

iC-TL33 TO46-2L1

Infrared LED



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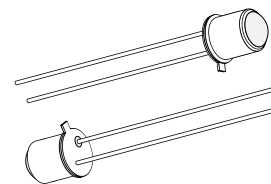
FEATURES

- ◆ Emission peak at 740 nm matched to silicon detectors and opto-ICs
- ◆ Optimized irradiance pattern
- ◆ High temperature range -40 to 125 °C
- ◆ Power output 0.5 mW at 20 mA
- ◆ High switching speed
- ◆ TO-46 package for high reliability
- ◆ ROHS conform

APPLICATIONS

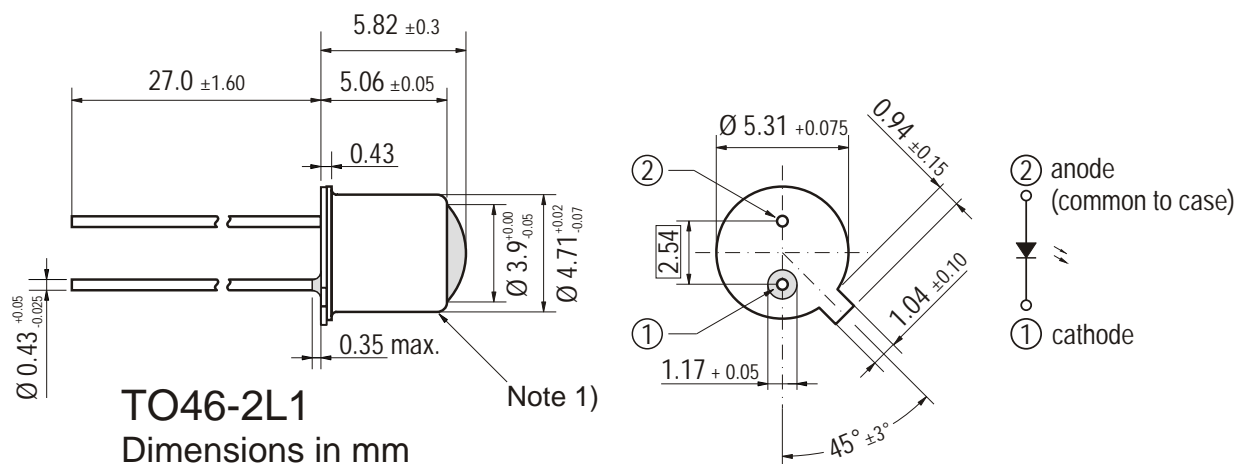
- ◆ Illumination for high resolution optical encoder
- ◆ Modulated light barriers

PACKAGES



TO46-2L1

DIMENSIONAL OUTLINE



1) Lens cap TO-18
(see SCHOTT SL 10.032.901 specification for details)

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ABSOLUTE MAXIMUM RATINGS

Beyond these values damage may occur ($T_a = 25^\circ\text{C}$, unless otherwise noted)

Item No.	Symbol	Parameter	Conditions			Unit
				Min.	Max.	
G001	IF	Forward current (DC)			50	mA
G002	IFM	Peak forward current	$t_p \leq 50\mu\text{s}$, $t_p/T=0,5$		100	mA
G003	IFSM	Surge forward current	$t_p \leq 10\mu\text{s}$		1000	mA
G004	VR	Reverse voltage			5	V
G005	P	Power dissipation	temperature dependence see figure 1		150	mW
G006	Tj	Junction temperature		-40	125	$^\circ\text{C}$

THERMAL DATA

Item No.	Symbol	Parameter	Conditions				Unit
				Min.	Typ.	Max.	
T01	Ta	Operating Ambient Temperature Range		-40		125	$^\circ\text{C}$
T02	Ts	Storage Temperature Range		-40		125	$^\circ\text{C}$
T03	Tpk	Soldering Temperature	$t_{pk} < 5\text{ s}$, 3 mm from case			260	$^\circ\text{C}$
T04	Rthja	Thermal Resistance Junction To Ambient			350		K/W

ELECTRICAL CHARACTERISTICS

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

Item No.	Symbol	Parameter	Conditions				Unit
				Min.	Typ.	Max.	
Electrical and Optical Characteristics							
002	VF	Forward voltage	IF = 20 mA		1.75	2.0	
003	VR	Reverse voltage	IR = 100 μA	5			V
005	ϕ_e	Radiant power	IF = 20 mA	0.3	0.5		mW
006	TK(ϕ_e)	Temperature coefficient of radiant power	IF = 5 mA, $T_{amb} = 25^\circ\text{C} \dots 125^\circ\text{C}$		-0.4		%/K
007	λ_p	Peak wavelength	IF = 20 mA	730	740	750	nm
008	$\Delta\lambda$	Spectral half width	IF = 20 mA		26		nm
009	2ϕ	Viewing angle	IF = 20 mA		4		deg.
010	tr, tf	Switching time	IF = 20 mA		50		ns

DIAGRAMS

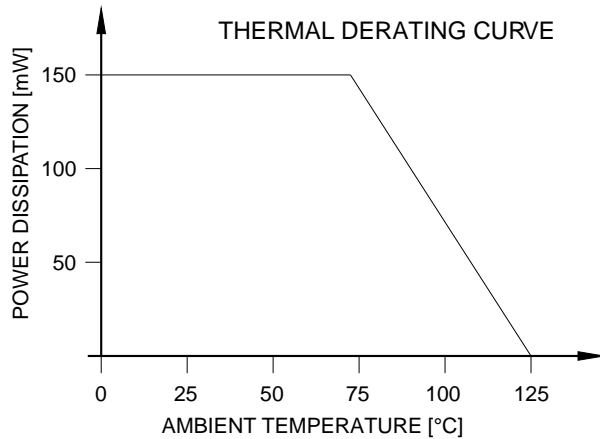


Figure 1: Maximum power dissipation with respect to temperature

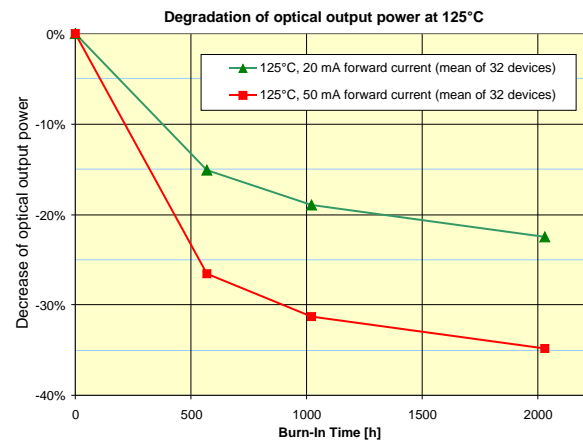


Figure 3: Optical output as a function of time. Mean value shown of 32 devices each.

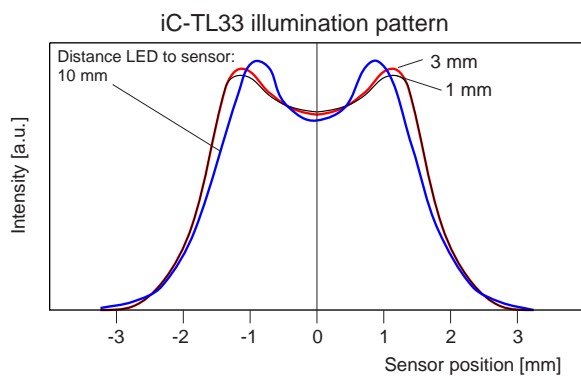


Figure 2: Illumination pattern depending vs. distance

LED's generally display a degradation in their optical power depending on the profile of the individual application, i.e. the forward current, chip temperature and operating time. Typical behavior is shown in Figure 3, from which the service life can be inferred. Depending on the profile of use the light yield can be reduced by 30% to 50% during deployment in an industrial application (e.g. 50,000 hours), making an LED power control necessary. The design and dimensioning of the LED circuitry is determined by the qualification according to the application-specific profile of use.

State-of-the-art technology guarantees a minimum beam power in an as-received condition with a defined current (25°C). A run-in at an operating point of 20 mA and a chip temperature of 125°C for 72 hours enables statements to be made as to the initial degradation during an accelerated stress test; it does not, however, provide any conclusions as to the service life of the LED.

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We understand suitable application of our published designs to be state-of-the-art technology which can no longer be classed as inventive under the stipulations of patent law. Our explicit application notes are to be treated only as mere examples of the many possible and extremely advantageous uses our products can be put to.

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ORDERING INFORMATION

Type	Package	Order Designation
iC-TL33	TO46-2L1 (<i>long lens cap</i>)	iC-TL33 TO46-2L1

For technical support, information about prices and terms of delivery please contact:

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