# AlGaAs laser diodes RLD-78MIT / 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.

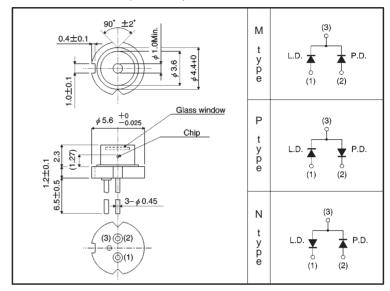
## Applications

Short-distance optical communications

#### Features

- High oscillation relaxation frequency.
- 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)



## ● Absolute maximum ratings (Tc = 25°C)

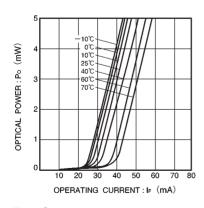
Parameter		Symbol	Limits	Unit
Output		Po	5	mW
Reverse	Laser	VR	2	V
	PIN photodiode	VR (PIN)	30	V
Operating temperature		Topr	-10~ <del>+</del> 80	°C
Storage temperature		Tstg	-40~+90	°C

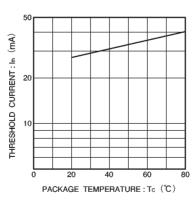
# ●Electrical and optical characteristics (Tc = 25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions	
Threshold current	Ith	_	35	50	mA	_	
Operating current	lop	_	45	65	mA	Po=3mW	
Operating voltage	Vop	_	1.9	2.3	٧	Po=3mW	
Differential efficiency	η	0.1	0.25	0.6	mW / mA	2mW I(3mW)—I(1mW)	
Monitor current	lm	0.1	0.2	0.6	mA	Po=3mW,V <sub>R(PIN)</sub> =15V	
Parallel divergence angle	θ // *	8	11	15	deg		
Perpendicular divergence angle	<i>θ</i>	28	37	45	deg	Po=3mW	
Parallel deviation angle	Δ φ //	_	_	±2	deg		
Perpendicular deviation angle	<b>∆</b> <i>φ</i> ⊥	_	_	±3	deg		
Emission point accuracy	ΔX ΔΥ ΔΖ	_	_	±80	μm	_	
Peak emission wavelength	λ	770	785	810	nm	Po=3mW	
Relaxation oscillation frequency	fr	1.8	_	_	GHz	Pave=1.5mV,50%duty	

<sup>\*</sup>  $\theta$  // and  $\theta$   $\perp$  are defined as the angle within which the intensity is 50% of the peak value.

# Electrical and optical characteristic curves





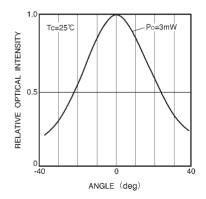


Fig. 1 Optical output vs. operating current

Fig. 2 Dependence of threshold current on temperature

Fig. 3 Perpendicular far field pattern

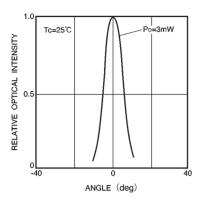


Fig. 4 Parallel far field pattern

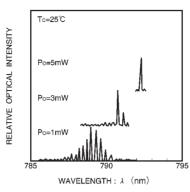


Fig. 5 Dependence of emission spectrum on optical output

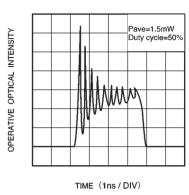


Fig. 6 Pulse response characteristic

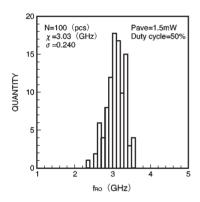


Fig. 7 Distribution of relaxation oscillation frequency