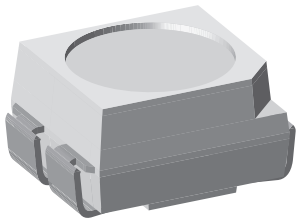
Power SMD LED in PLCC-3 Package

Description

The TLM.321. series is an advanced development in terms of heat dissipation.

The leadframe profile of this PLCC-3 SMD package is optimized to reduce the thermal resistance.

This allows higher drive current and doubles the light output compared to Vishay's high intensity SMD LED in PLCC-2 package.



19210

Features

- Utilizing AlInGaP, OMA* technology
- Angle of half intensity ± φ = 60 °
- Available in 8 mm tape
- Luninous intensity, color and forward voltage categorized per packing unit
- Luminous intensity ratio per packing unit $I_{Vmax}/I_{Vmin} \leq 1.6$
- ESD class 2
- Suitable for all soldering methods according to CECC
- Lead-free device

* Organic Mirror Advanced

Applications

Traffic Signals and Signs

Interior and exterior automotive lighting

Indicator and backlighting purposes for audio, video, LCD's switches, symbols, illuminated advertising etc.

Parts Table

Part	Color, Luminous Intensity	Dominant Wavelength
TLMK3210	Red, $I_V \geq 1000$ mcd (typ. 1250 mcd)	611 nm to 622 nm

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified
TLMK32..

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	5	V
Forward current		I_F	70	mA
Power dissipation	$T_{amb} \leq 65$ °C (290 K/W), $T_{amb} \leq 70$ °C (270 K/W)	P_{tot}	180	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 7)	R_{thJA}	290	K/W
	mounted on PC board FR4 recommended paddesign (see page 6)	R_{thJA}	270	K/W

Optical and Electrical Characteristics

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

Red

TLMK321.

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Luminous intensity	I_F = 50 mA	TLMK3210	I_V	1000	1250		mcd
Luminous flux/Luminous intensity			ϕ_V/I_V		3		mlm/mcd
Dominant wavelength	I_F = 50 mA		λ_d	611	617	622	nm
Peak wavelength	I_F = 50 mA		λ_p		624		nm
Spectral bandwidth at 50 % $I_{rel\ max}$	I_F = 50 mA		$\Delta\lambda$		18		nm
Angle of half intensity	I_F = 50 mA		φ		± 60		deg
Forward voltage	I_F = 50 mA		V_F	1.85	2.2	3.0	V
Reverse current	V_R = 5 V		V_R		0.01	10	µA

Typical Characteristics (Tamb = 25 °C unless otherwise specified)

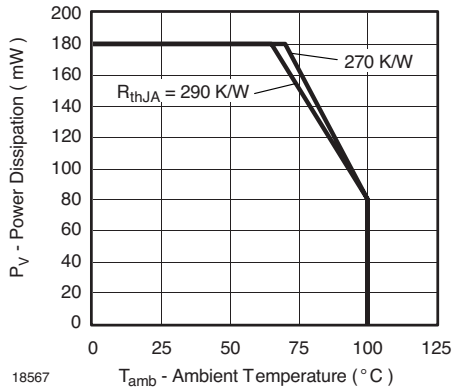


Figure 1. Power Dissipation vs. Ambient Temperature

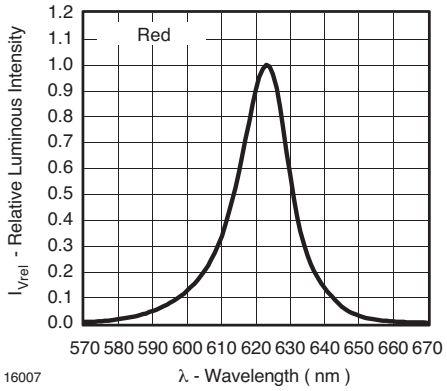


Figure 4. Relative Intensity vs. Wavelength

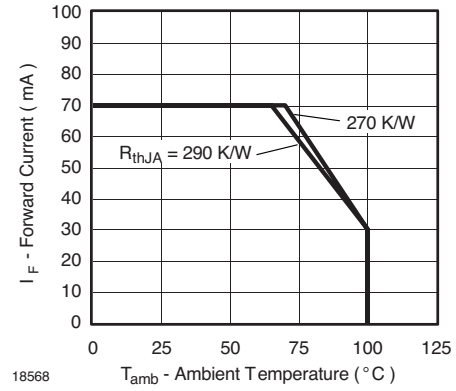


Figure 2. Forward Current vs. Ambient Temperature

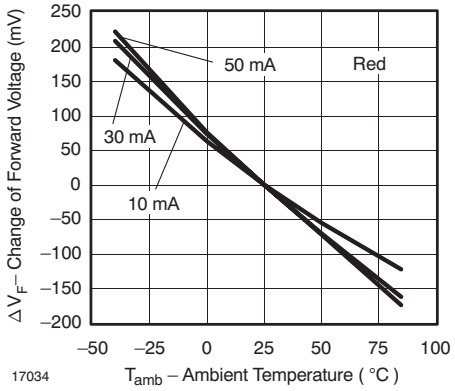


Figure 5. Change of Forward Voltage vs. Ambient Temperature

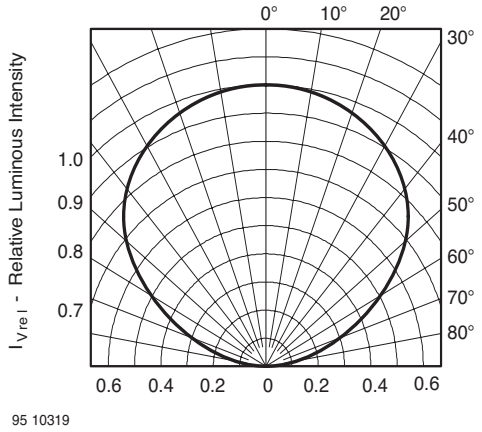


Figure 3. Rel. Luminous Intensity vs. Angular Displacement

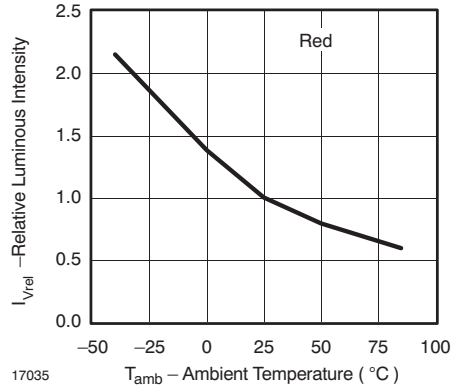


Figure 6. Relative Luminous Intensity vs. Amb. Temperature

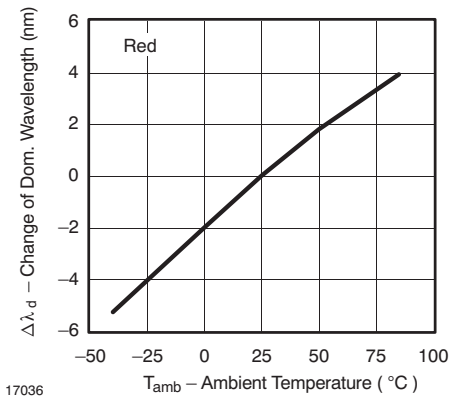


Figure 7. Change of Dominant Wavelength vs. Ambient Temperature

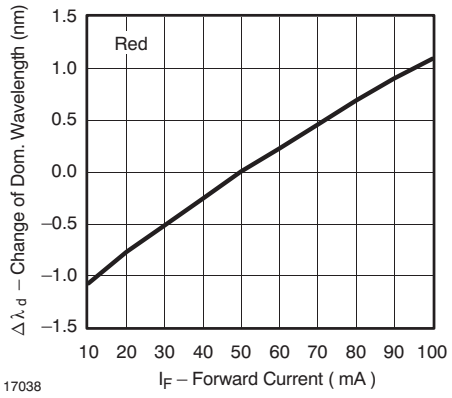


Figure 9. Change of Dominant Wavelength vs. Forward Current

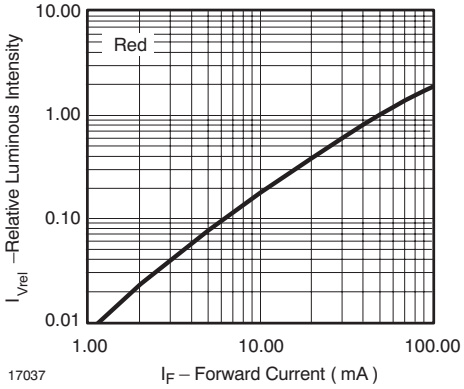


Figure 8. Relative Luminous Intensity vs. Forward Current

Forward Voltage Classification

Group	Forward Voltage (V)	
	min	max
1	1.85	2.25
2	2.15	2.55
3	2.43	2.67
4	2.55	2.79
5	2.67	2.91
6	2.79	3.03

Color Classification

Group	Dominant Wavelength (nm)					
	Red		Soft Orange		Yellow	
	min	max	min	max	min	max
1	611	618	598	601	581	584
2	614	622	600	603	583	586
3			602	605	585	588
4			604	607	587	590
5			606	609	589	592
6			608	611	591	594

Luminous Intensity Classification

Group	Luminous Intensity (mcd)	
	min	max
1a	1000	1600
1b	1250	2000
2a	1600	2500
2b	2000	3200

Group Name on Label

Luminous Intensity Group	Halfgroup	Wavelength	Forward Voltage
1	b	2	1

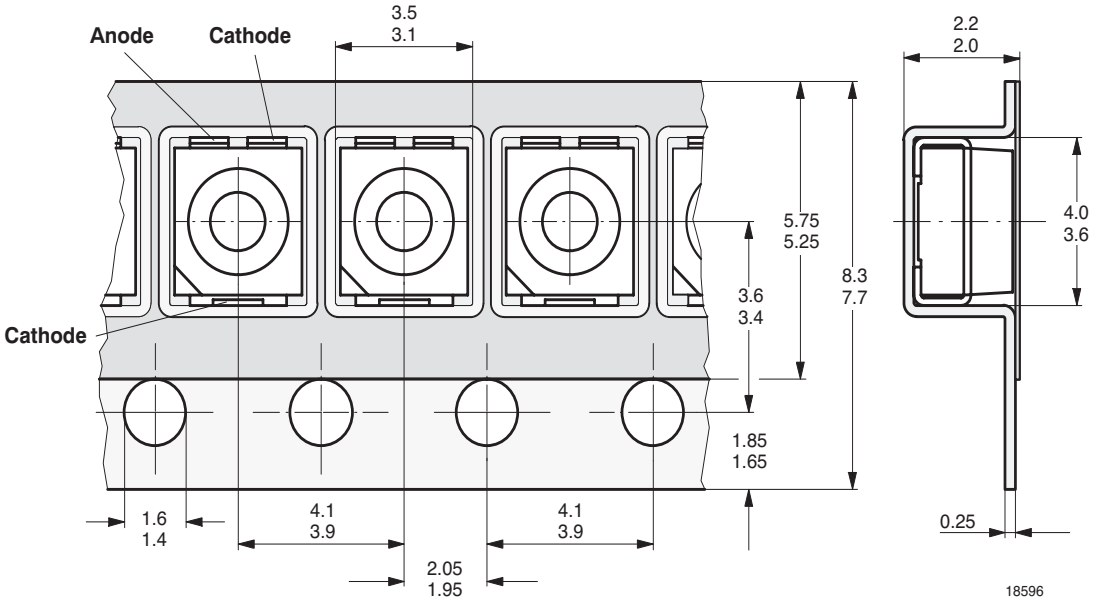
One packing unit/tape contains only one classification group of luminous intensity, color and forward voltage

Only one single classification groups is not available

The given groups are not order codes, customer specific group combinations require marketing agreement

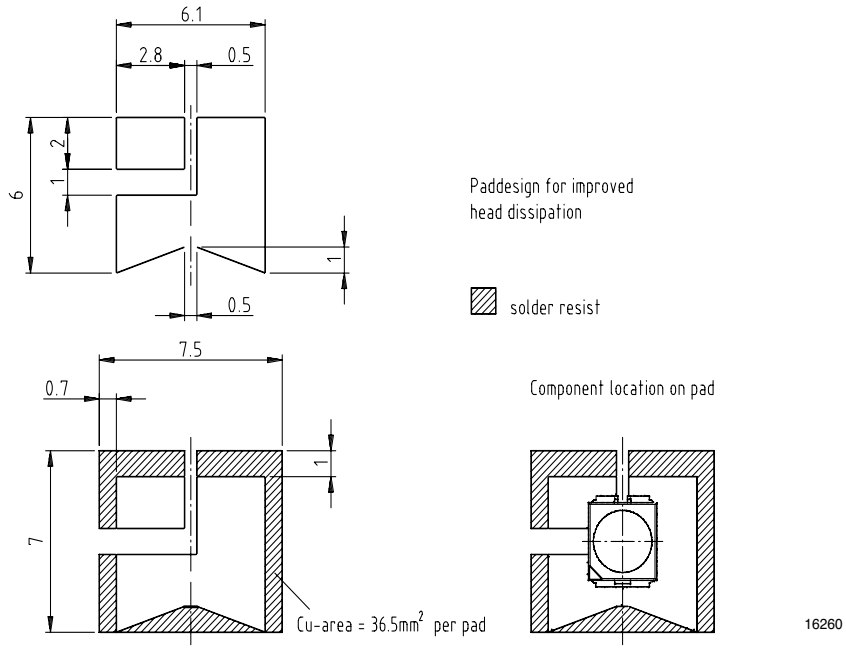
No color subgrouping for Super Red

Taping

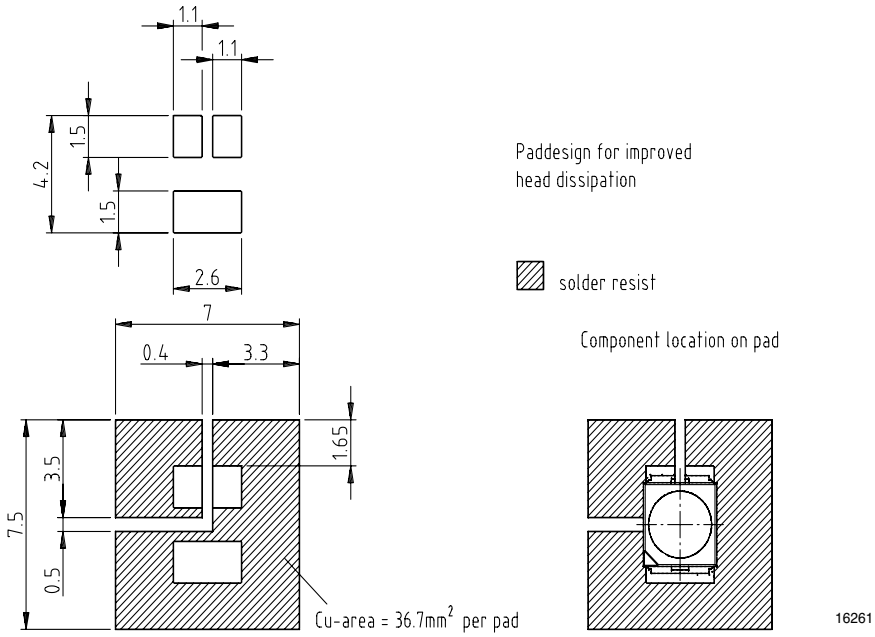


Tape Dimensions in mm for PLCC-3

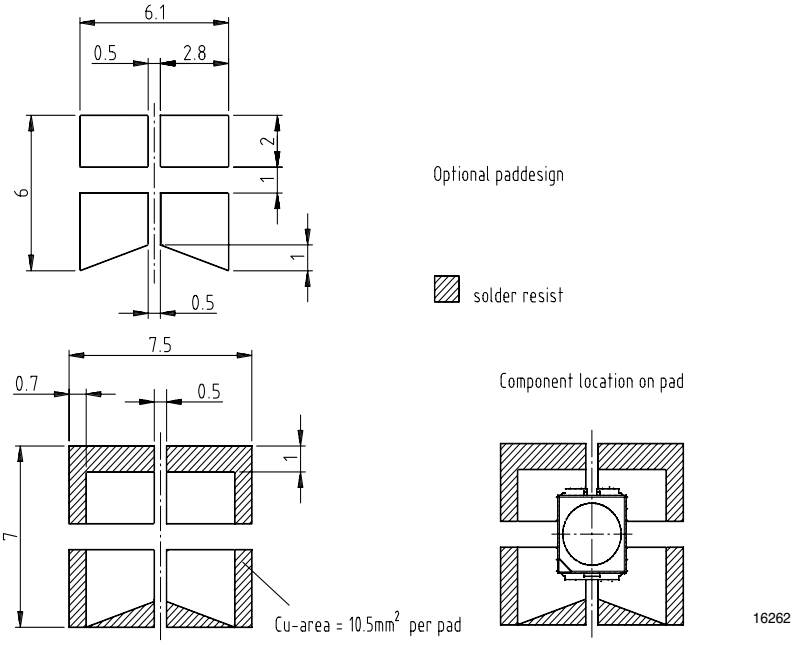
Recommended Pad Design (Wave-Soldering), R_{thJA} = 270 K/W



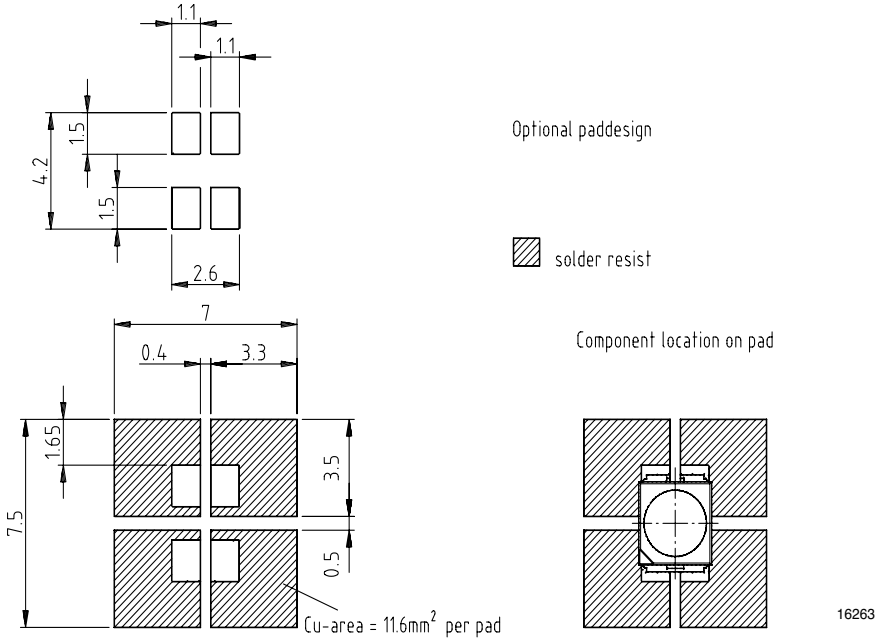
Recommended Pad Design (Reflow-Soldering), R_{thJA} = 270 K/W



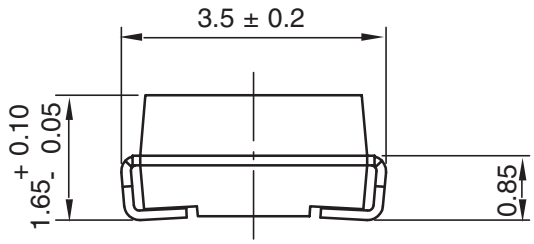
Optional Pad Design (Wave-Soldering), R_{thJA} = 290 K/W

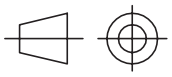


Optional Pad Design (Reflow-Soldering), R_{thJA} = 290 K/W

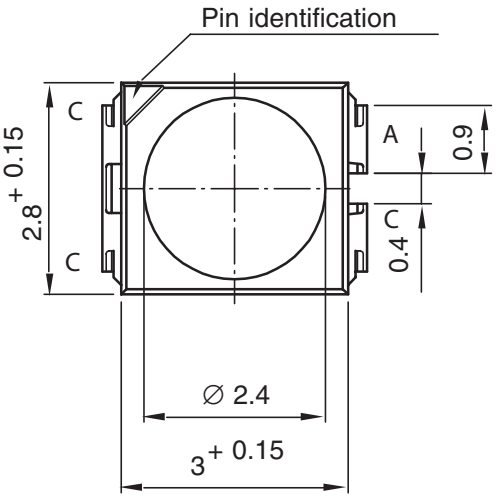


Package Dimensions in mm





technical drawings
according to DIN
specifications



Drawing-No. : 6.541-5054.01-4
Issue: 1; 19.02.04

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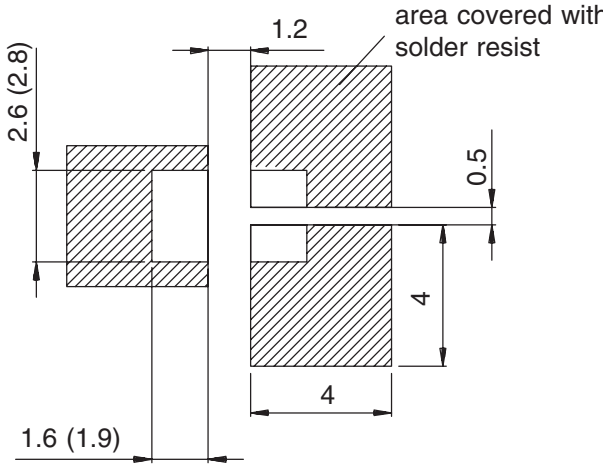
Mounting Pad Layout



Dimensions: IR and Vaporphase
(Wave Soldering)

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.

Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany

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