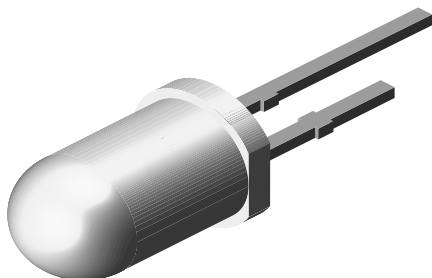


High Speed Infrared Emitting Diode, 890 nm, Surface Emitter Technology



FEATURES

- Package type: leaded
- Package form: T-1 $\frac{3}{4}$
- Dimensions (in mm): $\varnothing$ 5
- Leads with stand-off
- Peak wavelength: $\lambda_p = 890$ nm
- High reliability
- High radiant power
- High radiant intensity
- Angle of half intensity: $\varphi = \pm 10^\circ$
- Low forward voltage
- Good spectral matching to Si photodetectors
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

DESCRIPTION

TSHF5211 is an infrared, 890 nm emitting diode in surface emitter chip technology with high radiant power and high speed, molded in a clear, untinted plastic package.

APPLICATIONS

- Industrial sensors

PRODUCT SUMMARY

COMPONENT	I_e (mW/sr)	φ (°)	λ_p (nm)	t_r (ns)
TSHF5211	235	± 10	890	15

Note

- Test conditions see table “Basic Characteristics”

ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TSHF5211	Bulk	MOQ: 4000 pcs, 1000 pcs/reel	T-1 $\frac{3}{4}$
TSHF5211-MS21	Tape and reel	MOQ: 5000 pcs, 1000 pcs/reel	T-1 $\frac{3}{4}$
TSHF5211-MSZ	Ammopack	MOQ: 5000 pcs, 1000 pcs/reel	T-1 $\frac{3}{4}$

Note

- MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Forward current		I_F	100	mA
Peak forward current	$t_p/T = 0.5$, $t_p = 100 \mu\text{s}$	I_{FM}	200	mA
Surge forward current	$t_p = 100 \mu\text{s}$	I_{FSM}	1.0	A
Power dissipation		P_V	170	mW
Junction temperature		T_j	100	$^\circ\text{C}$
Ambient temperature range		T_{amb}	-40 to +85	$^\circ\text{C}$
Storage temperature range		T_{stg}	-40 to +100	$^\circ\text{C}$
Soldering temperature	$t \leq 5$ s, 2 mm from case	T_{sd}	260	$^\circ\text{C}$
Thermal resistance junction to ambient ⁽¹⁾	EIA / JESD51	R_{thJA}	230	K/W

Note

- ⁽¹⁾ The emitted optical signal was not considered

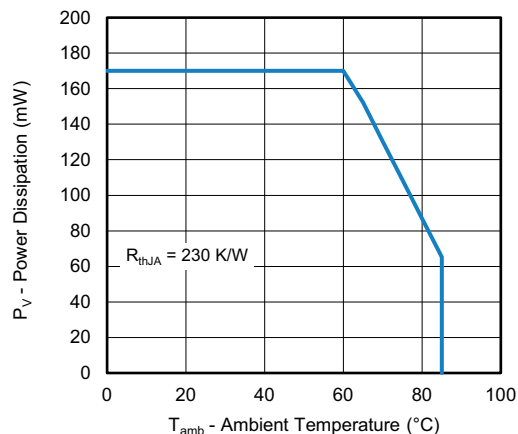


Fig. 1 - Power Dissipation vs. Ambient Temperature

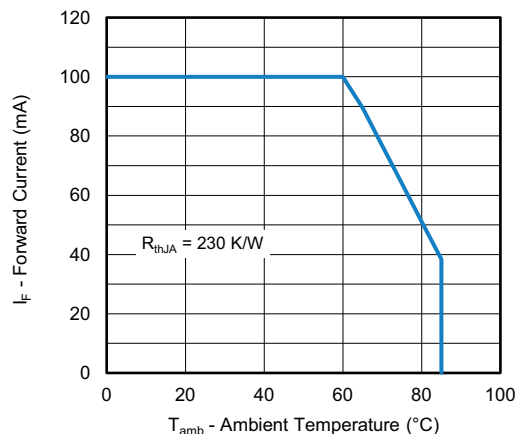


Fig. 2 - Forward Current vs. Ambient Temperature

BASIC CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$, 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	1.7	V
	$I_F = 1\text{ A}$, $t_p = 100\text{ }\mu\text{s}$	V_F	-	2.5	-	V
Temperature coefficient of V_F	$I_F = 1\text{ mA}$	TK_{V_F}	-	-1.0	-	mV/K
Reverse current		I_R	Not designed for reverse operation			
Junction capacitance	$V_R = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$	C_j	-	45	-	pF
Radiant intensity	$I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	I_e	150	235	340	mW/sr
	$I_F = 1\text{ A}$, $t_p = 100\text{ }\mu\text{s}$	I_e	-	1800	-	mW/sr
Radiant power	$I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	ϕ_e	-	50	-	mW
Temperature coefficient of ϕ_e	$I_F = 100\text{ mA}$	TK_{ϕ_e}	-	-0.2	-	%/K
Angle of half intensity		φ	-	± 10	-	°
Peak wavelength	$I_F = 100\text{ mA}$	λ_p	-	890	-	nm
Spectral bandwidth	$I_F = 100\text{ mA}$	$\Delta\lambda$	-	40	-	nm
Temperature coefficient of λ_p	$I_F = 100\text{ mA}$	TK_{λ_p}	-	0.3	-	nm/K
Rise time	$I_F = 100\text{ mA}$	t_r	-	15	-	ns
Fall time	$I_F = 100\text{ mA}$	t_f	-	15	-	ns

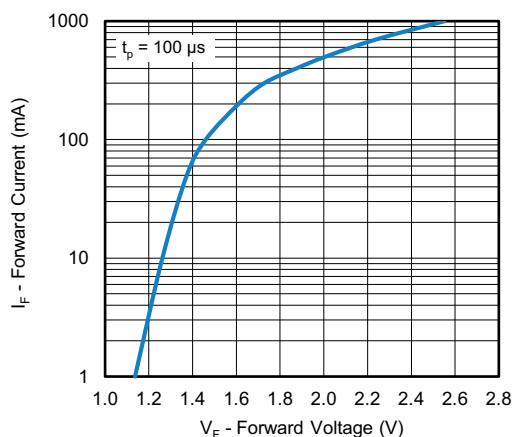
BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 3 - Forward Current vs. Forward Voltage

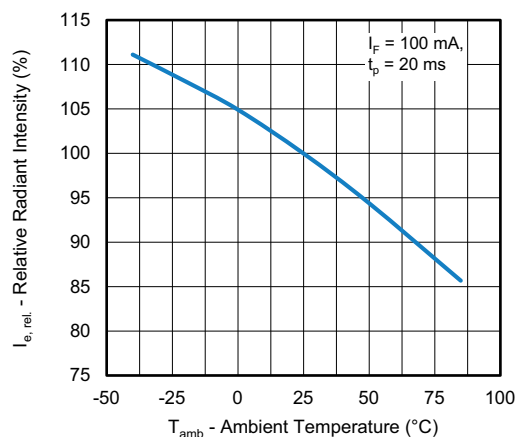


Fig. 6 - Relative Radiant Intensity vs. Ambient Temperature

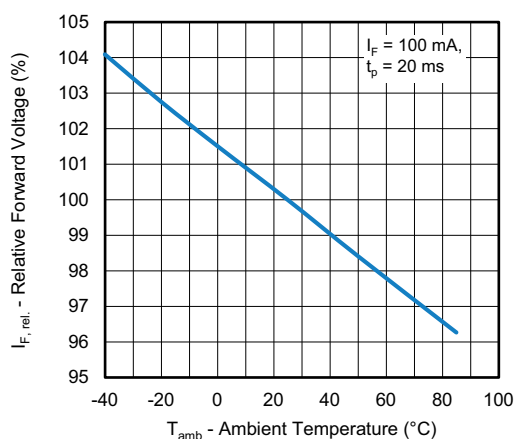


Fig. 4 - Forward Voltage vs. Ambient Temperature

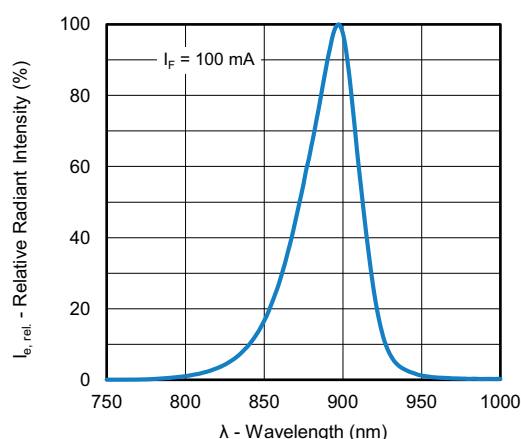


Fig. 7 - Relative Radiant Intensity vs. Wavelength

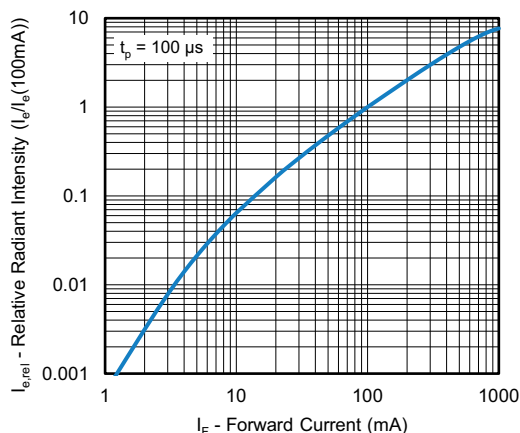


Fig. 5 - Relative Radiant Intensity vs. Forward Current

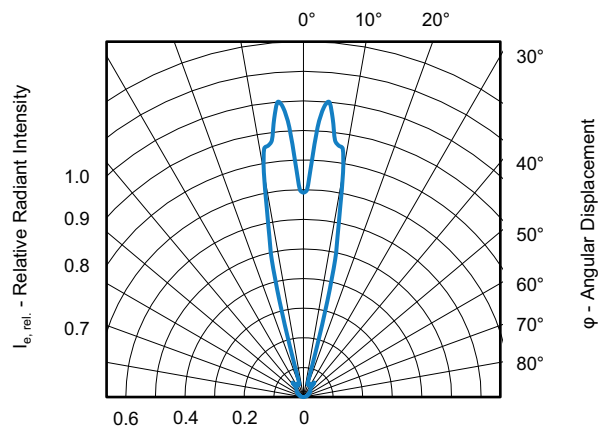


Fig. 8 - Relative Radiant Intensity vs. Angular Displacement

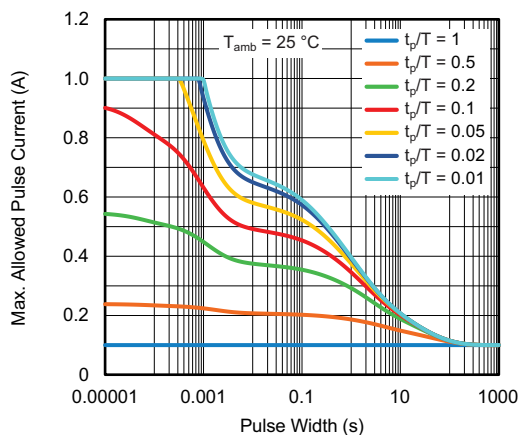


Fig. 9 - Pulse Forward Current vs. Pulse Duration at 25 °C

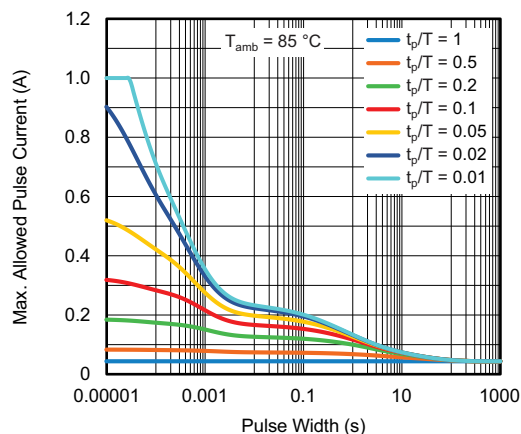
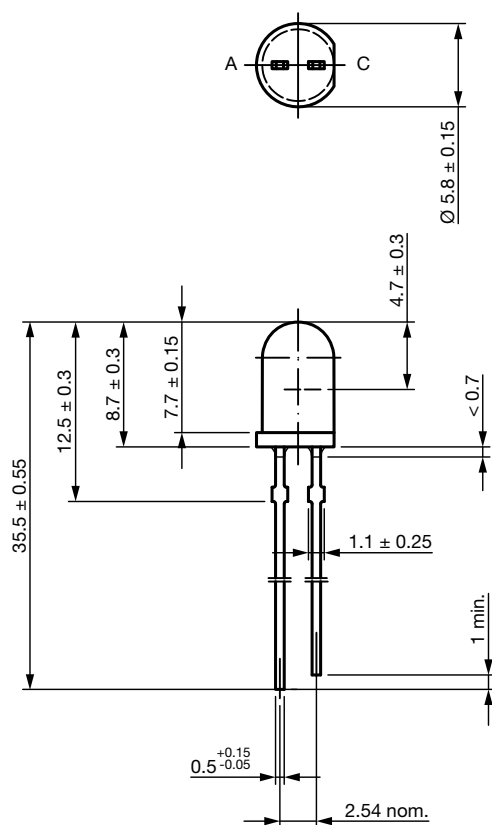
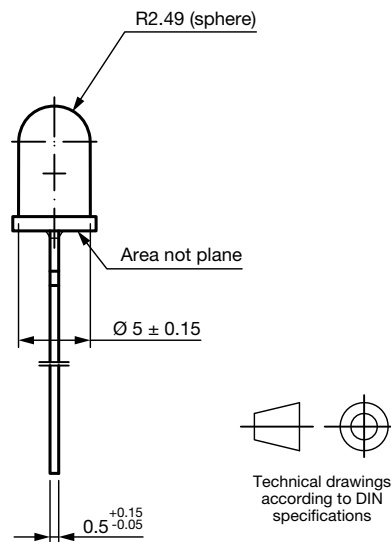


Fig. 10 - Pulse Forward Current vs. Pulse Duration at 85 °C

PACKAGE DIMENSIONS in millimeters



6.544-5258.16-4
Issue: 1; 06.10.16





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