

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

	<p><b>Description</b></p> <p>High-power infrared LED in an aluminium case, with thread socket for easy handling and heat sink mounting.</p>
	<p><b>Outline:</b></p> <p>H = 12.4 mm (± 0.5)</p> <p>D = 16 mm (± 0.5)</p> <p>Thread M10</p> <p>Pin 1 – cathode</p> <p>Pin 2 – anode</p> <p><b>Applications</b></p> <p>Medical appliances, remote control and optical communications, light barriers, measurement systems</p>

**Absolute Maximum Ratings**

at T<sub>amb</sub> = 25°C, on heat sink (S ≥ 200 cm<sup>2</sup>), unless otherwise specified

Parameter	Test conditions	Symbol	Value	Unit
DC forward current	on heat sink	I <sub>F</sub>	1.5	A
Peak forward current	t <sub>p</sub> ≤ 10 μs, f ≤ 500 Hz	I <sub>FM</sub>	2.0	A
Power dissipation	on heat sink	P	4	W
Operating temperature range	on heat sink	T <sub>amb</sub>	-25 to +100	°C
Storage temperature range	on heat sink	T <sub>stg</sub>	-25 to +100	°C
Junction temperature	on heat sink	T <sub>j</sub>	100	°C

**Electrical Characteristics**

T<sub>amb</sub> = 25°C, unless otherwise specified

Parameter	Test conditions	Symbol	Min	Typ	Max	Unit
Forward voltage	I <sub>F</sub> = 350 mA	V <sub>F</sub>		1.5	1.8	V
Forward voltage*	I <sub>F</sub> = 1000 mA	V <sub>F</sub>		1.8	2.3	V
Switching time	I <sub>F</sub> = 350 mA	t <sub>r</sub> , t <sub>f</sub>		10/22		ns
Reverse voltage	I <sub>R</sub> = 10 μA	V <sub>R</sub>	5			
Thermal resistance junction-case		R <sub>thJC</sub>		10		K/W

\*only recommended on optimal heat sink

We reserve the right to make changes to improve technical design and may do so without further notice. Parameters can vary in different applications. All operating parameters must be validated for each customer application by the customer.

**Optical Characteristics**

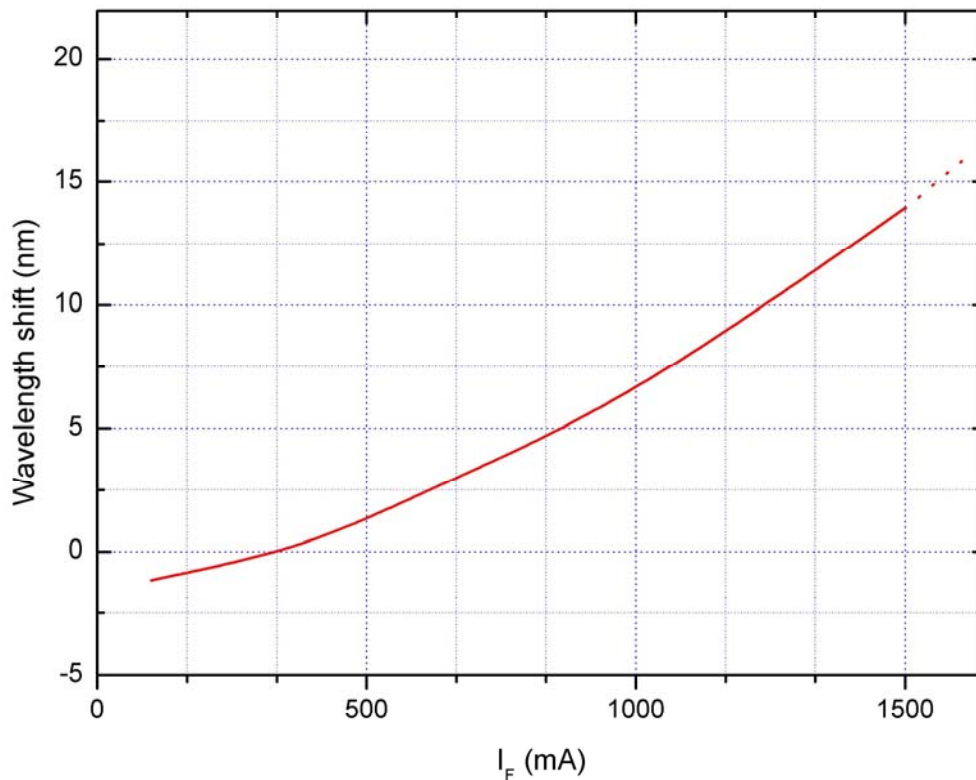
at  $T_{amb} = 25^{\circ}C$ , on heat sink ( $S \geq 200 \text{ cm}^2$ ), unless otherwise specified

Parameter	Test conditions	Symbol	Min	Typ	Max	Unit
Radiant power	$I_F = 350 \text{ mA}$	$\Phi_e$		90		mW
Radiant power*	$I_F = 1000 \text{ mA}$	$\Phi_e$		250		mW
Radiant intensity	$I_F = 350 \text{ mA}$	$I_e$	350	650		mW/sr
Radiant intensity*	$I_F = 1000 \text{ mA}$	$I_e$		1900		mW/sr
Peak wavelength	$I_F = 350 \text{ mA}$	$\lambda_p$	860	870	880	nm
Spectral bandwidth at 50%	$I_F = 350 \text{ mA}$	$\Delta\lambda_{0.5}$		42		nm
Viewing angle	$I_F = 350 \text{ mA}$	$\varphi$		17		deg

\*only recommended on optimal heat sink

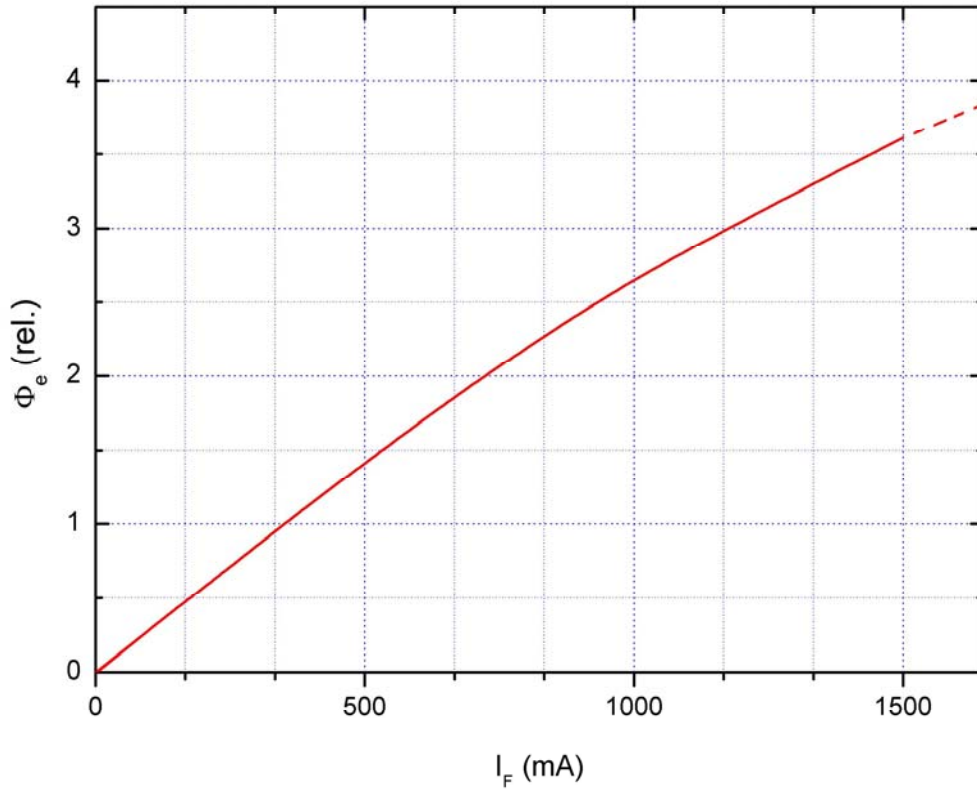
Note: All measurements carried out with *EPIGAP* equipment, on blank aluminium heat sink,  $S = 180 \text{ cm}^2$ , passive cooling. Measurement results and curve characteristics obtained with other heat sinks may differ.

**Typical wavelength shift vs. forward current  
(rel. to  $\lambda_p$  @  $I_F = 350 \text{ mA}$ )**

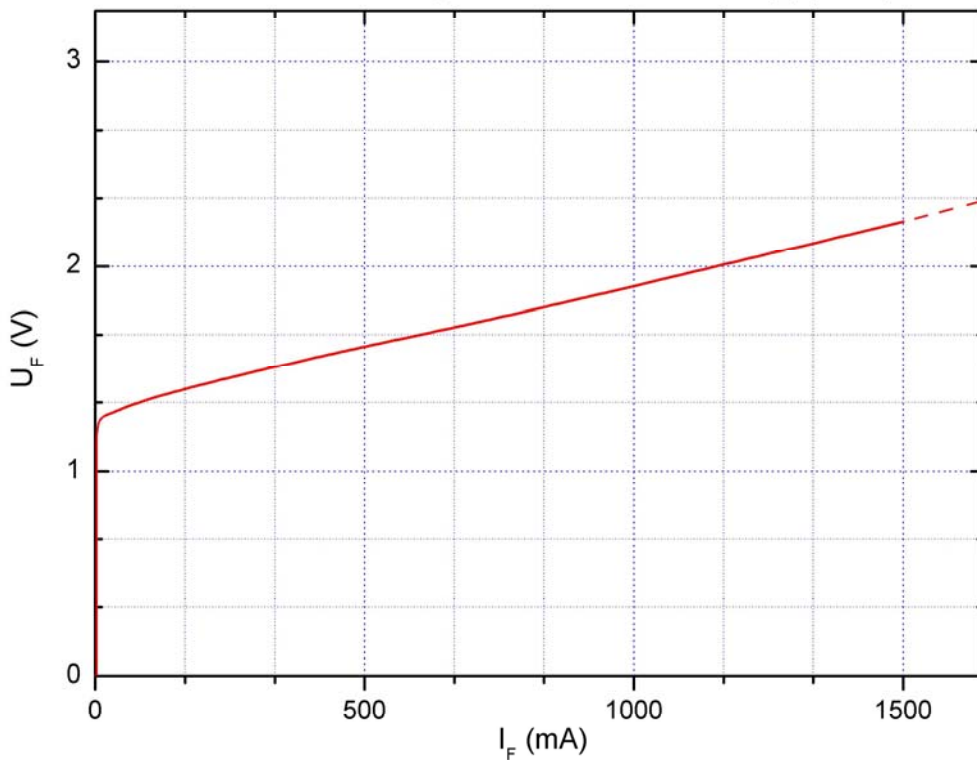


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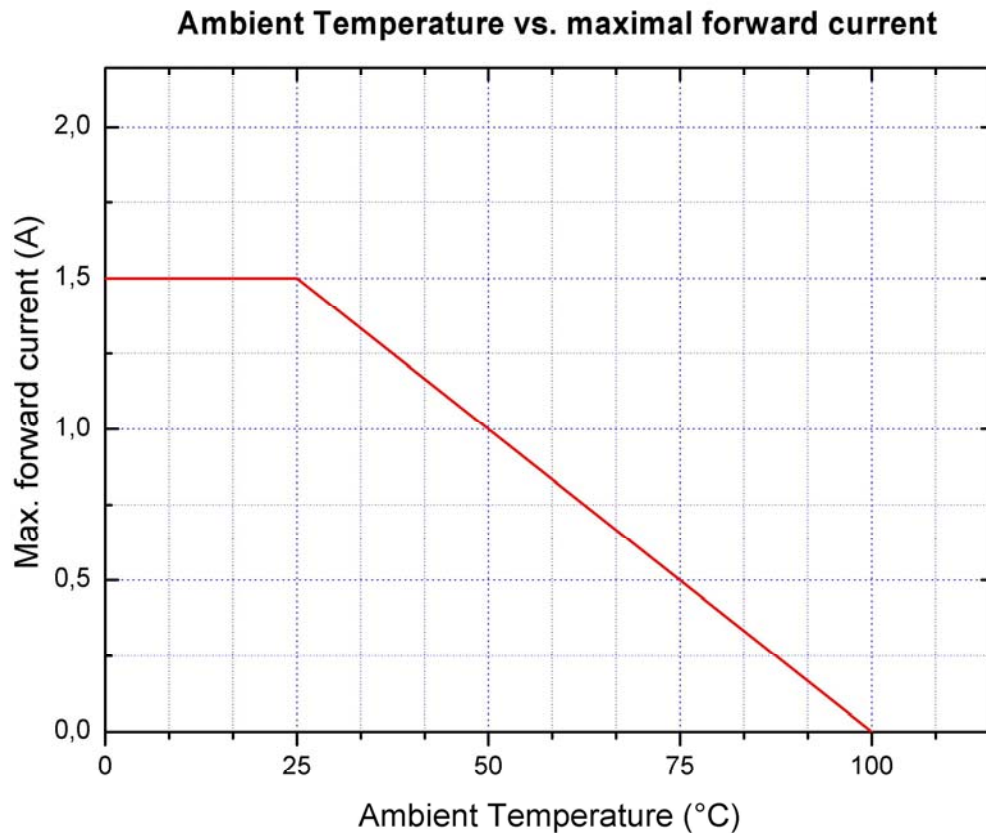
**Radiant power vs. forward current (typical)**  
 normalized to  $\Phi_E @ I_F = 350 \text{ mA}$



**Forward voltage vs. forward current (typical)**



Parameters can vary in different applications. All operating parameters must be validated for each customer application by the customer.



#### Remarks concerning optical radiation safety\*

At low forward current (<150 mA), and continuous operation, this LED may be classified as LED product *Class 1*, according to standard IEC 60825-1:A2. *Class 1* products are safe to eyes and skin under reasonably predictable conditions. This implicates a direct observation of the light beam by means of optical instruments.

When driven with higher continuous forward current, (up to 1 A), this product should be classified as LED product *Class 1M*, according to standard IEC 60825-1:A2. *Class 1M* products are safe to eyes and skin under normal conditions, including when users view 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 light beam can enter the eye. However, such optical products can be harmful to the retina if the beam is viewed using magnifying optical instruments. Therefore, users should not incorporate optics that could concentrate the output into the eyes.

If intended to operate 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 from the direct beam and from reflections, so these products are therefore 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 indirect viewing 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 light 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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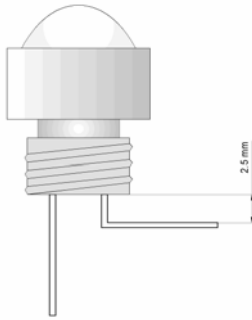
**EPIGAP** Optoelektronik GmbH, D-12555 Berlin, Köpenicker Str.325 b, Haus 201

Tel.: +49-30-6576 2543, Fax : +49-30-6576 2545

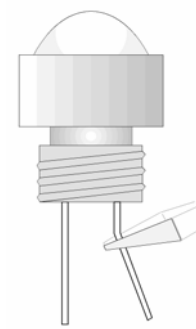
## Handling precautions

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

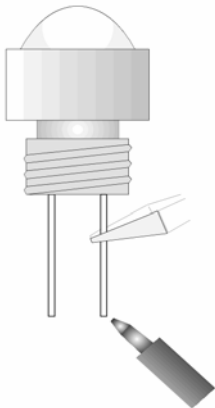
a) The bending point of the lead frame should be located at least 2.5 mm away from the body.



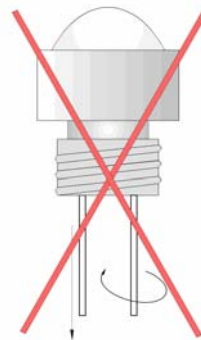
b) While bending, the base of the lead frame has to be fixed with radio pliers or similar.



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



d) Avoid any torsion or tensile loading of the lead frames, especially when they have been heated after being soldered.



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



**ESD**

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