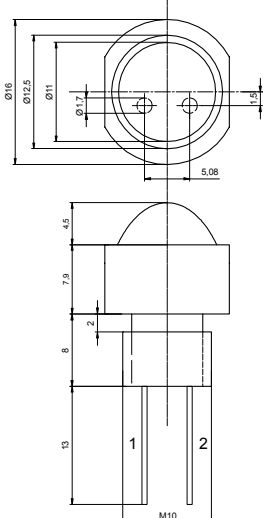


Radiation	Type	Technology	Case
Blue	4.5 W	InGaN/Al <sub>2</sub> O <sub>3</sub>	Plastic lens, metal case

 <p><b>Outline:</b></p> <p>H = 12.4 mm (± 0.5)</p> <p>D = 16.0 mm (± 0.5)</p> <p>Thread M10</p> <p>Pin 1 – cathode</p> <p>Pin 2 – anode</p>	<p><b>Description</b></p> <p>High-power blue LED in an aluminium case with thread socket, for easy handling and heat sink mounting</p>
	<p><b>Applications</b></p> <p>Illumination, remote control and optical communications, light barriers, measurement systems</p>

## Absolute Maximum Ratings

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

Parameter	Test conditions	Symbol	Value	Unit
DC forward current	on heat sink	$I_F$	1.0	A
Peak forward current	$t_p \leq 10 \mu\text{s}$ , $f \leq 500 \text{ Hz}$	$I_{FM}$	1,5	A
Power dissipation	on heat sink	P	4,5	W
Operating temperature range	on heat sink	$T_{amb}$	-25 to +100	$^{\circ}\text{C}$
Storage temperature range	on heat sink	$T_{stg}$	-25 to +100	$^{\circ}\text{C}$
Junction temperature	on heat sink	$T_j$	100	$^{\circ}\text{C}$

## Electrical Characteristics

$T_{amb} = 25^{\circ}\text{C}$ , unless otherwise specified

Parameter	Test conditions	Symbol	Min	Typ	Max	Unit
Forward voltage	$I_F = 350 \text{ mA}$	$V_F$		3.4	3.9	V
Forward voltage*	$I_F = 1000 \text{ mA}$	$V_F$		4.0	4.5	V
Switching time	$I_F = 350 \text{ mA}$	$t_r, t_f$		20/35		ns
Reverse voltage	$I_R = 10 \mu\text{A}$	$V_R$	5			
Thermal resistance junction-case		$R_{thJC}$		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

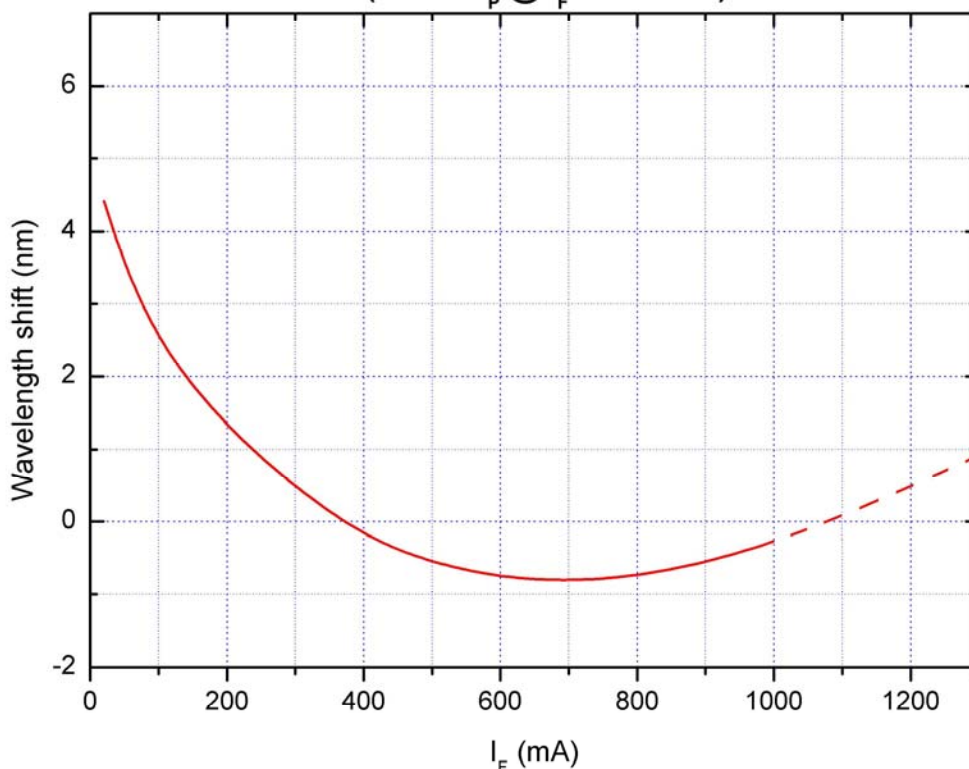
at  $T_{amb} = 25^{\circ}\text{C}$ , on heat sink ( $S \geq 200 \text{ cm}^2$ ), unless otherwise specified

Parameter	Test conditions	Symbol	Min	Typ	Max	Unit
Radiant power	$I_F = 350 \text{ mA}$	$\Phi_e$	50	65		mW
Radiant power*	$I_F = 1000 \text{ mA}$	$\Phi_e$		140		mW
Radiant intensity	$I_F = 350 \text{ mA}$	$I_e$	550	1080		mW/sr
Radiant intensity*	$I_F = 1000 \text{ mA}$	$I_e$		2260		mW/sr
Luminous intensity	$I_F = 350 \text{ mA}$	$I_v$	15	30		cd
Luminous intensity*	$I_F = 1000 \text{ mA}$	$I_v$		65		cd
Peak wavelength	$I_F = 350 \text{ mA}$	$\lambda_p$	440	450	460	nm
Spectral bandwidth at 50%	$I_F = 350 \text{ mA}$	$\Delta\lambda_{0.5}$		22		nm
Viewing angle	$I_F = 350 \text{ mA}$	$\varphi$		17		deg

\*only recommended on optimal heat sink

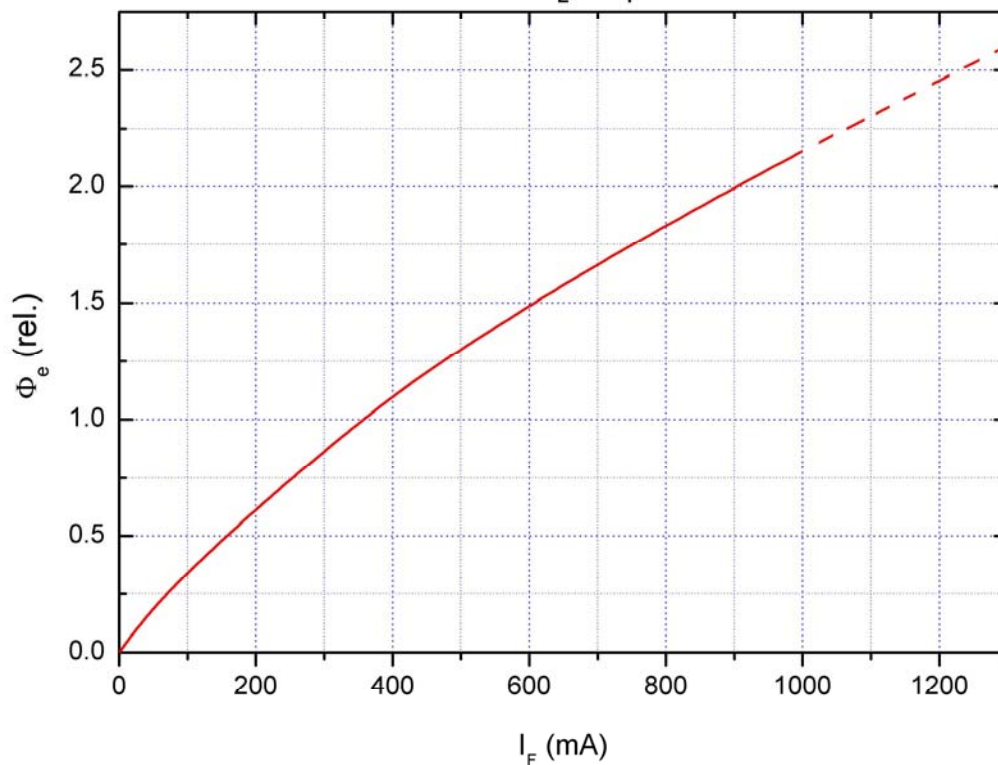
Note: All measurements carried out with *EPIGAP* equipment, on blank aluminium heat sink,  $S = 180 \text{ cm}^2$ , passive cooling. Measurement results and curve characteristics obtained with other heat sinks may differ.

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

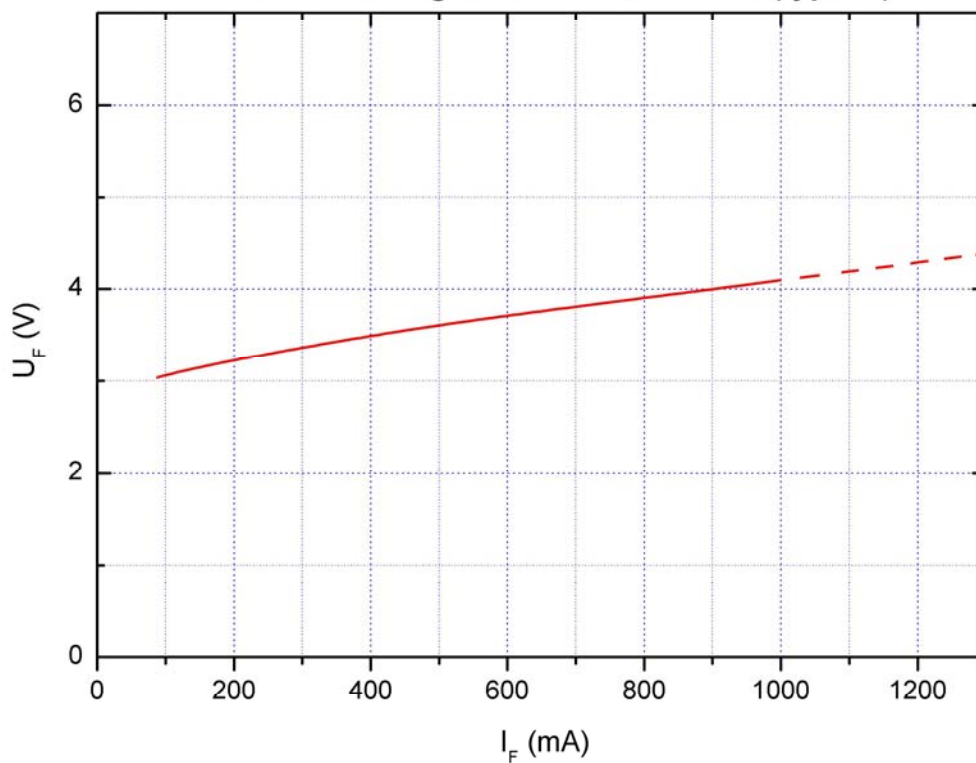


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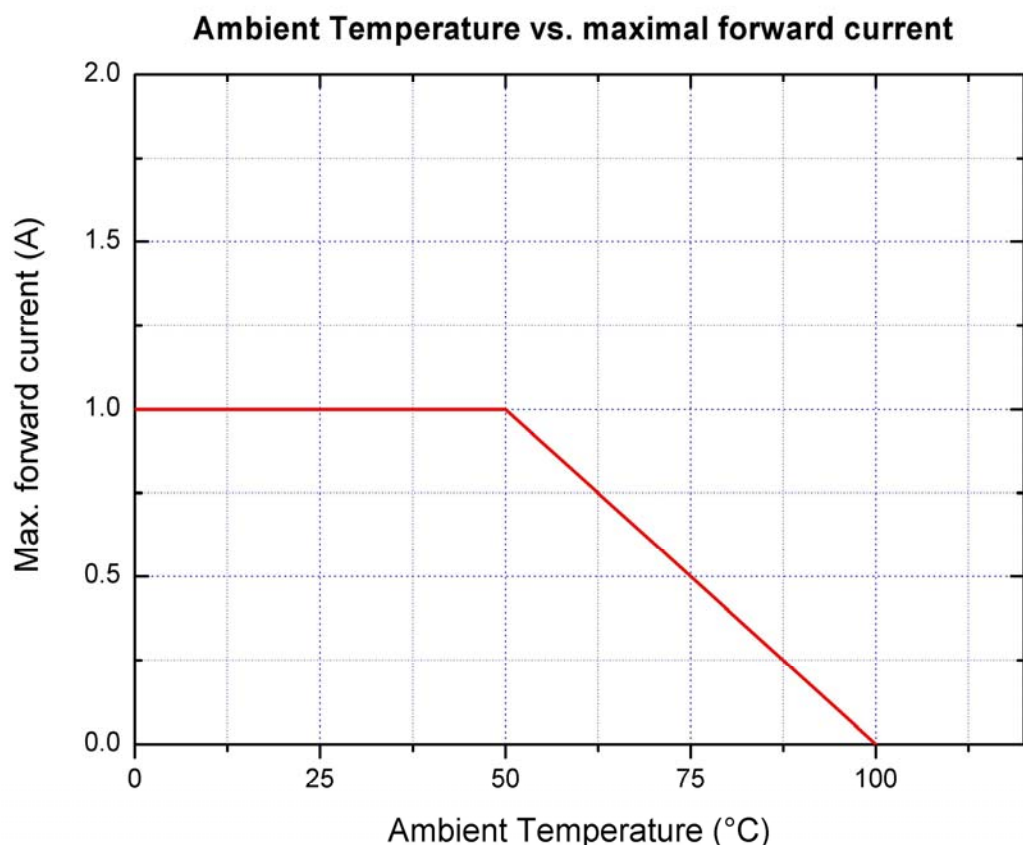
**Radiant power vs. forward current (typical)**  
 normalized to  $\Phi_E @ I_F = 350 \text{ mA}$



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



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.



#### Remarks concerning optical radiation safety\*

For low forward current (<100 mA) and continuous operation, this LED may be classified as LED product *Class 2*, according to standard IEC 60825-1:A2. *Class 2* products emit in the visible region, damaging exposure is usually prevented through avert reactions including blink reflex. It can be expected that these reactions provide sufficient protection under reasonably predictable conditions. This also implicates a direct observation of the light beam by means of optical instruments.

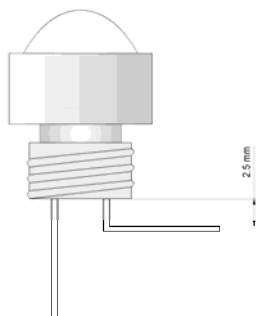
When driven with higher continuous forward current, (up to max. DC current), this LED should be classified as LED product *Class 2M*, according to standard IEC 60825-1:A2. *Class 2M* products are safe to eyes and skin under normal conditions, including when users view the light beam directly. These products emit in the visible region and it is presumed that the human blink reflex will be sufficient to prevent damaging exposure, but if the beam is focused down, damaging levels of radiation may be reached. Therefore, users should not incorporate optics that could concentrate the output into the eyes.

\*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.

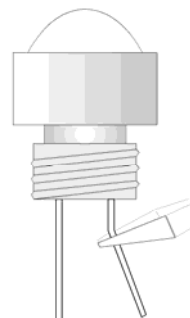
## Handling precautions

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

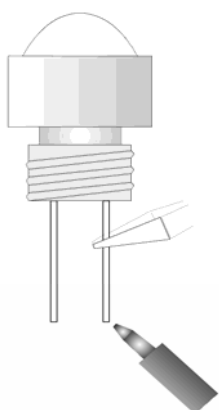
a) The bending point of the lead frame should be located at least 2.5 mm away from the body.



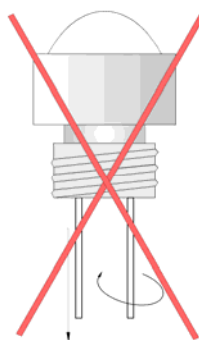
b) While bending, the base of the lead frame has to be fixed with radio pliers or similar.



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**