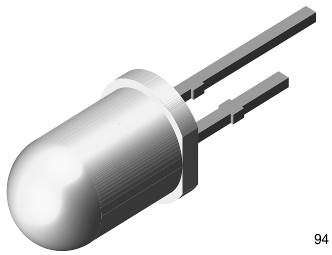
Infrared Emitting Diode, 875 nm, GaAlAs



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DESCRIPTION

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

FEATURES

- Package type: leaded
- Package form: T-1¾
- Dimensions (in mm): Ø 5
- Leads with stand-off
- Peak wavelength: λ_p = 875 nm
- High reliability
- Angle of half intensity: φ = ± 12°
- Low forward voltage
- Suitable for high pulse current operation
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

Pb e3 RoHS COMPLIANT GREEN (5-2008)**

Note

** Please see document "Vishay Material Category Policy": 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_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-1¾
TSHA5201	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1¾
TSHA5202	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1¾
TSHA5203	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 µs	I_{FM}	200	mA
Surge forward current	t_p = 100 µs	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 ≤ 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

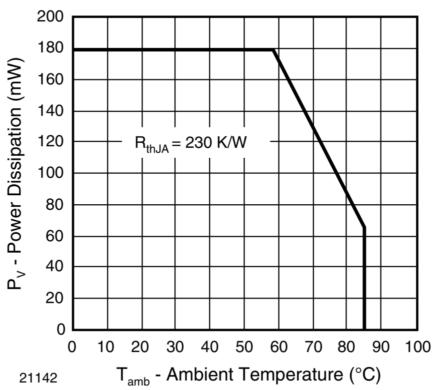


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

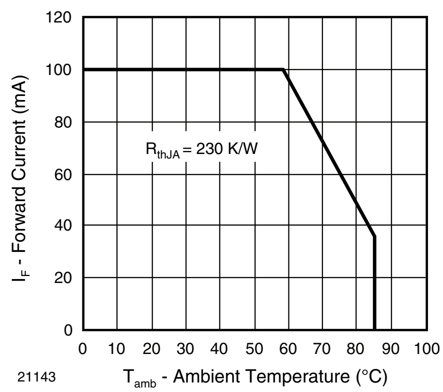


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Forward voltage	I_F = 100 mA, t_p = 20 ms	V_F		1.5	1.8	V
Temperature coefficient of V_F	I_F = 100 mA	TK_{VF}		- 1.6		mV/K
Reverse current	V_R = 5 V	I_R			100	µA
Junction capacitance	V_R = 0 V, f = 1 MHz, E = 0	C_j		20		pF
Temperature coefficient of ϕ_e	I_F = 20 mA	$TK\phi_e$		- 0.7		%/K
Angle of half intensity		φ		± 12		deg
Peak wavelength	I_F = 100 mA	λ_p		875		nm
Spectral bandwidth	I_F = 100 mA	$\Delta\lambda$		80		nm
Temperature coefficient of λ_p	I_F = 100 mA	$TK\lambda_p$		0.2		nm/K
Rise time	I_F = 100 mA	t_r		600		ns
	I_F = 1 A	t_r		300		ns
Fall time	I_F = 100 mA	t_f		600		ns
	I_F = 1 A	t_f		300		ns
Virtual source diameter		d		3.7		mm

TYPE DEDICATED CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)							
PARAMETER	**TEST CONDITION**	**PART**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Forward voltage	I_F = 1 A, t_p = 100 μs	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 mA, t_p = 20 μs	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 A, t_p = 100 μs	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 mA, t_p = 20 μs	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 °C, unless otherwise specified)

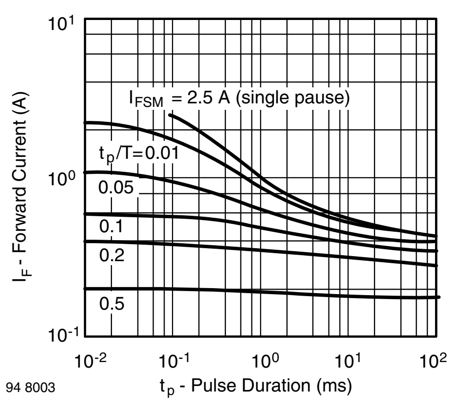


Fig. 3 - Pulse Forward Current vs. Pulse Duration

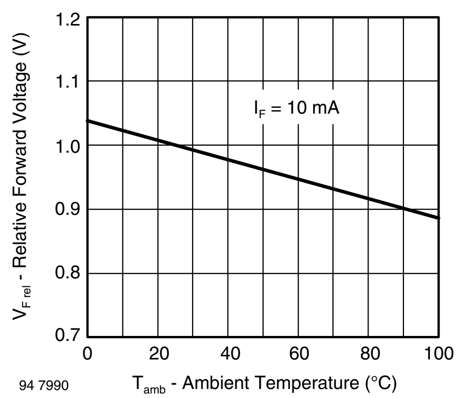


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

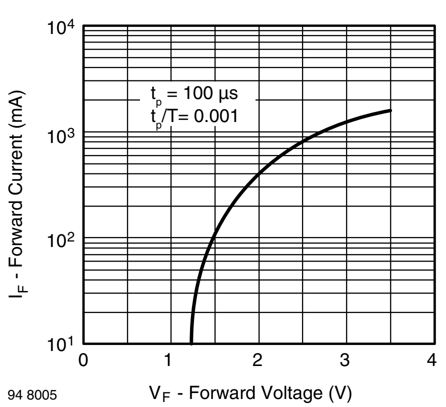


Fig. 4 - Forward Current vs. Forward Voltage

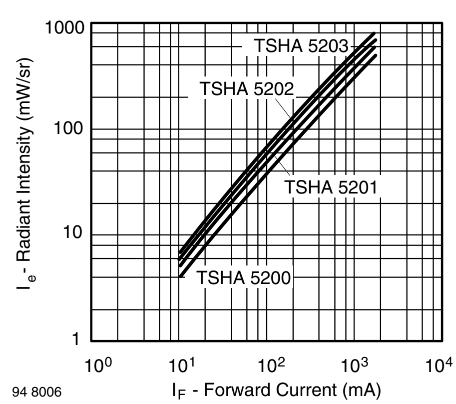


Fig. 6 - Radiant Intensity vs. Forward Current

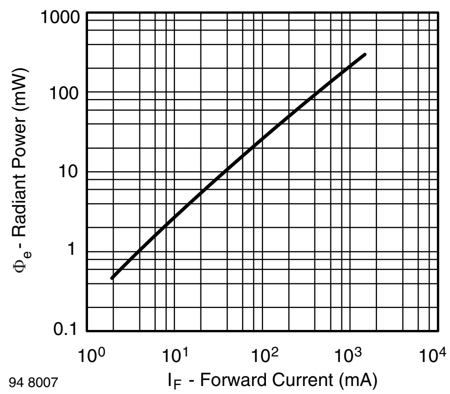


Fig. 7 - Radiant Power vs. Forward Current

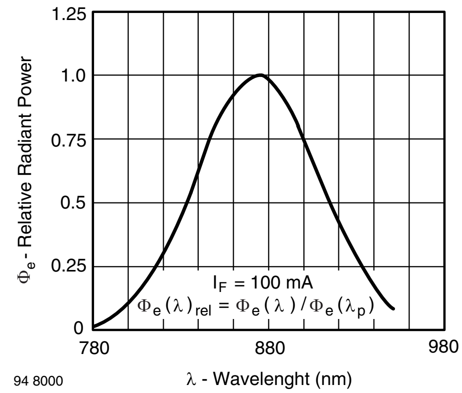


Fig. 9 - Relative Radiant Power vs. Wavelength

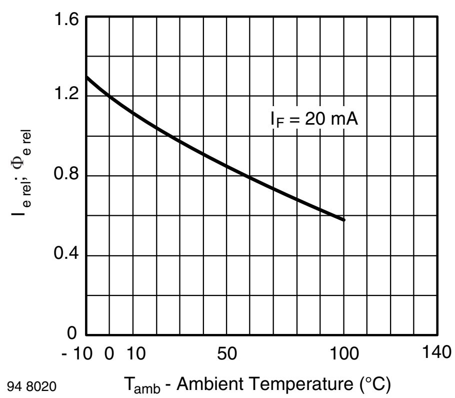


Fig. 8 - Relative Radiant Intensity/Power vs. Ambient Temperature

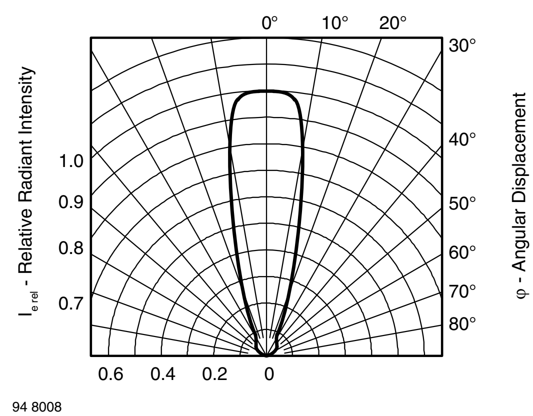
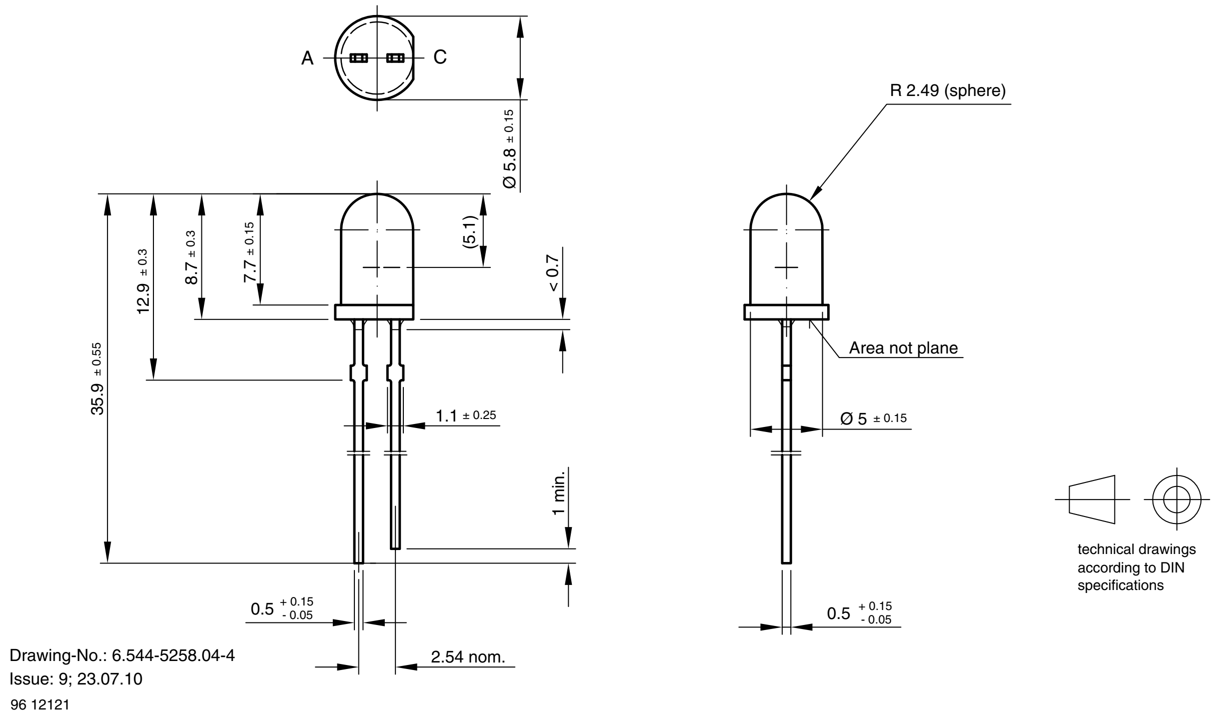


Fig. 10 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters



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