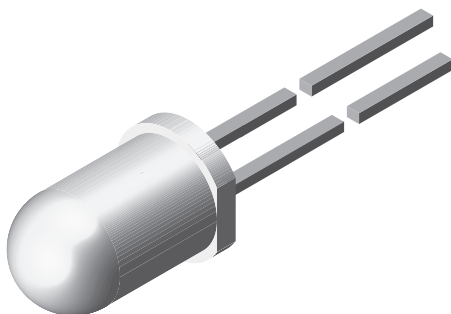




High Speed Infrared Emitting Diode, 850 nm, Surface Emitter Technology



DESCRIPTION

TSHG6200 is an infrared, 850 nm emitting diode based on surface emitter chip technology with high radiant power and high speed, molded in a clear, untinted plastic package.

FEATURES

- Package type: leaded
- Package form: T-1 $\frac{3}{4}$
- Dimensions (in mm): $\varnothing$ 5
- Peak wavelength: $\lambda_p = 850$ nm
- High reliability
- High radiant power
- High radiant intensity
- Angle of half intensity: $\phi = \pm 10^\circ$
- Low forward voltage
- Suitable for high pulse current operation
- Good spectral matching with Si photodetectors
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



APPLICATIONS

- Infrared high speed remote control and free air data transmission systems with high modulation frequencies or high data transmission rate requirements
- Transmission systems according to IrDA requirements and for carrier frequency based systems (e.g. ASK/FSK - coded, 450 kHz or 1.3 MHz)

PRODUCT SUMMARY

COMPONENT	I_e (mW/sr)	ϕ (°)	λ_p (nm)	t_r (ns)
TSHG6200	230	± 10	850	10

Note

- Test conditions see table "Basic Characteristics"

ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TSHG6200	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 $\frac{3}{4}$

Note

- MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V_R	5	V
Forward current		I_F	100	mA
Peak forward current	$t_p/T = 0.5$, $t_p = 100 \mu\text{s}$	I_{FM}	200	mA
Surge forward current	$t_p = 100 \mu\text{s}$	I_{FSM}	1	A
Power dissipation		P_V	180	mW
Junction temperature		T_j	100	$^\circ\text{C}$
Ambient temperature range		T_{amb}	-40 to +85	$^\circ\text{C}$
Storage temperature range		T_{stg}	-40 to +100	$^\circ\text{C}$
Soldering temperature	$t \leq 5$ s, 2 mm from case	T_{sd}	260	$^\circ\text{C}$
Thermal resistance junction to ambient	J-STD-051, leads 7 mm, soldered on PCB	R_{thJA}	230	K/W

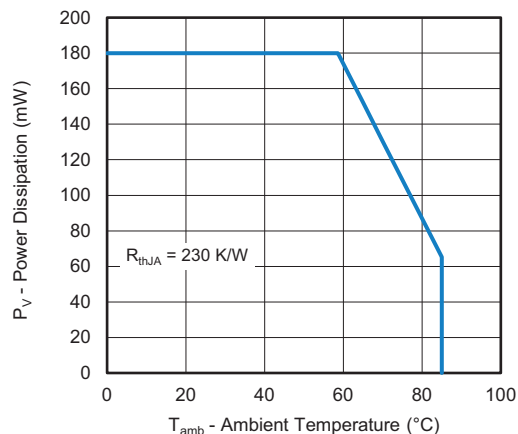


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

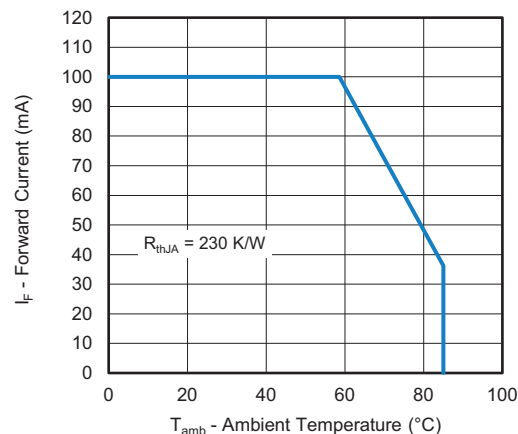


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	V_F	-	1.6	1.8	V
	$I_F = 1\text{ A}$, $t_p = 100\text{ }\mu\text{s}$	V_F	-	3.0	-	V
Temperature coefficient of V_F	$I_F = 100\text{ mA}$	TK_{V_F}	-	-1.5	-	mV/K
Reverse current		I_R	Not designed for reverse operation			μA
Junction capacitance	$V_R = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$	C_j	-	53	-	pF
Radiant intensity	$I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	I_e	100	230	420	mW/sr
	$I_F = 1\text{ A}$, $t_p = 100\text{ }\mu\text{s}$	I_e	-	2460	-	mW/sr
Radiant power	$I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	ϕ_e	-	61	-	mW
Temperature coefficient of ϕ_e	$I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	TK_{ϕ_e}	-	-0.27	-	%/K
Angle of half intensity		ϕ	-	± 10	-	$^{\circ}$
Peak wavelength	$I_F = 100\text{ mA}$	λ_p	-	850	-	nm
Spectral bandwidth	$I_F = 100\text{ mA}$	$\Delta\lambda$	-	30	-	nm
Temperature coefficient of λ_p	$I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	TK_{λ_p}	-	0.25	-	nm/K
Rise time	$I_F = 100\text{ mA}$	t_r	-	10	-	ns
Fall time	$I_F = 100\text{ mA}$	t_f	-	10	-	ns

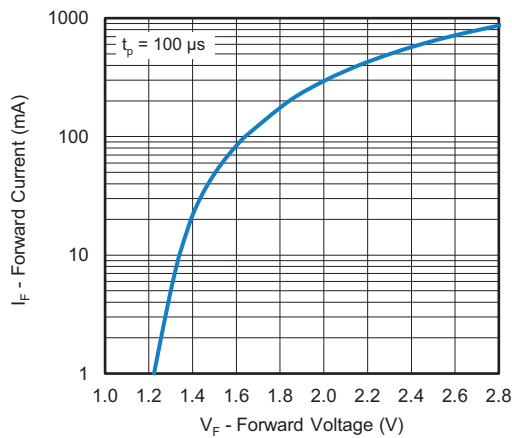
**BASIC CHARACTERISTICS** ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

Fig. 3 - Forward Current vs. Forward Voltage

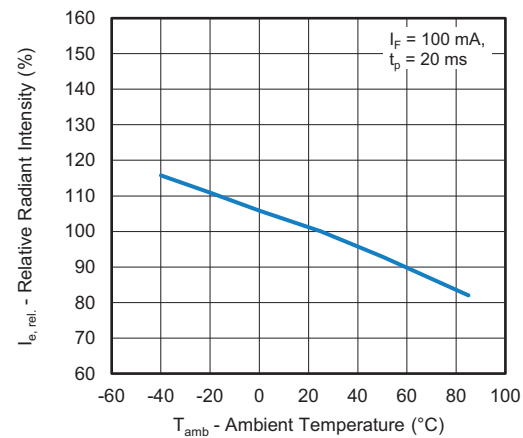


Fig. 6 - Relative Radiant Intensity vs. Ambient Temperature

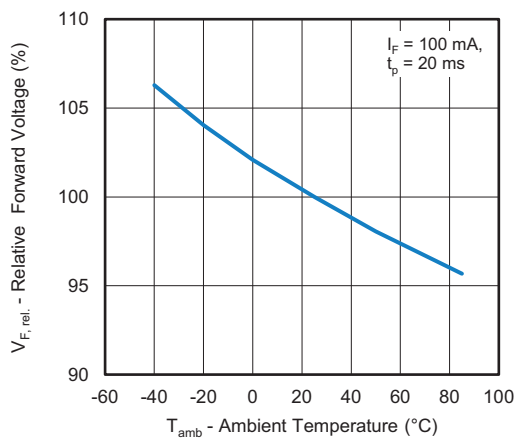


Fig. 4 - Relative Forward Voltage vs. Ambient Temperature

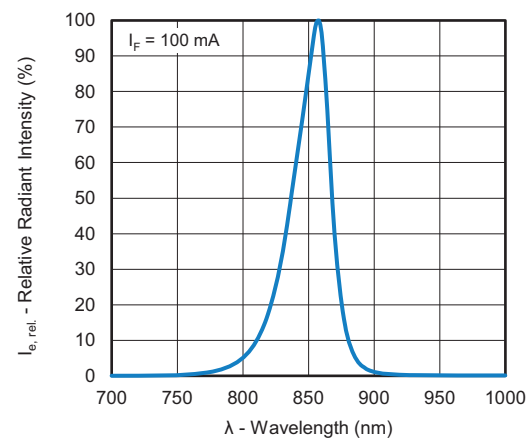


Fig. 7 - Relative Radiant Intensity vs. Wavelength

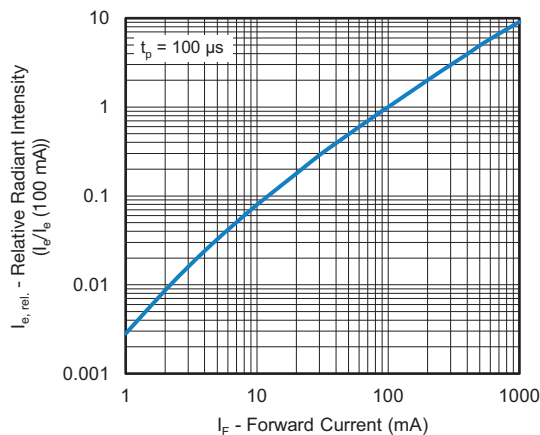


Fig. 5 - Relative Radiant Intensity vs. Forward Current

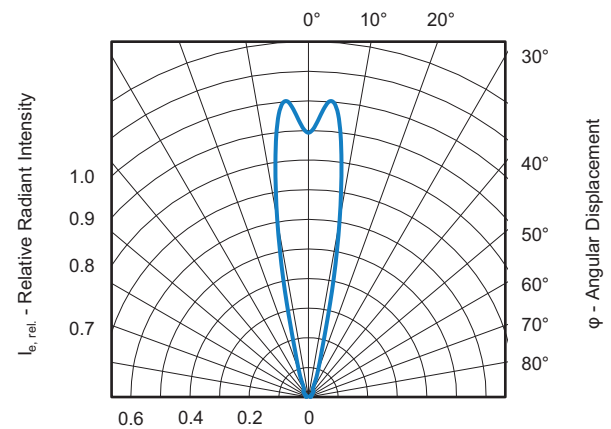


Fig. 8 - Relative Radiant Intensity vs. Angular Displacement

[illegible]

Technical drawing of a probe tip. The drawing shows a cross-section of the tip with a hemispherical top. The radius of the hemisphere is labeled as $R\ 2.49$ (sphere). A horizontal line across the middle of the tip is labeled "Area not plane". The diameter of the tip is labeled as 5 ± 0.15 . The length of the tip is labeled as $0.5 + 0.15 - 0.05$.



technical drawings
according to DIN
specifications



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