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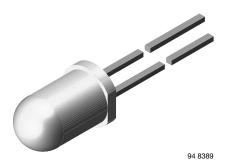


www.vishay.com

Vishay Semiconductors

TSPF6200

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



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

FEATURES

- Package type: leaded
- Package form: T-1¾
- Dimensions (in mm): Ø 5
- Peak wavelength: $\lambda_p = 890 \text{ nm}$
- 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 <u>www.vishay.com/doc?99912</u>

APPLICATIONS

Metering systems

PRODUCT SUMMARY					
COMPONENT	l _e (mW/sr)	φ (°)	λ _p (nm)	t _r (ns)	
TSPF6200	55	± 22	890	50	

Note

DESCRIPTION

• Test conditions see table "Basic Characteristics"

is molded in a blue gray tinted plastic package.

ORDERING INFORMATION					
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM		
TSPF6200	Bulk	MOQ: 3000 pcs, 3000 pcs/bulk	T-1¾		

Note

• MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINS (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 μs	I _{FSM}	1.5	A
Power dissipation		Pv	170	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 to ambient	J-STD-051, leads 7 mm soldered on PCB	R _{thJA}	230	K/W

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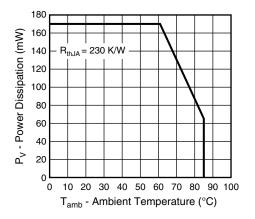


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

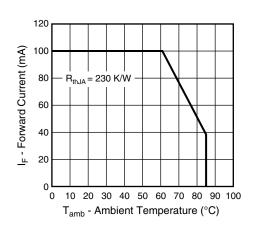


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	I _F = 100 mA, t _p = 20 ms	V _F	-	1.42	1.7	V
	$I_F = 1 \text{ A}, t_p = 100 \ \mu \text{s}$	V _F	-	3.0	-	V
Temperature coefficient of V_F	I _F = 100 mA	TK _{VF}	-	-1.7	-	mV/K
Reverse current	V _R = 5 V	I _R	-		100	nA
Junction capacitance	V _R = 0 V, f = 1 MHz, E = 0	Cj	-	160	-	pF
Radiant intensity	I _F = 100 mA, t _p = 20 ms	l _e	30	55	90	mW/sr
	$I_F = 1 \text{ A}, t_p = 100 \ \mu \text{s}$	l _e	-	520	-	mW/sr
Short circuit current	$E_e = 1 \text{ mW/cm}^2$, $\lambda = 870 \text{ nm}$	l _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	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	фе	-	40	-	mW
Temperature coefficient of ϕ_{e}	I _F = 100 mA	ΤΚφ _e	-	-0.35	-	%/K
Angle of half intensity		φ	-	± 22	-	0
Peak wavelength	I _F = 100 mA	λ _p	870	890	910	nm
Spectral bandwidth	I _F = 100 mA	Δλ	-	40	-	nm
Temperature coefficient of λ_p	I _F = 100 mA	TKλ _p	-	0.25	-	nm/K
Rise time	I _F = 100 mA	t _r	-	50	-	ns
Fall time	I _F = 100 mA	t _f	-	50	-	ns

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BASIC CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

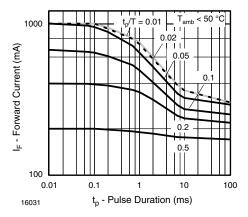


Fig. 3 - Pulse Forward Current vs. Pulse Duration

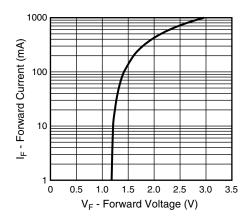


Fig. 4 - Forward Current vs. Forward Voltage

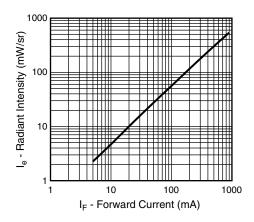


Fig. 5 - Radiant Intensity vs. Forward Current

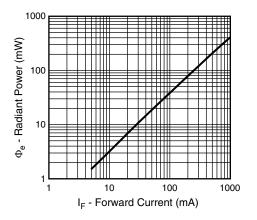


Fig. 6 - Radiant Power vs. Forward Current

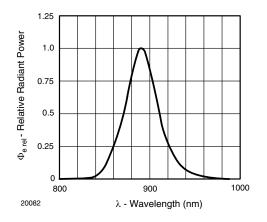


Fig. 7 - Relative Radiant Intensity / Power vs. Wavelength

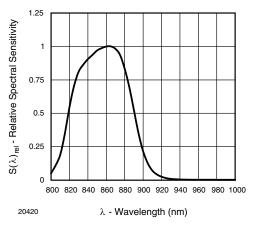


Fig. 8 - Relative Spectral Sensitivity vs. Wavelength

3 For technical questions, contact: <u>emittertechsupport@vishay.com</u>

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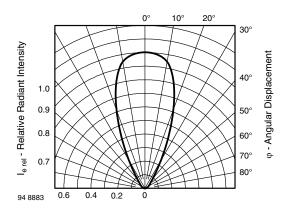
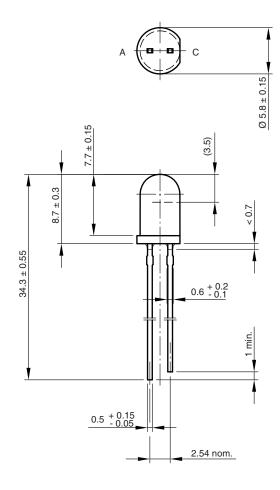
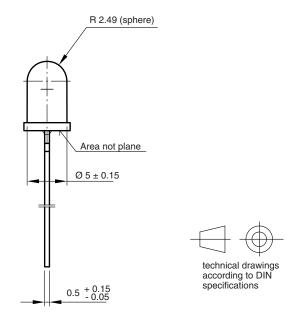


Fig. 9 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters





Drawing-No.: 6.544-5259.06-4 Issue: 6; 19.05.09 ¹⁹²⁵⁷

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4

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