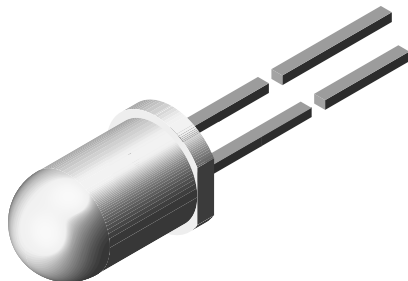




High Power Infrared Emitting Diode, 890 nm, GaAlAs / Double Hetero



94 8389



FEATURES

- Package type: leaded
- Package form: T-1 $\frac{3}{4}$
- Dimensions (in mm): \varnothing 5
- Peak wavelength: $\lambda_p = 890$ nm
- High reliability
- High radiant power
- High radiant intensity
- Angle of half intensity: $\varphi = \pm 22^\circ$
- 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

- Metering systems

DESCRIPTION

TSPF6200 is an infrared, 890 nm emitting diode in GaAlAs / double hetero (DH) technology with high radiant power, high speed, and with typical receiving characteristics, TSPF6200 is molded in a blue gray tinted plastic package.

PRODUCT SUMMARY

COMPONENT	I_e (mW/sr)	φ (°)	λ_p (nm)	t_r (ns)
TSPF6200	55	± 22	890	50

Note

- Test conditions see table "Basic Characteristics"

ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TSPF6200	Bulk	MOQ: 3000 pcs, 3000 pcs/bulk	T-1 $\frac{3}{4}$

Note

- MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25$ °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	$t_p/T = 0.5$, $t_p = 100$ μ s	I_{FM}	200	mA
Surge forward current	$t_p = 100$ μ s	I_{FSM}	1.5	A
Power dissipation		P_V	170	mW
Junction temperature		T_j	100	°C
Operating temperature range		T_{amb}	-40 to +85	°C
Storage temperature range		T_{stg}	-40 to +100	°C
Soldering temperature	$t \leq 5$ s, 2 mm from case	T_{sd}	260	°C
Thermal resistance junction to ambient	J-STD-051, leads 7 mm soldered on PCB	R_{thJA}	230	K/W

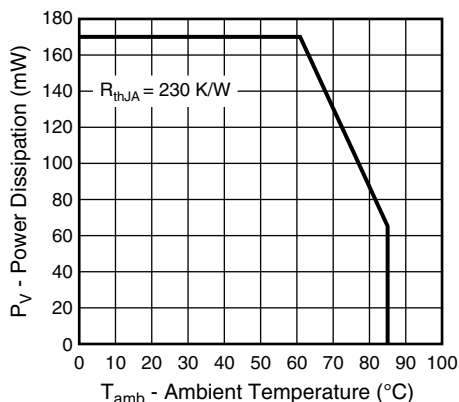


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

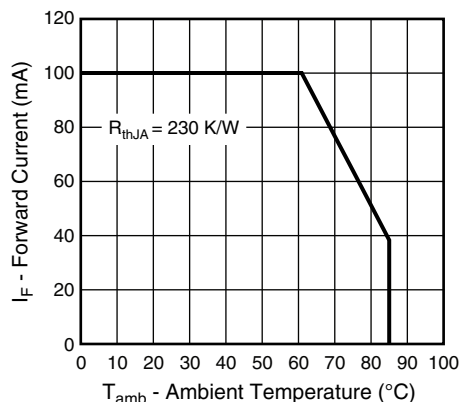


Fig. 2 - Forward Current Limit vs. Ambient Temperature

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	-	1.42	1.7	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}	-	-1.7	-	mV/K
Reverse current	$V_R = 5\text{ V}$	I_R	-	-	100	nA
Junction capacitance	$V_R = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$	C_j	-	160	-	pF
Radiant intensity	$I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	I_e	30	55	90	mW/sr
	$I_F = 1\text{ A}$, $t_p = 100\text{ }\mu\text{s}$	I_e	-	520	-	mW/sr
Short circuit current	$E_e = 1\text{ mW/cm}^2$, $\lambda = 870\text{ nm}$	I_k	-	10	-	μA
Open circuit voltage	$E_e = 1\text{ mW/cm}^2$, $\lambda = 870\text{ nm}$	V_0	-	1.0	-	V
Reverse light current	$E_e = 1\text{ mW/cm}^2$, $\lambda = 870\text{ nm}$, $V_R = 5\text{ V}$	I_{ra}	-	10	-	μA
Radiant power	$I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	ϕ_e	-	40	-	mW
Temperature coefficient of ϕ_e	$I_F = 100\text{ mA}$	TK_{ϕ_e}	-	-0.35	-	%/K
Angle of half intensity		ϕ	-	± 22	-	$^{\circ}$
Peak wavelength	$I_F = 100\text{ mA}$	λ_p	870	890	910	nm
Spectral bandwidth	$I_F = 100\text{ mA}$	$\Delta\lambda$	-	40	-	nm
Temperature coefficient of λ_p	$I_F = 100\text{ mA}$	TK_{λ_p}	-	0.25	-	nm/K
Rise time	$I_F = 100\text{ mA}$	t_r	-	50	-	ns
Fall time	$I_F = 100\text{ mA}$	t_f	-	50	-	ns



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

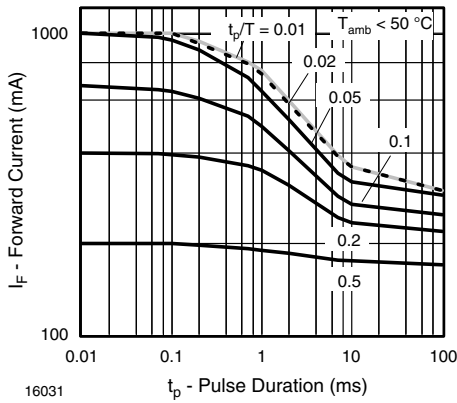


Fig. 3 - Pulse Forward Current vs. Pulse Duration

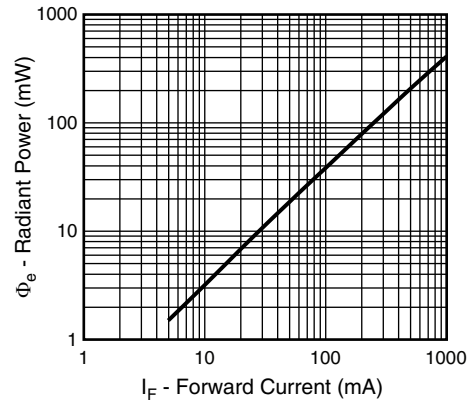


Fig. 6 - Radiant Power vs. Forward Current

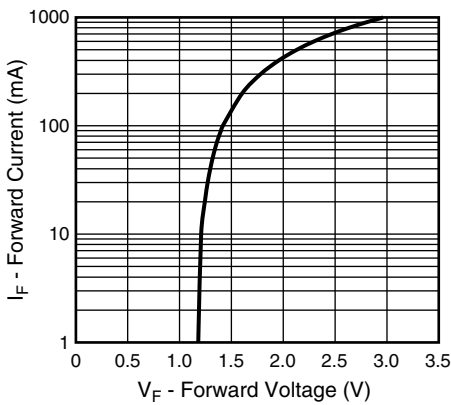


Fig. 4 - Forward Current vs. Forward Voltage

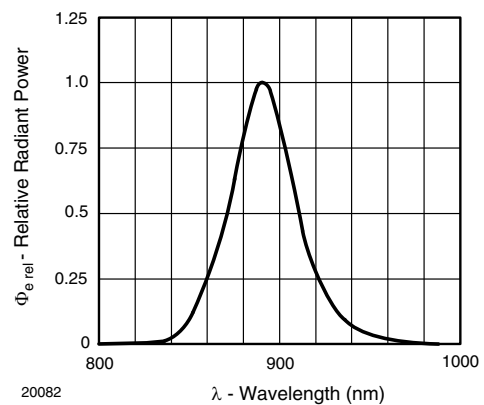


Fig. 7 - Relative Radiant Intensity / Power vs. Wavelength

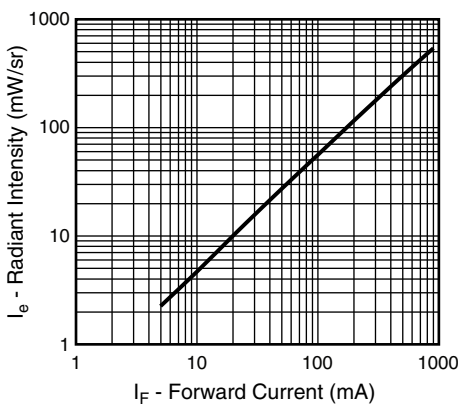


Fig. 5 - Radiant Intensity vs. Forward Current

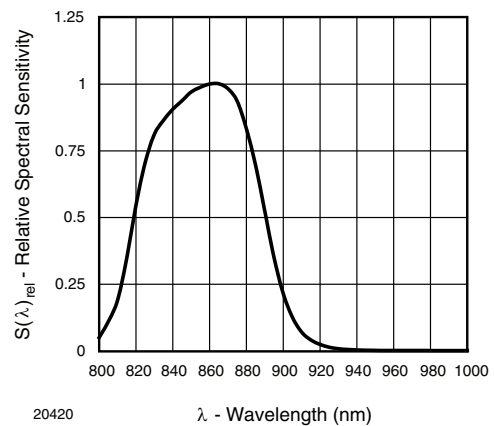


Fig. 8 - Relative Spectral Sensitivity vs. Wavelength

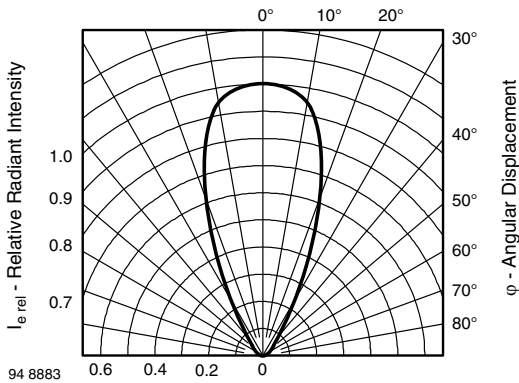
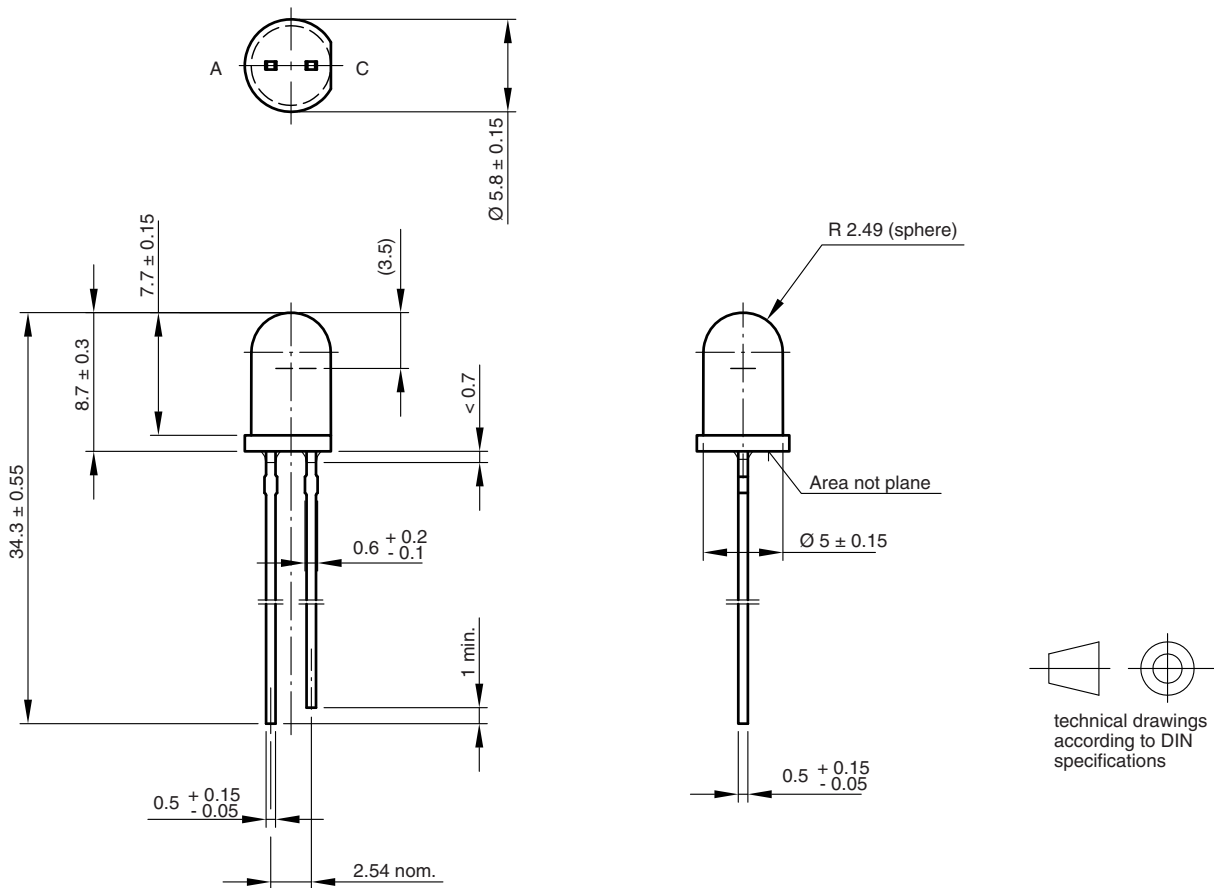


Fig. 9 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters



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