TSFF5210



Vishay Semiconductors

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



FEATURES

- Package type: leaded
- · Package form: T-1 3/4
- Dimensions (in mm): Ø 5
- · Leads with stand-off
- Peak wavelength: λ_p = 870 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
- 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": www.vishay.com/doc?99902

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

DESCRIPTION

TSFF5210 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.

PRODUCT SUMMARY				
COMPONENT	l _e (mW/sr)	φ (deg)	λ _p (nm)	t _r (ns)
TSFF5210	180	± 10	870	15

Note

Test conditions see table "Basic Characteristics"

ORDERING INFORMATION				
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM	
TSFF5210	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		IF	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	A
Power dissipation		Pv	180	mW

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ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
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	$t \leq 5$ 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

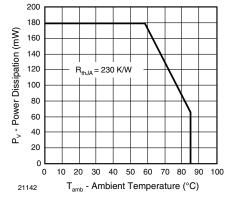


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

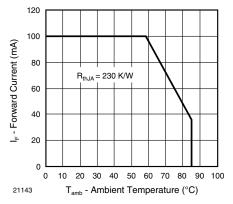


Fig. 2 - Forward Current Limit vs. Ambient Temperature

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Farmerel veltage	I _F = 100 mA, t _p = 20 ms	V _F		1.5	1.8	V
Forward voltage	I _F = 1 A, t _p = 100 μs	V _F		2.3		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	μA
Junction capacitance	$V_{R} = 0 V, f = 1 MHz, E = 0$	Cj		125		pF
De die stieten eiter	I _F = 100 mA, t _p = 20 ms	l _e	120	180	360	mW/sr
Radiant intensity	I _F = 1 A, t _p = 100 μs	l _e		$\begin{array}{c cccccc} 1.5 & 1.8 \\ 2.3 & 3.0 \\ -1.8 & & \\ & & 10 \\ 125 & & \\ 180 & 360 \\ 1800 & & \\ 50 & & \\ 50 & & \\ 50 & & \\ 50 & & \\ -0.35 & & \\ \pm 10 & & \\ 870 & & \\ 40 & & \\ 0.25 & & \\ 15 & & \\ 15 & & \\ 24 & & \\ \end{array}$	mW/sr	
Radiant power	I _F = 100 mA, t _p = 20 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	λρ		870		nm
Spectral bandwidth	I _F = 100 mA	Δλ		40		nm
Temperature coefficient of λ_p	I _F = 100 mA	ΤΚλρ		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 (Tamb = 25 °C, unless otherwise specified)

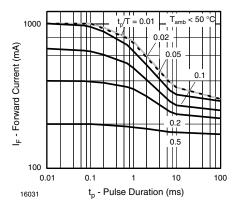


Fig. 3 - Pulse Forward Current vs. Pulse Duration

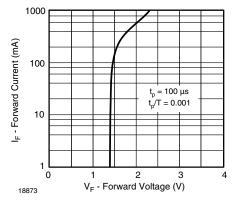


Fig. 4 - Forward Current vs. Forward Voltage

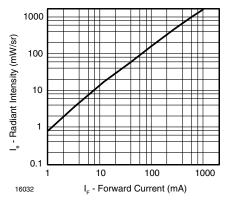


Fig. 5 - Radiant Intensity vs. Forward Current

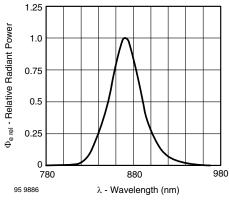


Fig. 6 - Relative Radiant Power vs. Wavelength

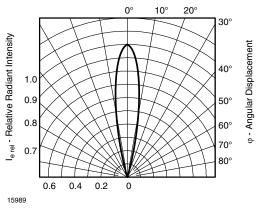


Fig. 7 - Relative Radiant Intensity vs. Angular Displacement

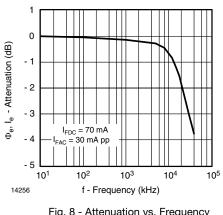


Fig. 8 - Attenuation vs. Frequency

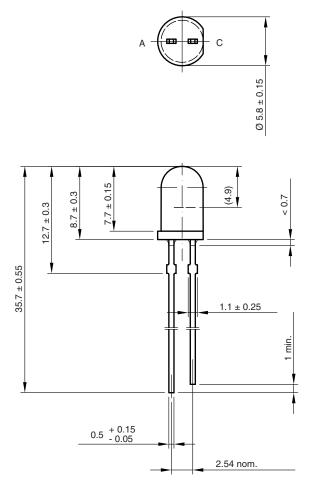
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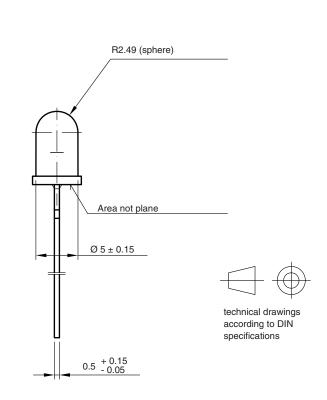


PACKAGE DIMENSIONS in millimeters

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