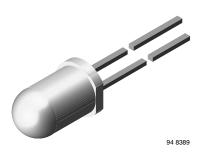
RoHS

<u>GREEN</u> (5-2008)**



Vishay Semiconductors

High Speed Infrared Emitting Diode, 870 nm, GaAlAs Double Hetero



DESCRIPTION

TSFF6210 is an infrared, 870 nm emitting diode in GaAlAs double hetero (DH) technology with high radiant power and high speed, molded in a clear, untinted plastic package.

FEATURES

Package type: leaded
Package form: T-1¾
Dimensions (in mm) = Ø 5
Peak wavelength: λ_p = 870 nm

· High reliability

High radiant power

· High radiant intensity

• Angle of half intensity: $\varphi = \pm 10^{\circ}$

· Low forward voltage

· Suitable for high pulse current operation

• High modulation bandwidth: f_c = 24 MHz

· Good spectral matching with Si photodetectors

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

Note

* Please see document "Vishay Material Category Policy": <u>www.vishay.com/doc?99902</u>

APPLICATIONS

- Infrared video data transmission between Camcorder and TV set
- Free air data transmission systems with high modulation frequencies or high data transmission rate requirements
- · Smoke-automatic fire detectors

PRODUCT SUMMARY					
COMPONENT	I _e (mW/sr)	φ (deg)	λ _p (nm)	t _r (ns)	
TSFF6210	180	± 10	870	15	

Note

• Test conditions see table "Basic Characteristics"

ORDERING INFORMATION				
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM	
TSFF6210	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1¾	

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 μs	I _{FSM}	1	А	
Power dissipation		P _V	180	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 ≤ 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	





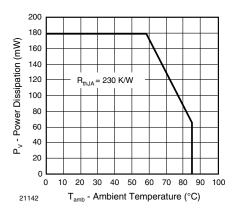


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

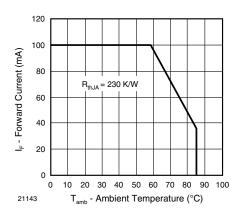


Fig. 1 - Forward Current Limit vs. Ambient Temperature

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	V _F		1.5	1.8	V
	$I_F = 1 \text{ A}, t_p = 100 \ \mu\text{s}$	V _F		2.3	3.0	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	$V_R = 0 \text{ V, } f = 1 \text{ MHz, } E = 0$	C _j		125		pF
Radiant intensity	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	l _e	90	180	450	mW/sr
	$I_F = 1 \text{ A}, t_p = 100 \ \mu\text{s}$	l _e		1800		mW/sr
Radiant power	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	φ _e		50		mW
Temperature coefficient of φ _e	I _F = 100 mA	TKφ _e		- 0.35		%/K
Angle of half intensity		φ		± 10		deg
Peak wavelength	I _F = 100 mA	λ_{p}		870		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		15		ns
Fall time	I _F = 100 mA	t _f		15		ns
Cut-off frequency	I _{DC} = 70 mA, I _{AC} = 30 mA pp	f _c		24		MHz
Virtual source diameter		d		3.7		mm

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

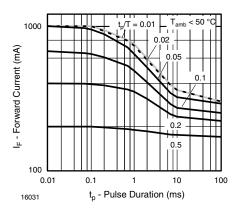


Fig. 2 - Pulse Forward Current vs. Pulse Duration

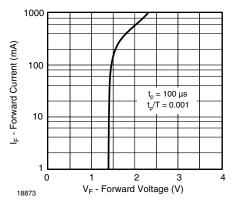


Fig. 3 - Forward Current vs. Forward Voltage

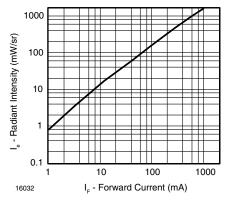


Fig. 4 - Radiant Intensity vs. Forward Current

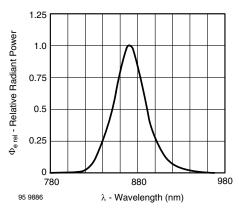


Fig. 5 - Relative Radiant Power vs. Wavelength

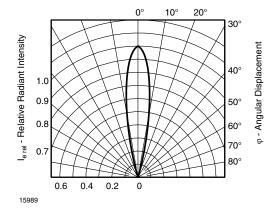


Fig. 6 - Relative Radiant Intensity vs. Angular Displacement

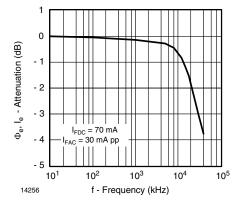
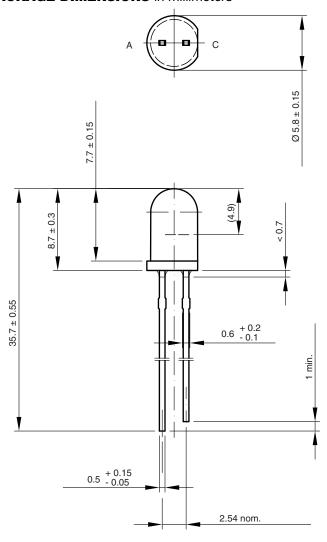


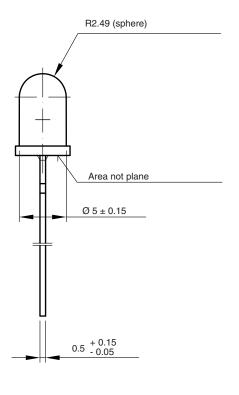
Fig. 7 - Attenuation vs. Frequency

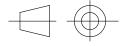
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PACKAGE DIMENSIONS in millimeters









technical drawings according to DIN specifications



Legal Disclaimer Notice

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Material Category Policy

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Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.