



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/ambient	J-STD-051, leads 7 mm, soldered on PCB	$R_{thJA}$	230	K/W

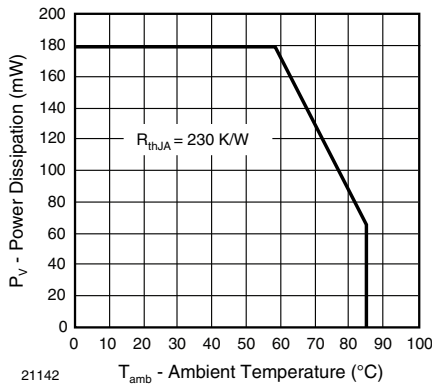


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

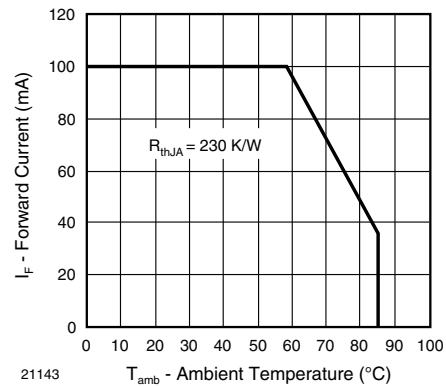


Fig. 2 - Forward Current Limit vs. Ambient Temperature

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 $V_F$	$I_F = 100\text{ mA}$	$TK_{V_F}$		- 1.6		mV/K
Reverse current	$V_R = 5\text{ V}$	$I_R$			100	$\mu\text{A}$
Junction capacitance	$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$	$C_j$		20		pF
Temperature coefficient of $\phi_e$	$I_F = 20\text{ mA}$	$TK_{\phi_e}$		- 0.7		%/K
Angle of half intensity		$\phi$		$\pm 12$		deg
Peak wavelength	$I_F = 100\text{ mA}$	$\lambda_p$		875		nm
Spectral bandwidth	$I_F = 100\text{ mA}$	$\Delta\lambda$		80		nm
Temperature coefficient of $\lambda_p$	$I_F = 100\text{ mA}$	$TK_{\lambda_p}$		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 ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 1\text{ A}$ , $t_p = 100\text{ }\mu\text{s}$	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	$\phi_e$		22		mW
		TSHA5201	$\phi_e$		23		mW
		TSHA5202	$\phi_e$		24		mW
		TSHA5203	$\phi_e$		25		mW

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

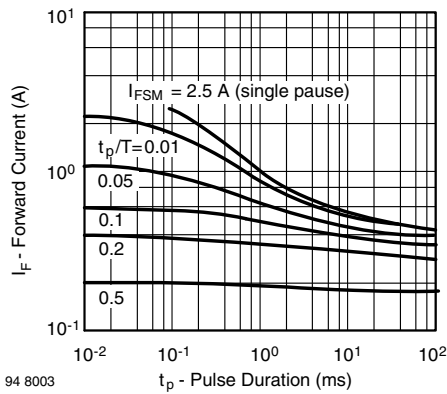


Fig. 3 - Pulse Forward Current vs. Pulse Duration

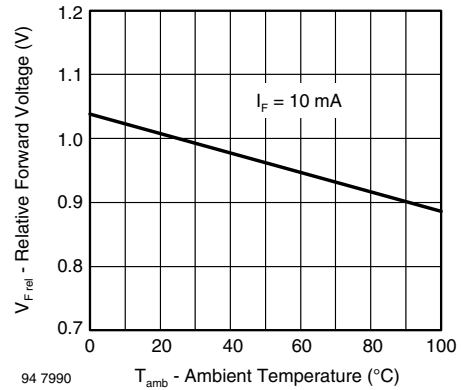


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

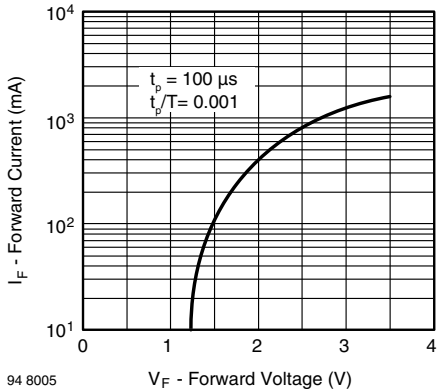


Fig. 4 - Forward Current vs. Forward Voltage

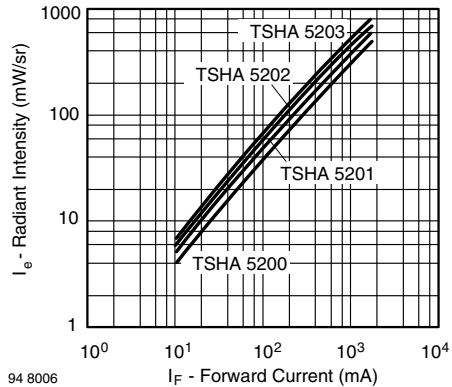


Fig. 6 - Radiant Intensity vs. Forward Current

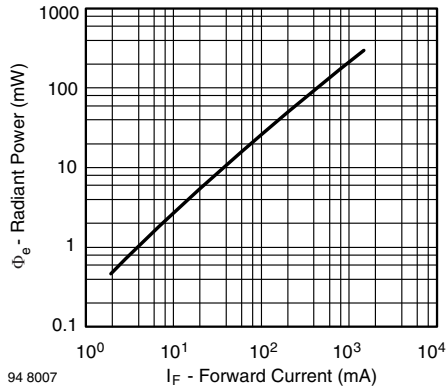


Fig. 7 - Radiant Power vs. Forward Current

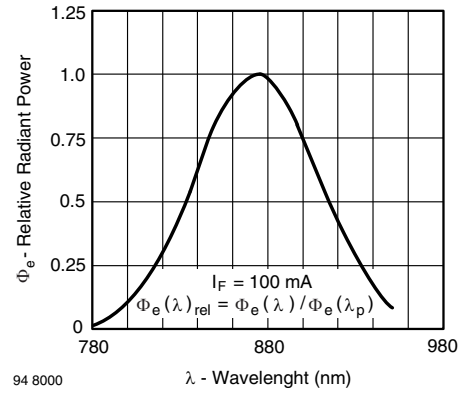


Fig. 9 - Relative Radiant Power vs. Wavelength

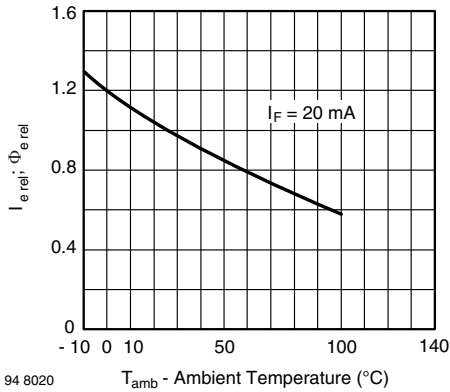


Fig. 8 - Relative Radiant Intensity/Power vs. Ambient Temperature

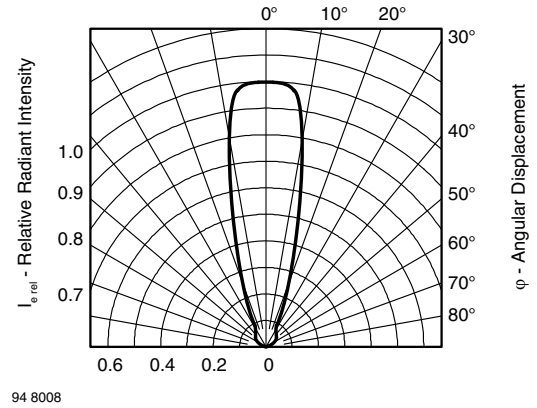
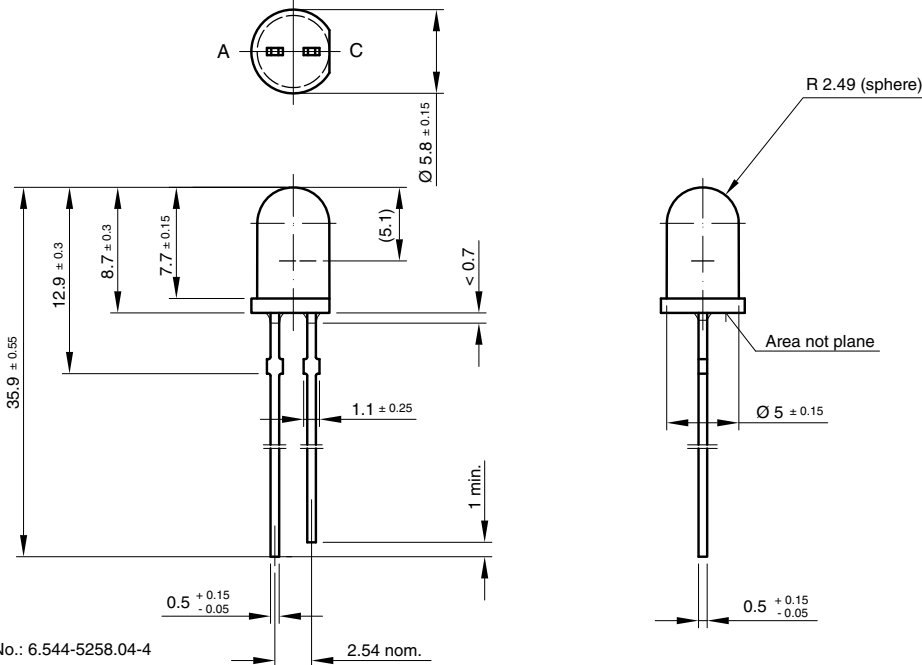
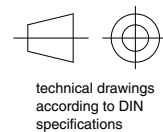


Fig. 10 - Relative Radiant Intensity vs. Angular Displacement

**PACKAGE DIMENSIONS** in millimeters



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