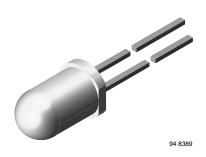
HALOGEN



Vishay Semiconductors

High Power Infrared Emitting Diode, 940 nm, GaAlAs/GaAs



DESCRIPTION

TSAL6200 is an infrared, 940 nm emitting diode in GaAlAs/GaAs technology with high radiant power molded in a blue-gray plastic package.

FEATURES

Package type: leaded
Package form: T-1¾
Dimensions (in mm): Ø 5

• Peak wavelength: $\lambda_p = 940 \text{ nm}$

· High reliability

· High radiant power

· High radiant intensity

• Angle of half intensity: $\phi = \pm 17^{\circ}$

· Low forward voltage

• Suitable for high pulse current operation

· Good spectral matching with Si photodetectors

 Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC

• Halogen-free according to IEC 61249-2-21 definition

APPLICATIONS

- · Infrared remote control units with high power requirements
- Free air transmission systems
- · Infrared source for optical counters and card readers

| PRODUCT SUMMARY | | | | | |
|-----------------|------------------------|---------|---------------------|---------------------|--|
| COMPONENT | I _e (mW/sr) | φ (deg) | λ _P (nm) | t _r (ns) | |
| TSAL6200 | 60 | ± 17 | 940 | 800 | |

Note

Test conditions see table "Basic Characteristics"

| ORDERING INFORMATION | | | | | |
|----------------------|-----------|------------------------------|--------------|--|--|
| ORDERING CODE | PACKAGING | REMARKS | PACKAGE FORM | | |
| TSAL6200 | Bulk | MOQ: 4000 pcs, 4000 pcs/bulk | T-1¾ | | |

Note

MOQ: minimum order quantity

| ABSOLUTE MAXIMUM RATINGS | | | | | |
|-------------------------------------|---------------------------------------|-------------------|---------------|------|--|
| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT | |
| Reverse voltage | | V _R | 5 | V | |
| Forward current | | I _F | 100 | mA | |
| Peak forward current | $t_p/T = 0.5, t_p = 100 \mu s$ | I _{FM} | 200 | mA | |
| Surge forward current | t _p = 100 μs | I _{FSM} | 1.5 | А | |
| Power dissipation | | P _V | 160 | mW | |
| Junction temperature | | Tj | 100 | °C | |
| Operating temperature range | | T _{amb} | - 40 to + 85 | °C | |
| Storage temperature range | | T _{stg} | - 40 to + 100 | °C | |
| Soldering temperature | $t \le 5$ s, 2 mm from case | T _{sd} | 260 | °C | |
| Thermal resistance junction/ambient | J-STD-051, leads 7 mm soldered on PCB | R _{thJA} | 230 | K/W | |

Note

T_{amb} = 25 °C, unless otherwise specified

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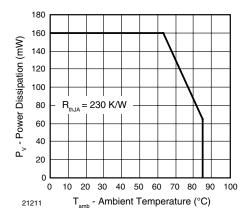


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

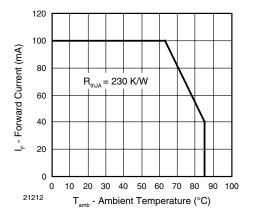


Fig. 2 - Forward Current Limit vs. Ambient Temperature

| BASIC CHARACTERISTICS | | | | | | |
|---|--|------------------|------|-------|------|-------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Forward voltage | $I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$ | V _F | | 1.35 | 1.6 | V |
| | $I_F = 1 \text{ A}, t_p = 100 \ \mu\text{s}$ | V _F | | 2.6 | 3 | V |
| Temperature coefficient of V _F | I _F = 1 mA | TK _{VF} | | - 1.8 | | mV/K |
| Reverse current | V _R = 5 V | I _R | | | 10 | μΑ |
| Junction capacitance | V _R = 0 V, f = 1 MHz, E = 0 | C _j | | 25 | | pF |
| De dieut interesite | $I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$ | l _e | 40 | 60 | 200 | mW/sr |
| Radiant intensity | $I_F = 1 \text{ A}, t_p = 100 \ \mu\text{s}$ | l _e | 340 | 500 | | mW/sr |
| Radiant power | $I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$ | φ _e | | 35 | | mW |
| Temperature coefficient of φ _e | I _F = 20 mA | TKφe | | - 0.6 | | %/K |
| Angle of half intensity | | φ | | ± 17 | | deg |
| Peak wavelength | I _F = 100 mA | λ_{p} | | 940 | | nm |
| Spectral bandwidth | I _F = 100 mA | Δλ | | 50 | | nm |
| Temperature coefficient of λ_p | I _F = 100 mA | $TK\lambda_p$ | | 0.2 | | nm/K |
| Rise time | I _F = 100 mA | t _r | | 800 | | ns |
| Fall time | I _F = 100 mA | t _f | | 800 | | ns |
| Virtual source diameter | Method: 63 % encircled energy | d | | 2.4 | | mm |

Note

 T_{amb} = 25 °C, unless otherwise specified



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BASIC CHARACTERISTICS

T_{amb} = 25 °C, unless otherwise specified

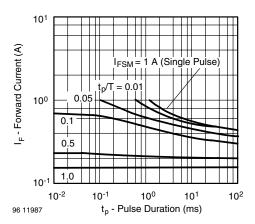


Fig. 3 - Pulse Forward Current vs. Pulse Duration

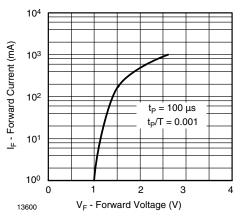


Fig. 4 - Forward Current vs. Forward Voltage

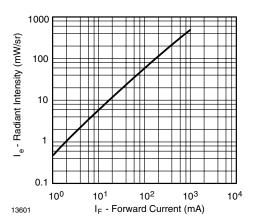


Fig. 5 - Radiant Intensity vs. Forward Current

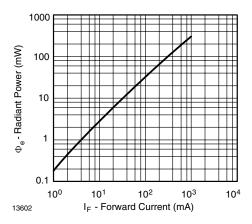


Fig. 6 - Radiant Power vs. Forward Current

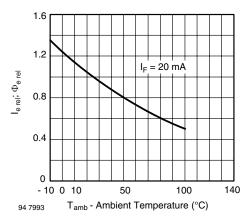


Fig. 7 - Relative Radiant Intensity/Power vs. Ambient Temperature

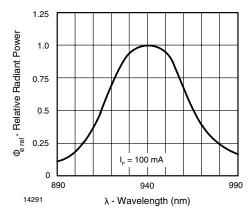


Fig. 8 - Relative Radiant Power vs. Wavelength

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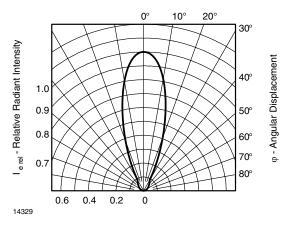
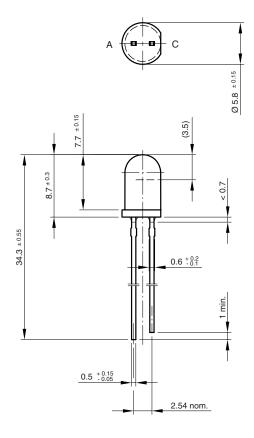
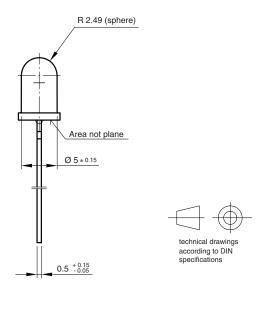


Fig. 9 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters





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