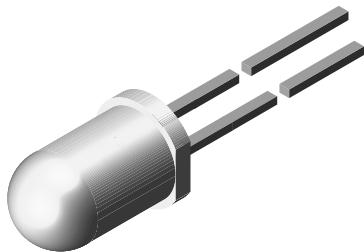


## Infrared Emitting Diode, 875 nm, GaAlAs



94 8389

### FEATURES

- Package type: leaded
- Package form: T-1 3/4
- Dimensions (in mm): Ø 5
- Peak wavelength:  $\lambda_p = 875$  nm
- High reliability
- Angle of half intensity:  $\phi = \pm 12^\circ$
- Low forward voltage
- Suitable for high pulse current operation
- Good spectral matching with Si photodetectors
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC


**RoHS**  
COMPLIANT

**GREEN**  
*(S-2008) \*\**

### DESCRIPTION

The TSHA620. series are infrared, 875 nm emitting diodes in GaAlAs technology, molded in a clear, untinted plastic package.

### Note

\*\* Please see document "Vishay Material Category Policy":  
[www.vishay.com/doc?99902](http://www.vishay.com/doc?99902)

### APPLICATIONS

- Infrared remote control and free air data transmission systems
- This emitter series is dedicated to systems with panes in transmission space between emitter and detector, because of the low absorbtion of 875 nm radiation in glass

PRODUCT SUMMARY				
COMPONENT	I <sub>e</sub> (mW/sr)	φ (deg)	λ <sub>p</sub> (nm)	t <sub>r</sub> (ns)
TSHA6200	40	± 12	875	600
TSHA6201	50	± 12	875	600
TSHA6202	60	± 12	875	600
TSHA6203	65	± 12	875	600

### Note

- Test conditions see table "Basic Characteristics"

ORDERING INFORMATION			
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TSHA6200	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 3/4
TSHA6201	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 3/4
TSHA6202	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 3/4
TSHA6203	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 3/4

### Note

- MOQ: minimum order quantity

<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_{amb} = 25^{\circ}C$ , 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	$t_p = 100 \mu s$	$I_{FSM}$	2.5	A
Power dissipation		$P_V$	180	mW
Junction temperature		$T_j$	100	°C
Operating temperature range		$T_{amb}$	- 40 to + 85	°C
Storage temperature range		$T_{stg}$	- 40 to + 100	°C
Soldering temperature	$t \leq 5 s, 2 \text{ mm from case}$	$T_{sd}$	260	°C
Thermal resistance junction/ambient	J-STD-051, leads 7 mm, soldered on PCB	$R_{thJA}$	230	K/W

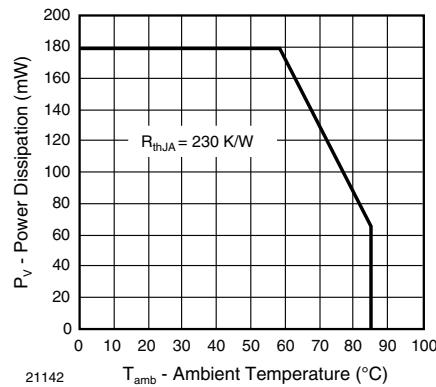


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

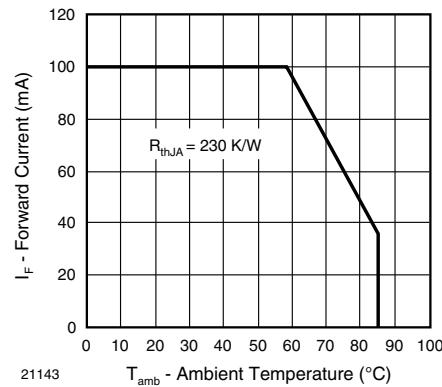


Fig. 2 - Forward Current Limit vs. Ambient Temperature

<b>BASIC CHARACTERISTICS</b> ( $T_{amb} = 25^{\circ}C$ , 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
Temperature coefficient of $V_F$	$I_F = 100 \text{ mA}$	$TK_{VF}$		- 1.6		mV/K
Reverse current	$V_R = 5 \text{ V}$	$I_R$			100	μA
Junction capacitance	$V_R = 0 \text{ V}, f = 1 \text{ MHz}, E = 0$	$C_j$		20		pF
Temperature coefficient of $\phi_e$	$I_F = 20 \text{ mA}$	$TK\phi_e$		- 0.7		%/K
Angle of half intensity		$\phi$		± 12		deg
Peak wavelength	$I_F = 100 \text{ mA}$	$\lambda_p$		875		nm
Spectral bandwidth	$I_F = 100 \text{ mA}$	$\Delta\lambda$		80		nm
Temperature coefficient of $\lambda_p$	$I_F = 100 \text{ mA}$	$TK\lambda_p$		0.2		nm/K
Rise time	$I_F = 100 \text{ mA}$	$t_r$		600		ns
	$I_F = 1 \text{ A}$	$t_r$		300		ns
Fall time	$I_F = 100 \text{ mA}$	$t_f$		600		ns
	$I_F = 1 \text{ A}$	$t_f$		300		ns
Virtual source diameter		$d$		3.7		mm

TYPE DEDICATED CHARACTERISTICS ( $T_{amb} = 25^\circ C$ , unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 1 \text{ A}, t_p = 100 \mu\text{s}$	TSHA6200	$V_F$		2.8	3.5	V
		TSHA6201	$V_F$		2.8	3.5	V
		TSHA6202	$V_F$		2.8	3.5	V
		TSHA6203	$V_F$		2.8	3.5	V
Radiant intensity	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	TSHA6200	$I_e$	25	40	125	mW/sr
		TSHA6201	$I_e$	30	50	125	mW/sr
		TSHA6202	$I_e$	36	60	125	mW/sr
		TSHA6203	$I_e$	50	65	125	mW/sr
	$I_F = 1 \text{ A}, t_p = 100 \mu\text{s}$	TSHA6200	$I_e$	200	330		mW/sr
		TSHA6201	$I_e$	260	400		mW/sr
		TSHA6202	$I_e$	330	460		mW/sr
		TSHA6203	$I_e$	400	530		mW/sr
Radiant power	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	TSHA6200	$\phi_e$		22		mW
		TSHA6201	$\phi_e$		23		mW
		TSHA6202	$\phi_e$		24		mW
		TSHA6203	$\phi_e$		25		mW

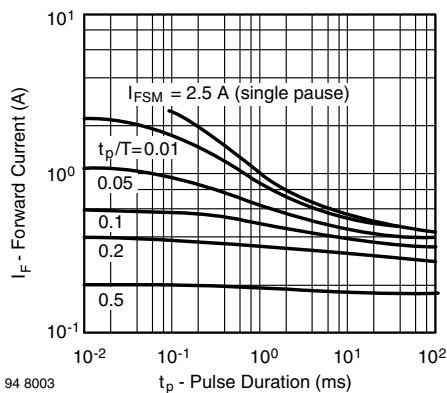
**BASIC CHARACTERISTICS** ( $T_{amb} = 25^\circ C$ , unless otherwise specified)


Fig. 3 - Pulse Forward Current vs. Pulse Duration

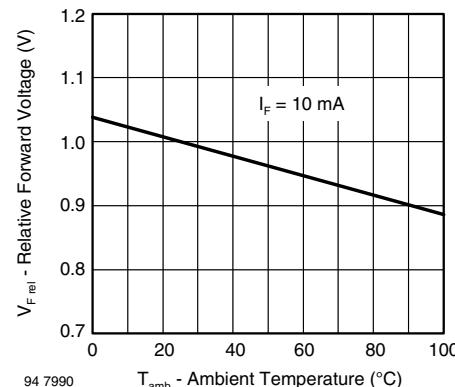


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

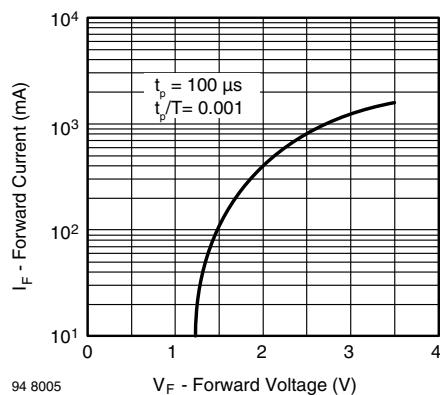


Fig. 4 - Forward Current vs. Forward Voltage

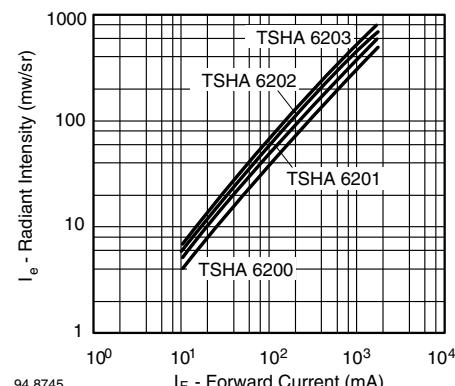


Fig. 6 - Radiant Intensity vs. Forward Current

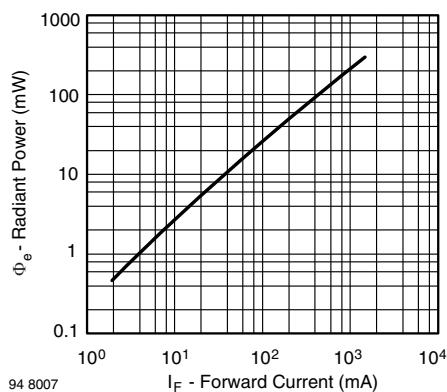


Fig. 7 - Radiant Power vs. Forward Current

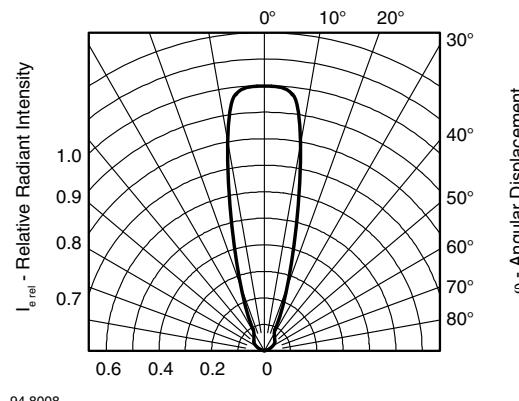


Fig. 10 - Relative Radiant Intensity vs. Angular Displacement

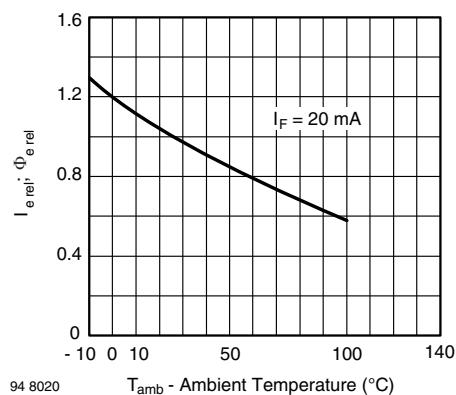


Fig. 8 - Relative Radiant Intensity/Power vs. Ambient Temperature

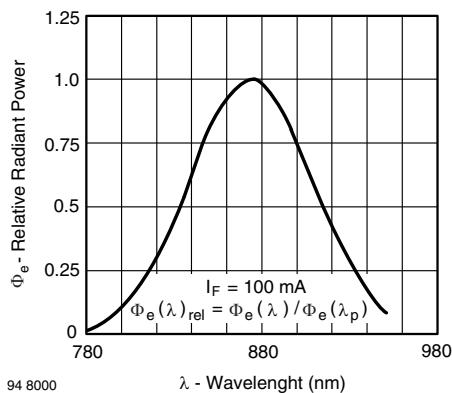
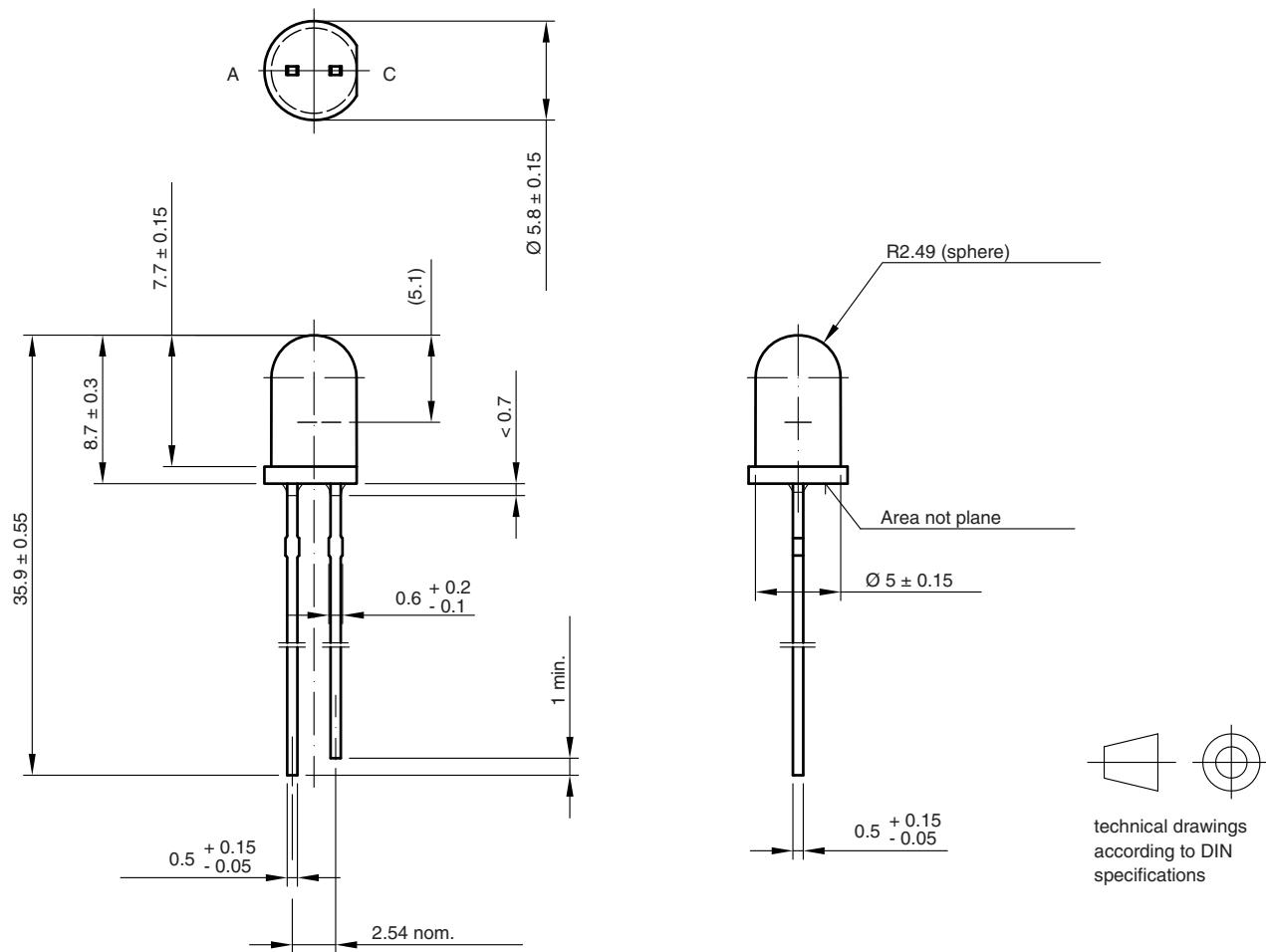


Fig. 9 - Relative Radiant Power vs. Wavelength

**PACKAGE DIMENSIONS** in millimeters


Drawing-No.: 6.544-5259.04-4  
 Issue: 8; 19.05.09  
 96 12125

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