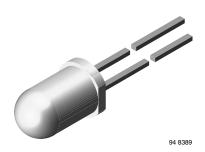
GREEN

Vishay Semiconductors

High Speed Infrared Emitting Diode, 850 nm, GaAlAs Double Hetero



DESCRIPTION

TSHG6400 is an infrared, 850 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: $\lambda_p = 850 \text{ nm}$

· 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

• High modulation bandwidth: f_c = 18 MHz

· Good spectral matching with CMOS cameras

 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 radiation source for operation with CMOS cameras (illumination).
- High speed IR data transmission.

PRODUCT SUMMARY					
COMPONENT	I _e (mW/sr)	φ (deg)	$\lambda_{\mathbf{p}}$ (nm)	t _r (ns)	
TSHG6400	70	± 22	850	20	

Note

Test conditions see table "Basic Characteristics"

ORDERING INFORMATION						
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM			
TSHG6400	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	Α	
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	





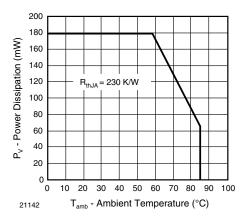


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

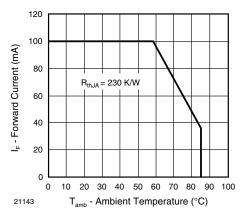


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	V _F		1.5	1.8	V
	$I_F = 1 \text{ A}, t_p = 100 \mu \text{s}$	V _F		2.3		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
	I _F = 100 mA, t _p = 20 ms	I _e	45	70	135	mW/sr
Radiant intensity	$I_F = 1 \text{ A}, t_p = 100 \ \mu\text{s}$	I _e		700		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		± 22		deg
Peak wavelength	I _F = 100 mA	λ_{p}		850		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		20		ns
Fall time	I _F = 100 mA	t _f		13		ns
Cut-off frequency	$I_{DC} = 70 \text{ mA}, I_{AC} = 30 \text{ mA pp}$	f _c		18		MHz
Virtual source diameter		d		3.7		mm

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

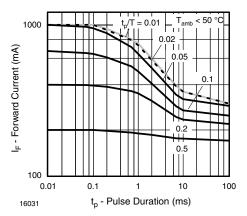


Fig. 3 - Pulse Forward Current vs. Pulse Duration

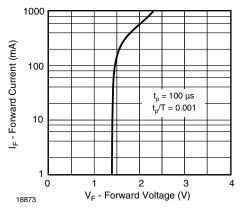


Fig. 4 - Forward Current vs. Forward Voltage

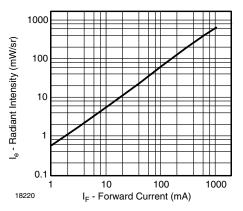


Fig. 5 - Radiant Intensity vs. Forward Current

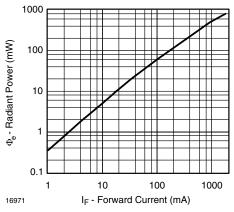


Fig. 6 - Radiant Power vs. Forward Current

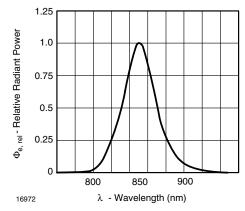


Fig. 7 - Relative Radiant Power vs. Wavelength

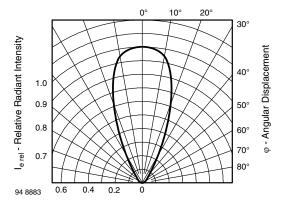
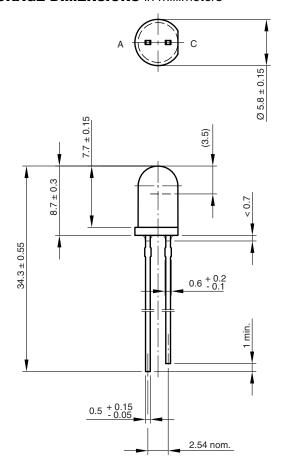
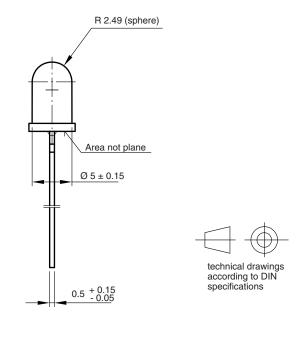


Fig. 8 - Relative Radiant Intensity vs. Angular Displacement

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PACKAGE DIMENSIONS in millimeters





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