

iC-TL85 TO46-2L1

Infrared LED



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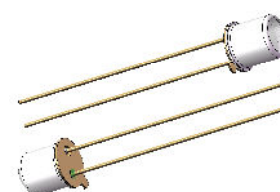
FEATURES

- ◆ Emission peak at 850 nm matched to silicon sensors
- ◆ Optimized irradiance pattern
- ◆ Temperature range -40 to 125 °C
- ◆ High optical output power
- ◆ Fast switching speed
- ◆ TO-46 package for high reliability
- ◆ ROHS conform

APPLICATIONS

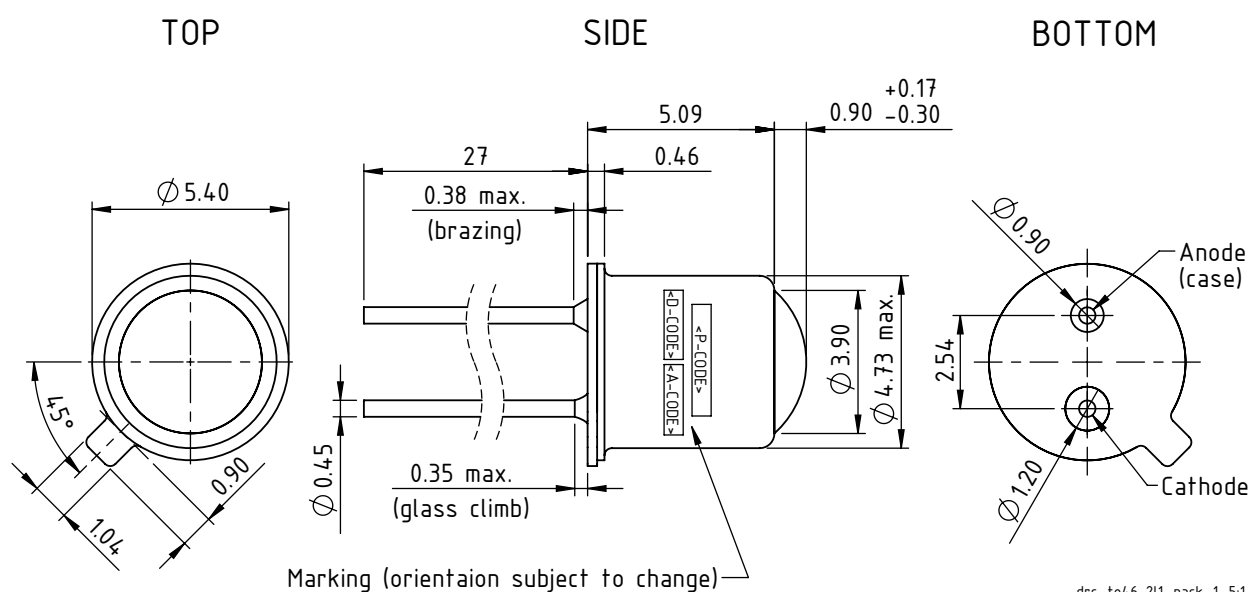
- ◆ Illumination for high resolution optical encoder
- ◆ Modulated light barriers

PACKAGES



TO46-2L1

DIMENSIONS [in mm, typical values]



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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) | | | 100 | mA |
| G002 | IFSM | Surge forward current | $t_p \leq 10\mu\text{s}$, 5 % duty cycle | | 1000 | mA |
| G003 | VR | Reverse voltage | | | 5 | V |
| G004 | P | Power dissipation | | | 150 | mW |
| G005 | 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 |

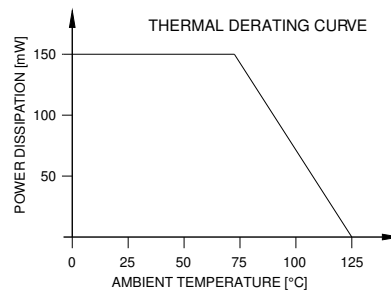


Figure 1: Maximum power dissipation with respect to temperature

ELECTRICAL CHARACTERISTICS

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

| Item No. | Symbol | Parameter | Conditions | | | | Unit |
|---|-----------------|--|--|------|------|------|------|
| | | | | Min. | Typ. | Max. | |
| Electrical and Optical Characteristics | | | | | | | |
| 001 | V _F | Forward voltage | IF = 20 mA | | 1.4 | 1.8 | |
| 002 | VR | Reverse voltage | IR = 5 μA | 5 | | | V |
| 003 | ϕ_e | Radiant power | IF = 20 mA | 1.4 | 2.7 | | mW |
| 004 | TK(ϕ_e) | Temperature coefficient of radiant power | IF = 20 mA, Tj = 25 $^\circ\text{C}$...125 $^\circ\text{C}$ | | -0.6 | | %/K |
| 005 | λ_p | Peak wavelength | IF = 20 mA | 840 | 850 | 860 | nm |
| 006 | $\Delta\lambda$ | Spectral half width | IF = 20 mA | | 30 | | nm |
| 008 | tr, tf | Switching time | IF = 100 mA, RL = 50 Ω | | 12 | | ns |

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SAFETY ADVICES

Depending on the mode of operation, these devices emit highly concentrated non visible infrared light which can be hazardous to the human eye.

Products which incorporate these devices have to follow the safety precautions given in IEC 60825-1 and IEC 62471.

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 must be avoided.

DESIGN REVIEW: Notes on chip characteristics

| iC-TL85 / iC-TL85Z | | | |
|--------------------|-------------|--|--|
| No. | Chip Design | Function, Parameter/Code | Description and Application Hints |
| 1 | iC-TL85 | initial chip release | see datasheet revision A1 |
| 2 | iC-TL85Z | Maximum Ratings G002 Electrical Characteristics 003 | changed to 1.0 A min. / typ. values increased to 1.4 / 2.7 mW |

Table 4: Notes on chip functions regarding iC-TL85 / iC-TL85Z

REVISION HISTORY

| Rel. | Rel. Date* | Chapter | Modification | Page |
|------|------------|------------------------------------|--|------|
| C1 | 2019-04-29 | DIMENSIONS [in mm, typical values] | Package dimensions revised w. respect to glass climb and brazing | 1 |

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* Release Date format: YYYY-MM-DD

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ORDERING INFORMATION

| Type | Package | Order Designation |
|---------|-----------------------------------|-------------------|
| iC-TL85 | TO46-2L1 (<i>long lens cap</i>) | iC-TL85 TO46-2L1 |

Please send your purchase orders to our order handling team:

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