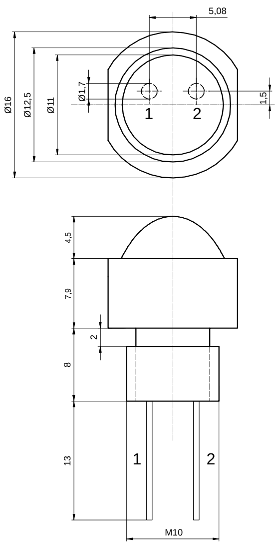
Radiation	Type	Technology	Case
Infrared	4 W	AlGaAs/AlGaAs	Plastic lens, metal case



Outline:

H = 12.4 mm (± 0.5)

D = 16 mm (± 0.5)

Thread M10

Pin 1 – cathode

Pin 2 – anode

Description

High-power infrared-LED in black anodised aluminium case, with thread socket for easy handling and heat sink mounting

Applications

Medical appliances, remote control and optical communications, light barriers, measurement systems

Absolute Maximum Ratings

at T_{amb} = 25℃, on heat sink (S ≥ 200 cm²), unless otherwise specified

Parameter	Test conditions	Symbol	Value	Unit
DC forward current	on heat sink	I_F	1.2	A
Peak forward current	t_p≤100 µs, D = 0,05	I_{FM}	2.0	A
Power dissipation	on heat sink	P	2.8	W
Operating temperature range	on heat sink	T_{amb}	-25 to +100	℃
Storage temperature range	on heat sink	T_{stg}	-25 to +100	℃
Junction temperature	on heat sink	T_j	100	℃

Electrical Characteristics

T_{amb} = 25℃, unless otherwise specified

Parameter	Test conditions	Symbol	Min	Typ	Max	Unit
Forward voltage	I_F = 350 mA	V_F		1.6	1.9	V
Forward voltage*	I_F = 1000 mA	V_F		2.0	2.4	V
Switching time	I_F = 350 mA	t_r, t_f		20		ns
Reverse voltage	I_R = 10 µA	V_R	5			
Thermal resistance junction-case		R_{thJC}		10		K/W

*only recommended on optimal heat sink

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Optical Characteristics

at T_{amb} = 25°C, on heat sink (S ≥ 200 cm²), unless otherwise specified

Parameter	Test conditions	Symbol	Min	Typ	Max	Unit
Radiant power	I_F = 350 mA	Φ_e	80	100		mW
Radiant power*	I_F = 1000 mA	Φ_e		270		mW
Radiant intensity	I_F = 350 mA	I_e	450	750		mW/sr
Radiant intensity*	I_F = 1000 mA	I_e		2100		mW/sr
Peak wavelength	I_F = 350 mA	λ_p	820	830	840	nm
Spectral bandwidth at 50%	I_F = 350 mA	$\Delta\lambda_{0.5}$		35		nm
Full viewing angle	I_F = 350 mA	2φ		20		deg

*only recommended on optimal heat sink

Note: All measurements carried out with *EPIGAP* equipment, on blank aluminium heat sink, S = 180 cm², passive cooling. Measurement results and curve characteristics obtained with other heat sinks may differ.

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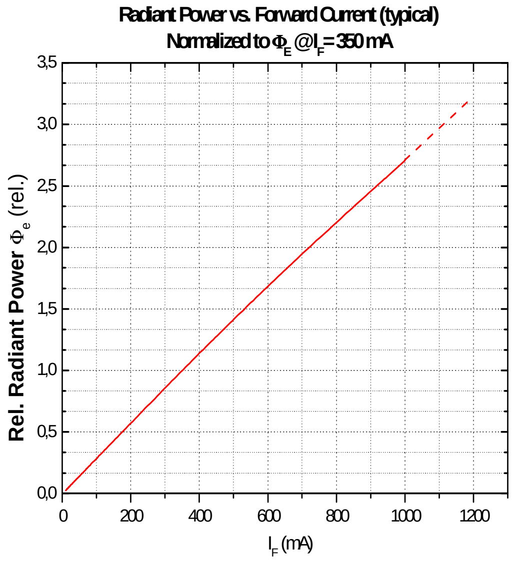
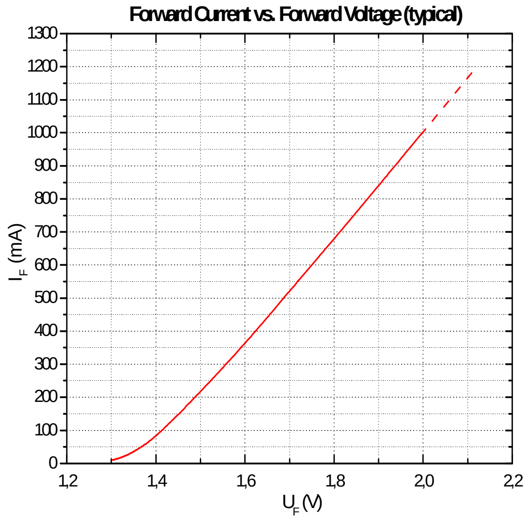
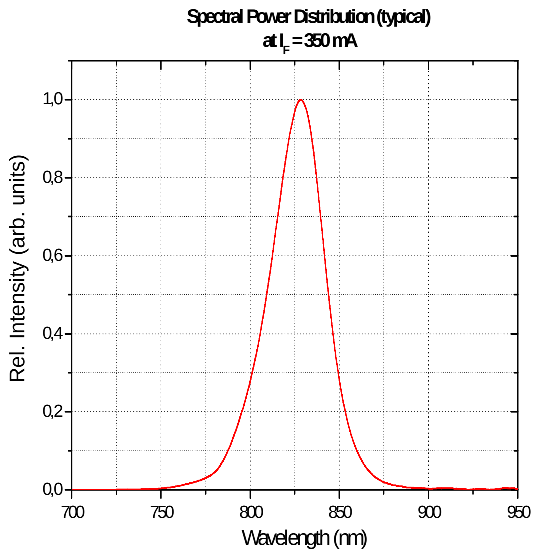


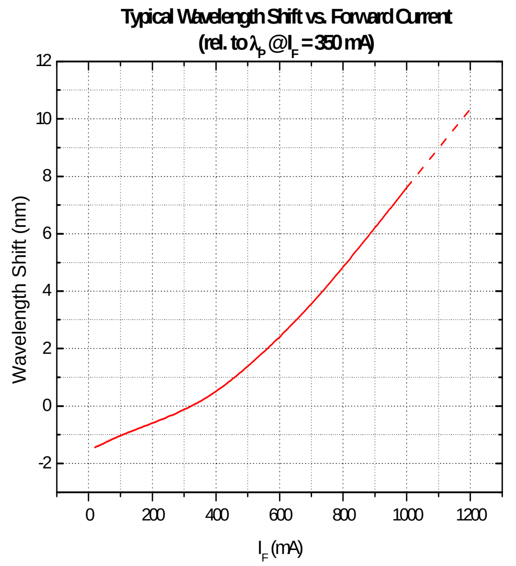
Radiant Power vs. Forward Current (typical)
Normalized to Φ_E @ I_F = 350 mA
Rel. Radiant Power Φ_e (rel.)
I_F (mA)



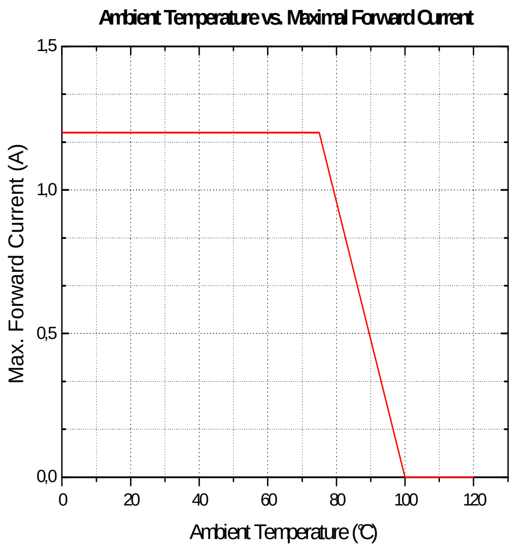
Forward Current vs. Forward Voltage (typical)
I_F (mA)
U_F (V)



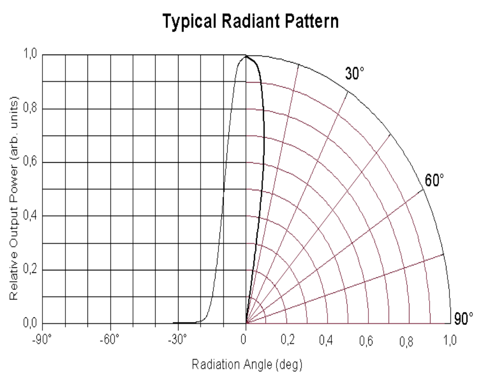
Spectral Power Distribution (typical)
at I_F = 350 mA
Rel. Intensity (arb. units)
Wavelength (nm)



Typical Wavelength Shift vs. Forward Current
(rel. to λ_P @ I_F = 350 mA)
Wavelength Shift (nm)
I_F (mA)



Ambient Temperature vs. Maximal Forward Current
Max. Forward Current (A)
Ambient Temperature (°C)



Typical Radiant Pattern
Relative Output Power (arb. units)
Radiation Angle (deg)
30°
60°
90°

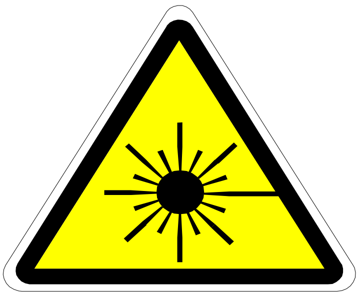
Remarks concerning optical radiation safety*

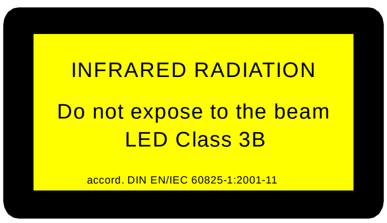
This LED may be classified as LED product Class 1 according to standard IEC 60825-1:A2 at low forward current (<100 mA) and continuous operation. *Class 1* products are safe to eyes and skin under reasonable predictable conditions. This implicates a direct observation of the light beam by means of optical instruments.

This product should be classified as LED product Class 1M according to standard IEC 60825-1:A2 if driven with higher continuous forward current (up to 700 mA). *Class 1M* products are safe to eyes and skin under normal conditions, even when users look into the light beam directly. *Class 1M* products produce either a highly divergent beam or a large diameter beam, so only a small part of the whole radiation beam can enter the eye. However, such optical products can be harmful to the retina using magnifying optical instruments. Therefore, users should not incorporate optics that could focus the output into the eyes.

If it is intended to operate the LED at very high continuous current (>1 A), this product has to be (potentially) classified as *Class 3B* LED. *Class 3B* LEDs may have sufficient power to cause an eye injury both by the direct beam and by reflections therefore these products are considered hazardous to the eye. However, the extent and severity of any eye injury arising from an exposure to the light beam of a *Class 3B* product will depend upon several factors including the radiant power entering the eye and the duration of the exposure. Nonetheless, adequate precautions should be taken to avoid direct or indirect looking into the beam.

*Note: Safety classification of an optical component mainly depends on the intended application and the way the component is being used. Furthermore, all statements made to classification are based on calculations and are only valid for this LED "as it is" and at continuous operation. Using pulsed current or altering the radiation beam with additional optics may lead to different safety classifications. Therefore these remarks should be taken as recommendation and guideline only.





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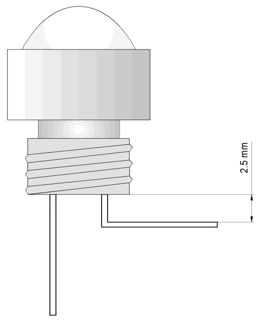
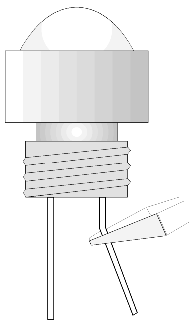
Handling precautions

To prevent damage to the LED during soldering and assembly, following precautions have to be taken into account.

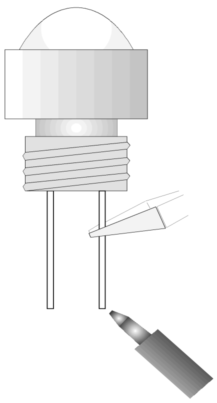
a) The bending point of the lead frame should be located at least 2.5 mm away from the body.



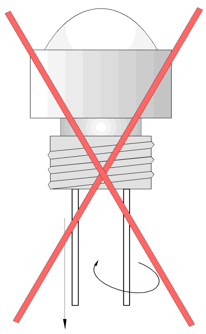
b) While bending, the base of the lead frame has to be fixed with radio pliers or similar.



c) To ensure an adequate strain relief, the lead frames have to be firmly fixed during soldering.



d) To avoid any damage of the LED during soldering the lead frames should not be distorted especially when they have been heated



e) LEDs are static sensitive devices, so adequate handling precautions have to be taken, e.g. wearing grounding wrist straps.

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