SONY

SLD302XT

200mW High Power Laser Diode

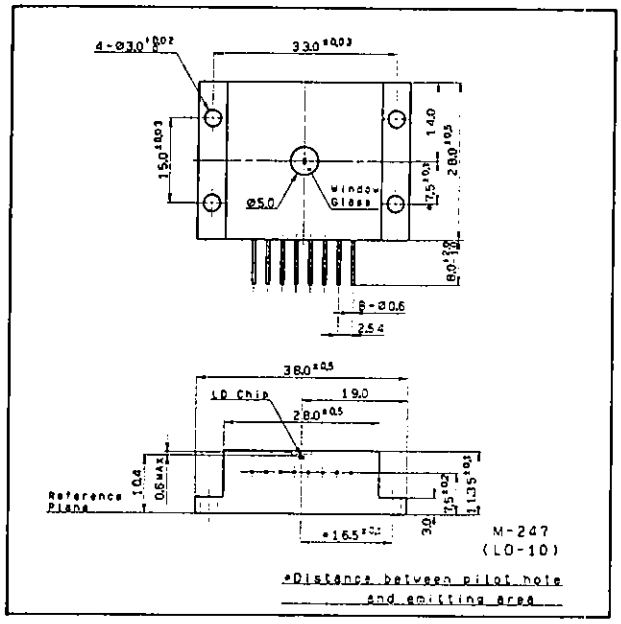
Description

SLD302XT 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.

Package Outline

Unit : mm



Features

- High power
  Recommended power output Po=180mW
- Small operating current
- Newly developed flat package with built-in TE cooler, thermistor and photodiode.

Structure

GaAlAs double-hetero laser diode

Applications

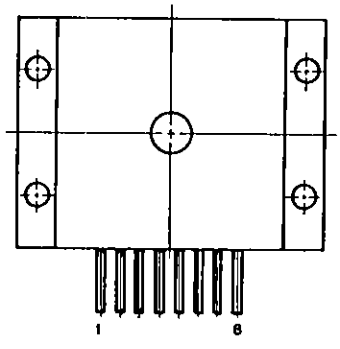
- Solid state laser excitation
- Medical use

Absolute Maximum Ratings (T_{th}=25°C)

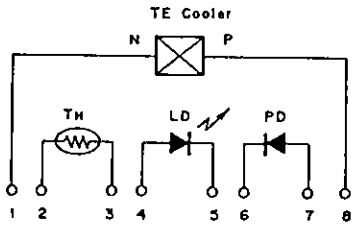
• Radiant power output	P_O		200	mW
• Reverse voltage	V_R	LD	2	V
		PD	15	V
• Operating temperature	T_{opr}		−10 to +50	°C
• Storage temperature	T_{stg}		−40 to +85	°C
• Operating current of TE cooler	I_T		2.5	A

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



E88Z28A13-HP

Optical and Electrical Characteristics

T_{th}=25°C

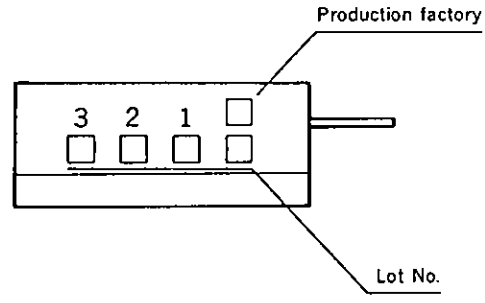
Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Threshold current		Ith			150	200	mA
Operating current		I_{OP}	Po=180mW		350	500	mA
Operating voltage		V_{OP}	Po=180mW		1.9	3.0	V
Wavelength*		λ_P	Po=180mW	770		840	nm
Monitor current		Imon	Po=180mW V_R=10V		0.3		mA
Radiation angle (F. W. H. M)	Perpendicular	$\theta\perp$	Po=180mW		28	40	degree
	Parallel	$\theta_{//}$			12	17	degree
Positional accuracy	Position	ΔX, ΔY	Po=180mW			±100	μm
	Angle	$\Delta\phi\perp$				±3	degree
Slope efficiency		η_D	Po=180mW	0.65	0.9		mW/mA
Thermistor resistance		Rth	T_{th}=25°C		10		kΩ

Note) Tth: Thermistor temperature

*Wavelength Selection Classification

Type	Wavelength (nm)
SLD302XT-1	785±15
SLD302XT-2	810±10
SLD302XT-3	830±10
SLD302XT-21	798± 3
-24	807± 3
-25	810± 3

Marking

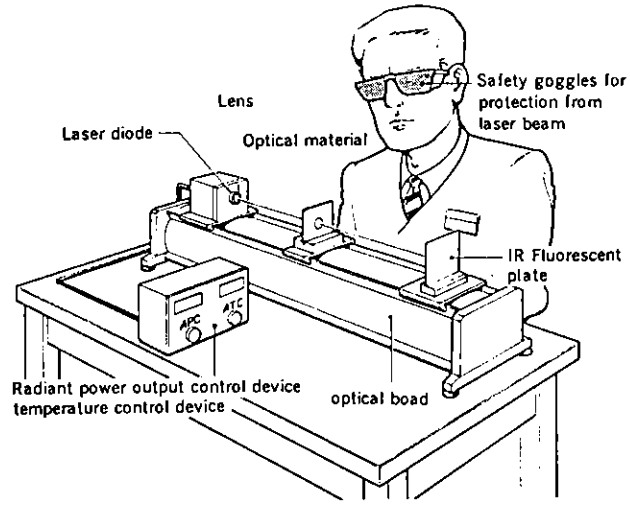


Categories are not specified by marking.

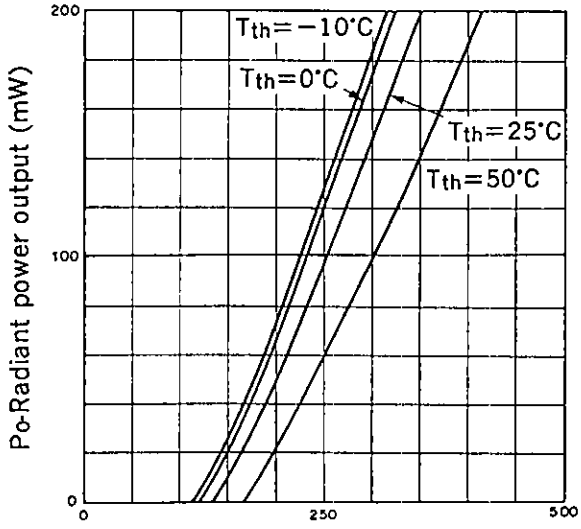
Handling Precautions

Eye protection against laser beams

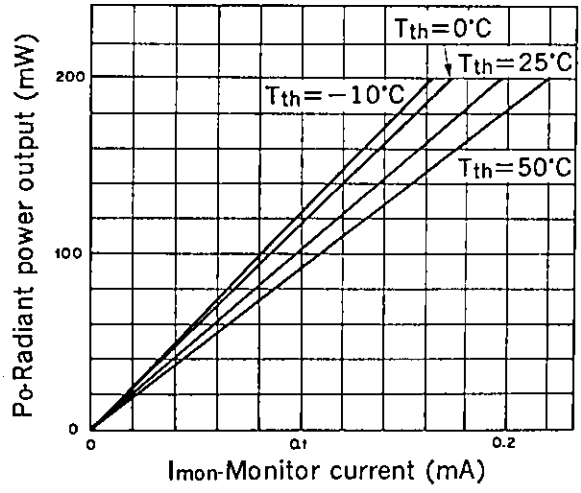
The optical output of laser diodes ranges from several milliwatts to one watt. However the optical density of the laser beam at the diode chip reaches 1 megawatt per square centimeter. Unlike gas lasers, since laser diode beams are divergent, uncollimated laser diode beams are fairly safe at a laser 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.



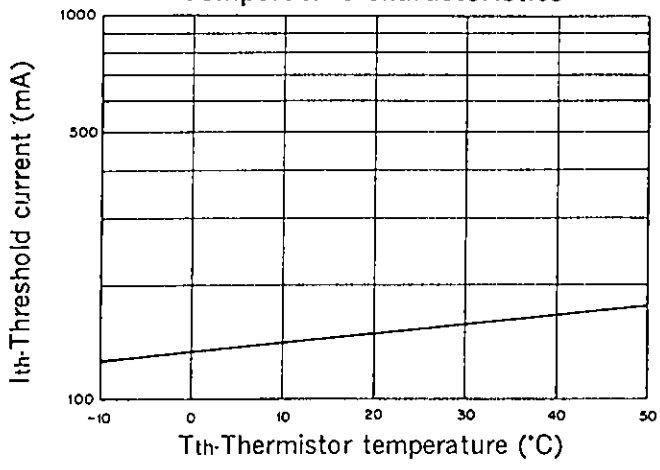
Radiant power output vs. Forward current characteristics



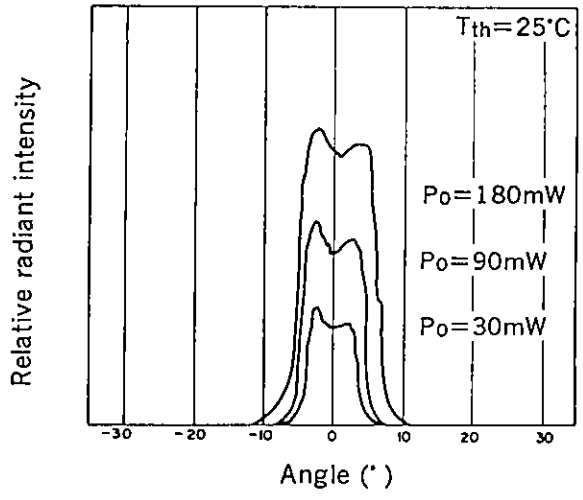
Radiant power output vs. Monitor current characteristics



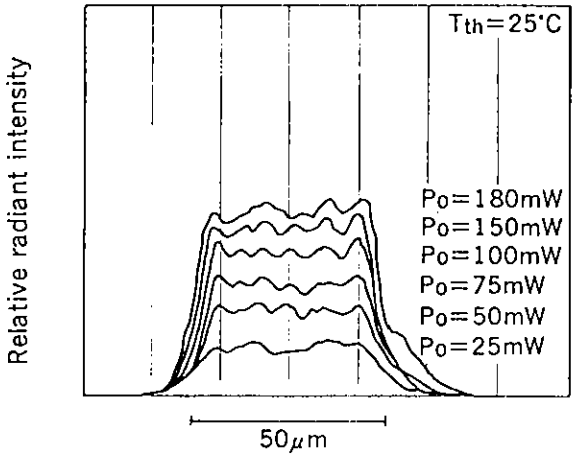
Threshold current vs. Temperature characteristics



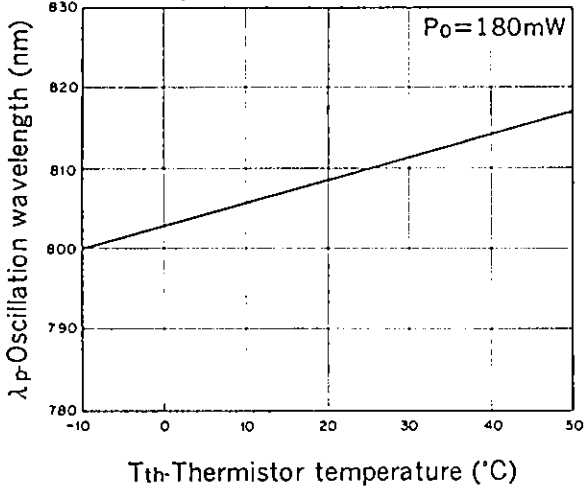
Power dependence of far field pattern (parallel to junction)



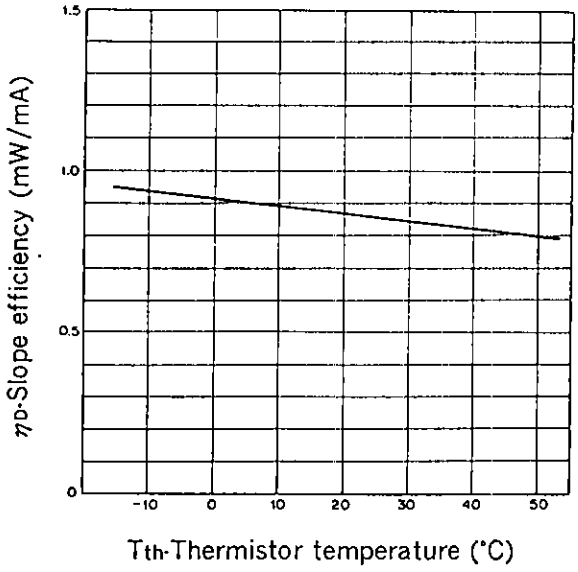
Power dependence of near field pattern



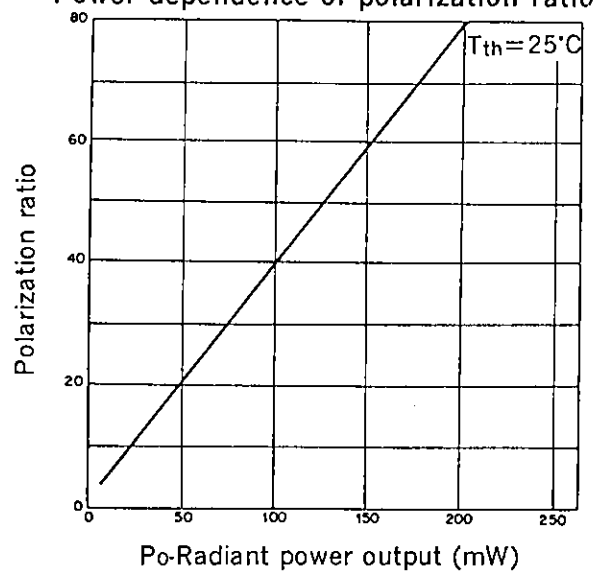
Oscillation wavelength vs. Temperature characteristics



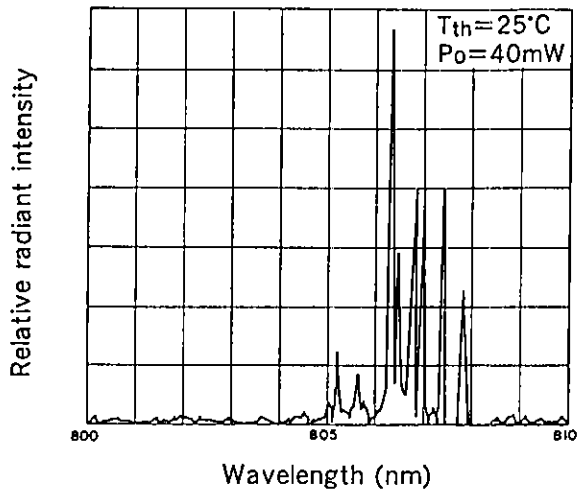
Slope efficiency vs.
Temperature characteristics

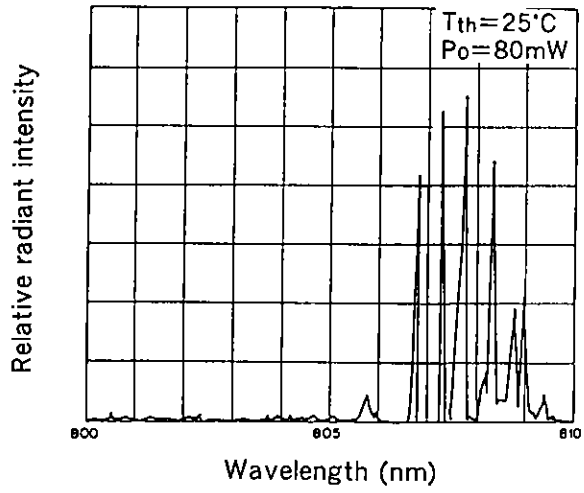


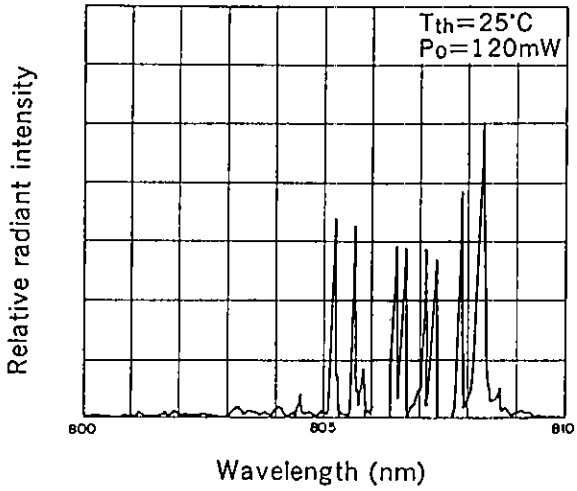
Power dependence of polarization ratio

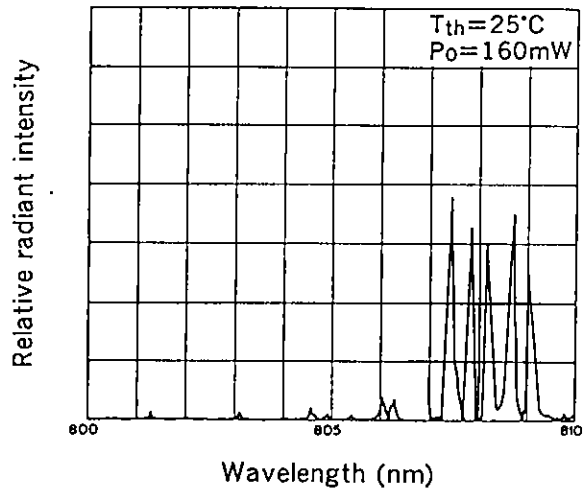


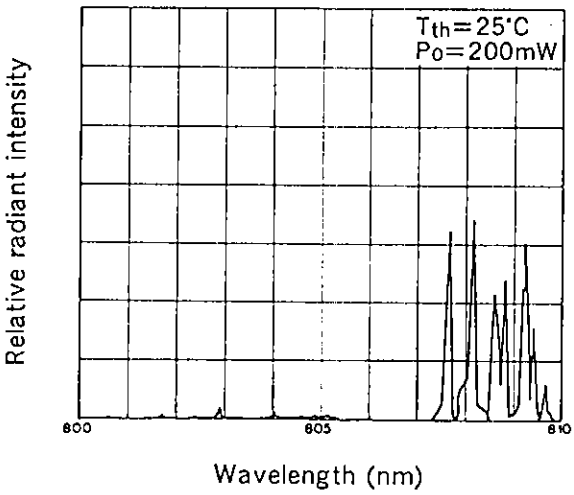
Power dependence of wavelength



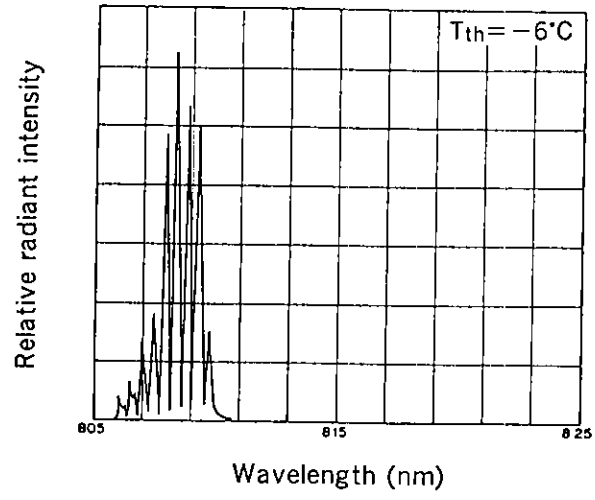


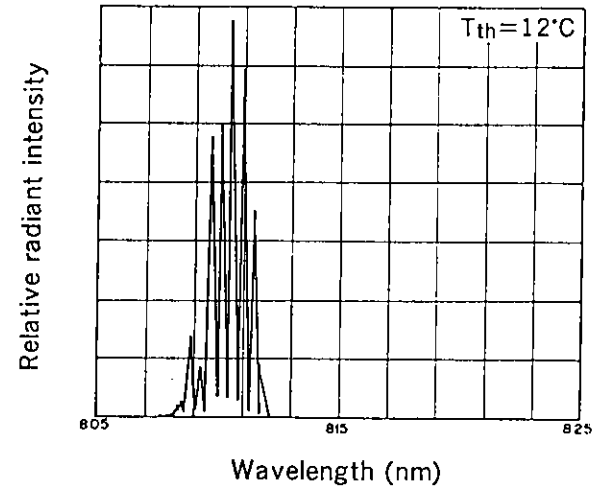


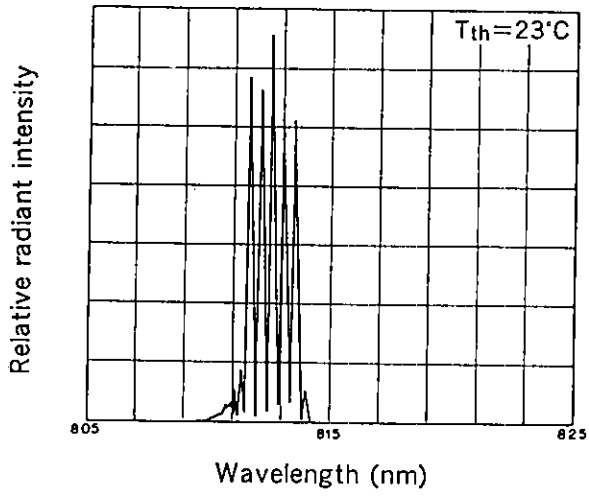


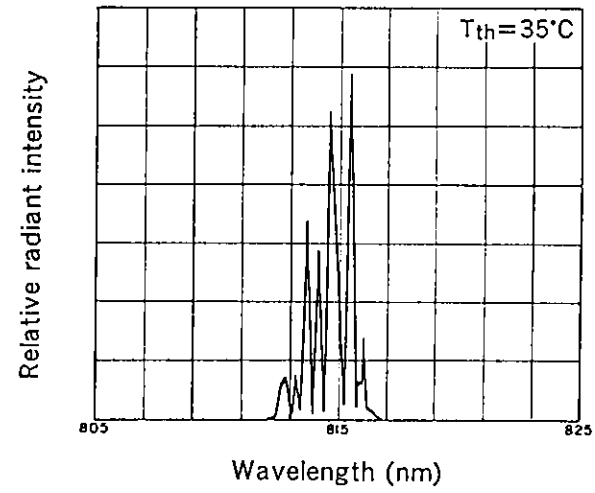


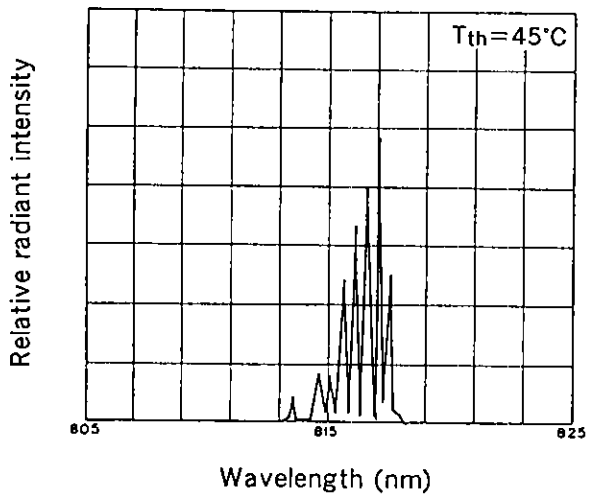
Temperature dependence of wavelength (P_o=180mW)





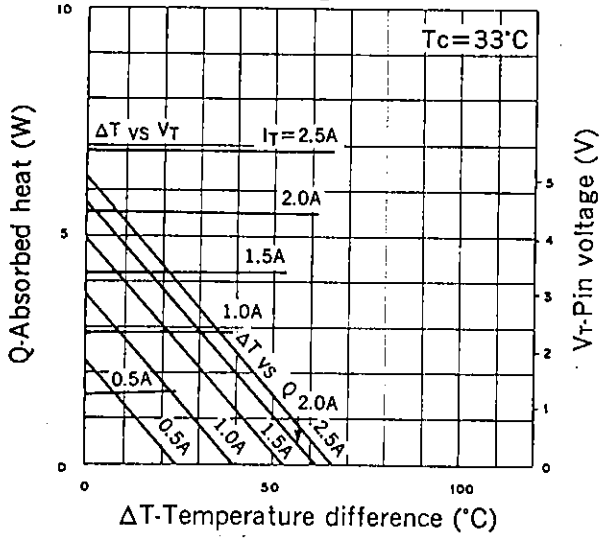






TE cooler characteristics

1



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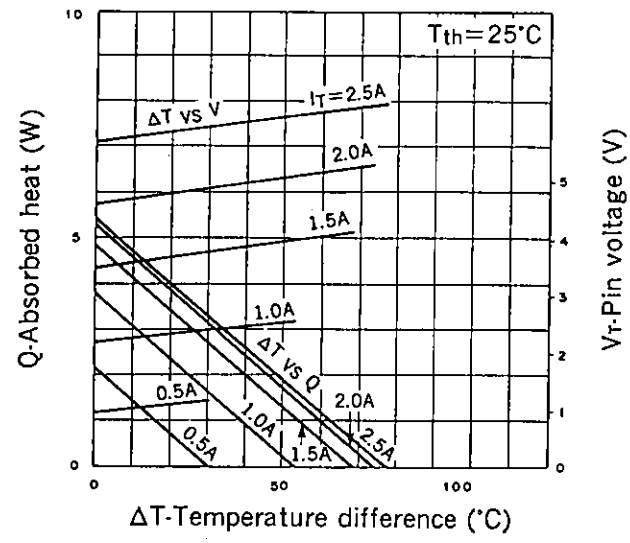

ΔT : Tc-Tth
Tth : Thermistor temperature
Tc : Case temperature

Thermistor characteristics