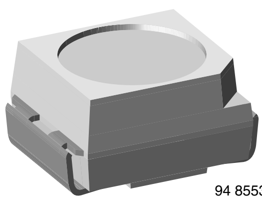
Infrared Emitting Diode, RoHS Compliant, 950 nm, GaAs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DESCRIPTION

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: λ_p = 950 nm
- High reliability
- Angle of half intensity: φ = ± 60°
- Low forward voltage
- Suitable for high pulse current operation
- Good spectral matching with Si photodetectors
- Package matched with IR emitter series VEMT3700
- Floor life: 4 weeks, MSL 2a, acc. J-STD-020
- Lead (Pb)-free reflow soldering
- Lead (Pb)-free component in accordance with RoHS 2002/95/EC and WEEE 2002/96/EC

Pb-free
e3
RoHS
COMPLIANT

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 (deg)	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

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}	1.5	A
Power dissipation		P_V	170	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	acc. figure 11, J-STD-020	T_{sd}	260	°C
Thermal resistance junction/ambient	J-STD-051, soldered on PCB	R_{thJA}	250	K/W

Note
T_{amb} = 25 °C, unless otherwise specified

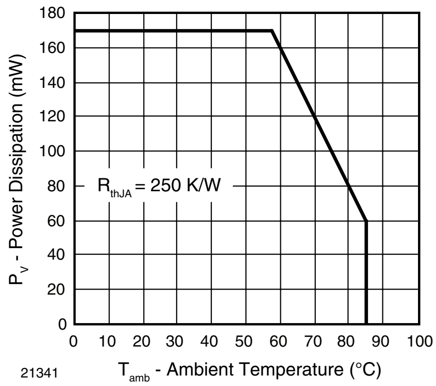


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

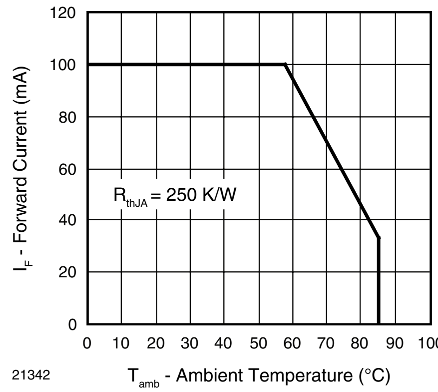


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Forward voltage	I_F = 100 mA, t_p = 20 ms	V_F		1.3	1.7	V
	I_F = 1 A, t_p = 100 µs	V_F		1.8		V
Temperature coefficient of V_F	I_F = 100 mA	TK_{VF}		- 1.3		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		30		pF
Radiant intensity	I_F = 100 mA, t_p = 20 ms	I_e	1.6	4.5	8.0	mW/sr
	I_F = 1.5 A, t_p = 100 µs	I_e		35		mW/sr
Radiant power	I_F = 100 mA, t_p = 20 ms	ϕ_e		15		mW
Temperature coefficient of ϕ_e	I_F = 100 mA	$TK\phi_e$		- 0.8		%/K
Angle of half intensity		φ		± 60		deg
Peak wavelength	I_F = 100 mA	λ_p		950		nm
Spectral bandwidth	I_F = 100 mA	$\Delta\lambda$		50		nm
Temperature coefficient of λ_p	I_F = 100 mA	$TK\lambda_p$		0.2		nm/K
Rise time	I_F = 20 mA	t_r		800		ns
	I_F = 1 A	t_r		400		ns
Fall time	I_F = 20 mA	t_f		800		ns
	I_F = 1 A	t_f		400		ns
Virtual source diameter	EN 60825-1	d		0.5		mm

Note
T_{amb} = 25 °C, unless otherwise specified

BASIC CHARACTERISTICS

T_{amb} = 25 °C, unless otherwise specified

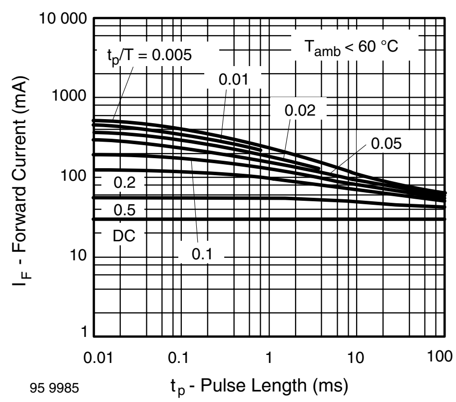


Fig. 3 - Pulse Forward Current vs. Pulse Duration

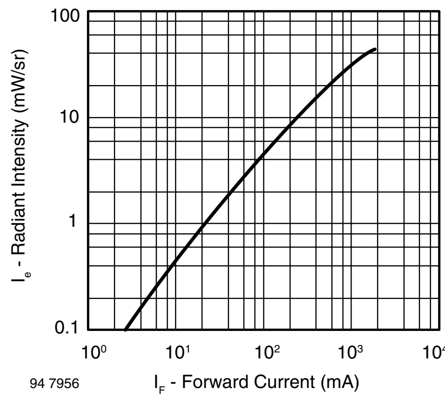


Fig. 6 - Radiant Intensity vs. Forward Current

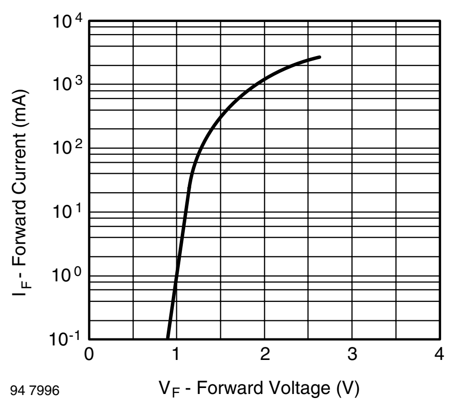


Fig. 4 - Forward Current vs. Forward Voltage

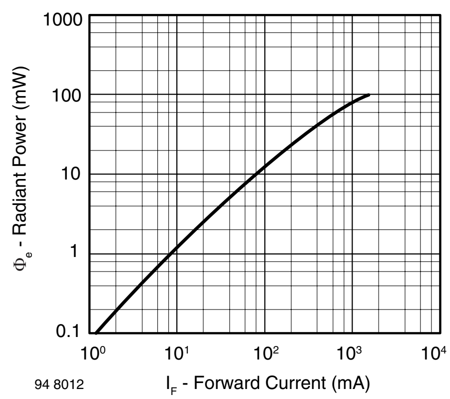


Fig. 7 - Radiant Power vs. Forward Current

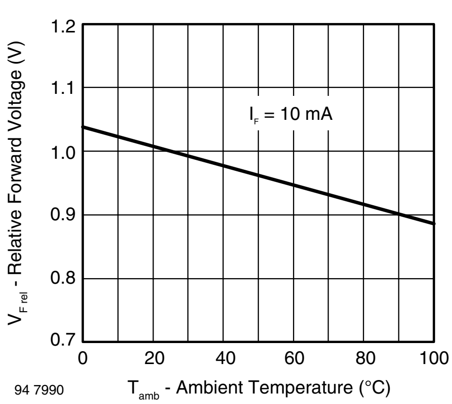


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

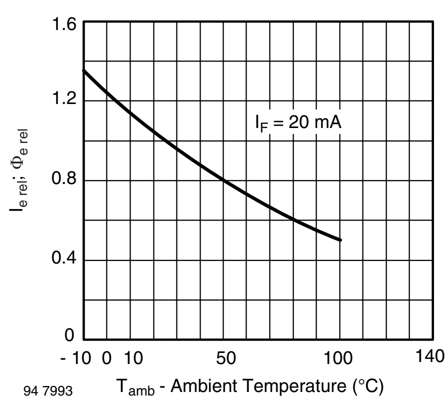


Fig. 8 - Relative Radiant Intensity/Power vs. Ambient Temperature

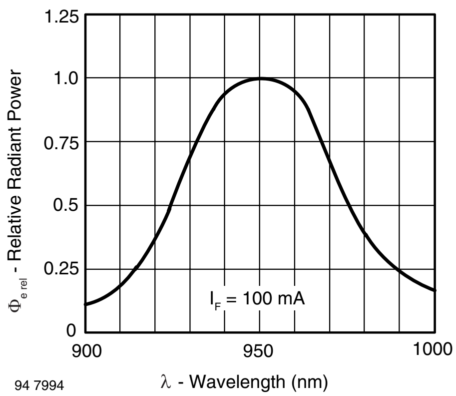


Fig. 9 - Relative Radiant Power vs. Wavelength

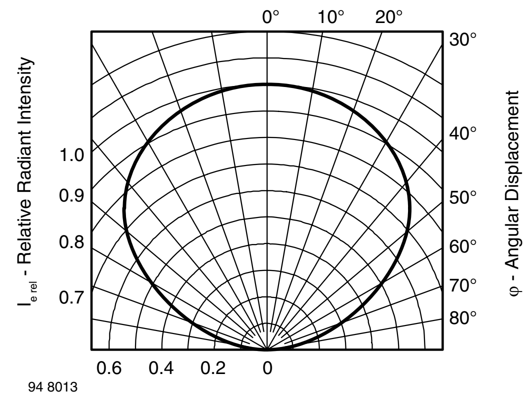
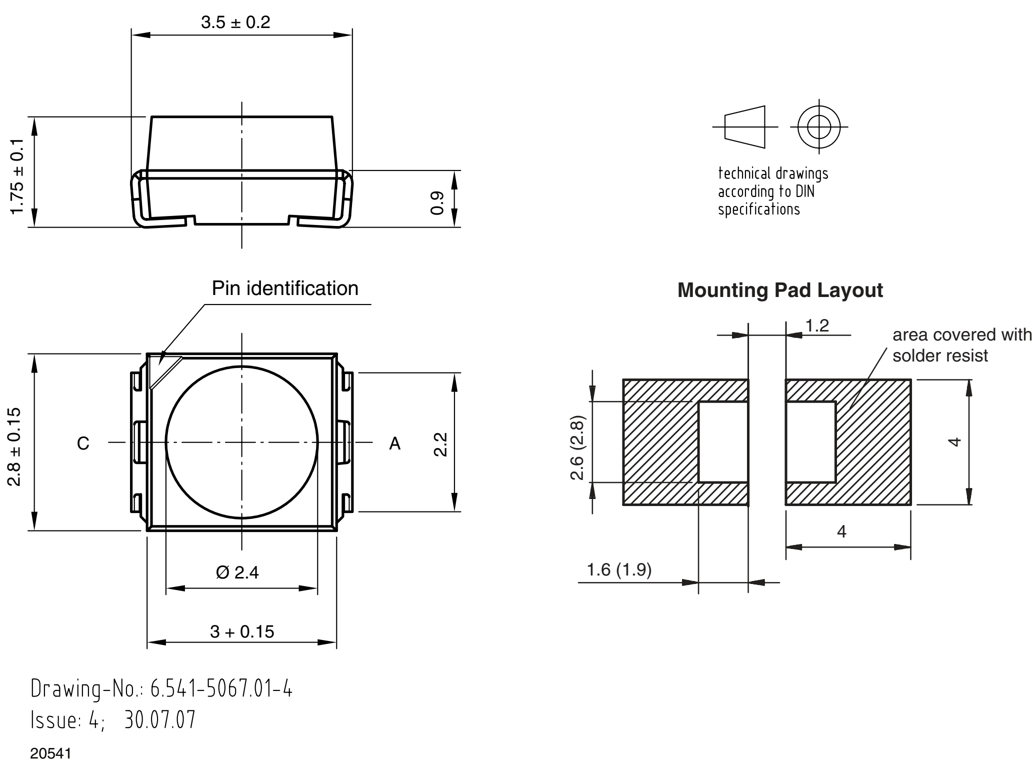


Fig. 10 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters



Die Position (for reference only)

X = +/- 0.2 mm centrical

Y = +/- 0.2 mm centrical

Z = 1.13 mm +/- 0.25 mm, from top of die bottom of component

SOLDER PROFILE

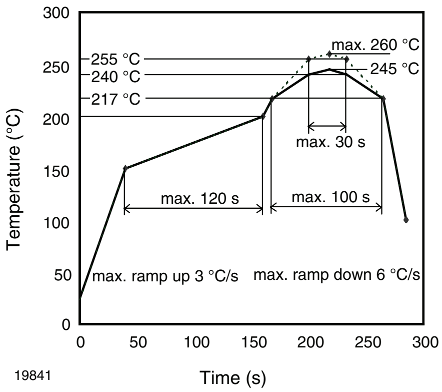


Fig. 11 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020D

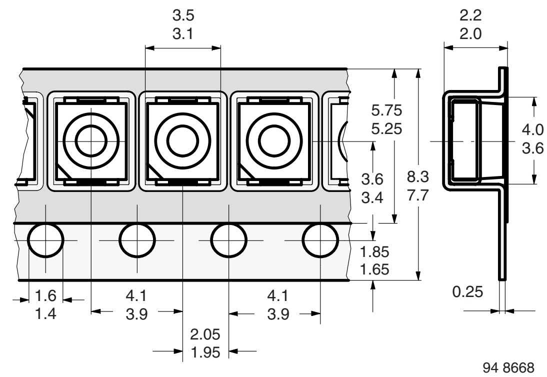


Fig. 13 - Tape Dimensions in mm for PLCC-2

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: 4 weeks
Conditions: T_{amb} < 30 °C, RH < 60 %
Moisture sensitivity level 2a, 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.

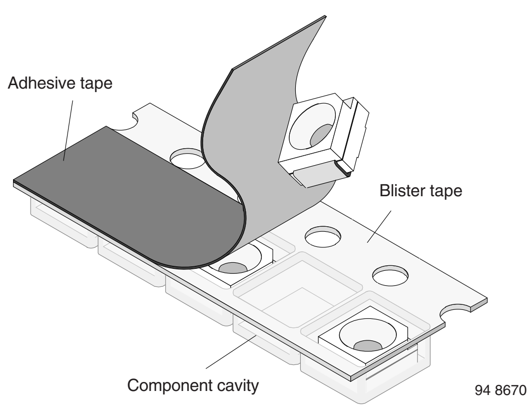


Fig. 12 - Blister Tape

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.

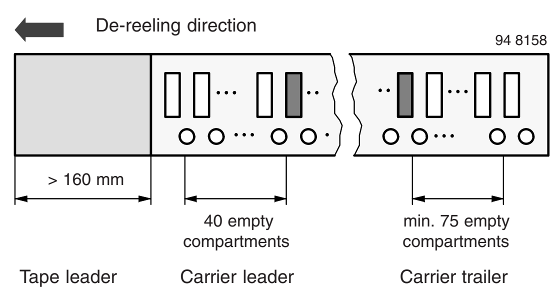


Fig. 14 - Beginning and End of Reel

The tape leader is at least 160 mm and is followed by a carrier tape leader with at least 40 empty compartments. The tape leader may include the carrier tape as long as the cover tape is not connected to the carrier tape. The least component is followed by a carrier tape trailer with a least 75 empty compartments and sealed with cover tape.

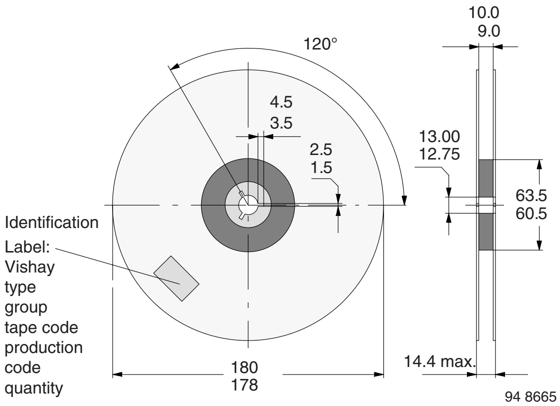


Fig. 15 - Dimensions of Reel-GS08

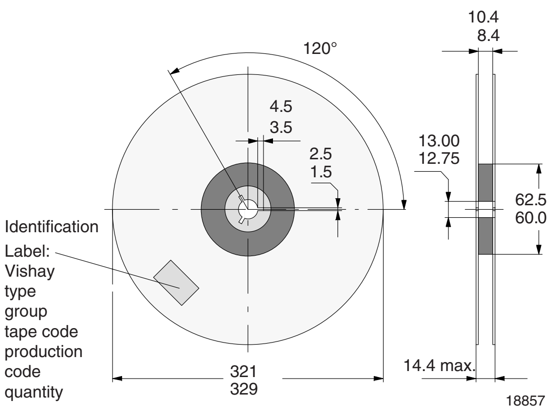


Fig. 16 - Dimensions of Reel-GS18

COVER TAPE REMOVAL FORCE

The removal force lies between 0.1 N and 1.0 N at a removal speed of 5 mm/s. In order to prevent components from popping out of the blisters, the cover tape must be pulled off at an angle of 180° with regard to the feed direction.

Disclaimer

All product specifications and data are subject to change without notice.

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