

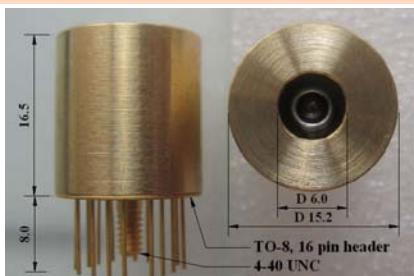
TE cooled Optically Immersed 4.7 μm LED

LED47T08TEC

| | | | |
|--|---------------|-------------------------------------|-------|
| Peak wavelength λ_{max} | μm | 4.65 \div 4.75 | |
| Pulse power P_{pulsed} | mW | Drive current 1 A, 2 % duty cycle | 0.018 |
| Quasi-CW power P_{QCW} | mW | Drive current 0.4 A, 50% duty cycle | 0.008 |
| CW power P_{CW} | mW | Drive current 0.2 A | 0.005 |

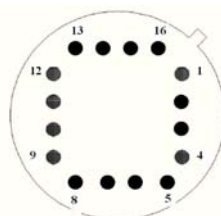
| Code | Emission size, mm | Lens material | Far-field pattern FWHM, deg. | Optical axis deviation, deg. | Optical power deviation, % | Operation conditions, $^{\circ}\text{C}$ | Lifetime, hrs |
|-------------|-------------------|-----------------------------|------------------------------|------------------------------|----------------------------|--|---------------|
| LED19T08TEC | \varnothing 3.2 | Si lens and sapphire window | \sim 15 | \leq 5 | \pm 25 | -25 \div +60 | >80 000 |

Product view



Bottom view

Pin assignment



1 TEC -; 4 TEC +
8 LED +; 13 LED -
10, 11 thermosensor

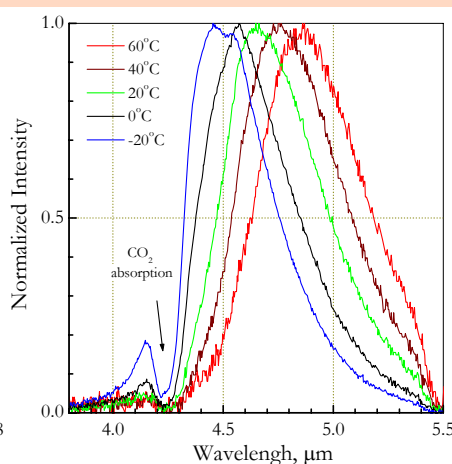
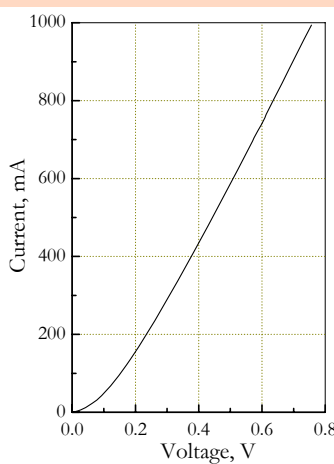
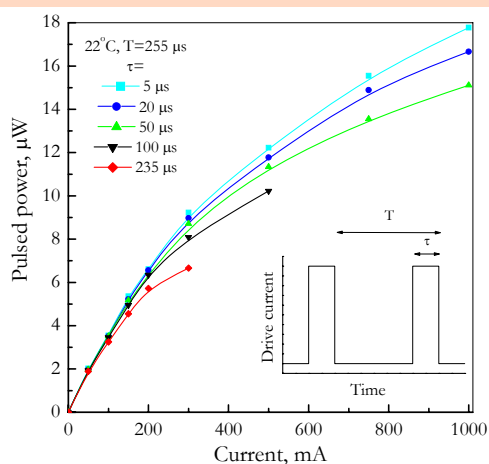
Features

Growth of narrow gap semiconductor alloys onto n^+ -InAs substrate; Flip-chip design of LEDs; Optical coupling through the use of chalcogenide glasses and Si lenses with antireflection coating

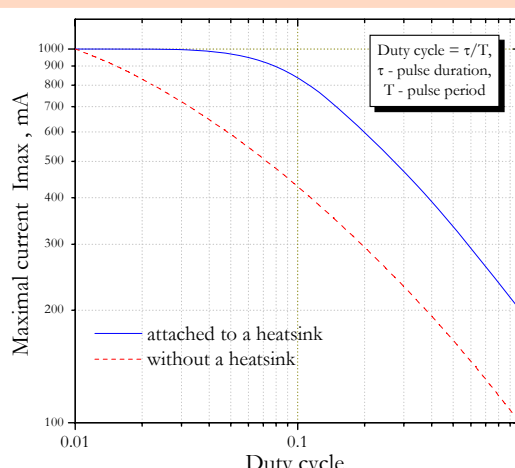
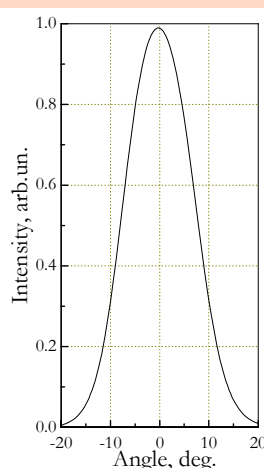
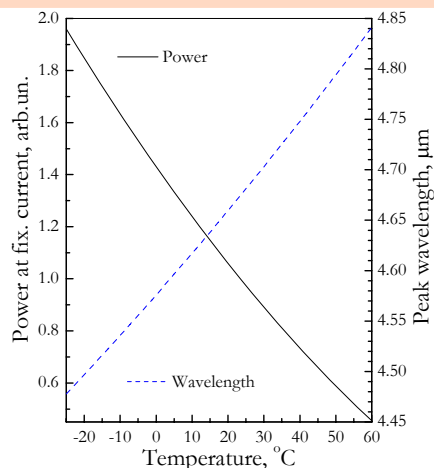
3-fold increased LED output power; Beam collimation within \sim 15 deg; Low serial resistance; Small on-off time (tenths of ns); Low power consumption (\leq 0.1 W)

Emission beam divergence is small and thus we recommend adjusting LED position regarding to the detector system before final evaluation/use of the devices. We recommend if possible using low duty cycle mode of operation with $I < 0.5 \times I_{\text{max}}$ so that higher efficiency and long term stability of a LED are achieved. **Data are valid for 22 $^{\circ}\text{C}$ and LED attached to a heatsink.** Heatsink is important for LED operation especially in the CW mode.

L-I and I-V characteristics and emission spectra



Output power and peak wavelength vs temperature, far-field pattern and maximal current vs operation conditions



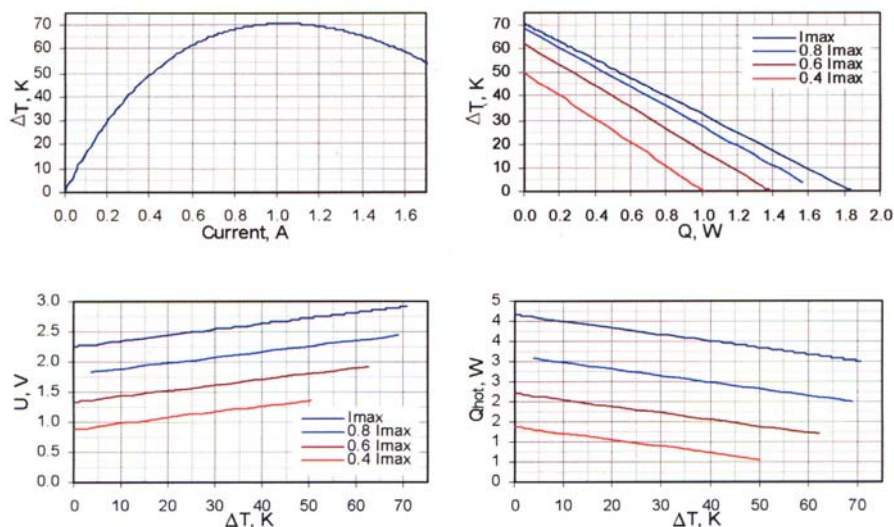
Product specifications are subject to change without prior notice due to improvements or other reasons. Updated 14.10.11



TO816.1MC0602415

Standard Performance Plots

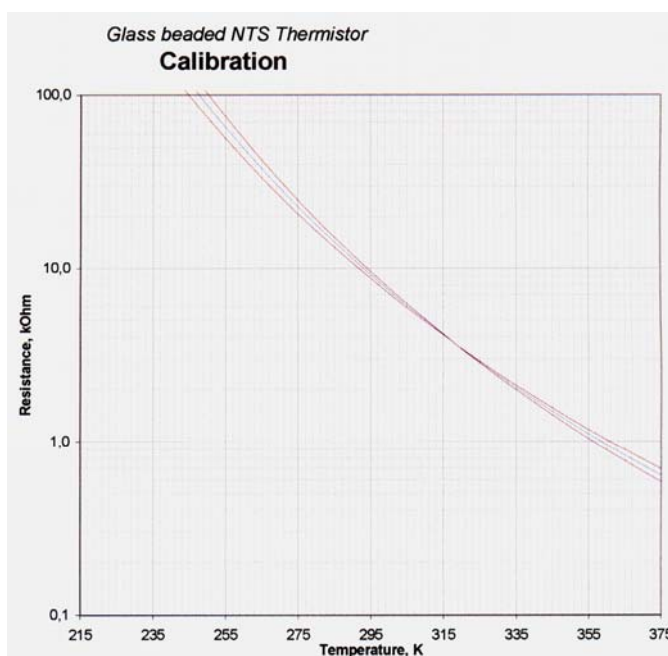
Thermoelectric cooling module datasheet



Type **TB04-103**
Batch **TB0180506**

| T, K | 5% | R _t | -5% | T, °C |
|------|---------|----------------|--------|-------|
| 375 | 0,58 | 0,64 | 0,69 | 102 |
| 370 | 0,67 | 0,73 | 0,79 | 97 |
| 365 | 0,77 | 0,83 | 0,90 | 92 |
| 360 | 0,90 | 0,96 | 1,02 | 87 |
| 355 | 1,04 | 1,11 | 1,17 | 82 |
| 350 | 1,22 | 1,28 | 1,35 | 77 |
| 345 | 1,43 | 1,50 | 1,56 | 72 |
| 340 | 1,69 | 1,75 | 1,82 | 67 |
| 335 | 2,00 | 2,06 | 2,12 | 62 |
| 330 | 2,38 | 2,44 | 2,48 | 57 |
| 325 | 2,85 | 2,89 | 2,92 | 52 |
| 320 | 3,44 | 3,45 | 3,46 | 47 |
| 315 | 4,17 | 4,15 | 4,12 | 42 |
| 310 | 5,08 | 5,01 | 4,93 | 37 |
| 305 | 6,24 | 6,09 | 5,93 | 32 |
| 300 | 7,71 | 7,45 | 7,19 | 27 |
| 293 | 10,50 | 10,00 | 9,50 | 20 |
| 290 | 12,04 | 11,39 | 10,75 | 17 |
| 285 | 15,22 | 14,24 | 13,29 | 12 |
| 280 | 19,41 | 17,95 | 16,56 | 7 |
| 275 | 24,96 | 22,81 | 20,80 | 2 |
| 270 | 32,40 | 29,25 | 26,33 | -3 |
| 265 | 42,49 | 37,86 | 33,65 | -8 |
| 260 | 56,29 | 49,49 | 43,40 | -13 |
| 255 | 75,40 | 65,37 | 56,54 | -18 |
| 250 | 102,18 | 87,32 | 74,44 | -23 |
| 245 | 140,21 | 118,03 | 99,11 | -28 |
| 240 | 194,95 | 161,56 | 133,55 | -33 |
| 235 | 274,90 | 224,11 | 182,25 | -38 |
| 230 | 393,45 | 315,33 | 252,09 | -43 |
| 225 | 572,18 | 450,47 | 353,76 | -48 |
| 220 | 846,39 | 654,04 | 504,13 | -53 |
| 215 | 1275,02 | 966,21 | 730,37 | -58 |

| | | | | |
|------------------|--------|--------|--------|--------------------|
| β= | 3876,1 | 3691,5 | 3506,9 | [K ⁻¹] |
| T ₀ = | | 293 | | [K] |



Thermistor specification

$$R_t = R_{t_0} \exp(\beta(T_0 - T) / (T \times T_0)),$$

where

R_{t0} - Resistivity at standard temperature (T₀=293K)

β=3691 K⁻¹ - Beta constant

