ROITHNER LASERTECHNIK GmbH
WIEDNER HAUPTSTRASSE 76 1040 VIENNA AUSTRIA
TEL. +43 1 586 52 43 -0, FAX. -44 OFFICE@ROITHNER-LASER.COM

LED780-03AU

- **IR Through Hole LED**
- **780 nm, 24 mW**
- **AlGaAs chip, 400 x 400 µm**
- **5 mm Epoxy Resin Package**
- **Beam Angle: ±10°**

RoHS COMPLIANT Pb-Free

Description

LED780-03AU is an AlGaAs based infrared LED, emitting at a peak wavelength of typically 780 nm and optical output power of 24 mW @ 50 mA. It comes in a **5 mm through hole** clear epoxy resin mold package with a beam angle of ±10°. Different beam angle variants are available on request.

Maximum Ratings*

Parameter	Symbol	Values Min.	Values Max.	Unit
Power Dissipation	P_D		200	mW
Forward Current	I_F		100	mA
Pulse Forward Current **	I_{FP}		500	mA
Reverse Voltage	V_F		5	V
Thermal Resistance	R_{THJA}		250	K/W
Junction Temperature	T_J		120	°C
Operating Temperature	T_{CASE}	- 40	+ 100	°C
Storage Temperature	T_{STG}	- 40	+ 100	°C
Lead Solder Temperature ($t_{max.}$ 3s)	T_{SLD}		+ 265	°C

***** Operating close to or exceeding these parameters may damage the device
** duty cycle = 1 %, pulse width = 10 µs

Electro-Optical Characteristics (T_{CASE} = 25°C)

Parameter	Symbol	Conditions	Values Min.	Values Typ.	Values Max.	Unit
Peak Wavelength	λ_P	IF=50 mA	770		790	nm
Half Width	λ_Δ	IF=50 mA		27		nm
Forward Voltage	V_F	IF=50 mA		1.7	2.0	V
	V_{FP}	I_{FP}=500 mA*		3.5		
Total Radiated Power	P_O	IF=50 mA		24		mW
		I_{FP}=500 mA*		230		
Radiant Intensity	I_E	IF=50 mA		170		mW/sr
		I_{FP}=500 mA*		1600		
Beam Angle	$2\theta_{1/2}$	I_F=50 mA		20		deg.
Rise Time	t_r	IF=50 mA		30		ns
Fall Time	t_f	IF=50 mA		30		ns

* duty cycle = 1 %, pulse width = 10 µs

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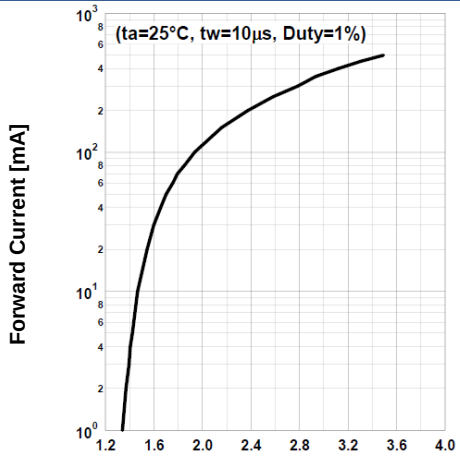
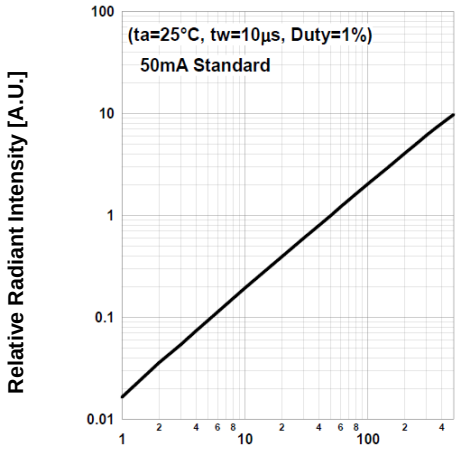
Typical Performance Curves

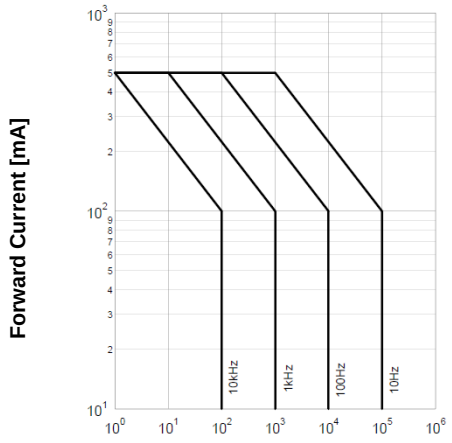
Forward Current vs. Forward Voltage



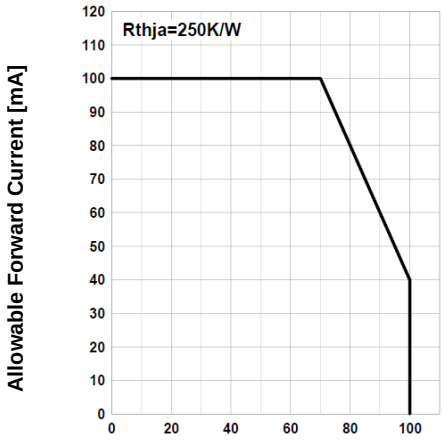
Relative Radiant Intensity vs. Forward Current



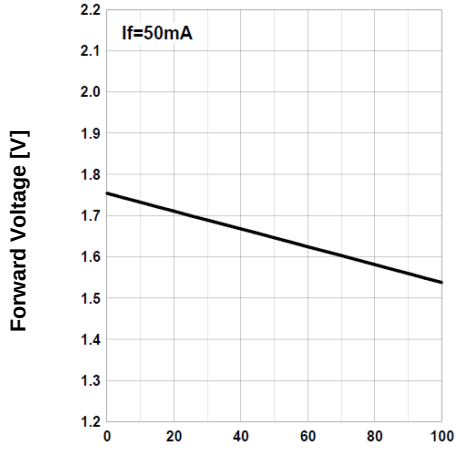
Forward Current vs. Pulse Duration



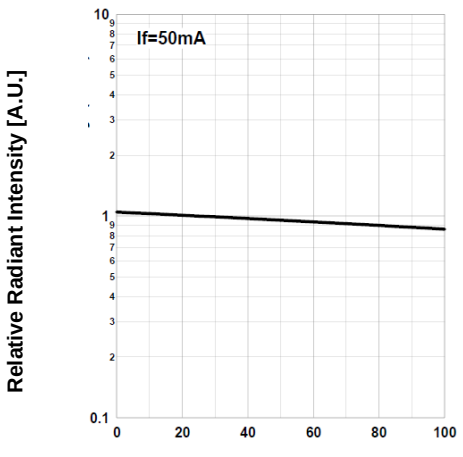
Allowed Forward Current vs. Amb. Temperature



Forward Voltage vs. Ambient Temperature



Rel. Radiant Intensity vs. Ambient Temperature



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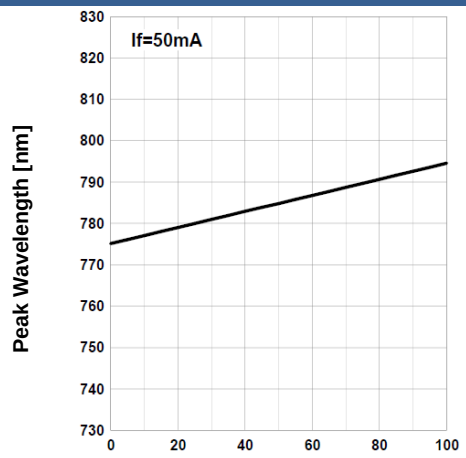
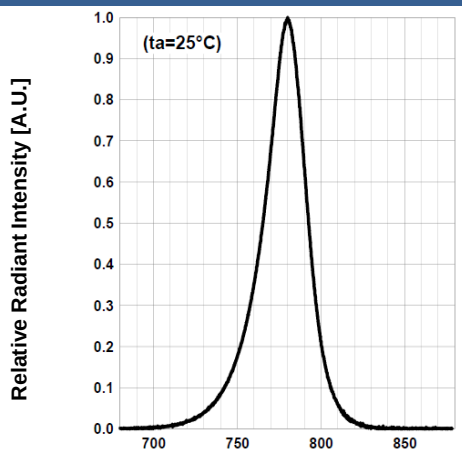
Typical Performance Curves

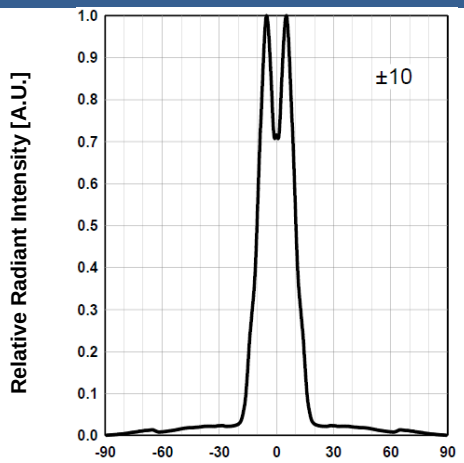
Peak Wavelength vs. Amb. Temp.



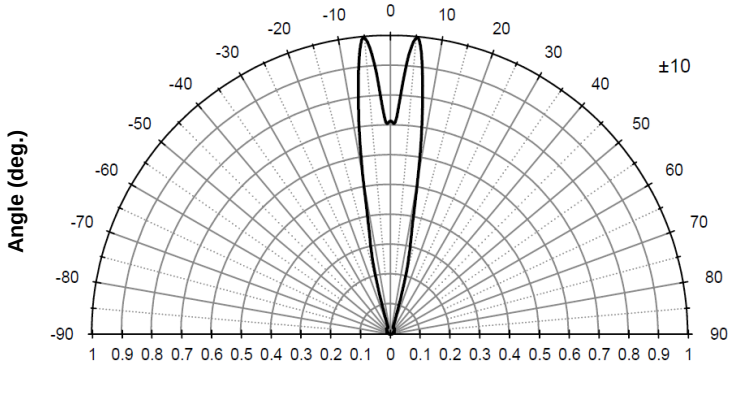
Relative Spectral Emission



Radiation Characteristics

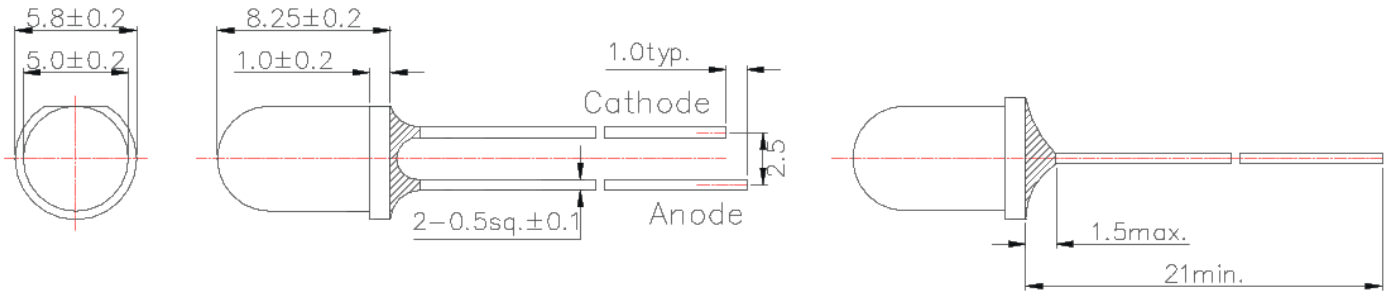


Radiation Characteristics



Outline Dimensions

5 mm Through Hole



all dimensions in mm

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General Notes

Soldering

- Do avoid overheating of the LED
- Do avoid electrostatic discharge (ESD)
- Do avoid mechanical stress, shock, and vibration
- Do only use non-corrosive flux
- Do not apply current to the LED until it has cooled down to room temperature after soldering

Cleaning

- **Cleaning with isopropyl alcohol, propanol, or ethyl alcohol is recommended**
- DO NOT USE acetone, chloroseen, trichloroethylene, or MKS
- DO NOT USE ultrasonic cleaners

Static Electricity

- **LEDs are sensitive to electrostatic discharge (ESD)**.
- Precautions against ESD must be taken when handling or operating these LEDs
- Surge voltage or electrostatic discharge can result in complete failure of the LED.

Radiation

- During operation these LEDs do emit light, which **could be hazardous to skin and eyes**, and **may cause cancer**.
- Do avoid exposure to the emitted light. Protective glasses if needed
- It is further advised to attach a warning label on products/systems.

Operation

- **Do *only* operate LEDs with a current source.**
- Running these LEDs from a voltage source will result in complete failure of the device.
- Current of a LED is an exponential function of the voltage across it. Usage of current regulated drive circuits is mandatory.