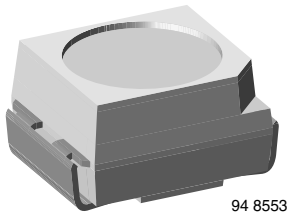


## High Speed Infrared Emitting Diode, RoHS Compliant, 870 nm, GaAIAs Double Hetero



94 8553

### DESCRIPTION

VSMF4720 is an infrared, 870 nm emitting diode in GaAIAs double hetero (DH) technology with high radiant power and high speed, molded in a PLCC-2 package for surface mounting (SMD). A 19" chip provides outstanding low forward voltage and radiant intensity even at 1 A pulse current.

### 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:  $\lambda_p = 870$  nm
- High reliability
- High radiant power
- High radiant intensity
- Angle of half intensity:  $\phi = \pm 60^\circ$
- Low forward voltage
- Suitable for high pulse current operation
- High modulation band width:  $f_c = 24$  MHz
- Good spectral matching with Si photodetectors
- 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


**RoHS**  
COMPLIANT

### APPLICATIONS

- High speed IR data transmission
- High power emitter for low space applications
- High performance transmissive or reflective sensors

### PRODUCT SUMMARY

COMPONENT	$I_e$ (mW/sr)	$\phi$ (deg)	$\lambda_p$ (nm)	$t_r$ (ns)
VSMF4720	16	$\pm 60$	870	15

#### Note

Test conditions see table "Basic Characteristics"

### ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
VSMF4720-GS08	Tape and reel	MOQ: 7500 pcs, 1500 pcs/reel	PLCC-2
VSMF4720-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	$t_p/T = 0.5$ , $t_p = 100 \mu s$	$I_{FM}$	200	mA
Surge forward current	$t_p = 100 \mu s$	$I_{FSM}$	1	A
Power dissipation		$P_V$	160	mW
Junction temperature		$T_j$	100	$^\circ C$
Operating temperature range		$T_{amb}$	- 40 to + 85	$^\circ C$
Storage temperature range		$T_{stg}$	- 40 to + 100	$^\circ C$
Soldering temperature	Acc. figure 8, J-STD-020B	$T_{sd}$	260	$^\circ C$
Thermal resistance junction/ambient	J-STD-051, soldered on PCB	$R_{thJA}$	250	K/W

#### Note

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



High Speed Infrared Emitting Diode, RoHS Vishay Semiconductors  
Compliant, 870 nm, GaAlAs Double Hetero

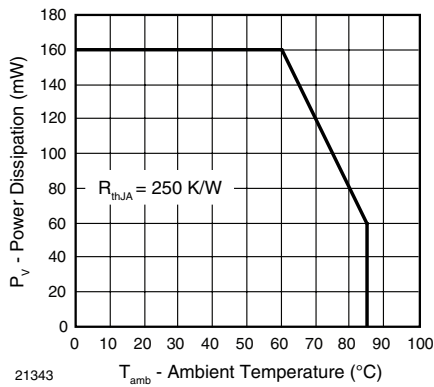


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

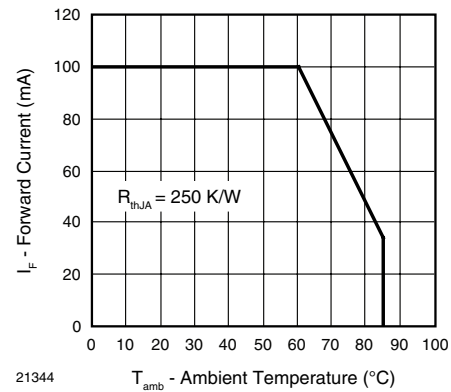


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	I <sub>F</sub> = 100 mA, t <sub>p</sub> = 20 ms	V <sub>F</sub>		1.45	1.6	V
	I <sub>F</sub> = 1 A, t <sub>p</sub> = 100 μs	V <sub>F</sub>		2.1		V
Temperature coefficient of V <sub>F</sub>	I <sub>F</sub> = 1 mA	TK <sub>V<sub>F</sub></sub>		- 1.8		mV/K
Reverse current	V <sub>R</sub> = 5 V	I <sub>R</sub>			10	μA
Junction capacitance	V <sub>R</sub> = 0 V, f = 1 MHz, E = 0	C <sub>j</sub>		125		pF
Radiant intensity	I <sub>F</sub> = 100 mA, t <sub>p</sub> = 20 ms	I <sub>e</sub>	10	16	30	mW/sr
	I <sub>F</sub> = 1 A, t <sub>p</sub> = 100 μs	I <sub>e</sub>		150		mW/sr
Radiant power	I <sub>F</sub> = 100 mA, t <sub>p</sub> = 20 ms	φ <sub>e</sub>		50		mW
Temperature coefficient of φ <sub>e</sub>	I <sub>F</sub> = 100 mA	TKφ <sub>e</sub>		- 0.35		%/K
Angle of half intensity		φ		± 60		deg
Peak wavelength	I <sub>F</sub> = 100 mA	λ <sub>p</sub>		870		nm
Spectral bandwidth	I <sub>F</sub> = 100 mA	Δλ		40		nm
Temperature coefficient of λ <sub>p</sub>	I <sub>F</sub> = 100 mA	TKλ <sub>p</sub>		0.25		nm/K
Rise time	I <sub>F</sub> = 100 mA	t <sub>r</sub>		15		ns
Fall time	I <sub>F</sub> = 100 mA	t <sub>f</sub>		15		ns
Cut-off frequency	I <sub>DC</sub> = 70 mA, I <sub>AC</sub> = 30 mA pp	f <sub>c</sub>		24		MHz
Virtual source diameter		d		0.67		mm

**Note**

T<sub>amb</sub> = 25 °C, unless otherwise specified

**BASIC CHARACTERISTICS**

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

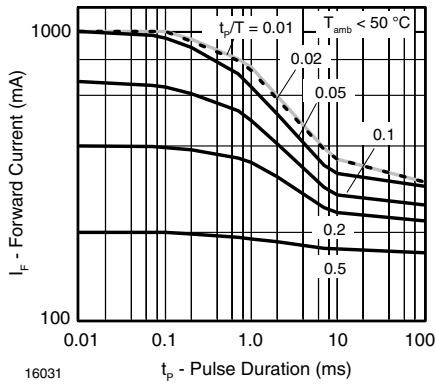


Fig. 3 - Pulse Forward Current vs. Pulse Duration

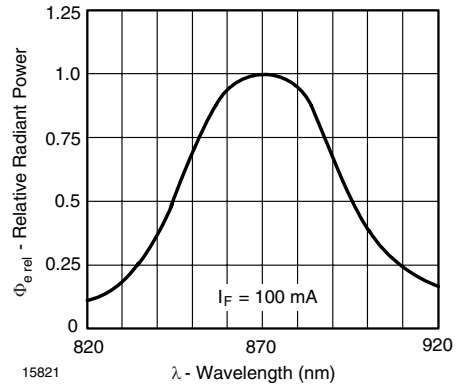


Fig. 6 - Relative Radiant Power vs. Wavelength

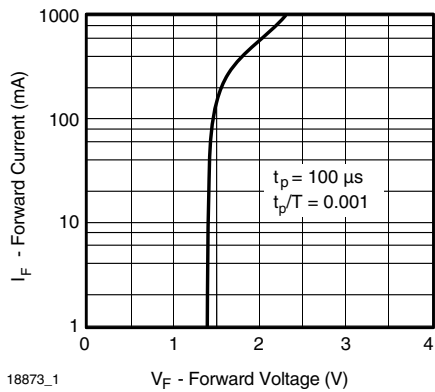


Fig. 4 - Forward Current vs. Forward Voltage

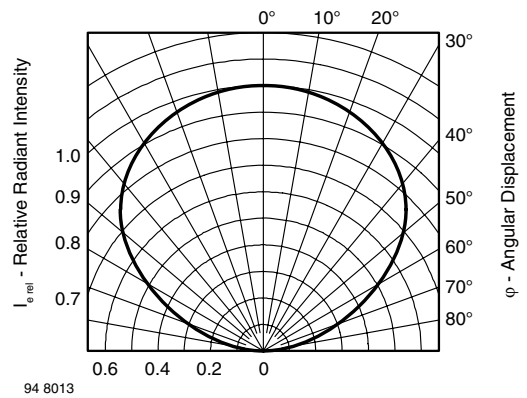


Fig. 7 - Relative Radiant Intensity vs. Angular Displacement

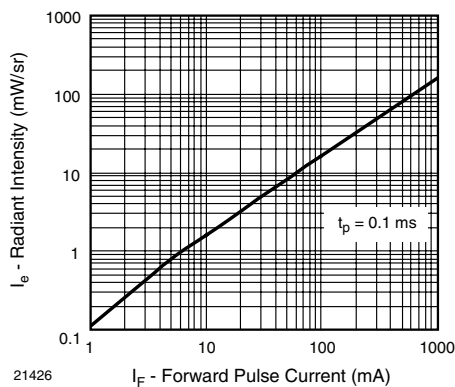
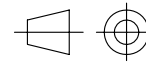
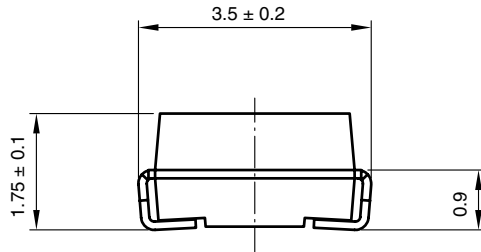


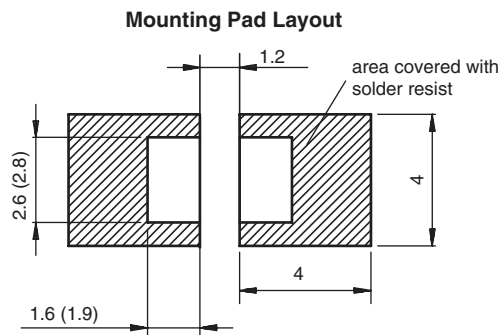
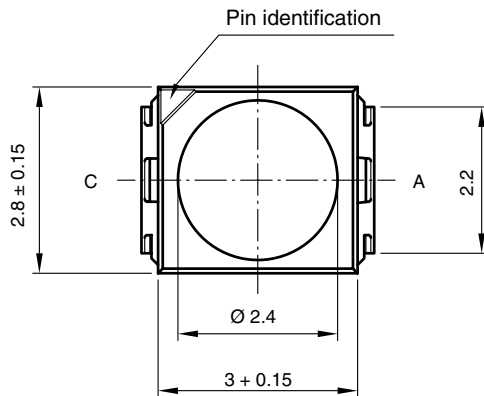
Fig. 5 - Radiant Intensity vs. Forward Current



**PACKAGE DIMENSIONS** in millimeters



technical drawings  
according to DIN  
specifications



Drawing-No.: 6.541-5067.01-4

Issue: 4; 30.07.07

20541

**SOLDER PROFILE**

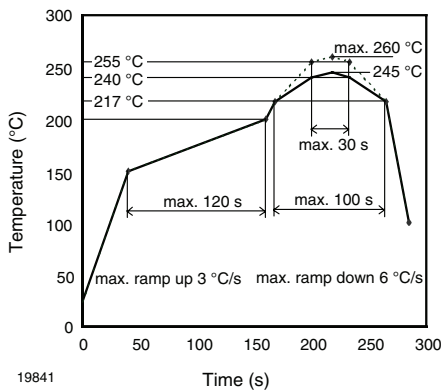


Fig. 8 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020B for Preconditioning acc. to JEDEC, Level 2a

**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:  $T_{amb} < 30\text{ }^{\circ}\text{C}$ ,  $RH < 60\%$

Moisture sensitivity level 2a, acc. to J-STD-020B.

**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  $40\text{ }^{\circ}\text{C}$  (+  $5\text{ }^{\circ}\text{C}$ ),  $RH < 5\%$ .

**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.

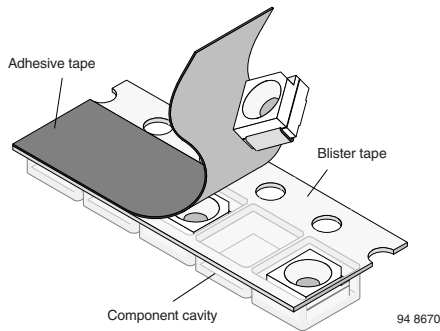


Fig. 9 - Blister Tape

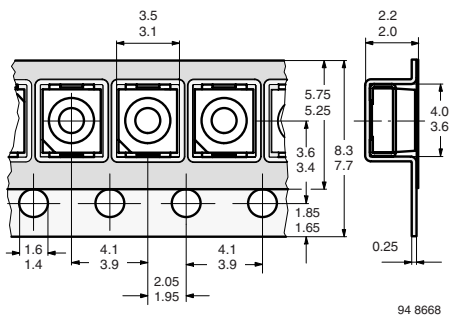


Fig. 10 - Tape Dimensions in mm for PLCC-2

**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.

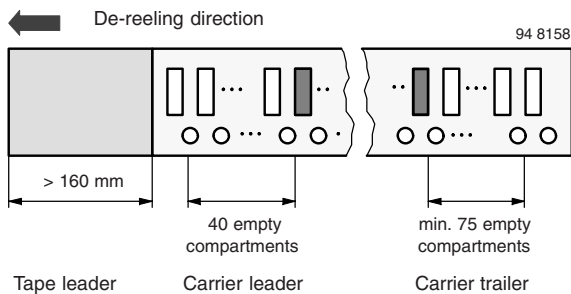


Fig. 11 - Beginning and End of Reel

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.

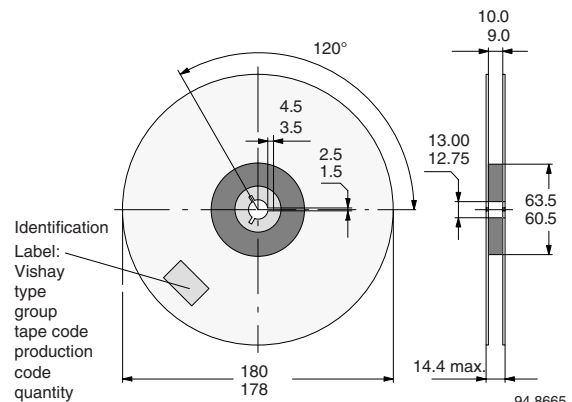


Fig. 12 - Dimensions of Reel-GS08

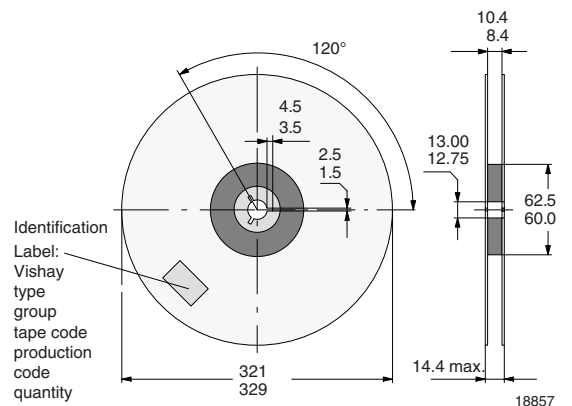


Fig. 13 - Dimensions of Reel-GS18

**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.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.

## Данный компонент на территории Российской Федерации

### Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9