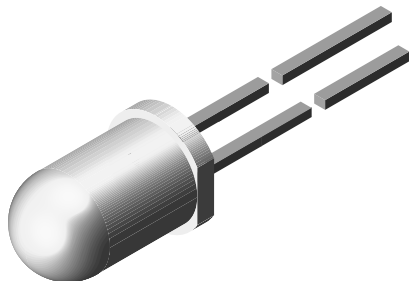




## High Power Infrared Emitting Diode, 890 nm, GaAlAs / Double Hetero



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](http://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)	$\varphi$ (°)	$\lambda_p$ (nm)	$t_r$ (ns)
TSPF6200	55	$\pm 22$	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	$t_p/T = 0.5$ , $t_p = 100$ $\mu$ s	$I_{FM}$	200	mA
Surge forward current	$t_p = 100$ $\mu$ 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

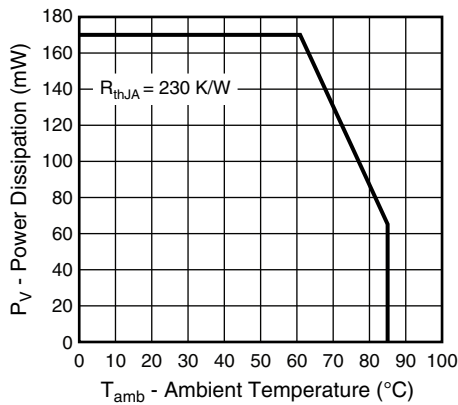


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

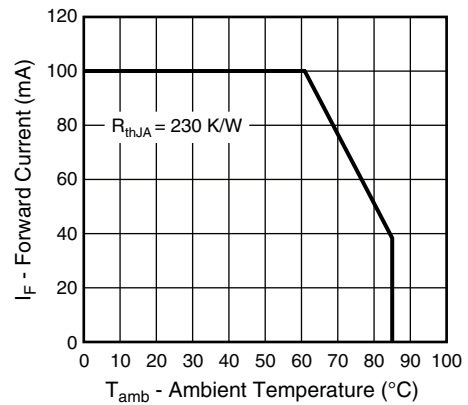


Fig. 2 - Forward Current Limit vs. Ambient Temperature

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	-	$\mu\text{A}$
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	-	$\mu\text{A}$
Radiant power	$I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$	$\phi_e$	-	40	-	mW
Temperature coefficient of $\phi_e$	$I_F = 100\text{ mA}$	$TK_{\phi_e}$	-	-0.35	-	%/K
Angle of half intensity		$\phi$	-	$\pm 22$	-	$^{\circ}$
Peak wavelength	$I_F = 100\text{ mA}$	$\lambda_p$	870	890	910	nm
Spectral bandwidth	$I_F = 100\text{ mA}$	$\Delta\lambda$	-	40	-	nm
Temperature coefficient of $\lambda_p$	$I_F = 100\text{ mA}$	$TK_{\lambda_p}$	-	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)

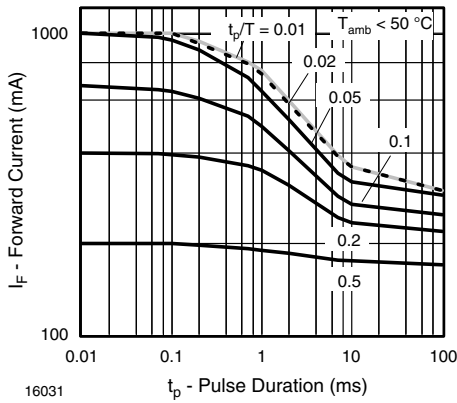


Fig. 3 - Pulse Forward Current vs. Pulse Duration

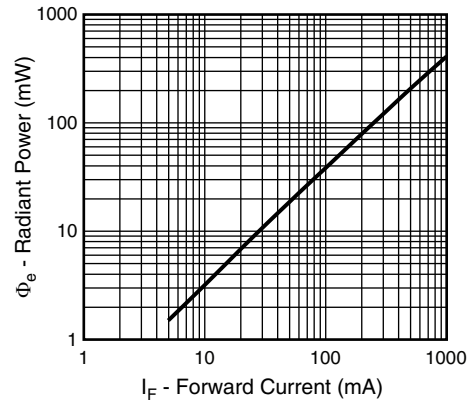


Fig. 6 - Radiant Power vs. Forward Current

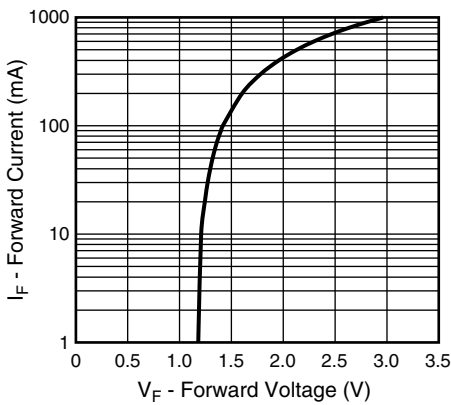


Fig. 4 - Forward Current vs. Forward Voltage

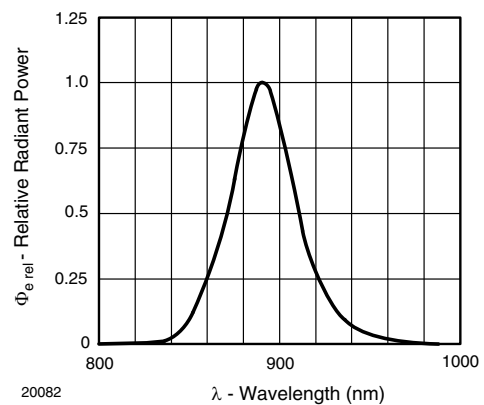


Fig. 7 - Relative Radiant Intensity / Power vs. Wavelength

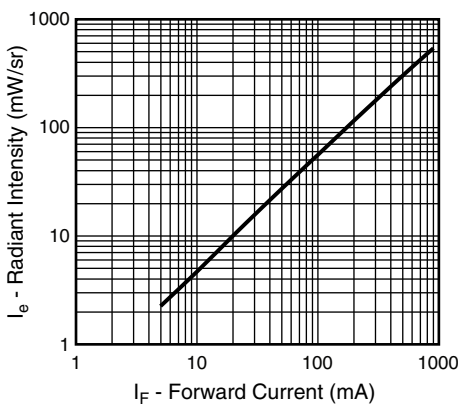


Fig. 5 - Radiant Intensity vs. Forward Current

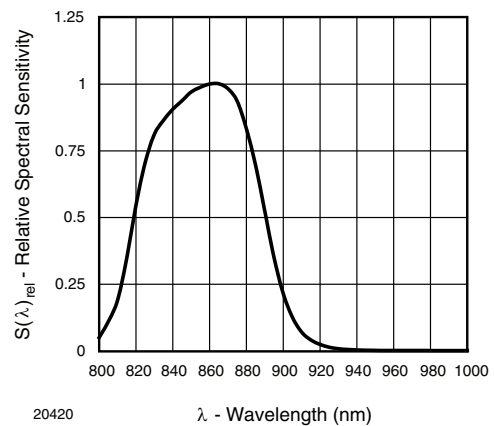


Fig. 8 - Relative Spectral Sensitivity vs. Wavelength

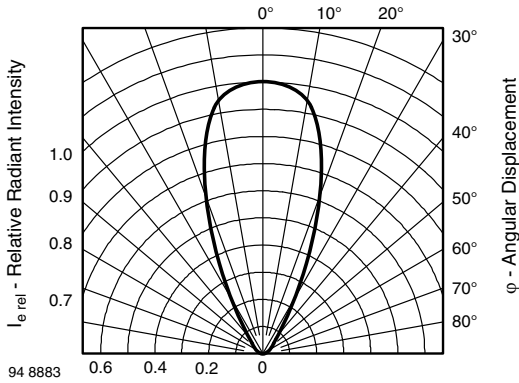
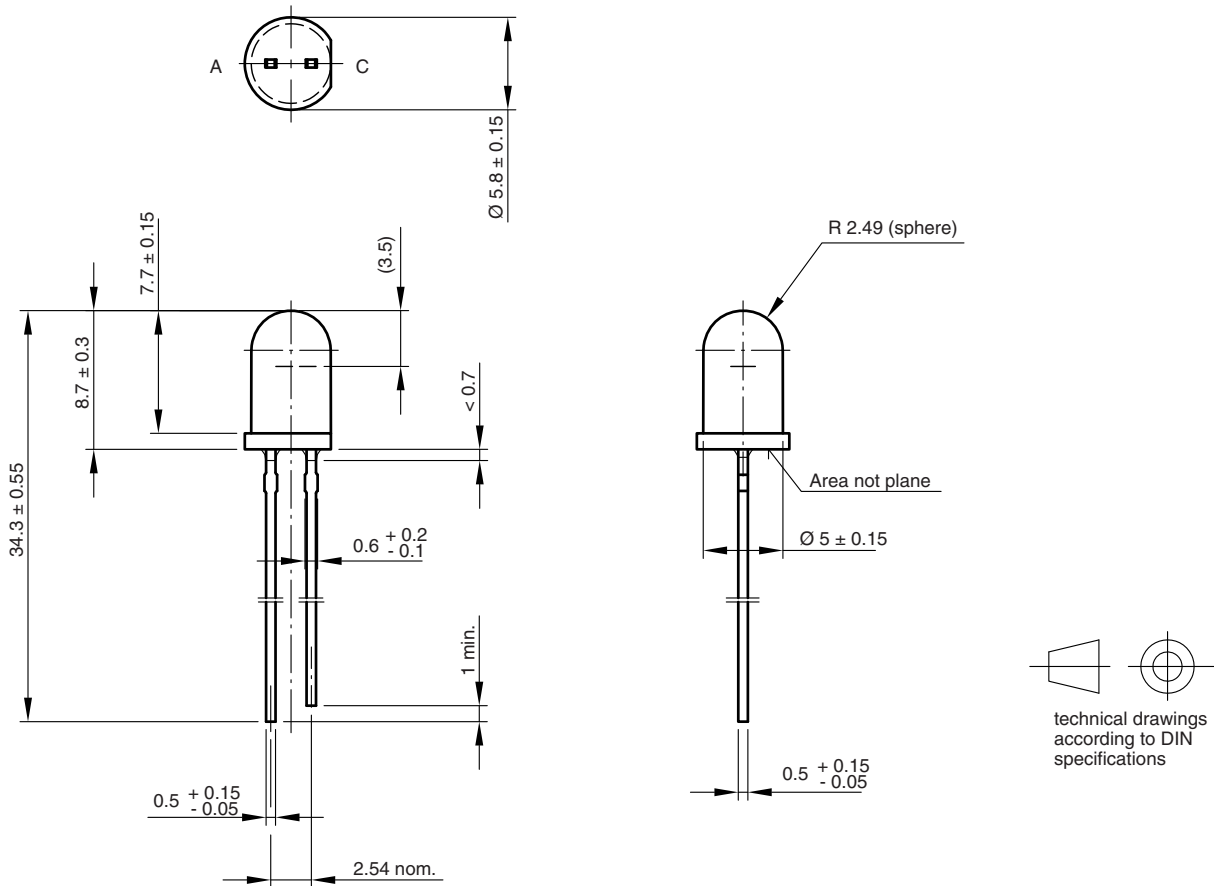


Fig. 9 - Relative Radiant Intensity vs. Angular Displacement

**PACKAGE DIMENSIONS** in millimeters



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