iC-TL46 TO46-2L1

Blue LED

FEATURES

- Emission peak at 460 nm
- Optimized irradiance pattern
- Temperature range -40 °C to 100 °C
- High efficiency LED chip
- Fast switching speed
- TO-46 package for flexible mounting
- Option: Extended temperature range -40°C to 125 °C

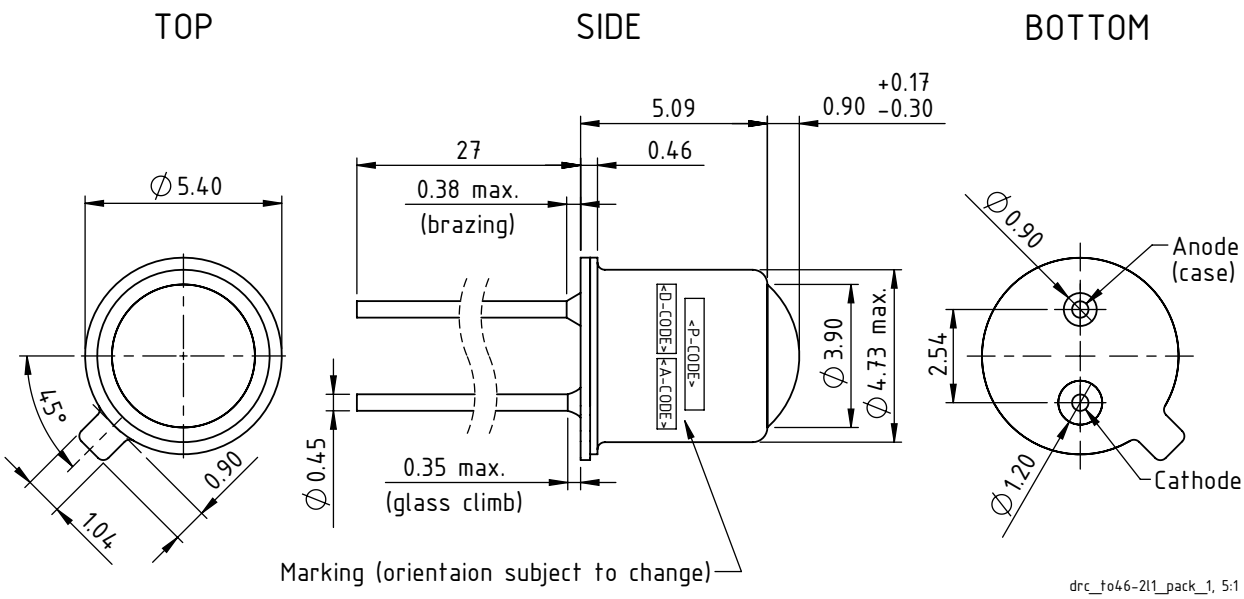
APPLICATIONS

- Illumination for high resolution optical encoder
- Modulated light barriers

PACKAGES

TO46-2L1
⌀ 4.7 mm, h 5.39 mm
RoHS compliant

DIMENSIONS [in mm, typical values]



ABSOLUTE MAXIMUM RATINGS

Beyond these values damage may occur (Ta = 25°C, unless otherwise noted)

Item No.	Symbol	Parameter	Conditions	Min.	Max.	Unit
G001	IF	Forward Current (DC)			50	mA
G002	IFSM	Surge Forward Current	1/10 duty cycle @ 1 kHz		100	mA
G003	VR	Reverse Voltage			5	V
G004	P	Power Dissipation	Case temperature 25°C		150	mW
G005	Tj	Junction Temperature		-40	125	°C

THERMAL DATA

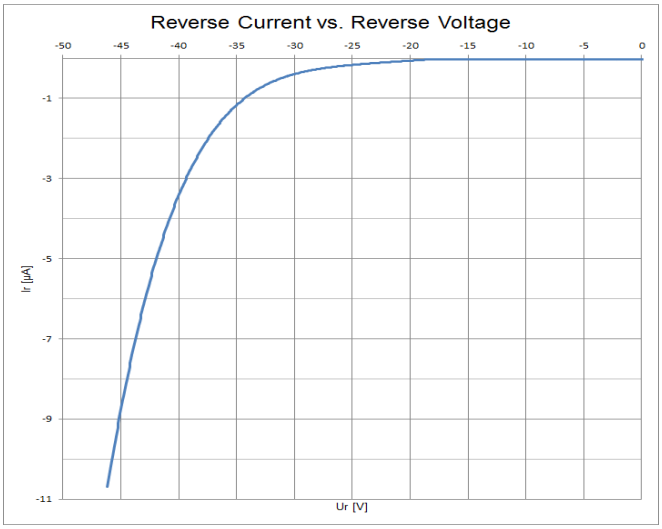
Item No.	Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
T01	Ta	Operating Ambient Temperature Range Extended Temperature Range (available on request)		-40 -40		100 125	°C °C
T02	Ts	Storage Temperature Range		-40		125	°C
T03	Tpk	Soldering Temperature	tpk < 5 s, 3 mm from case			260	°C
T04	Rthja	Thermal Resistance Junction To Ambient			350		K/W

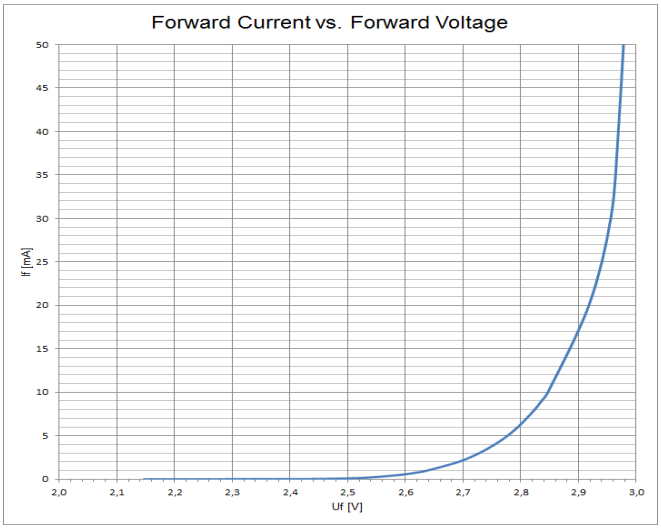
ELECTRICAL CHARACTERISTICS

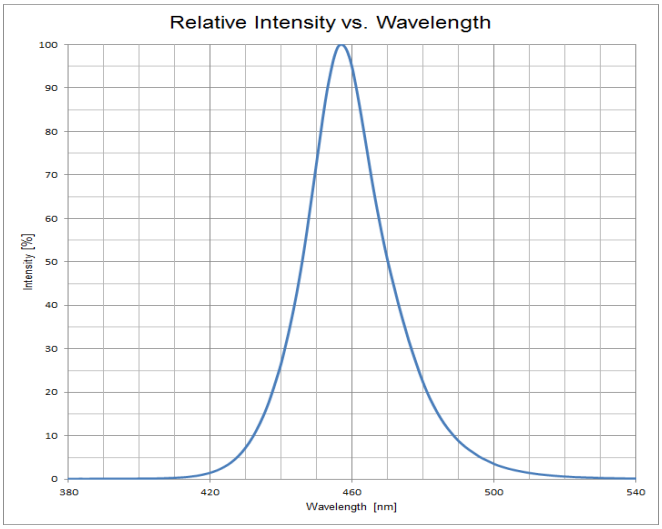
Tamb = 25°C, unless otherwise noted

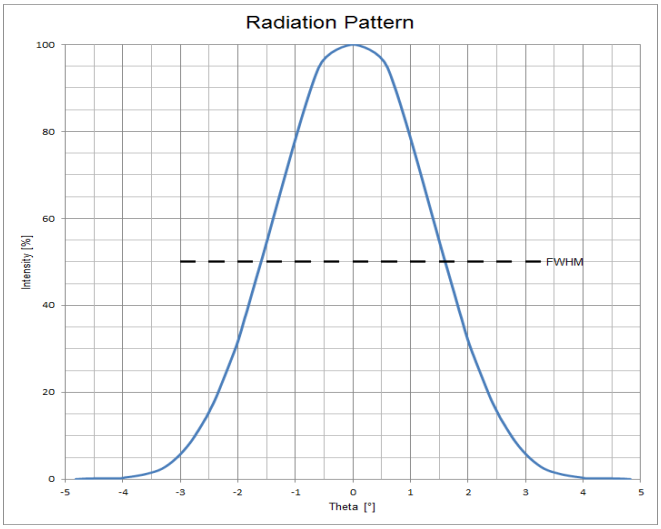
Item No.	Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Electrical and Optical Characteristics							
001	VF	Forward voltage	IF = 20 mA		2.9	3.8	
002	VR	Reverse voltage	IR = 5 µA	5			V
003	Φ_e	Radiant power	IF = 20 mA	4.0	5.0		mW
004	TK(Φ_e)	Temperature coefficient of radiant power	IF = 20 mA, Tj = 25°C...125°C		-0.3		%/K
005	λ_p	Peak wavelength	IF = 20 mA	450	460	470	nm
006	$\Delta\lambda$	Spectral half width	IF = 20 mA		25		nm
007	2ϕ	Divergence, Far Field	IF = 20 mA, FWHM (Full Width Half Maximum)		3.5		deg.
008	tr, tf	Switching time	Pulsed IF = 100 mA, RL = 50 Ω		20		ns

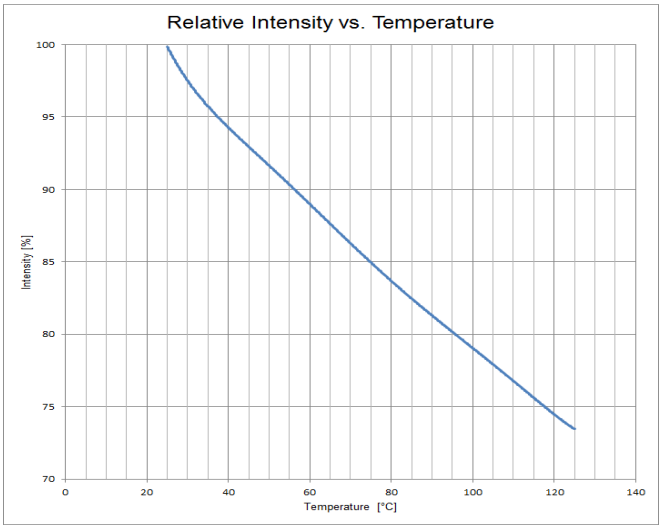
DIAGRAMS

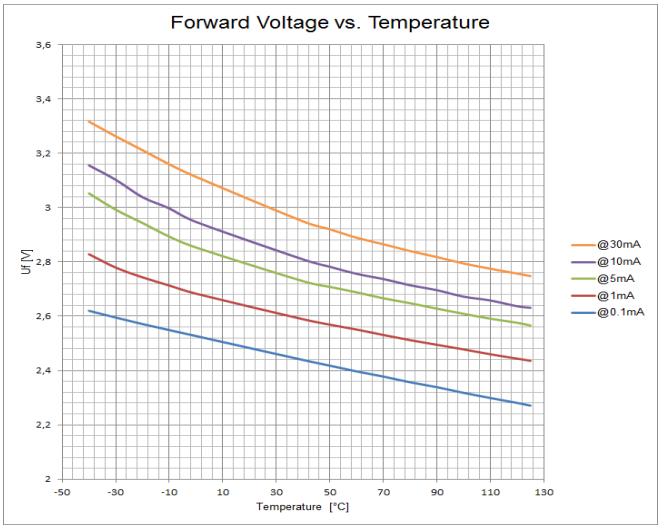












Typical values for reference only

SAFETY ADVICES

Depending on the mode of operation, these devices emit highly concentrated visible blue light which can be hazardous to the human eye. A direct and prolonged irradiation of the eye especially with short wavelengths should be avoided. For assembly activities during operation protective glasses and appropriate instructions are recommended. Products which incorporate these devices have to follow the safety precautions given in IEC 60825-1 and IEC 62471.

GENERAL NOTICE

Epoxy resins (such as solder resists, IC package and injection molding materials, as well as adhesives) may show discoloration, yellowing, and surface changes in general when exposed longterm to high temperatures, humidity, irradiation, or due to thermal treatments for soldering and other manufacturing processes.

Equally, standard molding materials used for IC packages can show visible changes induced by irradiation, among others when exposed to light of shorter wavelengths, blue light for instance. Such surface effects caused by visible or IR LED light are rated to be of cosmetic nature, without influence to the chip's function, its specifications and reliability.

Note that any other material used in the system (e.g. varnish, glue, code disc) should also be verified for irradiation effects.

HANDLING ADVICES

Because of the specific housing materials and geometries used, these LED devices are sensitive to rough handling or assembly and can thus be easily damaged or may fail in regard to their electro-optical operation. Excessive mechanical stress or load on the lens surface or to the glued cap must be avoided. This component is not hermetically sealed, therefore contact with liquids (e.g. aqueous cleaning, vapor phase soldering, ...) or exposure to condensing atmosphere must be avoided.

DESIGN REVIEW: Notes On Chip Characteristics

iC-TL46			
No.	Chip Design	Function, Parameter/Code	Description and Application Hints
1	iC-TL46	initial chip release	

Table 4: Notes on chip characteristics

REVISION HISTORY

Rel.	Rel. Date*	Chapter	Modification	Page
A1	2016-01-22	...	Initial release	all

Rel.	Rel. Date*	Chapter	Modification	Page
B1	2016-09-26	THERMAL DATA	Extended temperature range	2
		GENERAL NOTICE	new	4

Rel.	Rel. Date*	Chapter	Modification	Page
C1	2019-04-29	DIMENSIONS [in mm, typical values]	Package dimensions revised w. respect to glass climb, brazing and outline	1
		SAFETY ADVICES	Eye safety hints	4

* Release Date format: *YYYY-MM-DD*

ORDERING INFORMATION

Type	Package	Options	Order Designation
iC-TL46	TO46-2L1		iC-TL46 TO46-2L1
		Extended temperature range -40°C to 125 °C	iC-TL46 TO46-2L1 ET-40/125

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