SONY

SLD324ZT

High-Power Density 2W Laser Diode

Description

The SLD324ZT is a gain-guided, high-power density laser diode with a built-in TE cooler. A new flat, square package with a low thermal resistance and an in-line pin configuration is employed. Fine tuning of the wavelength is possible by controlling the laser chip temperature.

Features

- High power
  Recommended optical power output: Po = 2.0W
- Low operating current: Iop = 2.5A (Po = 2.0W)
- Newly developed flat package with built-in photodiode, TE cooler and thermistor

Applications

- Solid state laser excitation
- Medical use
- Material processes
- Measurement

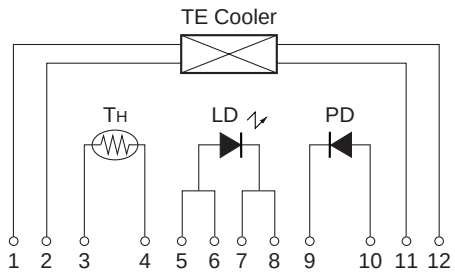
Structure

GaAlAs quantum well structure laser diode

Absolute Maximum Ratings (Tth = 25°C)

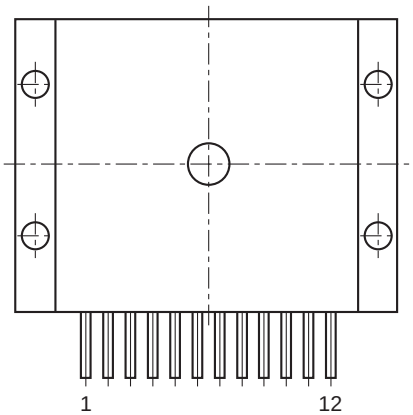
• Optical power output	Po		2.2	W
• Reverse voltage	V_R	LD	2	V
		PD	15	V
• Operating temperature (Tth)	Topr		–10 to +30	°C
• Storage temperature	Tstg		–40 to +85	°C
• Operating current of TE cooler	I_T		4.0	A

Equivalent Circuit



Pin Configuration (Top View)

No.	Function	No.	Function
1	TE Cooler (negative)	7	LD (cathode)
2	TE Cooler (negative)	8	LD (cathode)
3	Thermistor	9	PD (cathode)
4	Thermistor	10	PD (anode)
5	LD (anode)	11	TE Cooler (positive)
6	LD (anode)	12	TE Cooler (positive)



E93322B81-PS

Electrical and Optical Characteristics (Tth: Thermistor temperature, Tth = 25°C)

Item		Symbol	Conditions	Min.	Typ.	Max.	Unit
Threshold current		Ith			0.6	1.0	A
Operating current		Iop	P_O = 2.0W		2.5	3.5	A
Operating voltage		Vop	P_O = 2.0W		2.2	3.0	V
Wavelength*1		λp	P_O = 2.0W	790		840	nm
Monitor current		Imon	P_O = 2.0W V_R = 10V	0.15	0.8	3.0	mA
Radiation angle (F. W. H. M.*)	Perpendicular	θ⊥	P_O = 2.0W	20	30	40	degree
	Parallel	θ//		4	9	17	degree
Positional accuracy	Position	ΔX, ΔY	P_O = 2.0W			±100	μm
	Angle	Δφ⊥				±3	degree
Differential efficiency		η_D	P_O = 2.0W	0.65	1.0		W/A
Thermistor resistance		Rth	Tth = 25°C		10		kΩ

* F. W. H. M. : Full Width at Half Maximum

*1 **Wavelength Selection Classification**

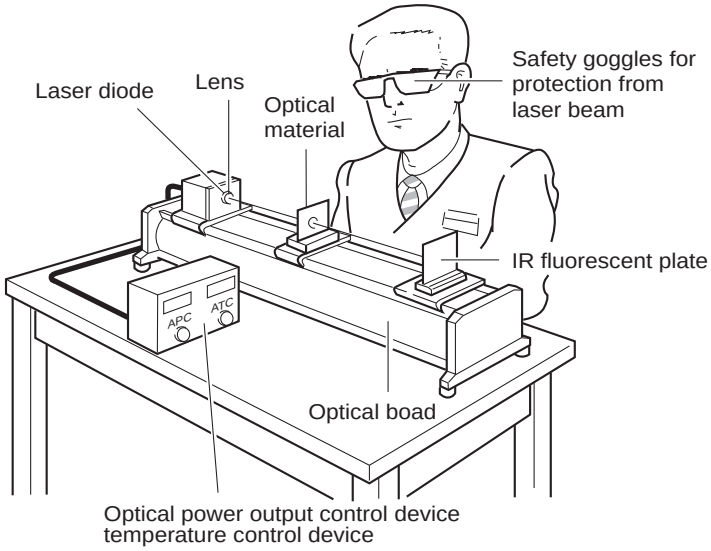
Type	Wavelength (nm)
SLD324ZT-1	795 ± 5
SLD324ZT-2	810 ± 10
SLD324ZT-3	830 ± 10

Type	Wavelength (nm)
SLD324ZT-21	798 ± 3
SLD324ZT-24	807 ± 3
SLD324ZT-25	810 ± 3

Handling Precautions

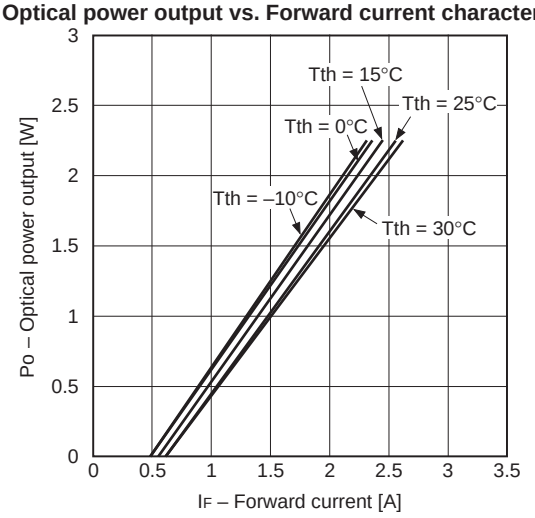
Eye protection against laser beams

The optical output of laser diodes ranges from several mW to 3W. However the optical power density of the laser beam at the diode chip reaches 1MW/cm^2. Unlike gas lasers, since laser diode beams are divergent, uncollimated laser diode beams are fairly safe at a laser diode. For observing laser beams, ALWAYS use safety goggles that block infrared rays. Usage of IR scopes, IR cameras and fluorescent plates is also recommended for monitoring laser beams safely.

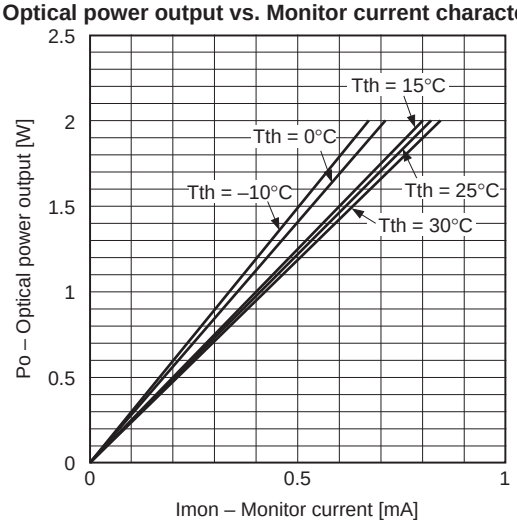


Example of Representative Characteristics

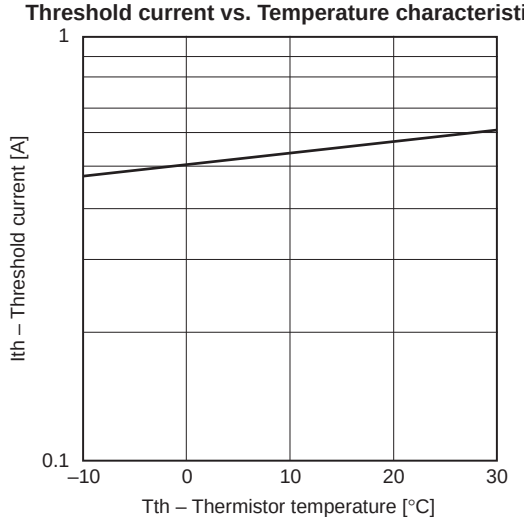
Optical power output vs. Forward current characteristics



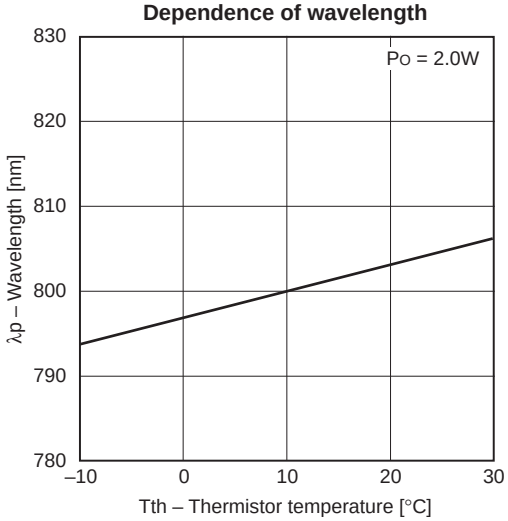
Optical power output vs. Monitor current characteristics



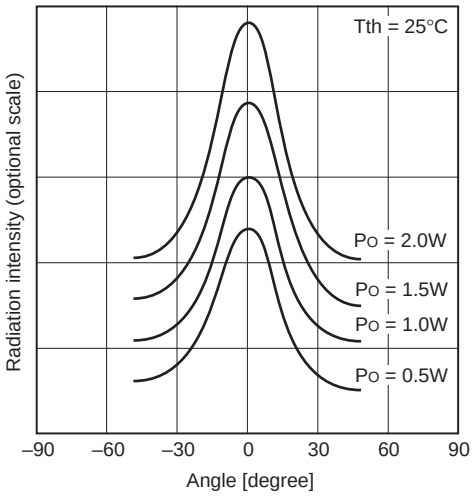
Threshold current vs. Temperature characteristics



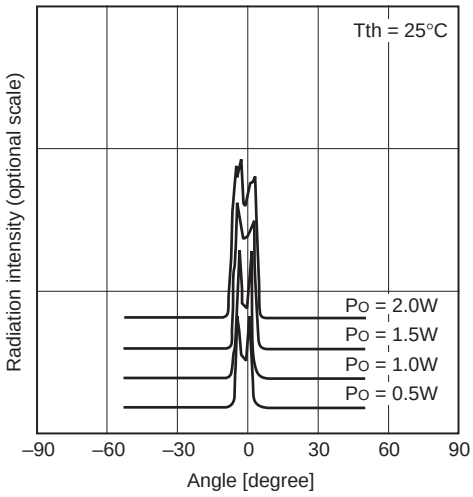
Dependence of wavelength



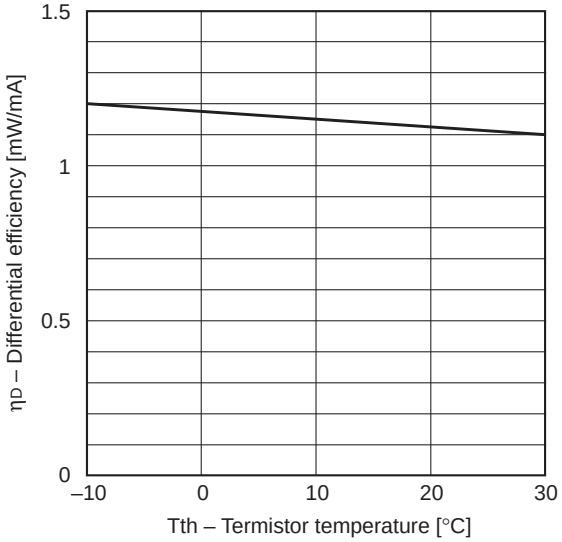
Power dependence of far field pattern (Perpendicular to junction)



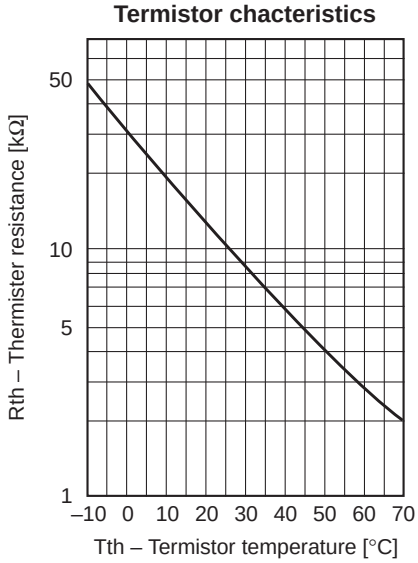
Power dependence of far field pattern (Parallel to junction)



Differential efficiency vs. Temperature characteristics

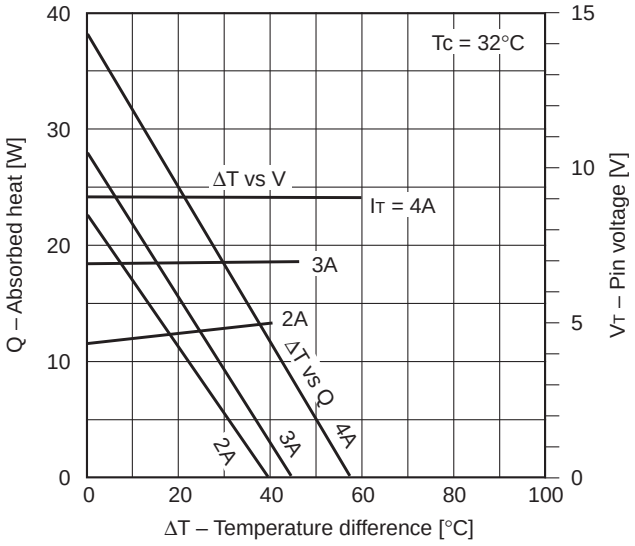


Termistor chacteristics

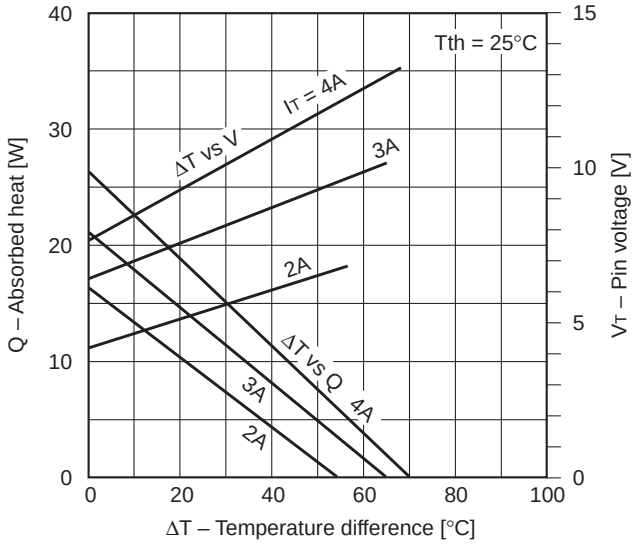


TE cooler characteristics

TE cooler characteristics 1

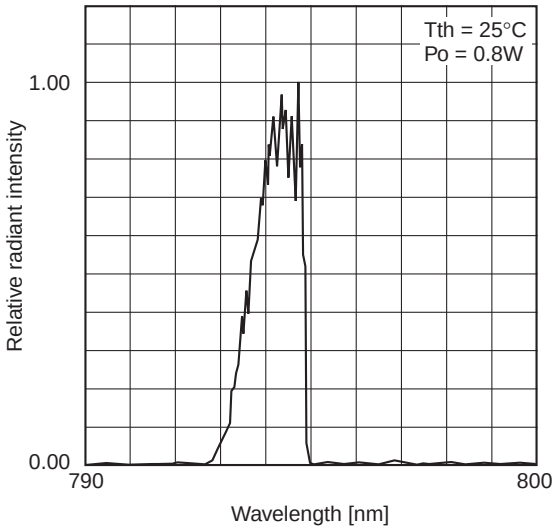


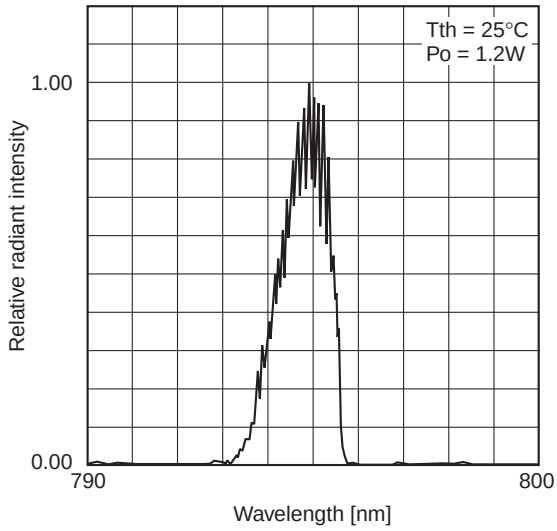
TE cooler characteristics 2

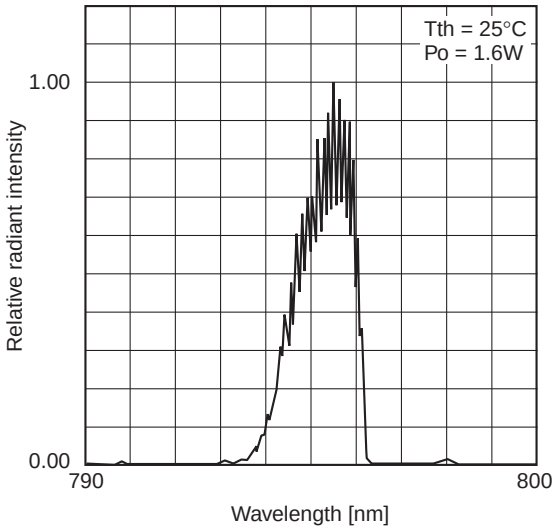


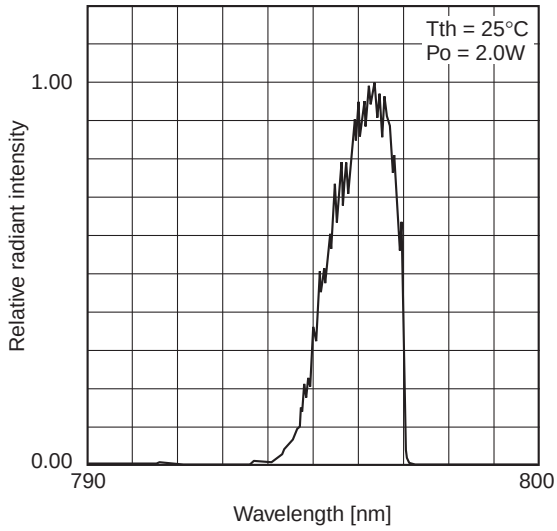
ΔT: Tc – Tth
Tth: Thermistor temperature
Tc: Case temperature

Power dependence of spectrum

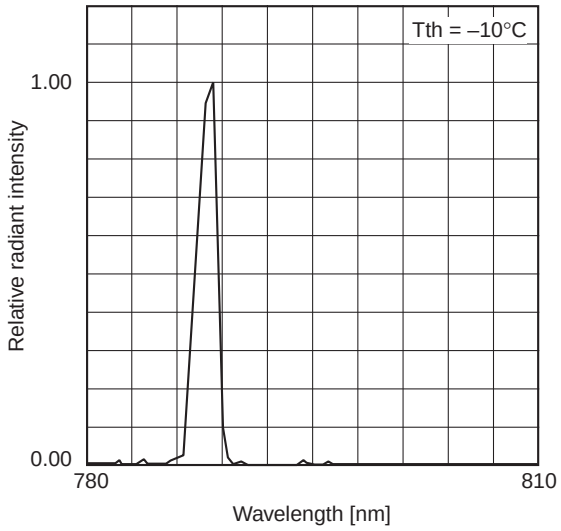


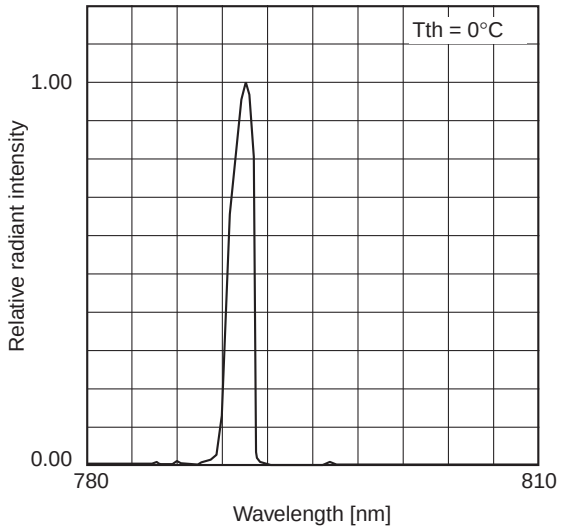


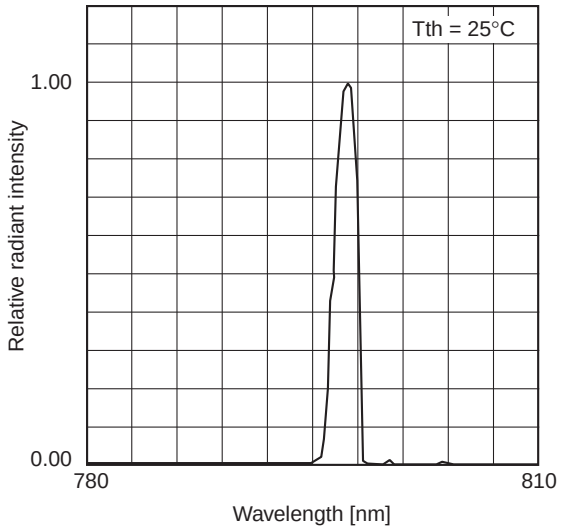


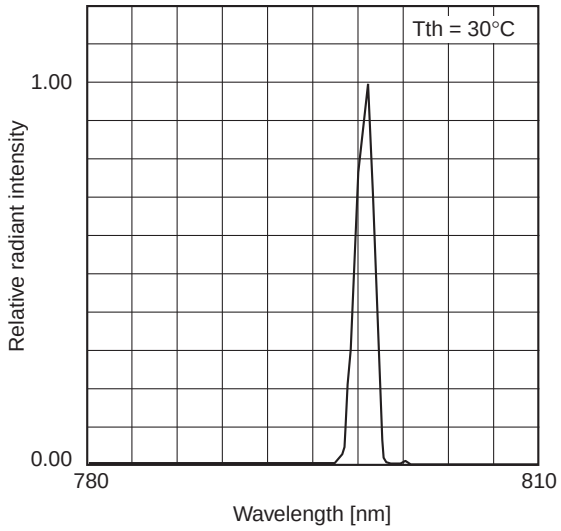


Temperature dependence of spectrum (Po = 2W)



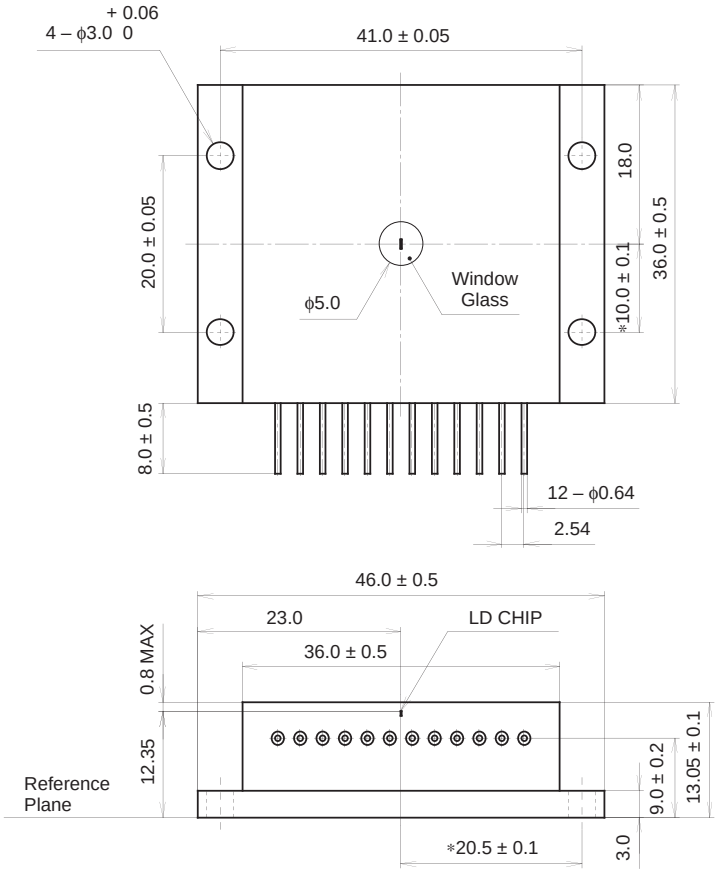






Package Outline Unit: mm

M-272



SONY CODE	M-272
EIAJ CODE	————
JEDEC CODE	————

*Distance between pilot hole and emitting area.

PACKAGE WEIGHT	118 g