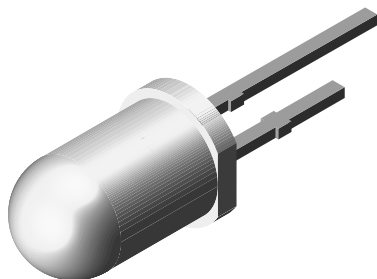




Infrared Emitting Diode, 875 nm, GaAlAs



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
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

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

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V_R	5	V
Forward current		I_F	100	mA
Peak forward current	$t_p/T = 0.5$, $t_p = 100\text{ }\mu\text{s}$	I_{FM}	200	mA
Surge forward current	$t_p = 100\text{ }\mu\text{s}$	I_{FSM}	2.5	A
Power dissipation		P_V	180	mW
Junction temperature		T_j	100	$^{\circ}\text{C}$
Operating temperature range		T_{amb}	-40 to +85	$^{\circ}\text{C}$
Storage temperature range		T_{stg}	-40 to +100	$^{\circ}\text{C}$
Soldering temperature	$t \leq 5\text{ s}$, 2 mm from case	T_{sd}	260	$^{\circ}\text{C}$
Thermal resistance junction to ambient	J-STD-051, leads 7 mm, soldered on PCB	R_{thJA}	230	K/W

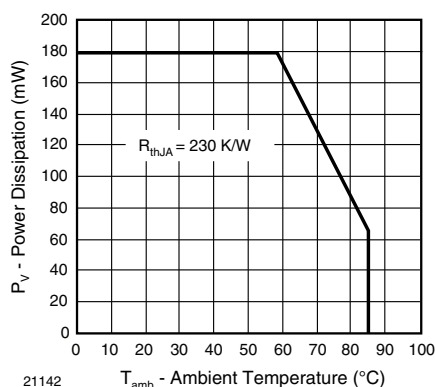


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

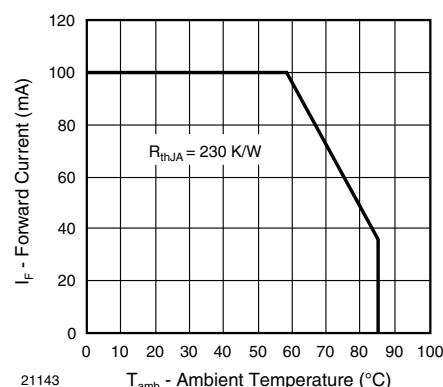


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, 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 ϕ_e	$I_F = 20\text{ mA}$	TK_{ϕ_e}	-	-0.7	-	%/K
Angle of half intensity		ϕ	-	± 12	-	$^{\circ}$
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



TYPE DEDICATED CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$, unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 1\text{ A}$, $t_p = 100\text{ }\mu\text{s}$	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	$I_F = 100\text{ mA}$, $t_p = 20\text{ }\mu\text{s}$	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
	$I_F = 1\text{ A}$, $t_p = 100\text{ }\mu\text{s}$	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	$I_F = 100\text{ mA}$, $t_p = 20\text{ }\mu\text{s}$	TSHA5200	ϕ_e	-	22	-	mW
		TSHA5201	ϕ_e	-	23	-	mW
		TSHA5202	ϕ_e	-	24	-	mW
		TSHA5203	ϕ_e	-	25	-	mW

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

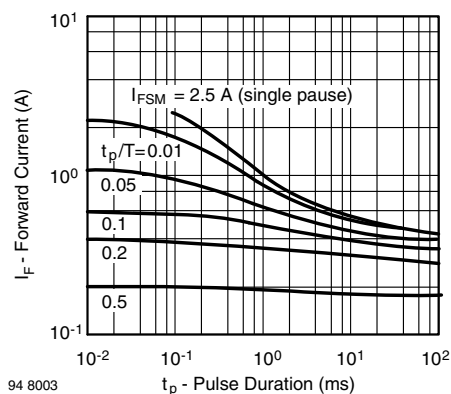


Fig. 3 - Pulse Forward Current vs. Pulse Duration

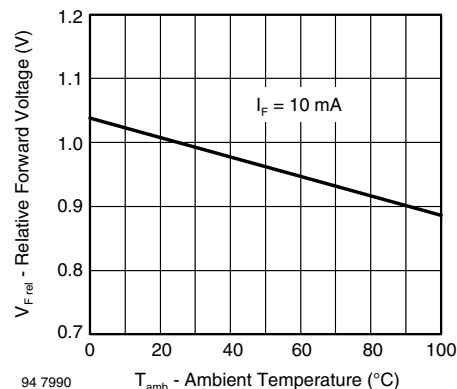


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

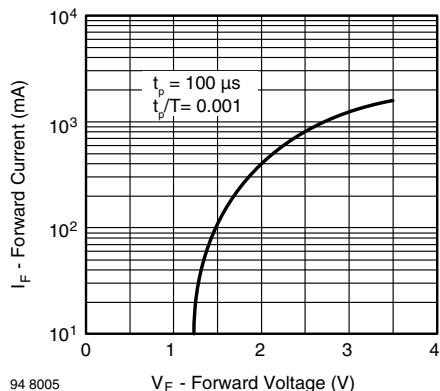


Fig. 4 - Forward Current vs. Forward Voltage

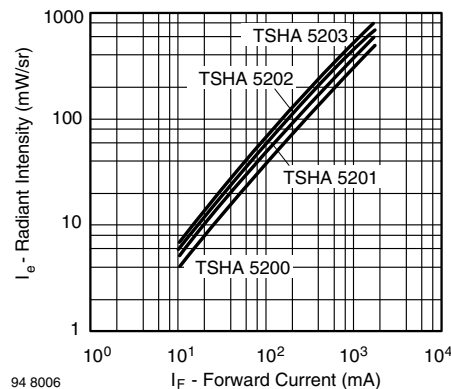


Fig. 6 - Radiant Intensity vs. Forward Current

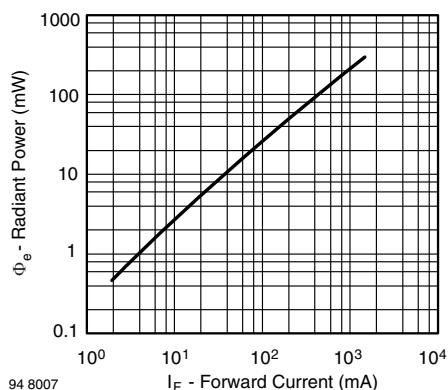


Fig. 7 - Radiant Power vs. Forward Current

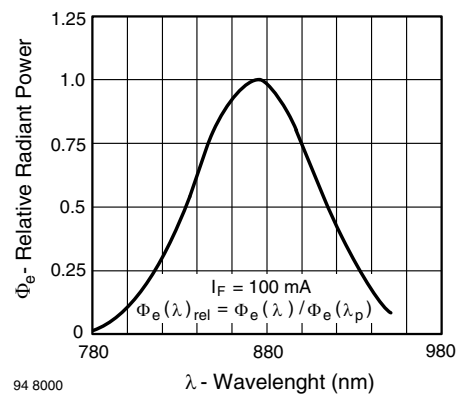


Fig. 9 - Relative Radiant Power vs. Wavelength

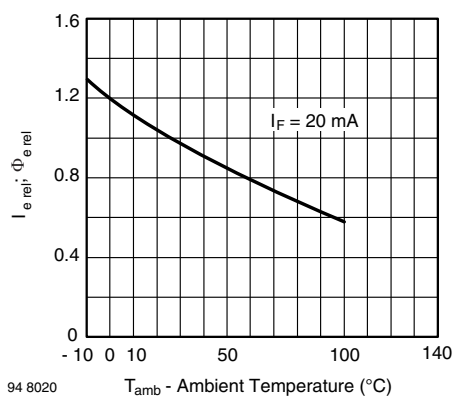


Fig. 8 - Relative Radiant Intensity/Power vs. Ambient Temperature

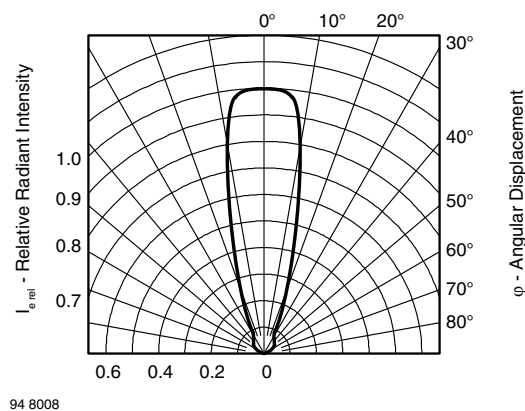


Fig. 10 - Relative Radiant Intensity vs. Angular Displacement

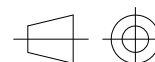
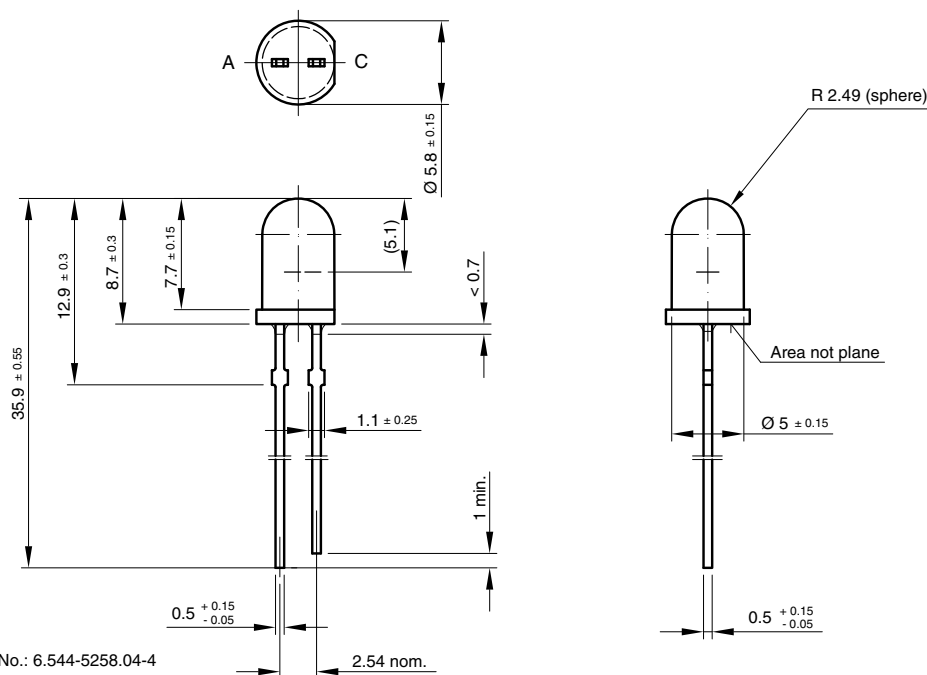


www.vishay.com

TSHA5200, TSHA5201, TSHA5202, TSHA5203

Vishay Semiconductors

PACKAGE DIMENSIONS in millimeters



technical drawings
according to DIN
specifications

Drawing-No.: 6.544-5258.04-4
Issue: 9; 23.07.10
96 12121



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