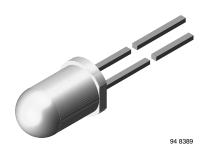
TSHG6400



Vishay Semiconductors

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



FEATURES

- · Package type: leaded
- Package form: T-1³⁄₄
- 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": <u>www.vishay.com/doc?99902</u>

APPLICATIONS

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

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.

PRODUCT SUMMARY					
COMPONENT	l _e (mW/sr)	φ (deg)	λ _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	

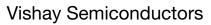
Note

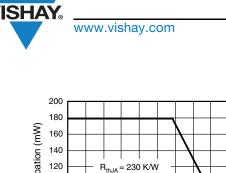
MOQ: minimum order quantity

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	A
Power dissipation		Pv	180	mW
Junction temperature		Тj	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/ambient	J-STD-051, leads 7 mm soldered on PCB	R _{thJA}	230	K/W

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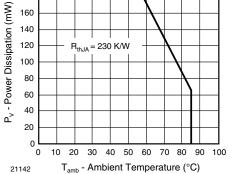


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

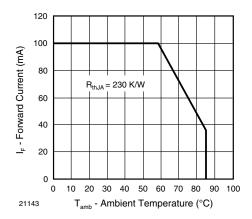


Fig. 2 - Forward Current Limit vs. Ambient Temperature

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		1.5	1.8	V
	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
Radiant intensity	I _F = 100 mA, t _p = 20 ms	l _e	45	70	135	mW/sr
	I _F = 1 A, t _p = 100 μs	l _e		700		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		± 22		deg
Peak wavelength	I _F = 100 mA	λρ		850		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		20		ns
Fall time	I _F = 100 mA	t _f		13		ns
Cut-off frequency	$I_{DC} = 70$ mA, $I_{AC} = 30$ 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)

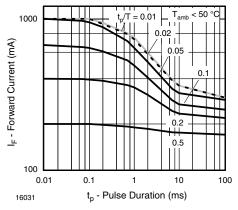


Fig. 3 - Pulse Forward Current vs. Pulse Duration

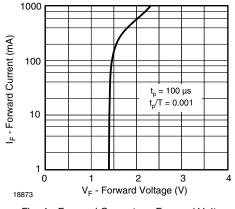


Fig. 4 - Forward Current vs. Forward Voltage

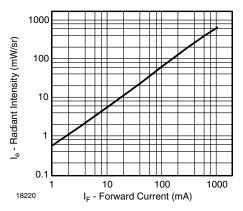


Fig. 5 - Radiant Intensity vs. Forward Current

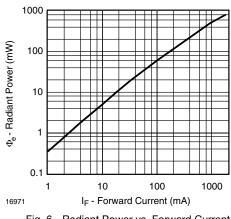
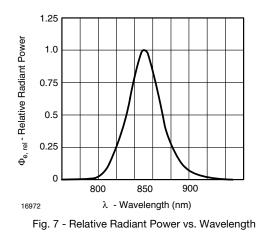


Fig. 6 - Radiant Power vs. Forward Current



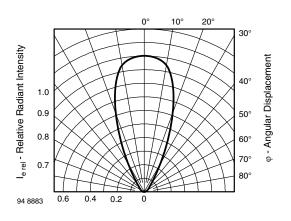


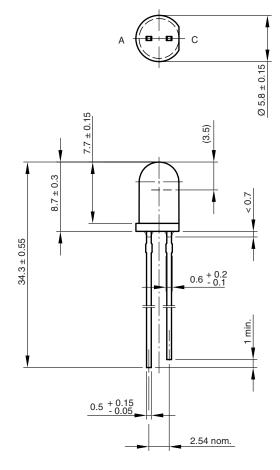
Fig. 8 - Relative Radiant Intensity vs. Angular Displacement

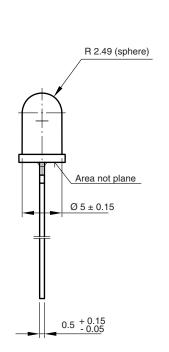
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PACKAGE DIMENSIONS in millimeters







technical drawings according to DIN specifications

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



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