SONY

SLD304XT

1000mW High Power Laser Diode

Description

The SLD304XT is a gain-guided, high-power 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 power output Po = 900mW
- Low operating current
- Newly developed flat package with built-in TE cooler, thermistor, and photodiode

Applications

- Solid state laser excitation
- Medical use

Structure

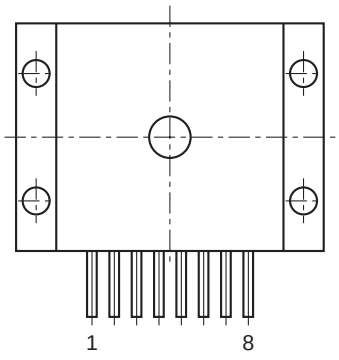
GaAlAs double-hetero-type laser diode

Absolute Maximum Ratings (Tth = 25°C)

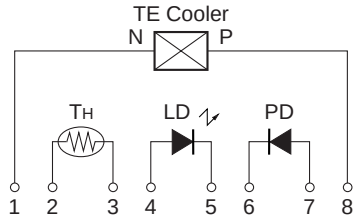
• Optical power output	Po		1000	mW
• Reverse voltage	V_R	LD	2	V
		PD	15	V
• Operating temperature	Topr		–10 to +30	°C
• Storage temperature	Tstg		–40 to +85	°C
• Operating current of TE cooler	I_T		2.5	A

Pin Configuration (Top View)

No.	Function
1	TE cooler, negative
2	Thermistor lead 1
3	Thermistor lead 2
4	Laser diode anode
5	Laser diode cathode
6	Photodiode cathode
7	Photodiode anode
8	TE cooler, positive



Equivalent Circuit



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E88066B81-PS

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

Item		Symbol	Conditions	Min.	Typ.	Max.	Unit
Threshold current		Ith			550	750	mA
Operating current		Iop	P_O = 900mW		1600	2000	mA
Operating voltage		Vop	P_O = 900mW		2.2	3.0	V
Wavelength*1		λp	P_O = 900mW	770		840	nm
Monitor current		Imon	P_O = 900mW V_R = 10V		1.5		mA
Radiation angle (F. W. H. M.*)	Perpendicular	θ⊥	P_O = 900mW		28	40	degree
	Parallel	θ//			13	17	degree
Positional accuracy	Position	ΔX, ΔY	P_O = 900mW			±100	μm
	Angle	Δϕ⊥				±3	degree
Differential efficiency		η_D	P_O = 900mW	0.65	0.85		mW/mA
Thermistor resistance		Rth	Tth = 25°C		10		kΩ

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

*1 **Wavelength Selection Classification**

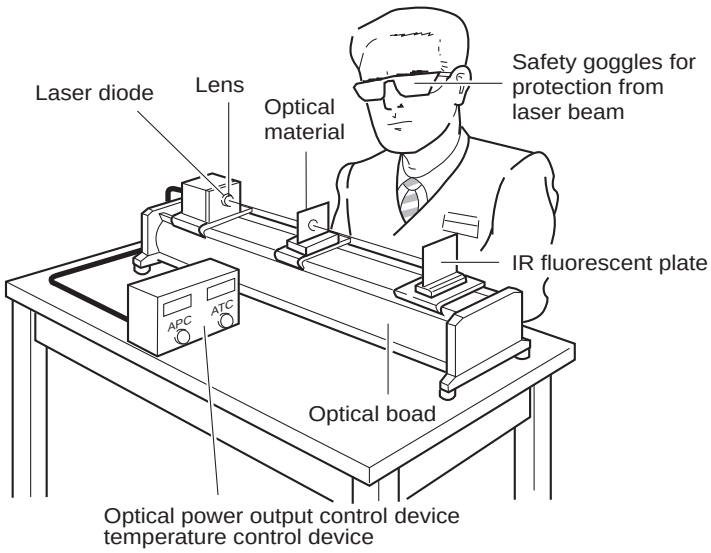
Type	Wavelength (nm)
SLD304XT-1	785 ± 15
SLD304XT-2	810 ± 10
SLD304XT-3	830 ± 10

Type	Wavelength (nm)
SLD304XT-21	798 ± 3
SLD304XT-24	807 ± 3
SLD304XT-25	810 ± 3

Handling Precautions

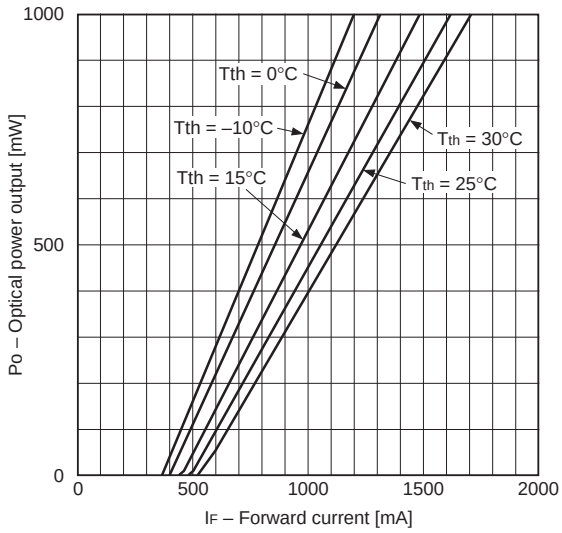
Eye protection against laser beams

The optical output of laser diodes ranges from several mW to 1W. 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.

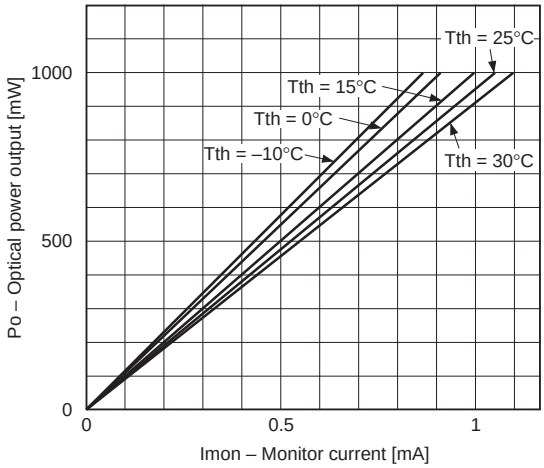


Example of Representative Characteristics

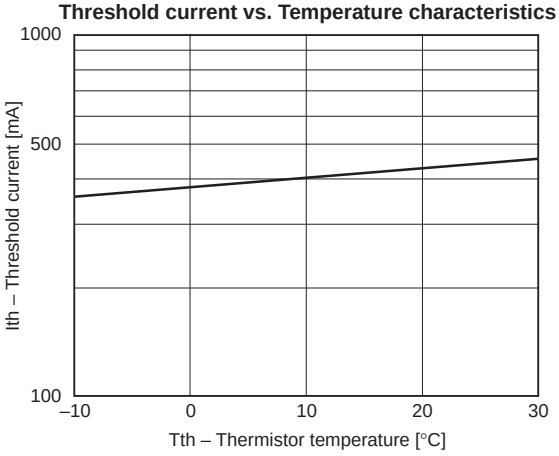
Optical power output vs. Forward current characteristics



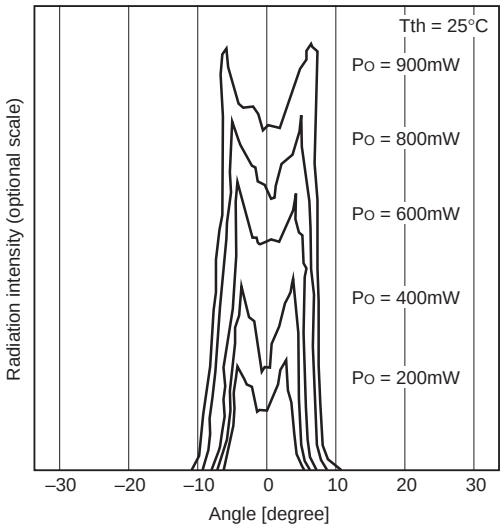
Optical power output vs. Monitor current characteristics



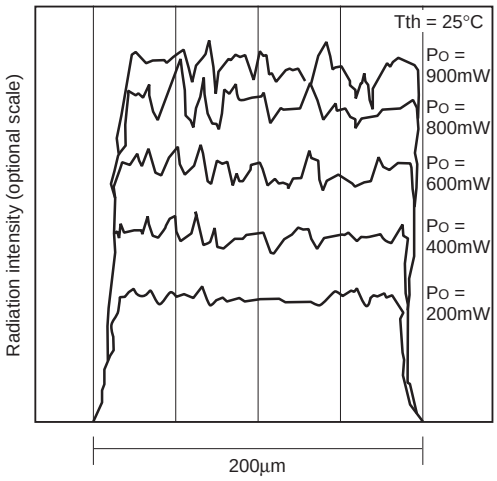
Threshold current vs. Temperature characteristics



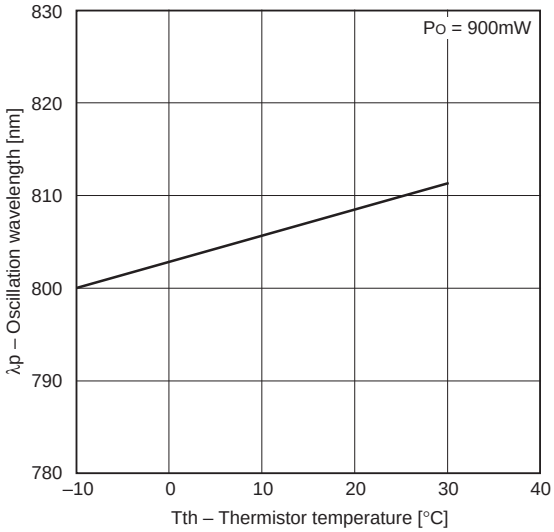
Power dependence of far field pattern (parallel to junction)



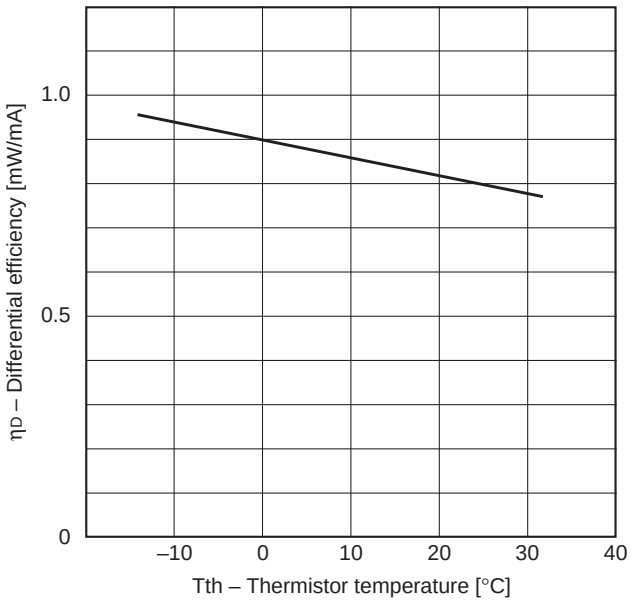
Power dependence of near field pattern



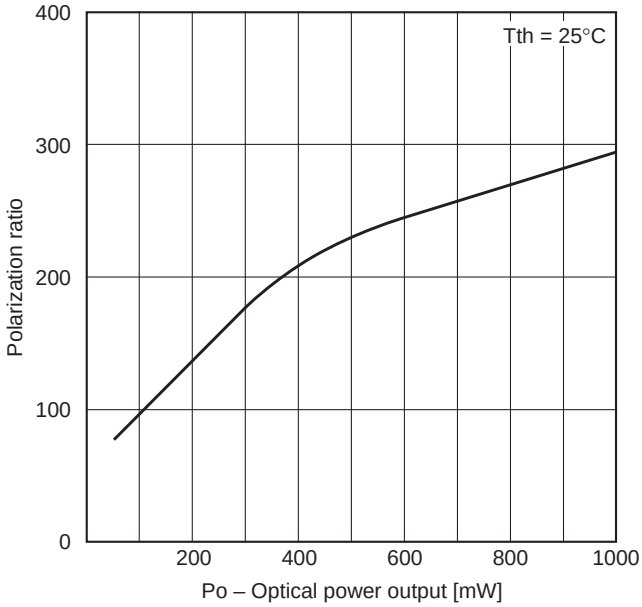
Oscillation wavelength vs. Temperature characteristics



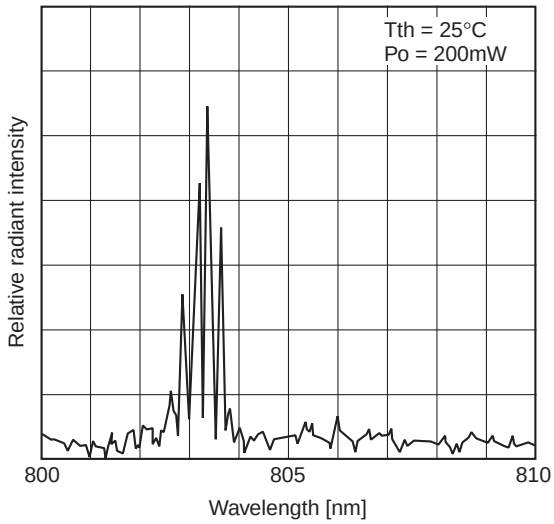
Differential efficiency vs. Temperature characteristics

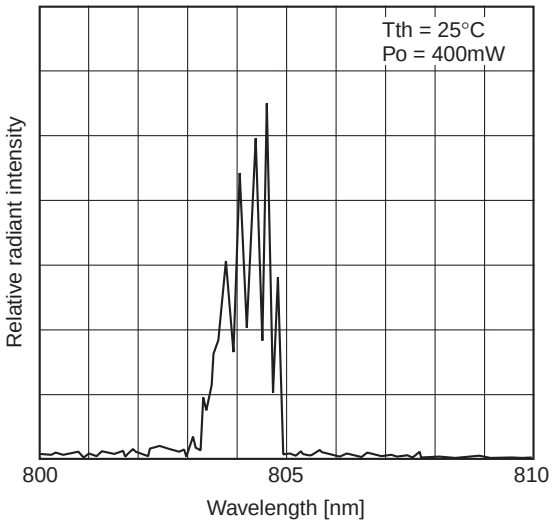


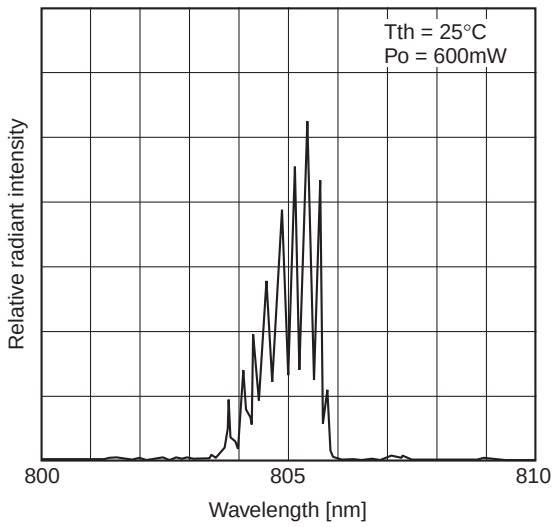
Power dependence of polarization ratio

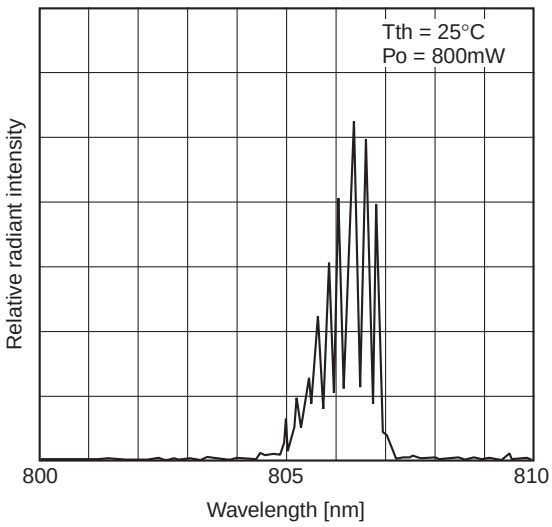


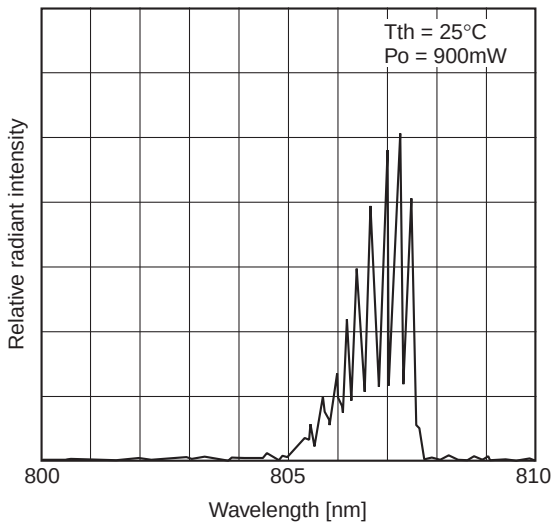
Power dependence of wavelength



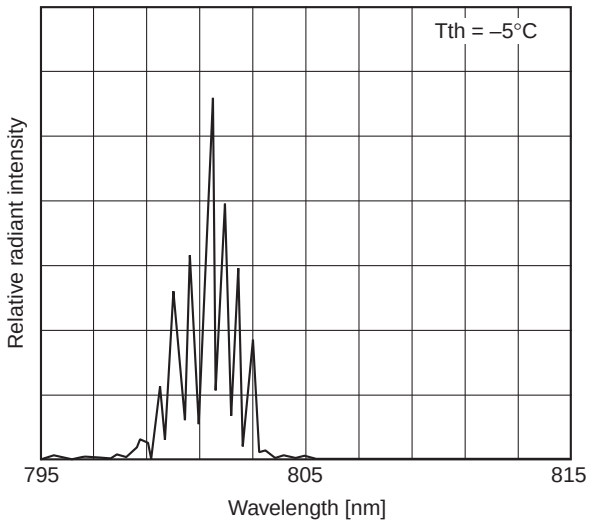


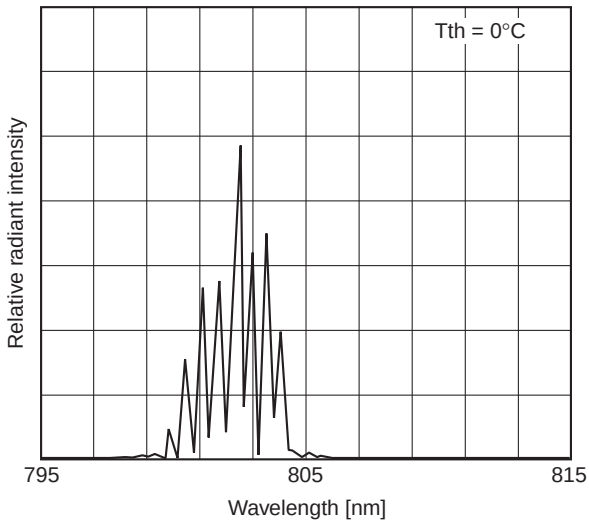


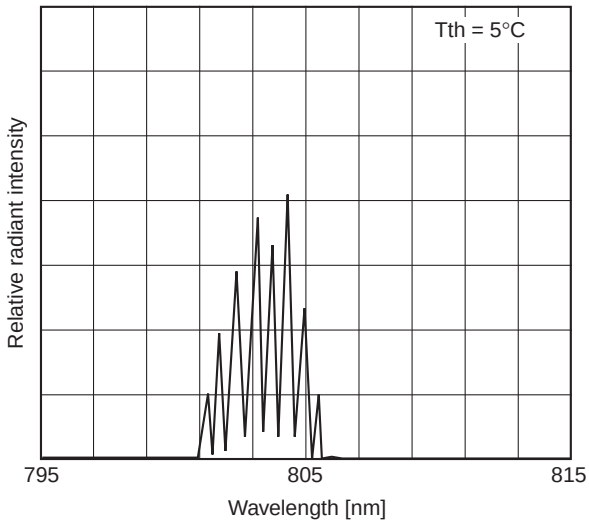


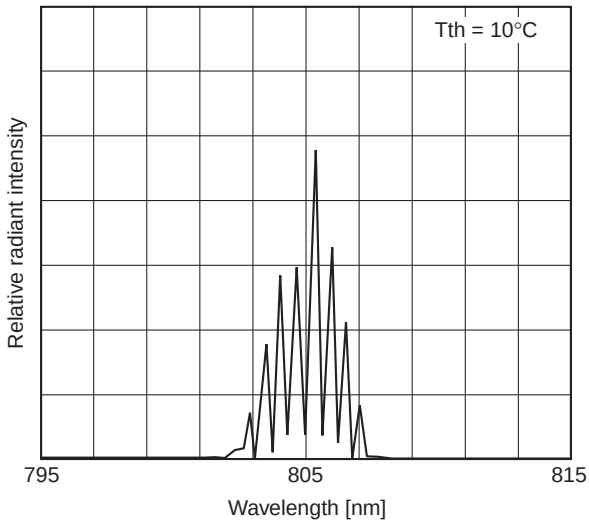


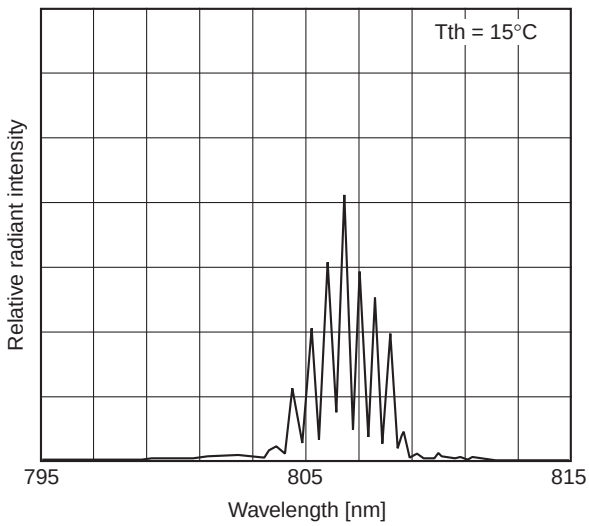
Temperature dependence of wavelength (Po = 900mW)

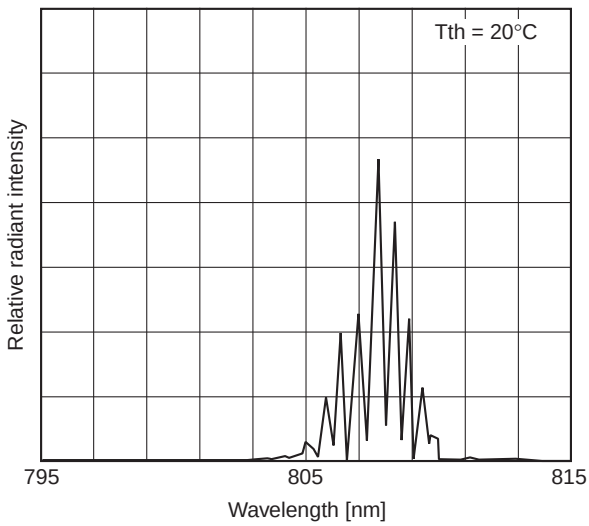


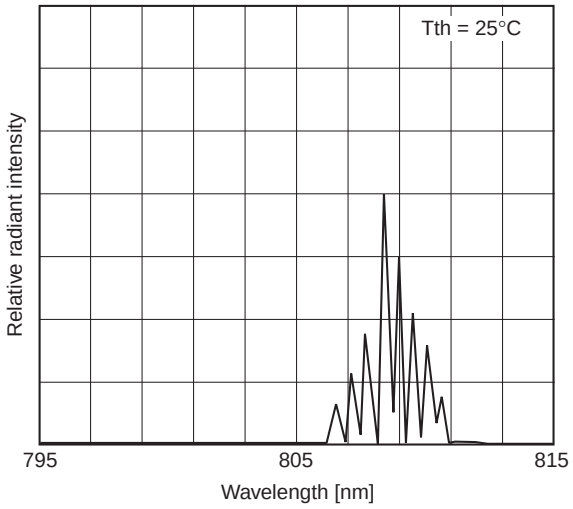


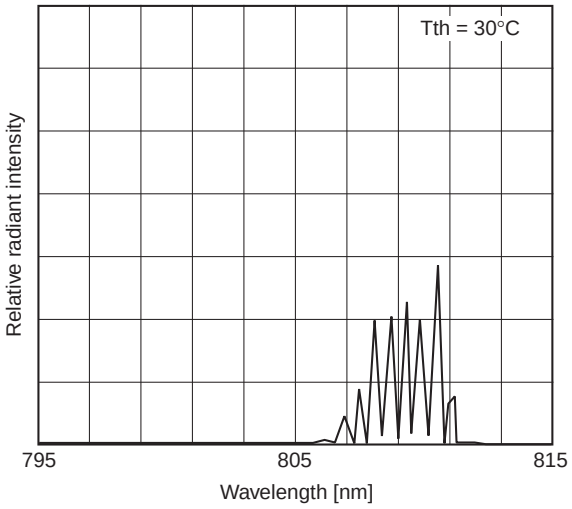






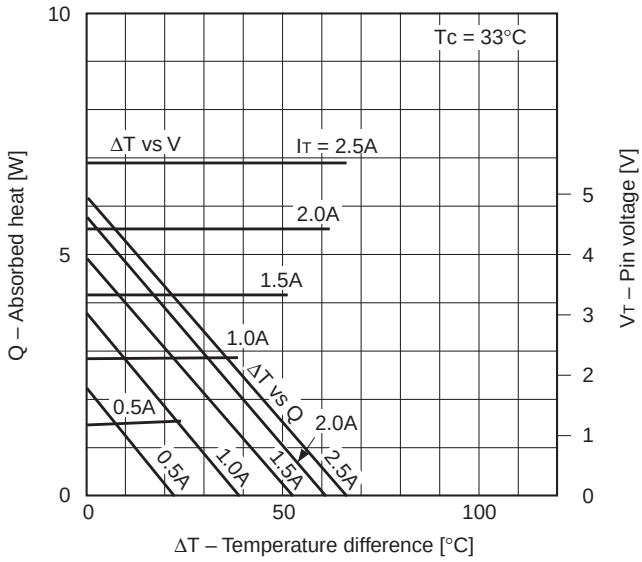




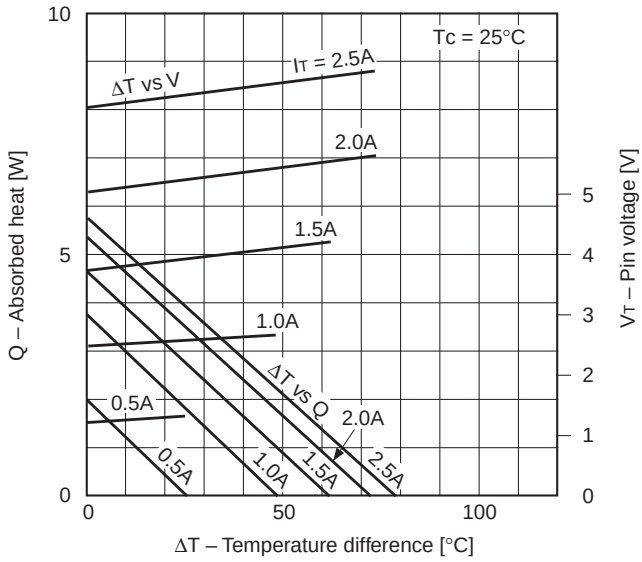


TE cooler characteristics

TE cooler characteristics 1

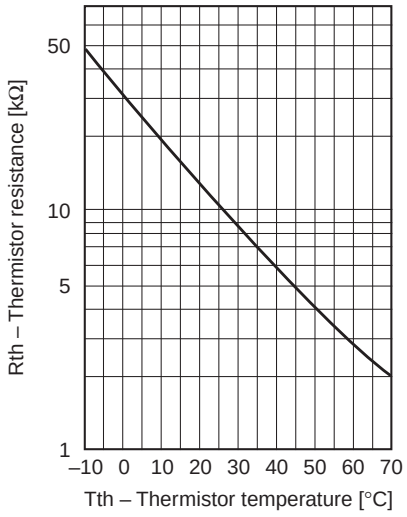


TE cooler characteristics 2



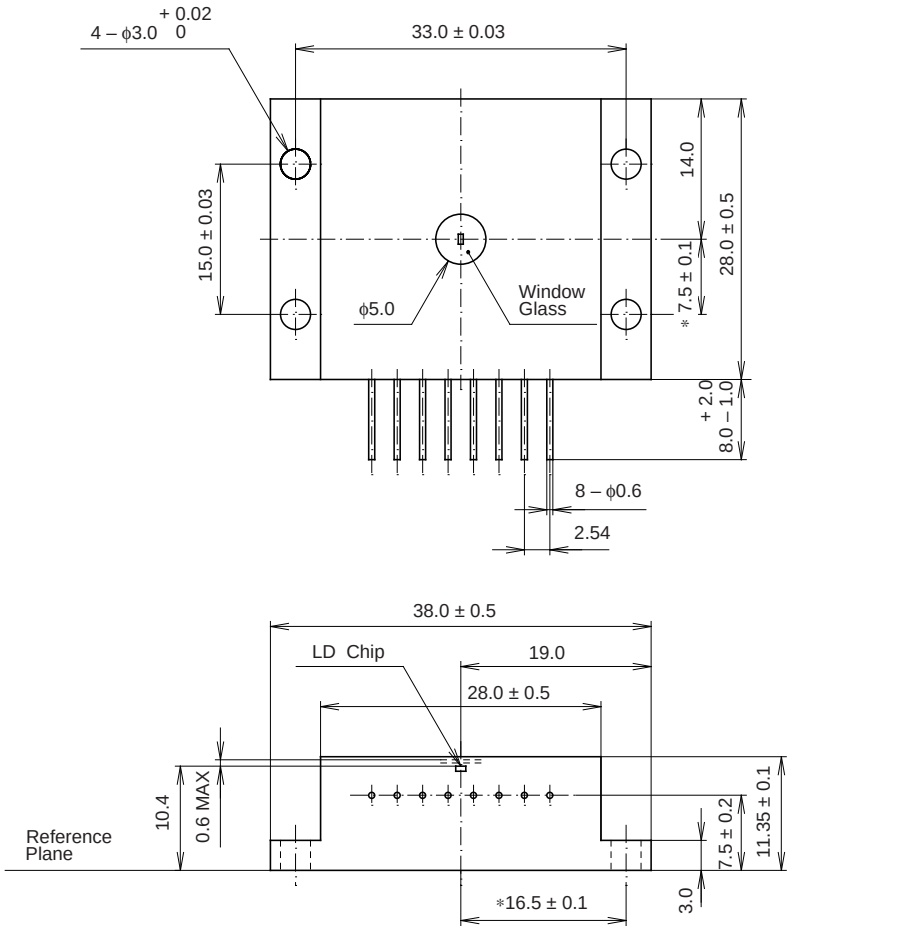
ΔT : Tc – Tth
Tth: Thermistor temperature
Tc : Case temperature

Termistor characteristics



Package Outline Unit: mm

M-247 (LO-10)



*Distance between pilot hole and emitting area

SONY CODE	M-247
EIAJ CODE	————
JEDEC CODE	————

PACKAGE WEIGHT	4.3g