

Vertical Cavity Surface Emitting Laser in T-1 Package

OPV332



Features:

- 850 nm VCSEL technology
- High thermal stability
- Low drive current
- High output power
- Narrow beam angle



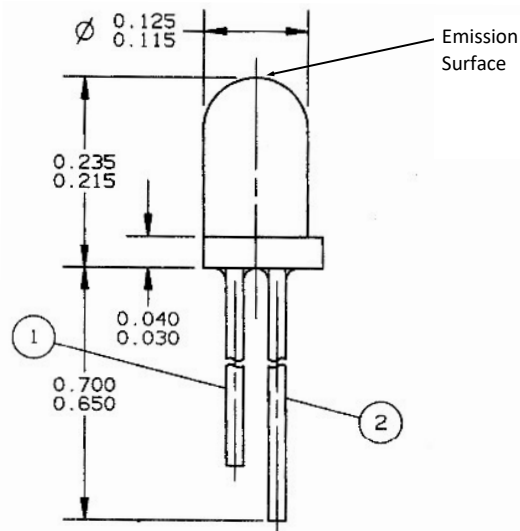
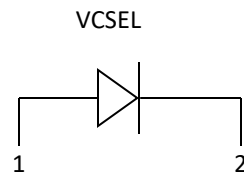
Description:

The OPV332 is a Vertical Cavity Surface Emitting Laser (VCSEL) packaged in a dome lens T-1 package. VCSELs offer many advantages in sensing applications when compared to infrared LEDs. These devices require substantially lower drive currents to obtain the same amount of output power as LEDs. This feature allows VCSELs to be used in low power consumption applications such as battery operated equipment.

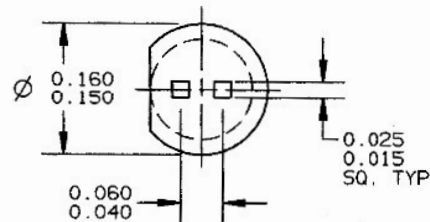
The dome lens packaging creates a narrow 4 degree beam angle from the device. Long distance applications may benefit from this feature as secondary optics may be eliminated, reducing total system cost. The OPV332 is optically and spectrally compatible with Optek's standard detector products such as the OP500 series phototransistors, OP530 series photodarlingtons and the OP900 series photodiodes.

Applications:

- Non-contact position sensing
- Photoelectric sensors
- Optical encoders
- Light curtains



Additional laser safety information can be found on the Optek website. See application bulletin #221. Classification is not marked on the device due to space limitations. See package outline for centerline of optical radiance. Operating devices beyond maximum rating may result in hazardous radiation exposure.



General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

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Electrical Specifications

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

| | |
|--|-----------------------|
| Storage Temperature Range | -40° to +100° C |
| Operating Temperature Range | 0° to +85° C |
| Lead Soldering Temperature [1/16 inch (1.6mm) from case for 5 sec with soldering iron] | 260° C ⁽¹⁾ |
| Maximum Forward Peak Current, Continuous | 12 mA |
| Maximum Reverse Voltage | 5 V |
| Maximum Forward Current, pulse (1μs P.W., 10% D.C.) | 48 mA |

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNITS | TEST CONDITIONS |
|-----------|--------------------------------------|------|-------|------|---------|---------------------|
| P_{OT} | Total Power Out | 1.5 | | | mW | $I_F = 7\text{ mA}$ |
| I_{TH} | Threshold Current | | | 3.0 | mA | Note 2 |
| V_F | Forward Voltage | | | 2.2 | V | $I_F = 7\text{ mA}$ |
| I_R | Reverse Current | | | 100 | nA | $V_R = 5\text{ V}$ |
| R_S | Series Resistance | 20 | | 55 | ohms | Note 3 |
| h | Slope Efficiency | 0.28 | | | mW/mA | Note 4 |
| λ | Wavelength | 840 | | 860 | nm | |
| DI | Optical Bandwidth | | | 0.85 | nm | |
| q | Beam Divergence | | 4 | | Degrees | FWHM |
| Dh/DT | Temp Coefficient of Slope Efficiency | | -0.50 | | %/°C | (0° - 70°C), Note 4 |
| DI/DT | Temp Coefficient of Wavelength | | 0.06 | | nm/°C | (0° - 70°C) |
| DI_{TH} | Temp Variance of Threshold Current | | ±1.0 | | mA | (0° - 70°C), Note 2 |
| DV_F/DT | Temp Coefficient for Forward Voltage | | -2.5 | | mV/°C | (0° - 70°C) |
| t_r/t_f | Rise and Fall Time | | 100 | | ps | 20% to 80% |

NOTES:

- (1) RMA flux is recommended. Solder dwell time can be increased to 10 seconds when flow soldering.
- (2) Threshold Current is based on the two line intersection method specified in Telcordia GR-468-Core. Line 1 from 4 mA to 6 mA. Line 2 from 0 mA to 0.5 mA.
- (3) Series Resistance is the slope of the Voltage-Current line from 5 to 8 mA.
- (4) Slope efficiency, is the slope of the best fit LI line from 5 mA to 8 mA with 0.25mA test intervals.

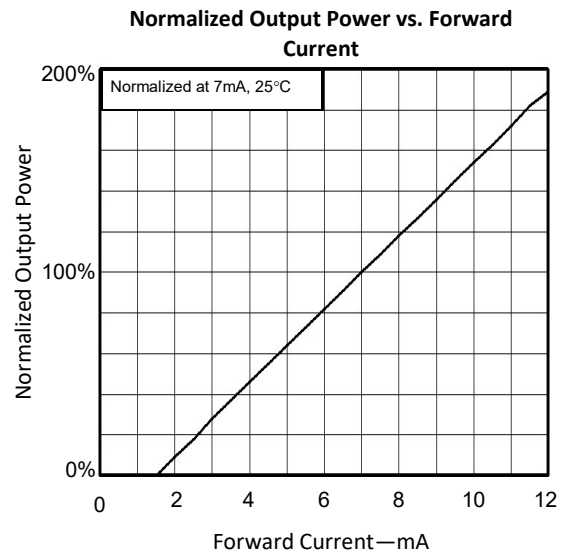
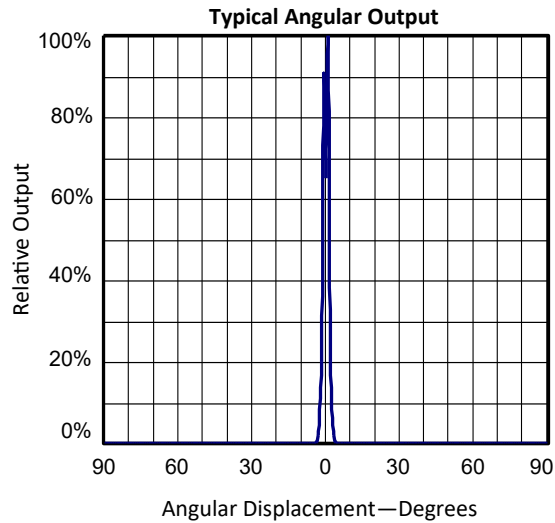
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NOTICE

This component is sensitive to electrostatic discharge (ESD). To prevent ESD-induced damage and/or degradation to equipment, take normal ESD precautions when handling this product.

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