

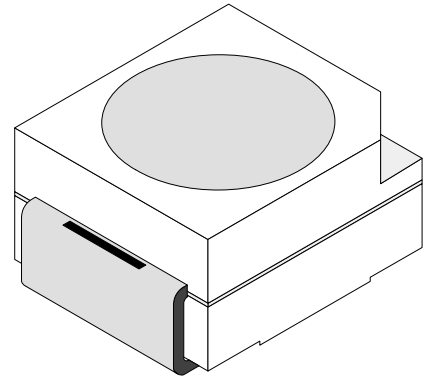
Power SMD LED

Color	Type	Technology	Angle of Half Intensity $\pm\varphi$
Red	TLMK330.	AllnGaP on GaAs	60°

Description

The TLM.33.. series is an advanced modification of the Vishays TLM.31.. series. It is designed to incorporate larger chips, therefore, capable of withstanding a 50 mA drive current.

The package of the TLM.33.. is the P-LCC-2 (equivalent to a size B tantalum capacitor). It consists of a lead frame which is embedded in a white thermoplast. The reflector inside this package is filled up with clear epoxy.



94 8553

Features

- Utilizing (AS) AllnGaP technology
- Available in 8 mm tape reel
- Suitable for all soldering methods according to CECC
- Forward voltage and color categorized per packing unit
- Luminous intensity ratio per packing unit $I_{Vmax}/I_{Vmin} \leq 1.6$
- Thermal resistance $R_{thJA} = 400K/W$
- ESD class 2

Applications

Tail- and Stop Lights of Motor Vehicles
Traffic Signals and Signs
Exterior lighting
Dot Matrix Panels, Signs, Displays
Dashboard illumination

Absolute Maximum Ratings

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

TLMK330.

Parameter	Test Conditions	Symbol	Value	Unit
Reverse voltage		V_R	5	V
Forward current		I_F	50	mA
Power dissipation	$T_{amb} \leq 73^{\circ}C$ (400K/W)	P_{tot}	130	mW
Junction temperature		T_j	125	°C
Operating temperature range		T_{amb}	-40 to +100	°C
Storage temperature range		T_{stg}	-40 to +100	°C
Thermal resistance junction/ambient	mounted on PC board FR4 optional Paddesign (see page 5)	R_{thJA}	400	K/W

Optical and Electrical Characteristics

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

Red (TLMK330.)

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit	
Luminous intensity	$I_F = 50\text{ mA}$	TLMK3300	I_V	250			mcd	
Luminous flux			ϕ_V		1000			mlm
Luminous intensity		TLMK3301	I_V	250		800	mcd	
Luminous flux			ϕ_V		1300			mlm
Luminous intensity		TLMK3302	I_V	400		800	mcd	
Luminous flux			ϕ_V		1650			mlm
Dominant wavelength			λ_d	611	617	622		nm
Peak wavelength			λ_p		624			nm
Spectral bandwidth at 50% $I_{rel\ max}$			$\delta\lambda$		18			nm
Viewing angle at 50% I_V				2ϕ		120		deg
Forward voltage	$I_F = 50\text{ mA}$		V_F		2.1	2.55	V	
Reverse current	$V_R = 5\text{ V}$		I_R		0.01	10	μA	
Temperature coefficient of λ_{dom}	$I_F = 50\text{ mA}$		TC_{λ}		0.05		nm/K	
Temperature coefficient of λ_{peak}		TC_{λ}		0.14			nm/K	
Temperature coefficient of V_F		TC_V		-2.1			mV/K	
Temperature coefficient of I_V		TC_{IV}		-0.6			%/K	

Forward Voltage Classification

Group	Forward Voltage (V)		Unit
	min	max	
1	1.85	2.25	V
2	2.15	2.55	V

Color Classification

Group	Red	
	Dom. wavelength (nm)	
	min	max
1	611	618
2	614	622

Luminous Intensity Classification

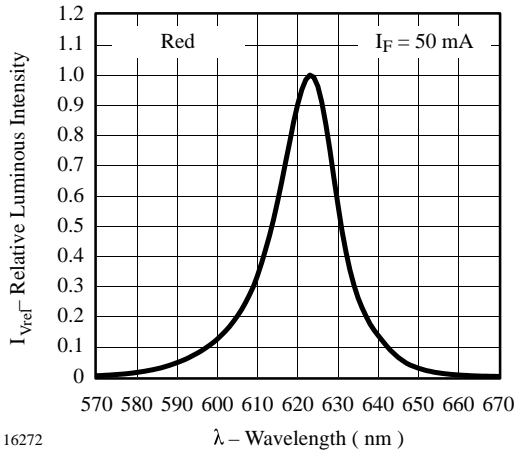
Group	Luminous Intensity (mcd)	
	min	max
Ya	250	400
Yb	320	500
Za	400	640
Zb	500	800

Group Name on Label

Example: Yb12

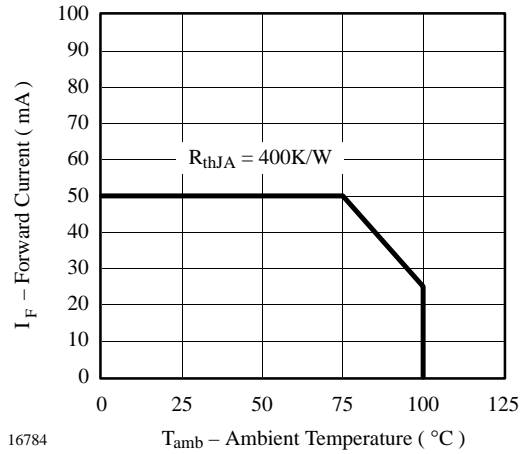
Luminous Intensity Group	Half Group	Wavelength	Forward Voltage
Y	b	1	2

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



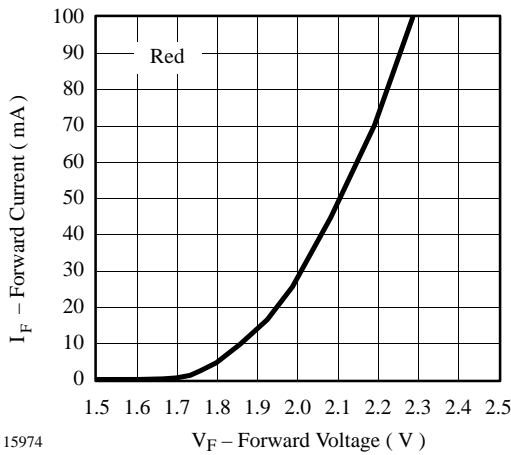
16272

Figure 1 Relative Luminous Intensity vs. Wavelength



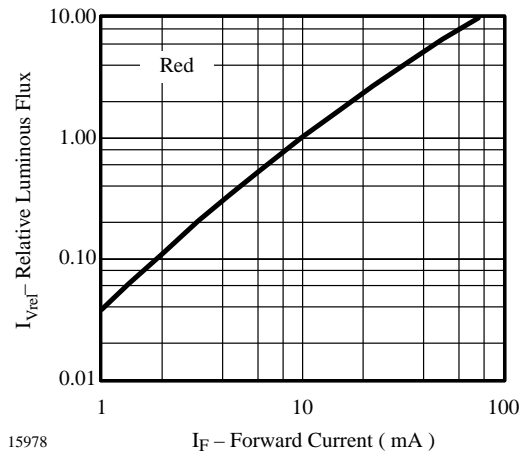
16784

Figure 4 Forward Current vs. Ambient Temperature



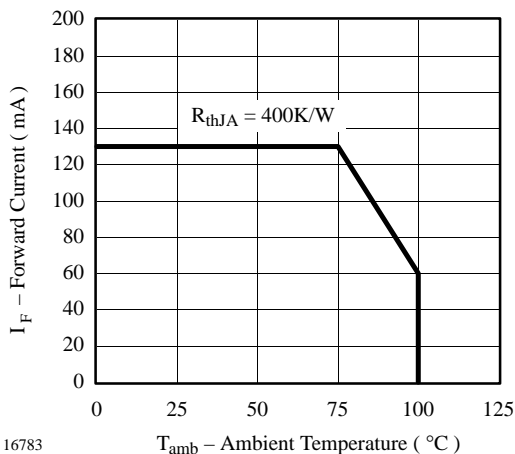
15974

Figure 2 Forward Current vs. Forward Voltage



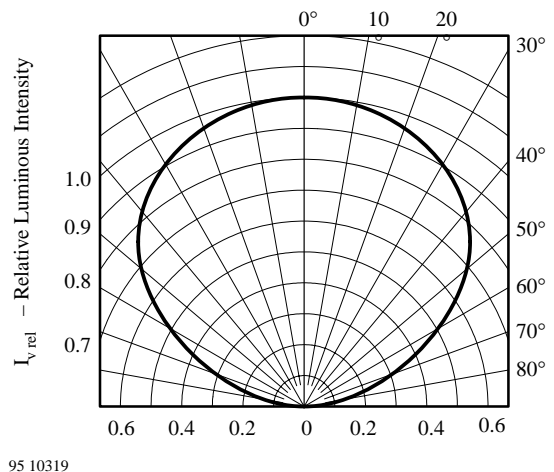
15978

Figure 5 Relative Luminous Flux vs. Forward Current



16783

Figure 3 Forward Current vs. Ambient Temperature



95 10319

Figure 6 Rel. Luminous Intensity vs. Angular Displacement

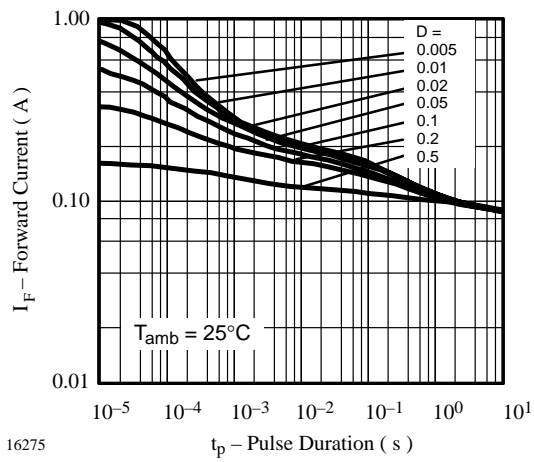
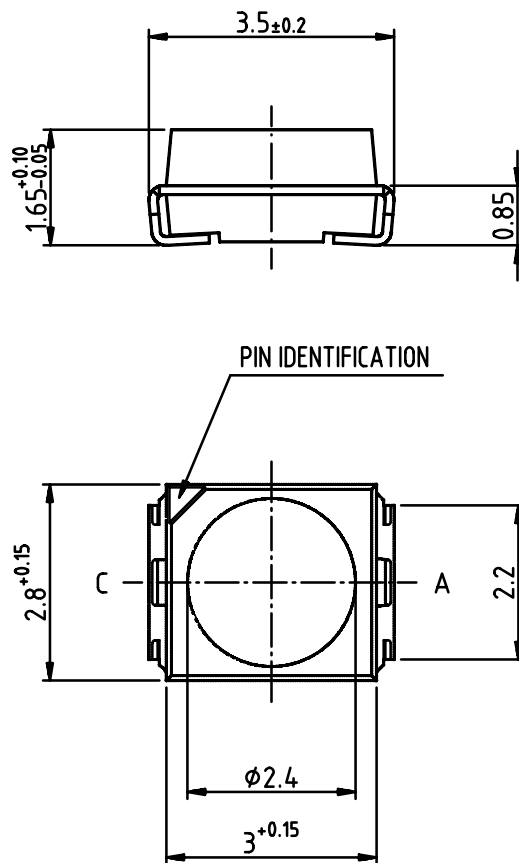


Figure 7 Forward Current vs. Pulse Duration

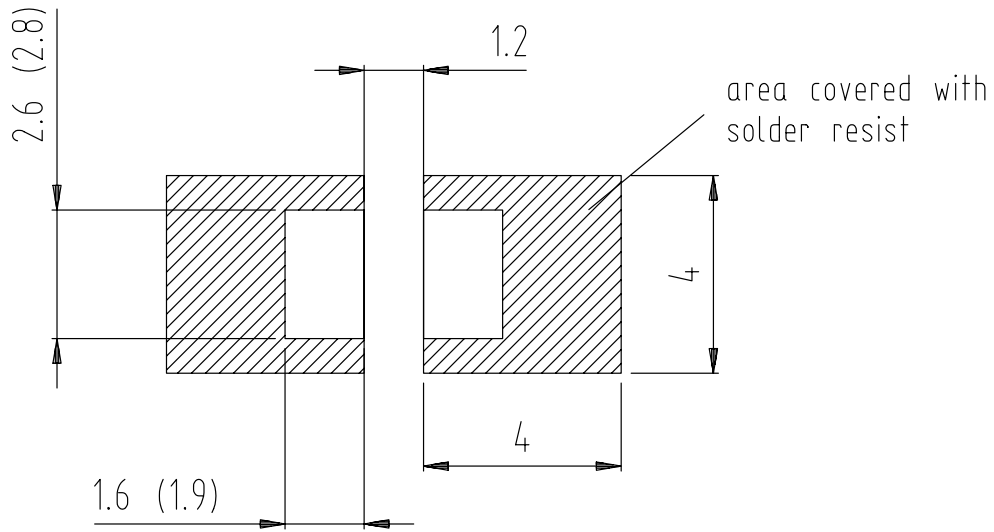
Dimensions in mm



95 11314

technical drawings according to DIN specifications

PCB Layout in mm



Dimensions: IR and Vaporphase
(Wave Soldering)

95 10966

Ozone Depleting Substances Policy Statement

It is the policy of **Vishay Semiconductor GmbH** to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

We reserve the right to make changes to improve technical design and may do so without further notice.

Parameters can vary in different applications. All operating parameters must be validated for each customer application by the customer. Should the buyer use Vishay Semiconductors products for any unintended or unauthorized application, the buyer shall indemnify Vishay Semiconductors against all claims, costs, damages, and expenses, arising out of, directly or indirectly, any claim of personal damage, injury or death associated with such unintended or unauthorized use.

Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany
Telephone: 49 (0) 7131 67 2831, Fax number: 49 (0) 7131 67 2423



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.