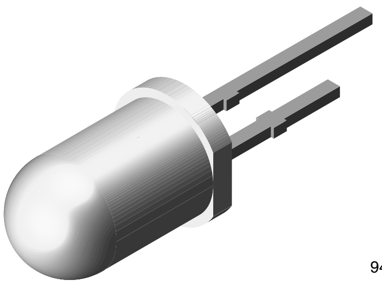
High Speed Infrared Emitting Diode, 890 nm, Surface Emitter Technology



94 8390

FEATURES

- Package type: leaded
- Package form: T-1¾
- Dimensions (in mm): Ø 5
- Leads with stand-off
- Peak wavelength: λ_p = 890 nm
- High reliability
- High radiant power
- High radiant intensity
- Angle of half intensity: φ = ± 8°
- 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

TSHF5210 is an infrared, 890 nm emitting diode based on surface emitter chip technology with high radiant power and high speed, molded in a clear, untinted plastic package.

APPLICATIONS

- Infrared high speed remote control and free air data transmission systems with high modulation frequencies or high data transmission rate requirements
- Transmission systems according to IrDA requirements and for carrier frequency based systems (e.g. ASK/FSK - coded, 450 kHz or 1.3 MHz)

PRODUCT SUMMARY

COMPONENT	I_e (mW/sr)	φ (°)	λ_p (nm)	t_r (ns)
TSHF5210	327	± 8	890	10

Note

- Test conditions see table “Basic Characteristics“

ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TSHF5210	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}	1	A
Power dissipation		P_V	170	mW
Junction temperature		T_j	100	°C
Ambient temperature range		T_{amb}	-40 to +85	°C
Storage temperature range		T_{stg}	-40 to +100	°C
Soldering temperature	$t \leq 5$ 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

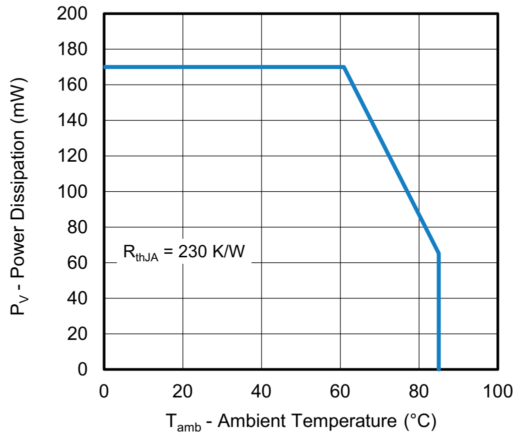


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

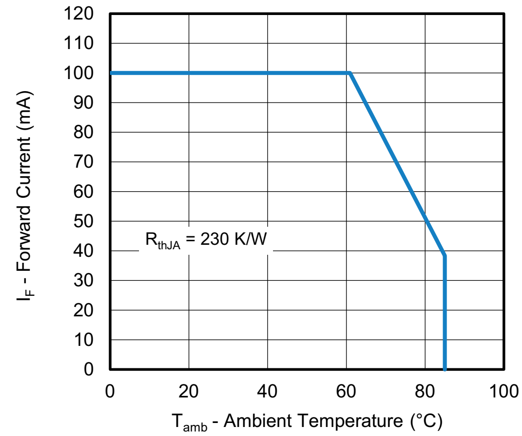


Fig. 2 - Forward Current Limit vs. Ambient Temperature

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	1.7	V
	I_F = 1 A, t_p = 100 μs	V_F	-	3	-	V
Temperature coefficient of V_F	I_F = 100 mA, t_p = 20 ms	TK_{VF}	-	-1.3	-	mV/K
Reverse current		I_R	Not designed for reverse operation			μA
Junction capacitance	V_R = 0 V, f = 1 MHz, E = 0 mW/cm²	C_j	-	55	-	pF
Radiant intensity	I_F = 100 mA, t_p = 20 ms	I_e	150	327	450	mW/sr
	I_F = 1 A, t_p = 100 μs	I_e	-	2700	-	mW/sr
Radiant power	I_F = 100 mA, t_p = 20 ms	ϕ_e	-	53	-	mW
Temperature coefficient of ϕ_e	I_F = 100 mA	$TK\phi_e$	-	-0.3	-	%/K
Angle of half intensity		φ	-	± 8	-	°
Peak wavelength	I_F = 100 mA	λ_p	-	890	-	nm
Spectral bandwidth	I_F = 100 mA	$\Delta\lambda$	-	40	-	nm
Temperature coefficient of λ_p	I_F = 100 mA	$TK\lambda_p$	-	0.3	-	nm/K
Rise time	I_F = 100 mA	t_r	-	10	-	ns
Fall time	I_F = 100 mA	t_f	-	10	-	ns

BASIC CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

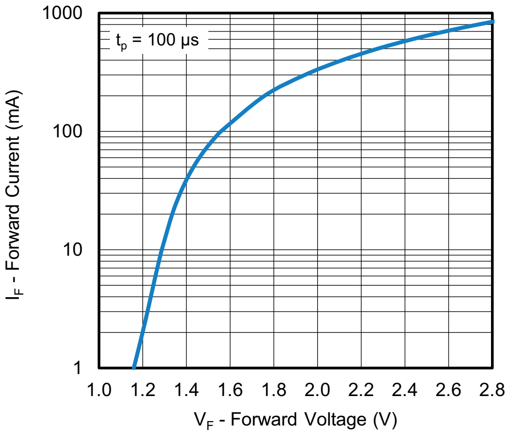


Fig. 3 - Forward Current vs. Forward Voltage

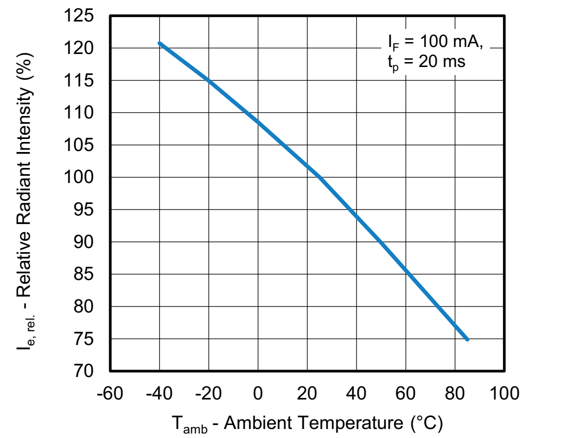


Fig. 6 - Relative Radiant Intensity vs. Ambient Temperature

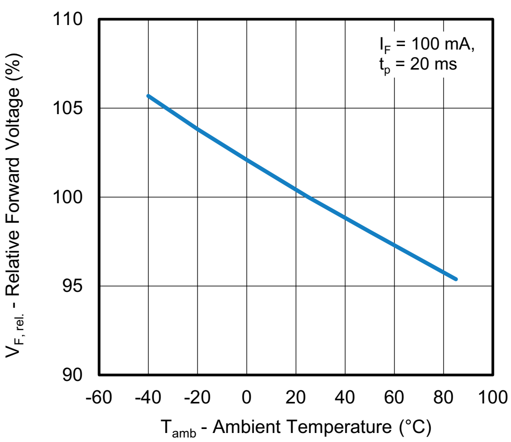


Fig. 4 - Relative Forward Voltage vs Ambient Temperature

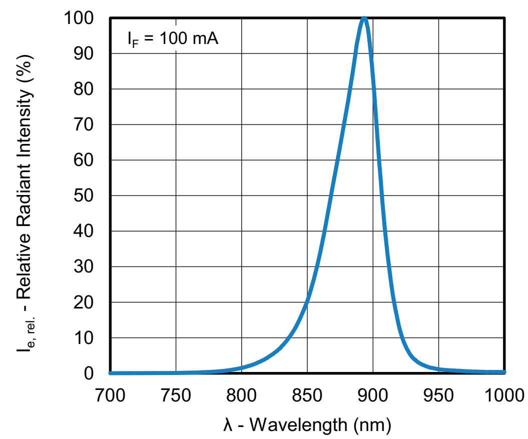


Fig. 7 - Relative Radiant Intensity vs. Wavelength

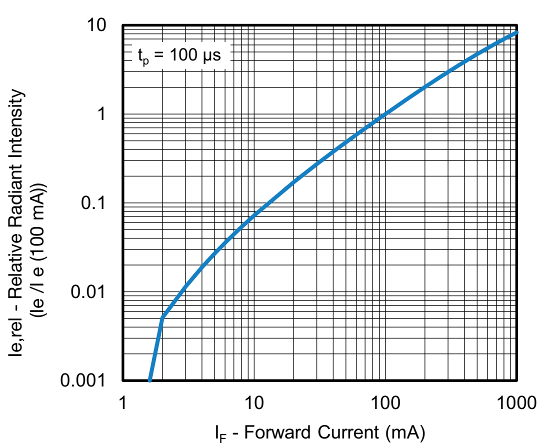


Fig. 5 - Relative Radiant Intensity vs. Forward Current

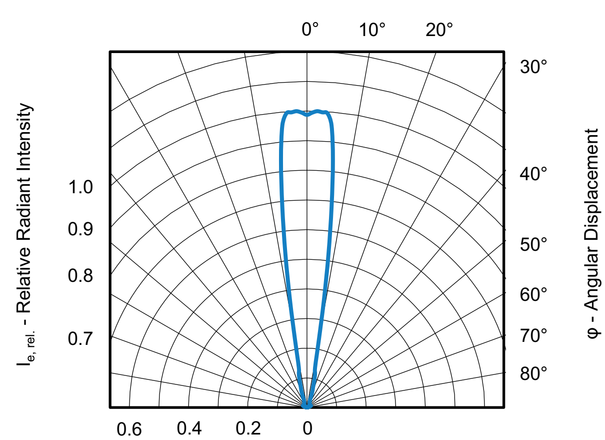
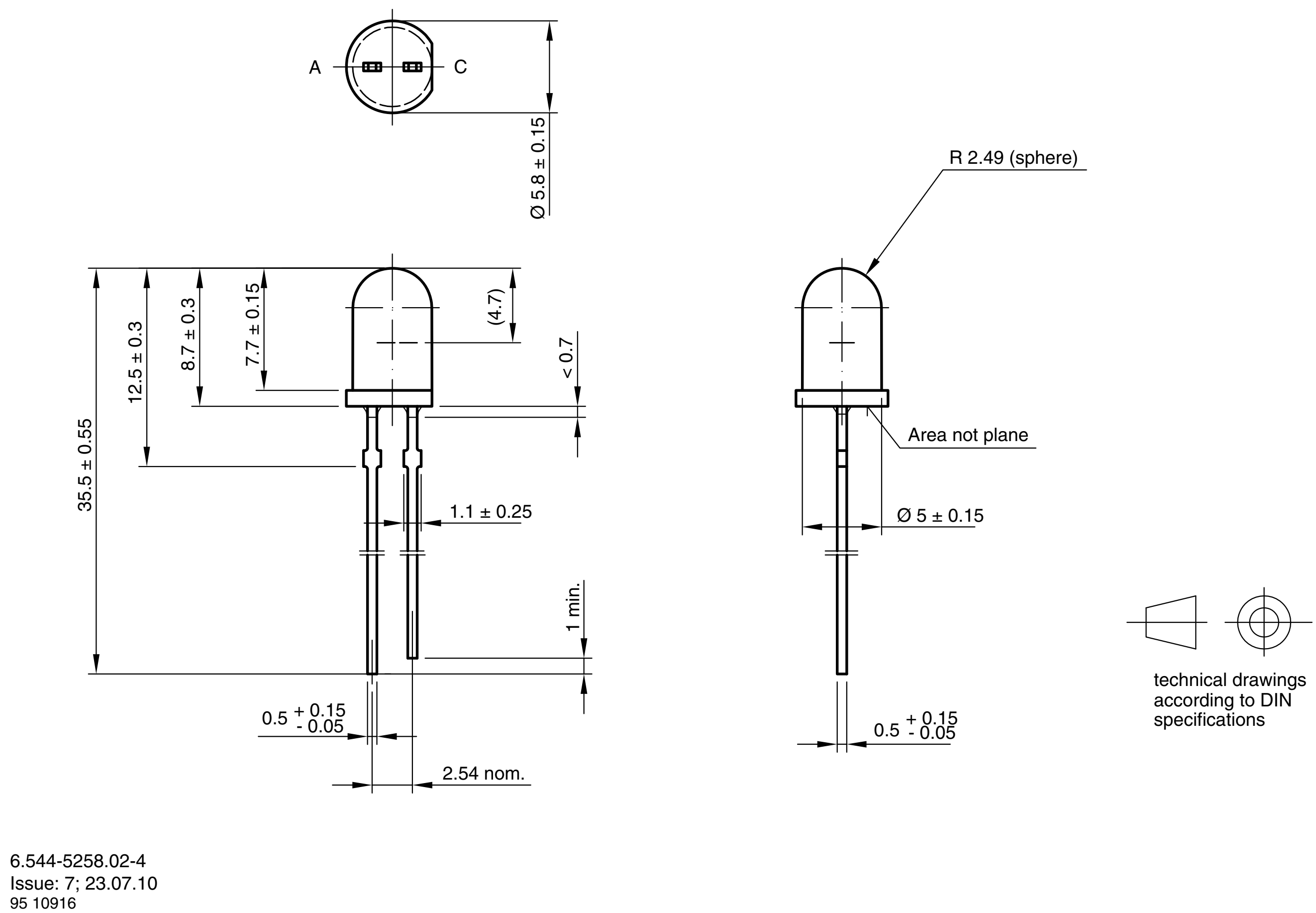


Fig. 8 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters



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