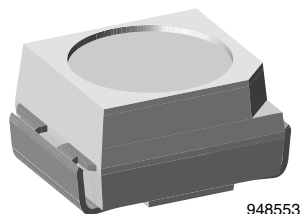




Infrared Emitting Diode, 950 nm, GaAs



948553

DESCRIPTION

VSMS3700 is an infrared, 950 nm emitting diode in GaAs technology, molded in a PLCC-2 package for surface mounting (SMD).

FEATURES

- Package type: surface-mount
- Package form: PLCC-2
- Dimensions (L x W x H in mm): 3.5 x 2.8 x 1.75
- Peak wavelength: $\lambda_p = 950$ nm
- High reliability
- Angle of half intensity: $\phi = \pm 60^\circ$
- Low forward voltage
- Suitable for high pulse current operation
- Good spectral matching with Si photodetectors
- Package matched with IR emitter series VEMT3700
- Floor life: 168 h, MSL 3, acc. J-STD-020
- Lead (Pb)-free reflow soldering
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



APPLICATIONS

- Infrared source in tactile keyboards
- IR diode in low space applications
- PCB mounted infrared sensors
- Emitter in miniature photo-interrupters

PRODUCT SUMMARY

COMPONENT	I_e (mW/sr)	ϕ (°)	λ_p (nm)	t_r (ns)
VSMS3700	4.5	± 60	950	800

Note

- Test conditions see table "Basic Characteristics"

ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
VSMS3700-GS08	Tape and reel	MOQ: 7500 pcs, 1500 pcs/reel	PLCC-2
VSMS3700-GS18	Tape and reel	MOQ: 8000 pcs, 8000 pcs/reel	PLCC-2

Note

- MOQ: minimum order quantity



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}	1.5	A
Power dissipation		P_V	170	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	According to Fig. 11, J-STD-020	T_{sd}	260	$^{\circ}\text{C}$
Thermal resistance junction-to-ambient	J-STD-051, soldered on PCB	R_{thJA}	250	K/W

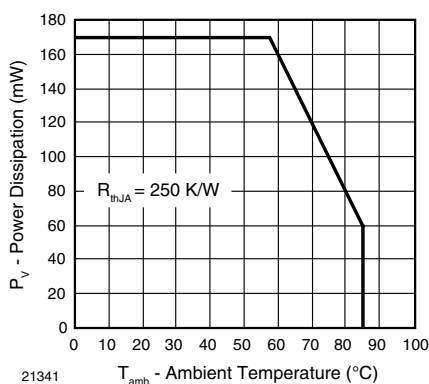


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

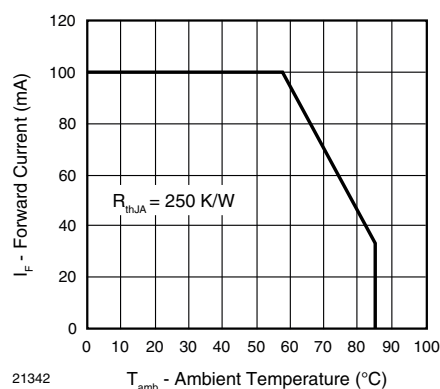


Fig. 2 - Forward Current Limit vs. Ambient Temperature

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	-	1.3	1.7	V
	$I_F = 1\text{ A}$, $t_p = 100\text{ }\mu\text{s}$	V_F	-	1.8	-	V
Temperature coefficient of V_F	$I_F = 100\text{ mA}$	TK_{V_F}	-	-1.3	-	mV/K
Reverse current	$V_R = 5\text{ V}$	I_R	-	-	100	μA
Junction capacitance	$V_R = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$	C_j	-	30	-	pF
Radiant intensity	$I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	I_e	1.6	4.5	8	mW/sr
	$I_F = 1.5\text{ A}$, $t_p = 100\text{ }\mu\text{s}$	I_e	-	35	-	mW/sr
Radiant power	$I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	ϕ_e	-	15	-	mW
Temperature coefficient of ϕ_e	$I_F = 100\text{ mA}$	TK_{ϕ_e}	-	-0.8	-	%/K
Angle of half intensity		ϕ	-	± 60	-	$^{\circ}$
Peak wavelength	$I_F = 100\text{ mA}$	λ_p	-	950	-	nm
Spectral bandwidth	$I_F = 100\text{ mA}$	$\Delta\lambda$	-	50	-	nm
Temperature coefficient of λ_p	$I_F = 100\text{ mA}$	TK_{λ_p}	-	0.2	-	nm/K
Rise time	$I_F = 20\text{ mA}$	t_r	-	800	-	ns
	$I_F = 1\text{ A}$	t_r	-	400	-	ns
Fall time	$I_F = 20\text{ mA}$	t_f	-	800	-	ns
	$I_F = 1\text{ A}$	t_f	-	400	-	ns
Virtual source diameter	EN 60825-1	d	-	0.5	-	mm



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

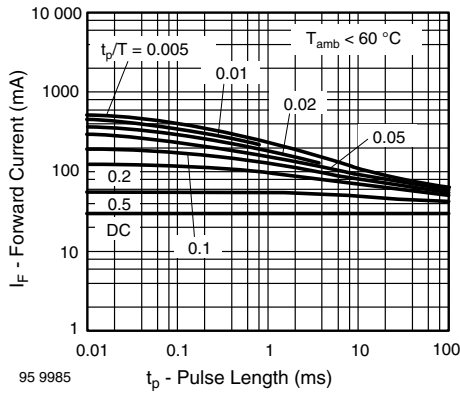


Fig. 3 - Pulse Forward Current vs. Pulse Duration

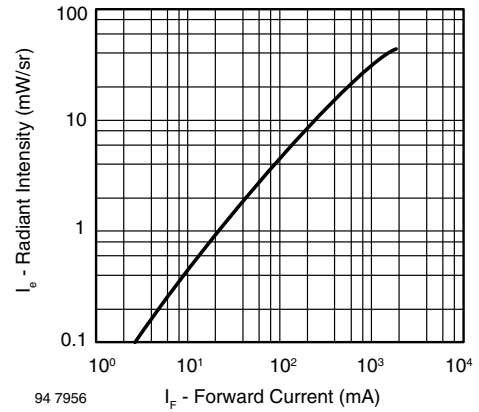


Fig. 6 - Radiant Intensity vs. Forward Current

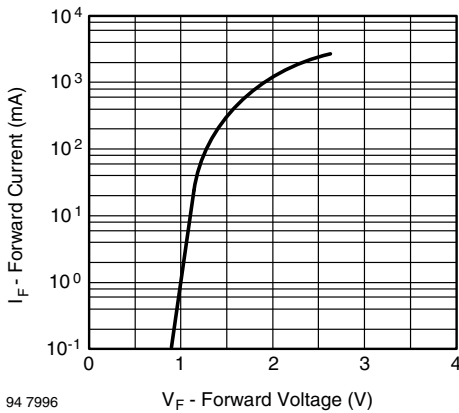


Fig. 4 - Forward Current vs. Forward Voltage

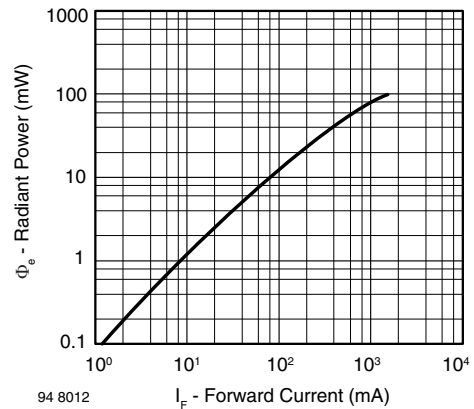


Fig. 7 - Radiant Power vs. Forward Current

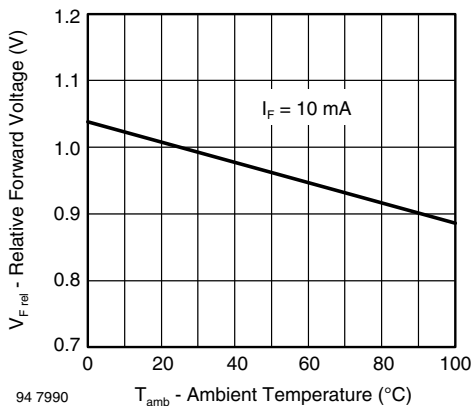


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

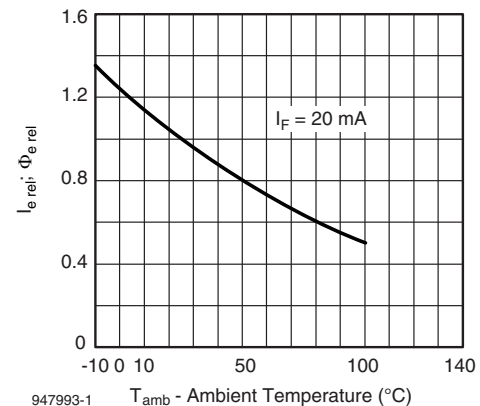


Fig. 8 - Relative Radiant Intensity/Power vs. Ambient Temperature

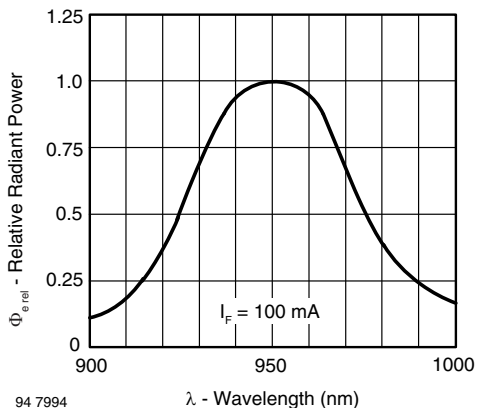


Fig. 9 - Relative Radiant Power vs. Wavelength

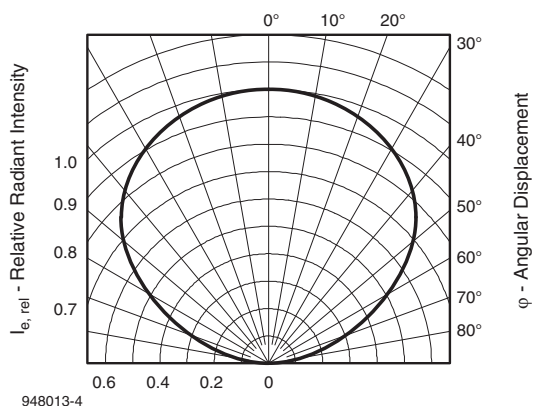
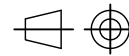
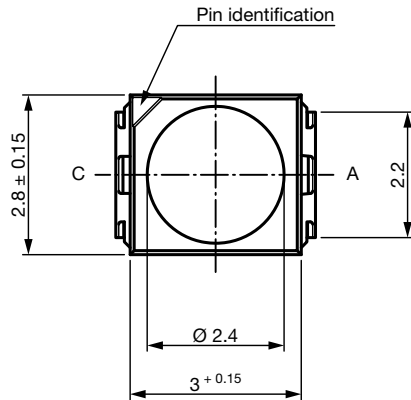
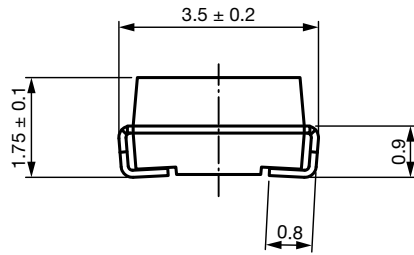


Fig. 10 - Relative Radiant Intensity vs. Angular Displacement

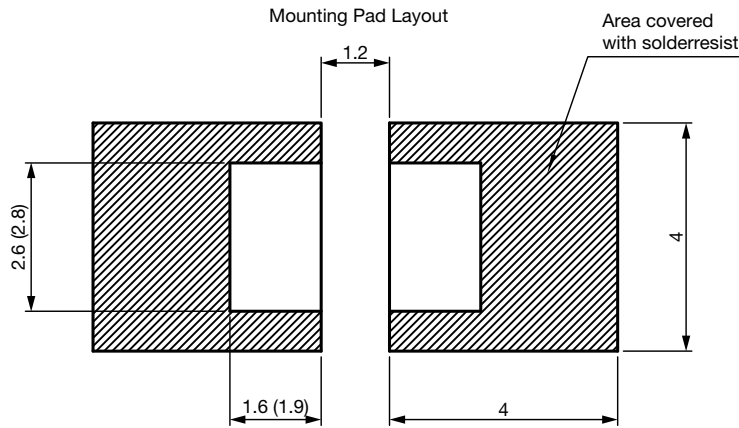


PACKAGE DIMENSIONS in millimeters



technical drawings
according to DIN
specifications

Drawing-No.: 6.541-5067.01-4
Issue: 7; 12.03.14



Dimensions: reflow and vapor phase (wave soldering)



SOLDER PROFILE

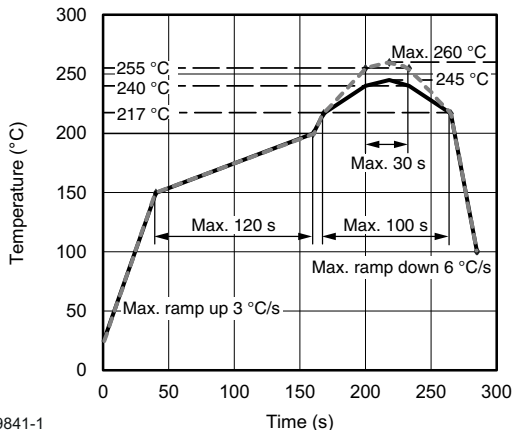


Fig. 11 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020

DRYPACK

Devices are packed in moisture barrier bags (MBB) to prevent the products from moisture absorption during transportation and storage. Each bag contains a desiccant.

FLOOR LIFE

Floor life (time between soldering and removing from MBB) must not exceed the time indicated on MBB label:

Floor life: 168 h

Conditions: $T_{amb} < 30\text{ °C}$, $RH < 60\%$

Moisture sensitivity level 3, acc. to J-STD-020

DRYING

In case of moisture absorption devices should be baked before soldering. Conditions see J-STD-020 or label. Devices taped on reel dry using recommended conditions 192 h at 40 °C (+ 5 °C), $RH < 5\%$.

TAPE AND REEL

PLCC-2 components are packed in antistatic blister tape (DIN IEC (CO) 564) for automatic component insertion. Cavities of blister tape are covered with adhesive tape.

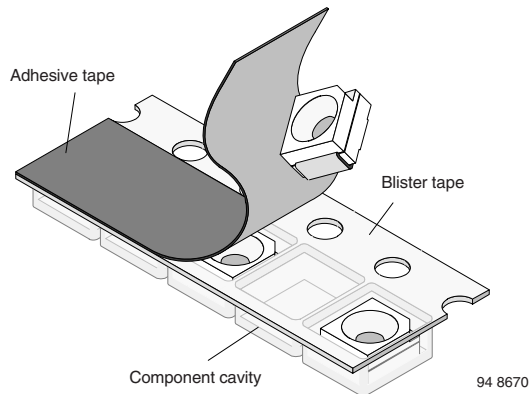


Fig. 12 - Blister Tape

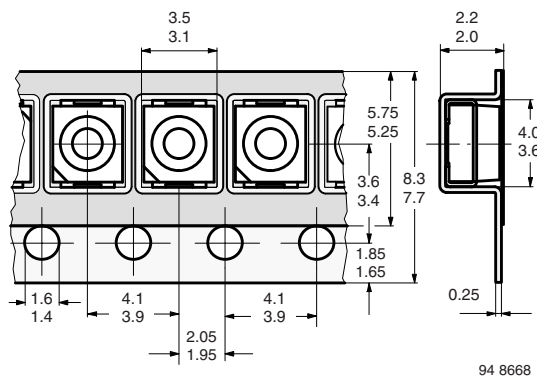


Fig. 13 - Tape Dimensions in mm for PLCC-2

MISSING DEVICES

A maximum of 0.5 % of the total number of components per reel may be missing, exclusively missing components at the beginning and at the end of the reel. A maximum of three consecutive components may be missing, provided this gap is followed by six consecutive components.

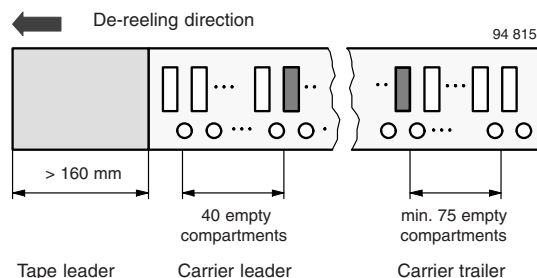


Fig. 14 - Beginning and End of Reel



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