within optical fiber.
- 3) High-precision, compact package.
- 4) Little dispersion of characteristics.
- 5) Long life.
- 6) Can be driven by single power supply (P and N types).

● External dimensions (Units: mm)

M type	
P type	
N type	

● Absolute maximum ratings ($T_c = 25^\circ\text{C}$)

Parameter		Symbol	Limits	Unit
Output		P_o	5	mW
Reverse voltage	Laser	V_R	2	V
	PIN photodiode	$V_{R(PIN)}$	30	V
Operating temperature		T_{opr}	$-10 \sim +80$	°C
Storage temperature		T_{stg}	$-40 \sim +90$	°C

● Electrical and optical characteristics ($T_c = 25^\circ\text{C}$)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Threshold current	I_{th}	—	35	50	mA	—
Operating current	I_{op}	—	45	65	mA	$P_o=3\text{mW}$
Operating voltage	V_{op}	—	1.9	2.3	V	$P_o=3\text{mW}$
Differential efficiency	η	0.1	0.25	0.6	mW / mA	$\frac{2\text{mW}}{I(3\text{mW})-I(1\text{mW})}$
Monitor current	I_m	0.1	0.2	0.6	mA	$P_o=3\text{mW}, V_{R(PIN)}=15\text{V}$
Parallel divergence angle	θ_{\parallel}^*	8	11	15	deg	$P_o=3\text{mW}$
Perpendicular divergence angle	θ_{\perp}^*	28	37	45	deg	
Parallel deviation angle	$\Delta\phi_{\parallel}$	—	—	± 2	deg	
Perpendicular deviation angle	$\Delta\phi_{\perp}$	—	—	± 3	deg	
Emission point accuracy	ΔX ΔY ΔZ	—	—	± 80	μm	—
Peak emission wavelength	λ	770	785	810	nm	$P_o=3\text{mW}$
Relaxation oscillation frequency	fr	1.8	—	—	GHz	$P_{ave}=1.5\text{mV}, 50\%\text{duty}$

* θ_{\parallel} and θ_{\perp} are defined as the angle within which the intensity is 50% of the peak value.

● Electrical and optical characteristic curves

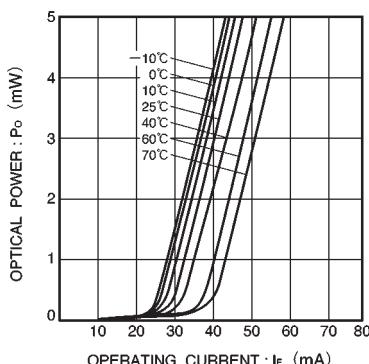


Fig. 1 Optical output vs. operating current

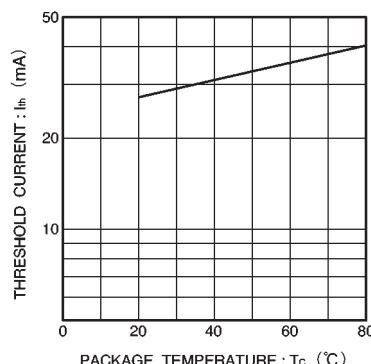


Fig. 2 Dependence of threshold current on temperature

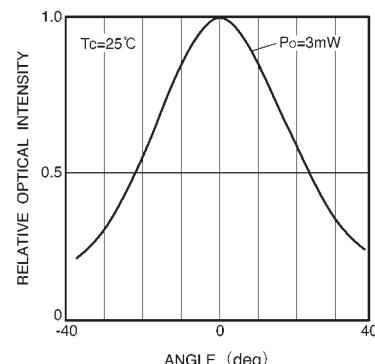


Fig. 3 Perpendicular far field pattern

