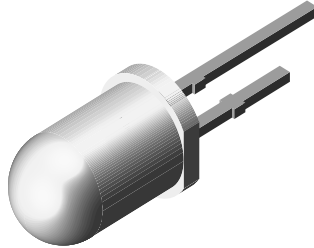




Infrared Emitting Diode, 875 nm, GaAlAs



94 8390

FEATURES

- Package type: leaded
- Package form: T-1 $\frac{3}{4}$
- Dimensions (in mm): \varnothing 5
- Leads with stand-off
- Peak wavelength: $\lambda_p = 875$ nm
- High reliability
- Angle of half intensity: $\varphi = \pm 12^\circ$
- Low forward voltage
- Suitable for high pulse current operation
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition



RoHS
COMPLIANT
HALOGEN
FREE

DESCRIPTION

The TSHA520. series are infrared, 875 nm emitting diodes in GaAlAs technology, molded in a clear, untinted plastic package.

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 absorption of 875 nm radiation in glass

PRODUCT SUMMARY				
COMPONENT	I_e (mW/sr)	φ (deg)	λ_p (nm)	t_r (ns)
TSHA5200	40	± 12	875	600
TSHA5201	50	± 12	875	600
TSHA5202	60	± 12	875	600
TSHA5203	65	± 12	875	600

Note

Test conditions see table "Basic Characteristics"

ORDERING INFORMATION			
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TSHA5200	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 $\frac{3}{4}$
TSHA5201	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 $\frac{3}{4}$
TSHA5202	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 $\frac{3}{4}$
TSHA5203	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 $\frac{3}{4}$

Note

MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS				
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	$^\circ C$
Operating temperature range		T_{amb}	- 40 to + 85	$^\circ C$
Storage temperature range		T_{stg}	- 40 to + 100	$^\circ C$
Soldering temperature	$t \leq 5$ s, 2 mm from case	T_{sd}	260	$^\circ C$
Thermal resistance junction/ambient	J-STD-051, leads 7 mm, soldered on PCB	R_{thJA}	230	K/W

Note

$T_{amb} = 25 \text{ }^\circ C$, unless otherwise specified

TSHA5200, TSHA5201, TSHA5202, TSHA5203

Vishay Semiconductors Infrared Emitting Diode, 875 nm, GaAlAs

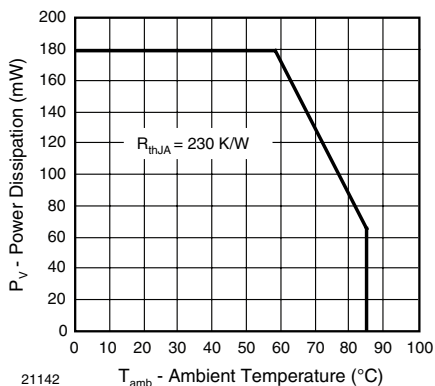


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

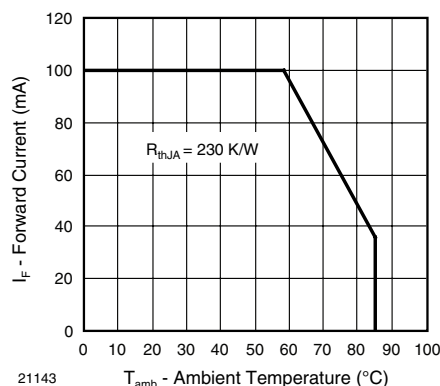


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS						
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_{V_F}		-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 ϕ_e	$I_F = 20 \text{ mA}$	TK_{ϕ_e}		-0.7		%/K
Angle of half intensity		ϕ		± 12		deg
Peak wavelength	$I_F = 100 \text{ mA}$	λ_p		875		nm
Spectral bandwidth	$I_F = 100 \text{ mA}$	$\Delta\lambda$		80		nm
Temperature coefficient of λ_p	$I_F = 100 \text{ mA}$	TK_{λ_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

Note

$T_{amb} = 25 \text{ }^\circ\text{C}$, unless otherwise specified



TSHA5200, TSHA5201, TSHA5202, TSHA5203

Infrared Emitting Diode, 875 nm, GaAIAs Vishay Semiconductors

TYPE DEDICATED CHARACTERISTICS							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 1 \text{ A}, t_p = 100 \mu\text{s}$	TSHA5200	V_F		2.8	3.5	V
		TSHA5201	V_F		2.8	3.5	V
		TSHA5202	V_F		2.8	3.5	V
		TSHA5203	V_F		2.8	3.5	V
Radiant intensity	$I_F = 100 \text{ mA}, t_p = 20 \mu\text{s}$	TSHA5200	I_e	25	40	125	mW/sr
		TSHA5201	I_e	30	50	125	mW/sr
		TSHA5202	I_e	36	60	125	mW/sr
		TSHA5203	I_e	50	65	125	mW/sr
	$I_F = 1 \text{ A}, t_p = 100 \mu\text{s}$	TSHA5200	I_e	200	330		mW/sr
		TSHA5201	I_e	260	400		mW/sr
		TSHA5202	I_e	330	460		mW/sr
		TSHA5203	I_e	400	530		mW/sr
Radiant power	$I_F = 100 \text{ mA}, t_p = 20 \mu\text{s}$	TSHA5200	ϕ_e		22		mW
		TSHA5201	ϕ_e		23		mW
		TSHA5202	ϕ_e		24		mW
		TSHA5203	ϕ_e		25		mW

Note

$T_{amb} = 25 \text{ }^\circ\text{C}$, unless otherwise specified

BASIC CHARACTERISTICS

$T_{amb} = 25 \text{ }^\circ\text{C}$, unless otherwise specified

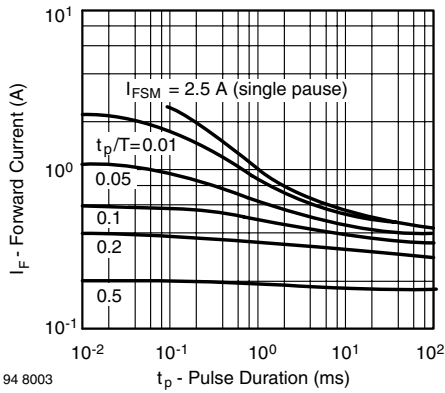


Fig. 3 - Pulse Forward Current vs. Pulse Duration

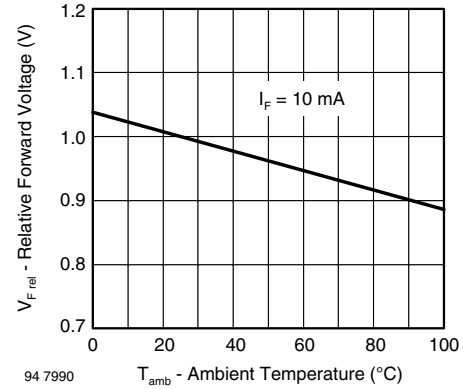


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

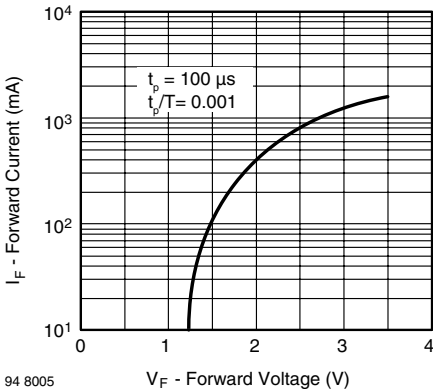


Fig. 4 - Forward Current vs. Forward Voltage

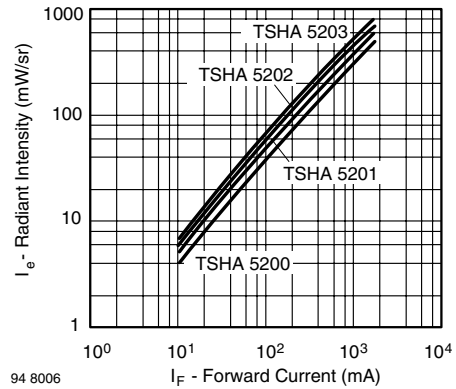
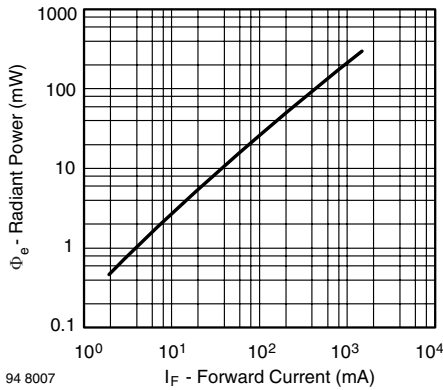


Fig. 6 - Radiant Intensity vs. Forward Current

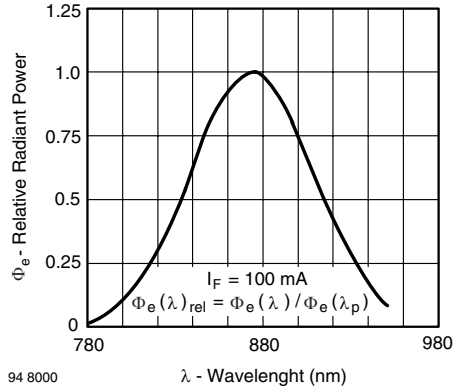
TSHA5200, TSHA5201, TSHA5202, TSHA5203



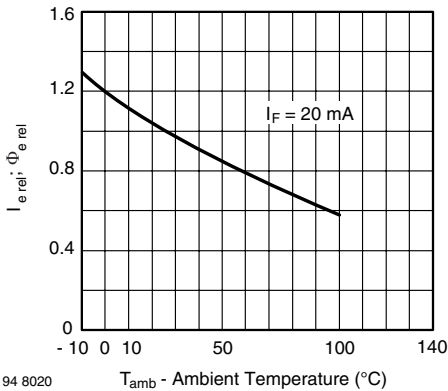
Vishay Semiconductors Infrared Emitting Diode, 875 nm, GaAlAs



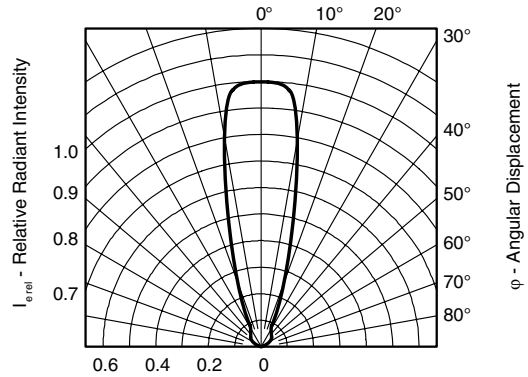
94 8007 I_F - Forward Current (mA)
Fig. 7 - Radiant Power vs. Forward Current



94 8000 λ - Wavelength (nm)
Fig. 9 - Relative Radiant Power vs. Wavelength

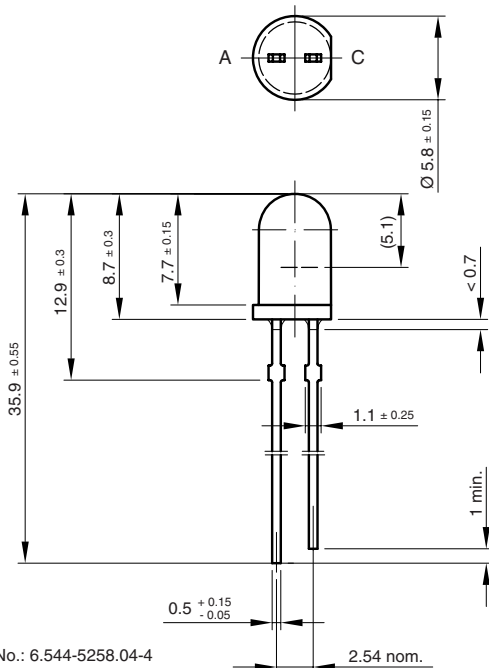


94 8020 T_{amb} - Ambient Temperature (°C)
Fig. 8 - Relative Radiant Intensity/Power vs. Ambient Temperature

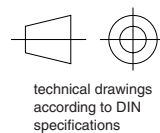
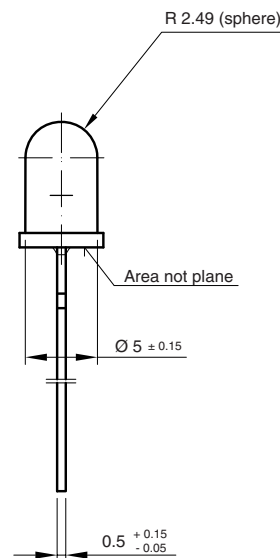


94 8008 ϕ - Angular Displacement
Fig. 10 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters



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