

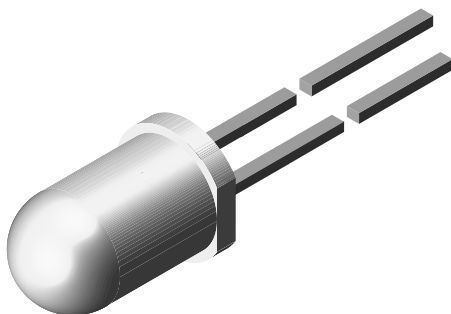


**THE DATASHEET OF
TSHA6203**





Infrared Emitting Diode, 875 nm, GaAlAs



FEATURES

- Package type: leaded
- Package form: T-1 $\frac{3}{4}$
- Dimensions (in mm): \varnothing 5
- 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
- Good spectral matching with Si photodetectors
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

DESCRIPTION

The TSHA620. 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)
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 $\frac{3}{4}$
TSHA6201	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 $\frac{3}{4}$
TSHA6202	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 $\frac{3}{4}$
TSHA6203	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 $\frac{3}{4}$

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 to ambient	J-STD-051, leads 7 mm, soldered on PCB	R _{thJA}	230	K/W

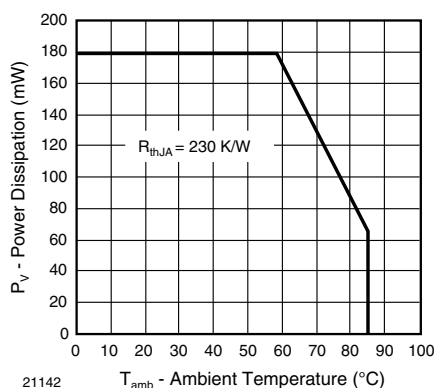


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

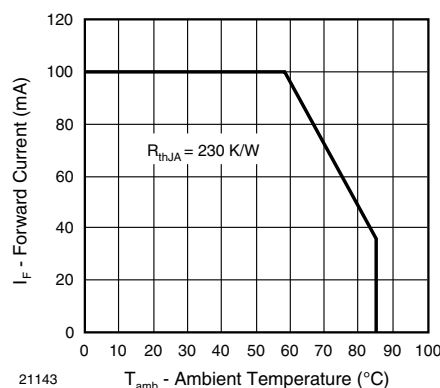


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS (T _{amb} = 25 °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 _{V_F}	-	-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	TKφ _e	-	-0.7	-	%/K
Angle of half intensity		φ	-	± 12	-	°
Peak wavelength	I _F = 100 mA	λ _p	-	875	-	nm
Spectral bandwidth	I _F = 100 mA	Δλ	-	80	-	nm
Temperature coefficient of λ _p	I _F = 100 mA	TKλ _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 ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 1\text{ A}$, $t_p = 100\text{ }\mu\text{s}$	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
	$I_F = 1\text{ A}$, $t_p = 100\text{ }\mu\text{s}$	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	ϕ_e	-	22	-	mW
		TSHA6201	ϕ_e	-	23	-	mW
		TSHA6202	ϕ_e	-	24	-	mW
		TSHA6203	ϕ_e	-	25	-	mW

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

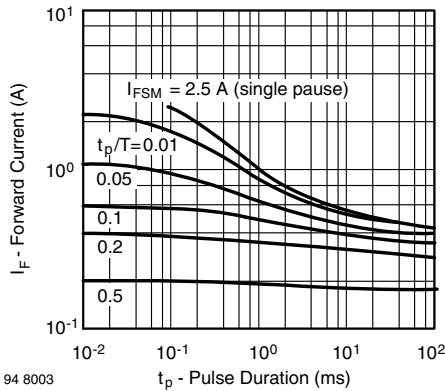


Fig. 3 - Pulse Forward Current vs. Pulse Duration

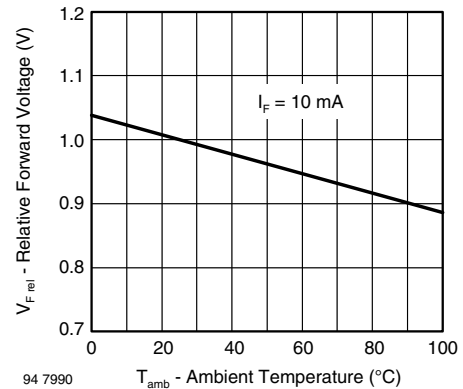


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

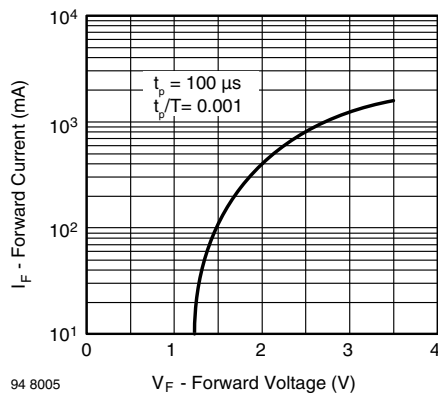


Fig. 4 - Forward Current vs. Forward Voltage

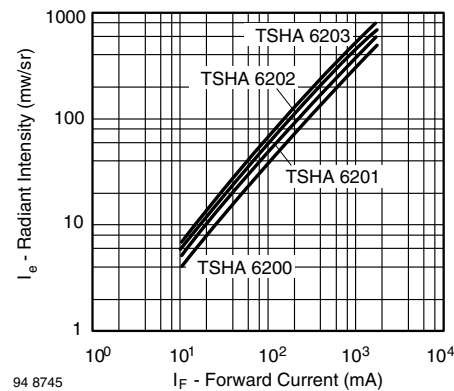


Fig. 6 - Radiant Intensity vs. Forward Current

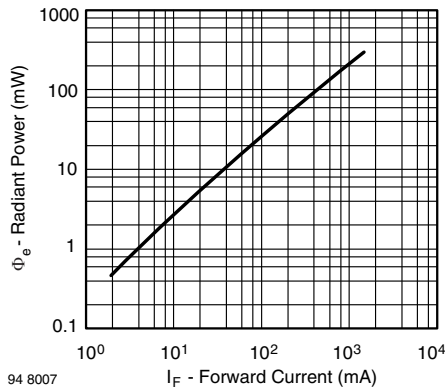


Fig. 7 - Radiant Power vs. Forward Current

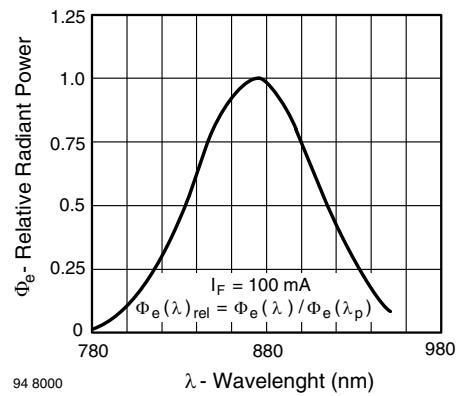


Fig. 9 - Relative Radiant Power vs. Wavelength

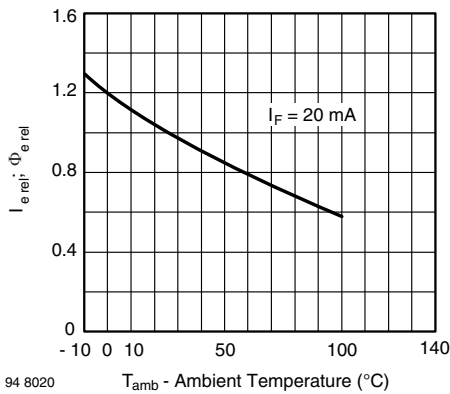


Fig. 8 - Relative Radiant Intensity/Power vs. Ambient Temperature

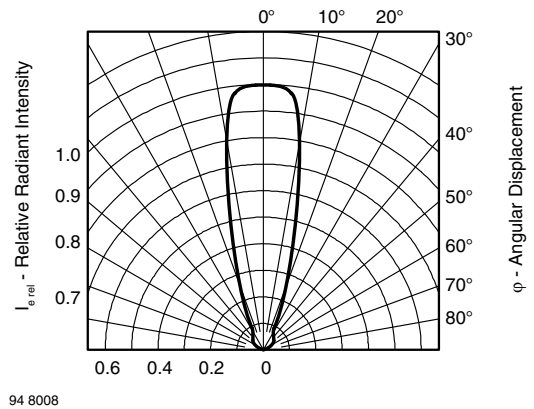
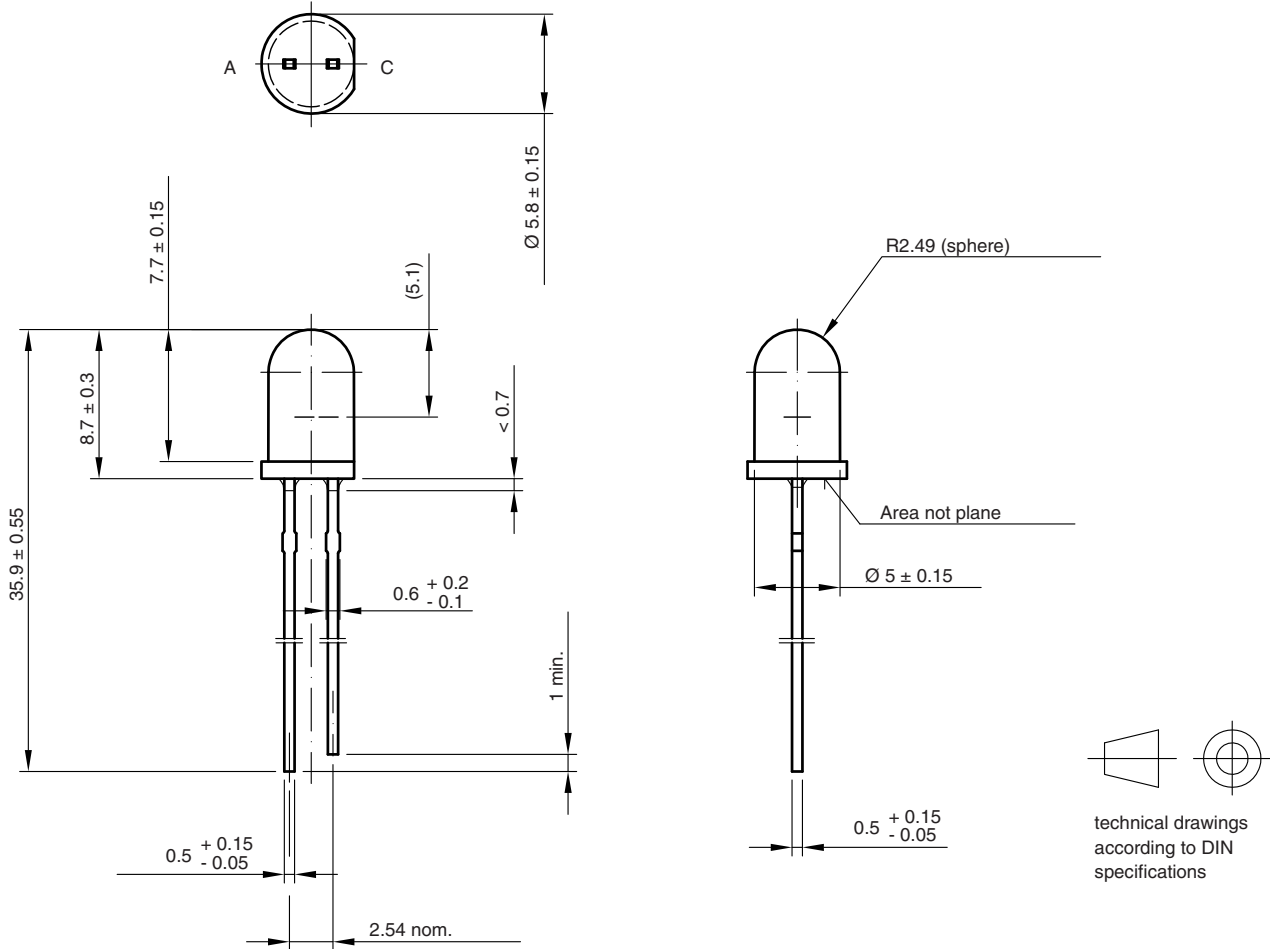


Fig. 10 - Relative Radiant Intensity vs. Angular Displacement



PACKAGE DIMENSIONS in millimeters



Drawing-No.: 6.544-5259.04-4
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