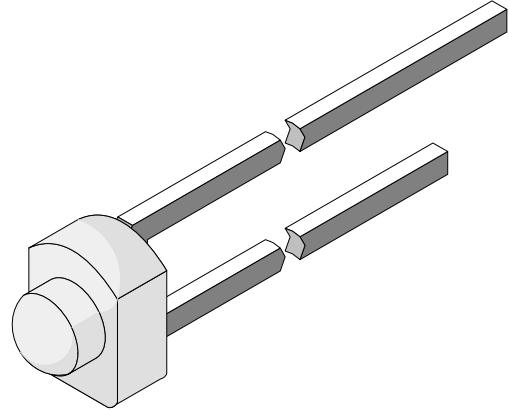


GaAs Infrared Emitting Diode in Miniature (T-3/4) Package

Description

CQY37N is a standard GaAs infrared emitting diode in a miniature top view plastic package. Its clear lens provides a high radiant intensity without external optics. The diode is case compatible to the BPW17N photo-transistor, allowing the user to assemble his own optical interrupters.



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Features

- Suitable for pulse operation
- Standard T-3/4 lensed miniature package
- Angle of half intensity $\phi = \pm 12^\circ$
- Peak wavelength $\lambda_p = 950 \text{ nm}$
- Good spectral matching to Si photodetectors

Applications

Radiation source in near infrared range

Absolute Maximum Ratings

$T_{amb} = 25^\circ\text{C}$

| Parameter | Test Conditions | Symbol | Value | Unit |
|-------------------------------------|----------------------------|------------|------------|------------------|
| Reverse Voltage | | V_R | 5 | V |
| Forward Current | | I_F | 100 | mA |
| Surge Forward Current | $t_p \leq 100 \mu\text{s}$ | I_{FSM} | 2 | A |
| Power Dissipation | | P_V | 170 | mW |
| Junction Temperature | | T_j | 100 | $^\circ\text{C}$ |
| Storage Temperature Range | | T_{stg} | -25...+100 | $^\circ\text{C}$ |
| Soldering Temperature | $t \leq 3 \text{ s}$ | T_{sd} | 245 | $^\circ\text{C}$ |
| Thermal Resistance Junction/Ambient | | R_{thJA} | 450 | K/W |

Basic Characteristics

$T_{amb} = 25^{\circ}\text{C}$

| Parameter | Test Conditions | Symbol | Min | Typ | Max | Unit |
|-------------------------------|---|-----------------|-----|----------|-----|-------|
| Forward Voltage | $I_F = 50\text{ mA}$, $t_p \leq 20\text{ ms}$ | V_F | | 1.3 | 1.6 | V |
| Breakdown Voltage | $I_R = 100\text{ }\mu\text{A}$ | $V_{(BR)}$ | 5 | | | V |
| Junction Capacitance | $V_R = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ | C_j | | 50 | | pF |
| Radiant Intensity | $I_F = 50\text{ mA}$, $t_p \leq 20\text{ ms}$ | I_e | 2.2 | 5 | | mW/sr |
| Radiant Power | $I_F = 50\text{ mA}$, $t_p \leq 20\text{ ms}$ | ϕ_e | | 10 | | mW |
| Temp. Coefficient of ϕ_e | $I_F = 50\text{ mA}$ | TK_{ϕ_e} | | -0.8 | | %/K |
| Angle of Half Intensity | | ϕ | | ± 12 | | deg |
| Peak Wavelength | $I_F = 50\text{ mA}$ | λ_p | | 950 | | nm |
| Spectral Bandwidth | $I_F = 50\text{ mA}$ | $\Delta\lambda$ | | 50 | | nm |
| Rise time | $I_F = 1.5\text{ A}$, $t_p/T = 0.01$, $t_p \leq 10\text{ }\mu\text{s}$ | t_r | | 400 | | ns |
| Fall Time | $I_F = 1.5\text{ A}$, $t_p/T = 0.01$, $t_p \leq 10\text{ }\mu\text{s}$ | t_f | | 450 | | ns |

Typical Characteristics ($T_{amb} = 25^{\circ}\text{C}$ unless otherwise specified)

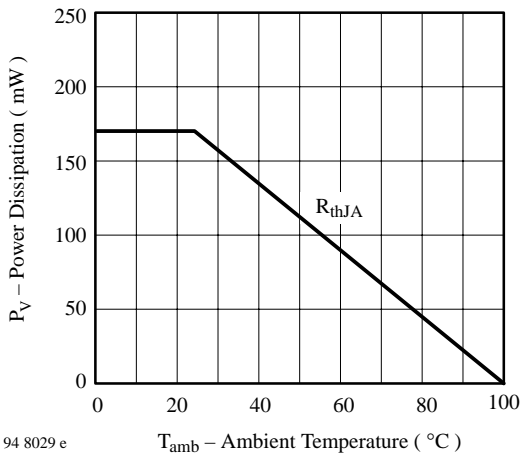


Figure 1. Power Dissipation vs. Ambient Temperature

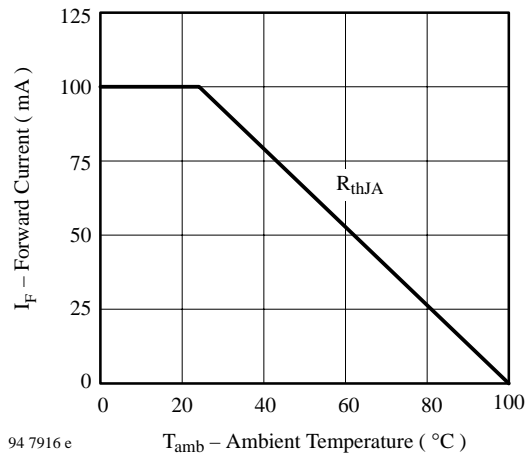


Figure 2. Forward Current vs. Ambient Temperature

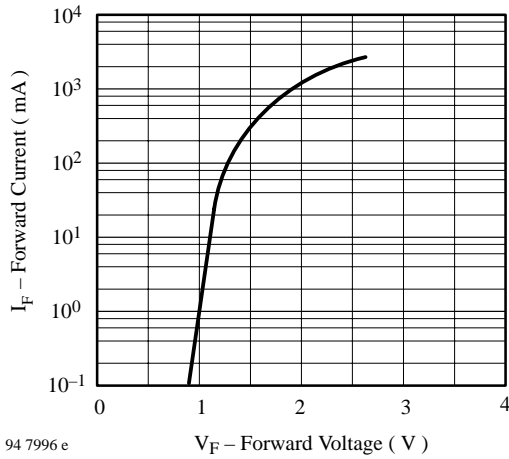


Figure 3. Forward Current vs. Forward Voltage

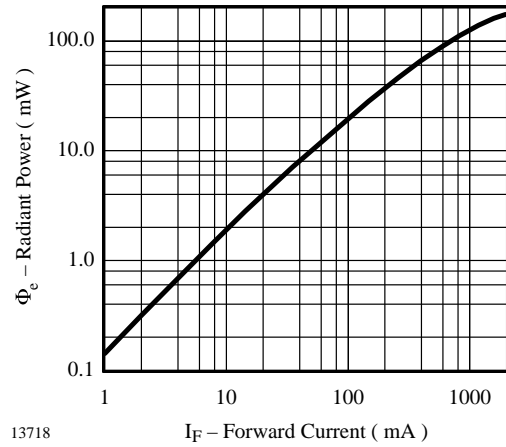


Figure 6. Radiant Power vs. Forward Current

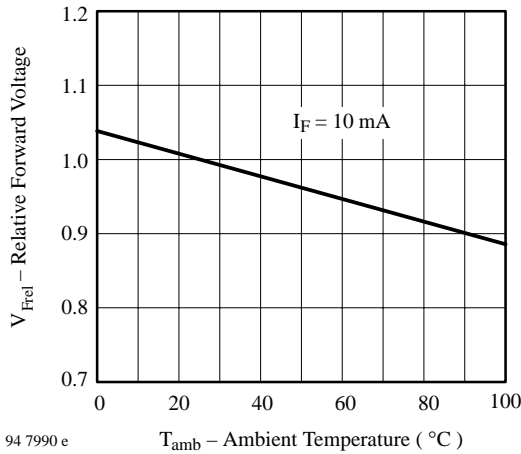


Figure 4. Relative Forward Voltage vs. Ambient Temperature

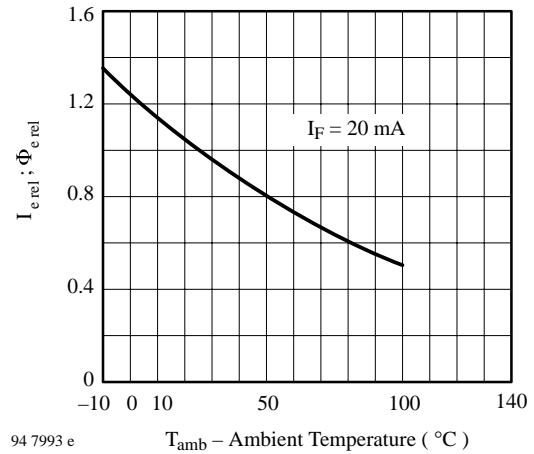


Figure 7. Rel. Radiant Intensity/Power vs. Ambient Temperature

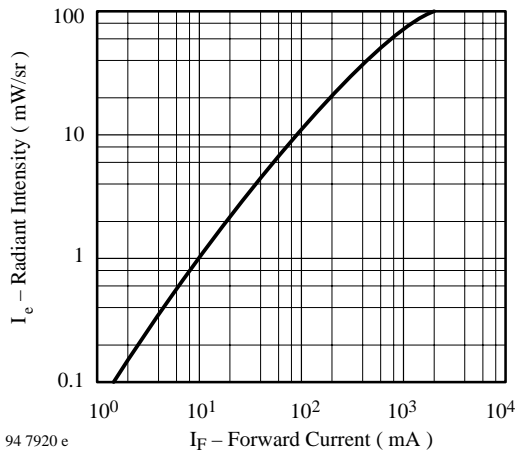


Figure 5. Radiant Intensity vs. Forward Current

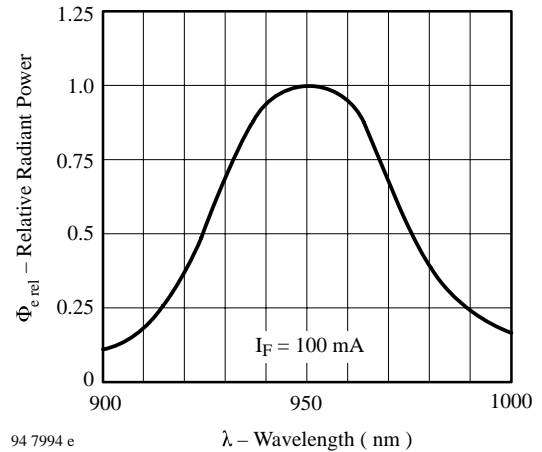
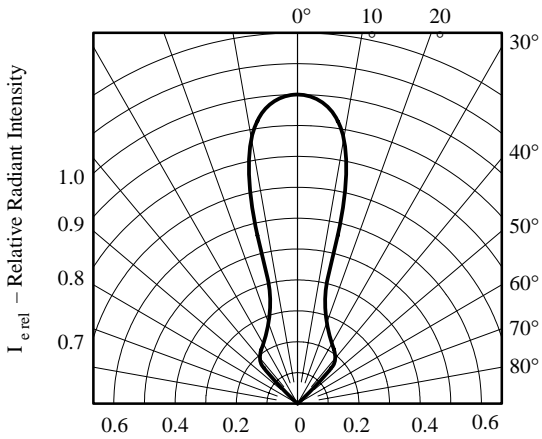


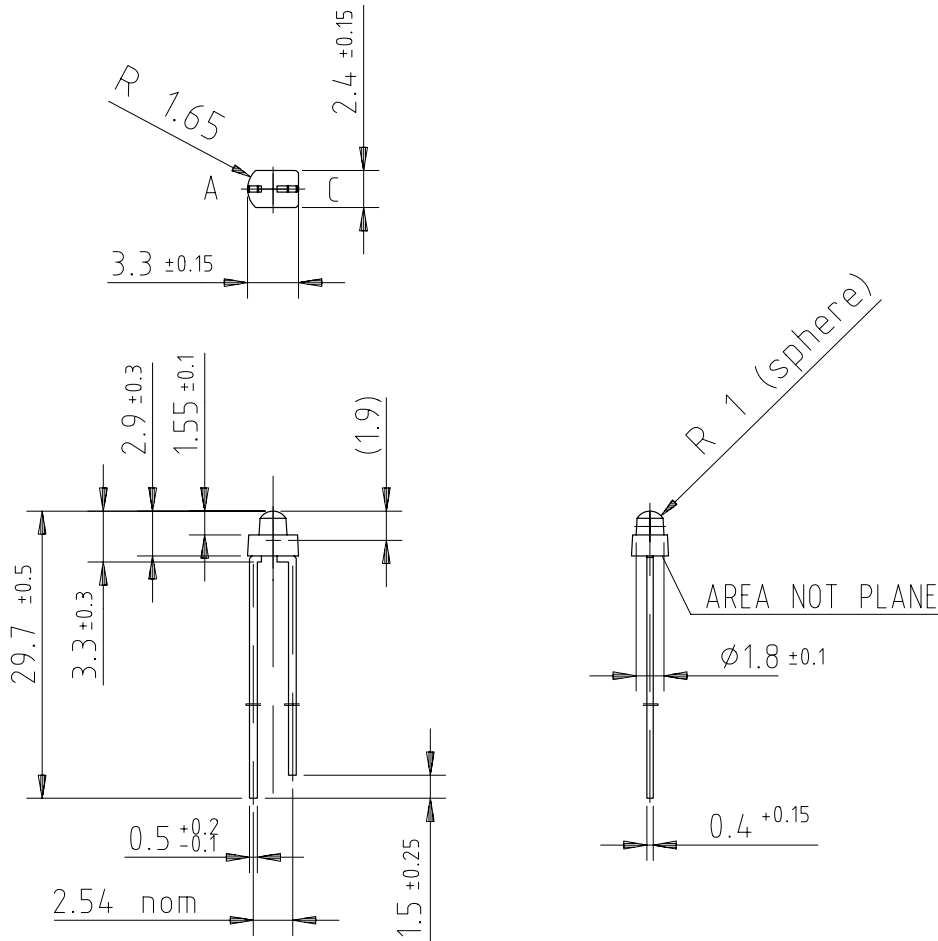
Figure 8. Relative Radiant Power vs. Wavelength



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Figure 9. Relative Radiant Intensity vs. Angular Displacement

Dimensions in mm



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technical drawings according to DIN specifications



Ozone Depleting Substances Policy Statement

It is the policy of **Vishay Semiconductor GmbH** to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

We reserve the right to make changes to improve technical design and may do so without further notice.

Parameters can vary in different applications. All operating parameters must be validated for each customer application by the customer. Should the buyer use Vishay-Semiconductors products for any unintended or unauthorized application, the buyer shall indemnify Vishay-Semiconductors against all claims, costs, damages, and expenses, arising out of, directly or indirectly, any claim of personal damage, injury or death associated with such unintended or unauthorized use.

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