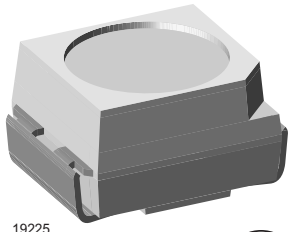
Power SMD LED in PLCC-2 Package

Description

The TLM.33.. series is an advanced modification of the Vishay 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 PLCC-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.



e3 Pb Pb-free

Features

- Utilizing (AS) AlInGaP technology
- Available in 8 mm tape
- Luninous intensity, color and forward voltage categorized per packing unit
- Luminous intensity ratio per packing unit $I_{Vmax}/I_{Vmin} \leq 1.6$
- Thermal resistance R = 400 K/W
- ESD class 2
- Suitable for all soldering methods according to CECC
- Lead-free device

Applications

Traffic Signals and Signs

Interior and exterior lighting

Dashboard illumination

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

Parts Table

Part	Color, Luminous Intensity	Angle of Half Intensity (±φ)	Technology
TLMK3300	Red, I_V > 200 mcd	60 °	AlInGaP on GaAs
TLMK3301	Red, I_V = (250 to 800) mcd	60 °	AlInGaP on GaAs
TLMK3302	Red, I_V = (400 to 800) mcd	60 °	AlInGaP on GaAs
TLMK3303	Red, I_V = (400 to 1250) mcd	60 °	AlInGaP on GaAs
TLMS3300	Red, I_V > 160 mcd	60 °	AlInGaP on GaAs
TLMS3301	Red, I_V = (160 to 400) mcd	60 °	AlInGaP on GaAs
TLMS3302	Red, I_V = (250 to 800) mcd	60 °	AlInGaP on GaAs
TLMO3300	Soft orange, I_V > 200 mcd	60 °	AlInGaP on GaAs
TLMO3301	Soft orange, I_V = (250 to 640) mcd	60 °	AlInGaP on GaAs
TLMO3302	Soft orange, I_V = (320 to 800) mcd	60 °	AlInGaP on GaAs

Part	Color, Luminous Intensity	Angle of Half Intensity (±φ)	Technology
TLMO3303	Soft orange, I_V = (400 to 1250) mcd	60 °	AlInGaP on GaAs
TLMY3300	Yellow, I_V > 200 mcd	60 °	AlInGaP on GaAs
TLMY3301	Yellow, I_V = (250 to 640) mcd	60 °	AlInGaP on GaAs
TLMY3302	Yellow, I_V = (320 to 800) mcd	60 °	AlInGaP on GaAs
TLMY3303	Yellow, I_V = (400 to 1250) mcd	60 °	AlInGaP on GaAs

Absolute Maximum Ratings

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

TLMY33.., TLMO33.., TLMK33.., TLMS33..

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	5	V
DC Forward current	$T_{amb} \leq 73$ °C (400 K/W)	I_F	50	mA
Power dissipation	$T_{amb} \leq 73$ °C (400 K/W)	P_V	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
Soldering temperature	t ≤ 5 s	T_{sd}	260	°C
Thermal resistance junction/ ambient	mounted on PC board (pad size > 16 mm^2)	R_{thJA}	400	K/W

Optical and Electrical Characteristics

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

Red

TLMK33..

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Luminous intensity	I_F = 50 mA	TLMK3300	I_V	200	500		mcd
		TLMK3301	I_V	250		800	mcd
		TLMK3302	I_V	400		800	mcd
		TLMK3303	I_V	400		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	2.1	2.55	V
Reverse current	V_R = 5 V		V_R		0.01	10	µA

Red

TLMS33..

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Luminous intensity	I_F = 50 mA	TLMS3300	I_V	160	300		mcd
		TLMS3301	I_V	160		400	mcd
		TLMS3302	I_V	250		800	mcd
Luminous flux/Luminous intensity			ϕ_V/I_V		3		mlm/ mcd
Dominant wavelength	I_F = 50 mA		λ_d	626	630	638	nm
Peak wavelength	I_F = 50 mA		λ_p		641		nm
Spectral bandwidth at 50 % $I_{rel\ max}$	I_F = 50 mA		$\Delta\lambda$		17		nm
Angle of half intensity	I_F = 50 mA		φ		± 60		deg
Forward voltage	I_F = 50 mA		V_F	1.85	2.1	2.55	V
Reverse current	V_R = 5 V		V_R		0.01	10	µA

Soft Orange

TLMO33..

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Luminous intensity	I_F = 50 mA	TLMO3300	I_V	200	500		mcd
		TLMO3301	I_V	250		640	mcd
		TLMO3302	I_V	320		800	mcd
		TLMO3303	I_V	400		1250	mcd
Luminous flux/Luminous intensity			ϕ_V/I_V		3		mlm/ mcd
Dominant wavelength	I_F = 50 mA		λ_d	600	605	611	nm
Peak wavelength	I_F = 50 mA		λ_p		611		nm
Spectral bandwidth at 50 % $I_{rel\ max}$	I_F = 50 mA		$\Delta\lambda$		17		nm
Angle of half intensity	I_F = 50 mA		φ		± 60		deg
Forward voltage	I_F = 50 mA		V_F	1.85	2.1	2.55	V
Reverse current	V_R = 5 V		V_R		0.01	10	µA

Yellow

TLMY33..

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Luminous intensity	I_F = 50 mA	TLMY3300	I_V	200	450		mcd
		TLMY3301	I_V	250		640	mcd
		TLMY3302	I_V	320		800	mcd
		TLMY3303	I_V	400		1250	mcd
Luminous flux/Luminous intensity			ϕ_V/I_V		3		mlm/ mcd
Dominant wavelength	I_F = 50 mA		λ_d	583	588	594	nm
Peak wavelength	I_F = 50 mA		λ_p		590		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	2.1	2.55	V
Reverse current	V_R = 5 V		V_R		0.01	10	µA

Forward Voltage Classification

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

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
Xa	160	250
Xb	200	320
Ya	250	400
Yb	320	500
Za	400	630
Zb	500	800
0a	630	1000
0b	800	1250

Group Name on Label

Luminous Intensity Group	Halfgroup	Wavelength	Forward Voltage
Z	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

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

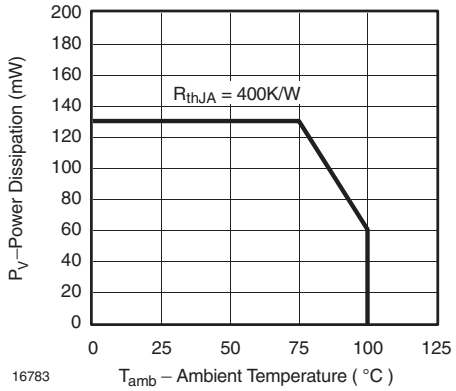


Figure 1. Power Dissipation vs. Ambient Temperature

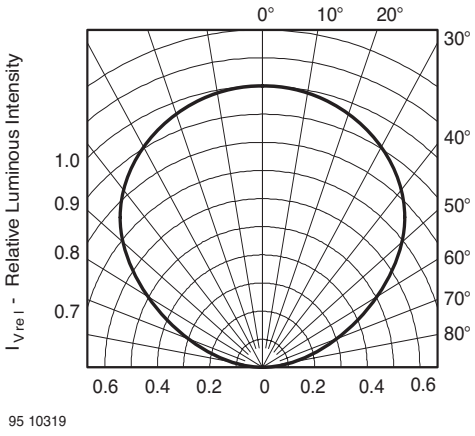


Figure 3. Rel. Luminous Intensity vs. Angular Displacement

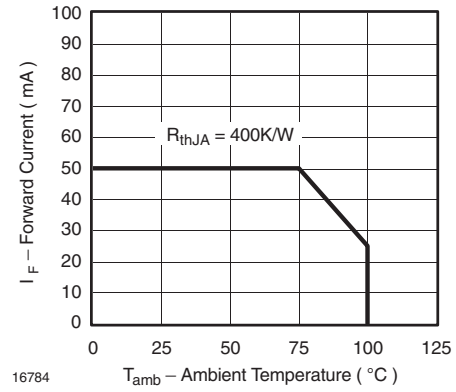


Figure 2. Forward Current vs. Ambient Temperature

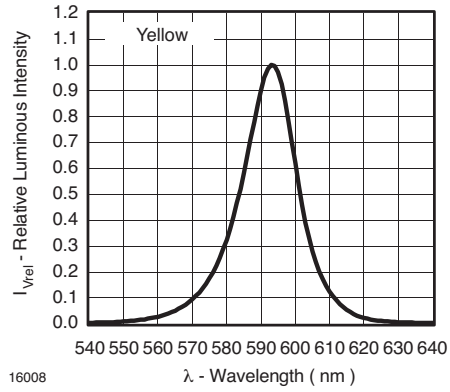


Figure 4. Relative Intensity vs. Wavelength

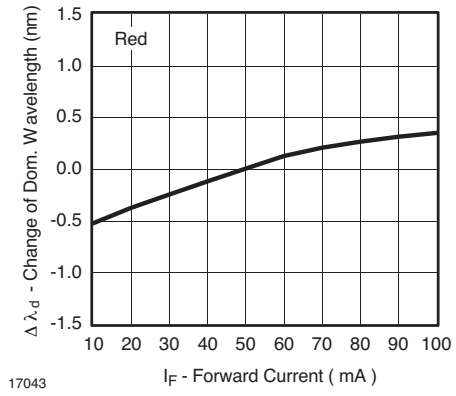


Figure 29. Change of Dominant Wavelength vs. Forward Current

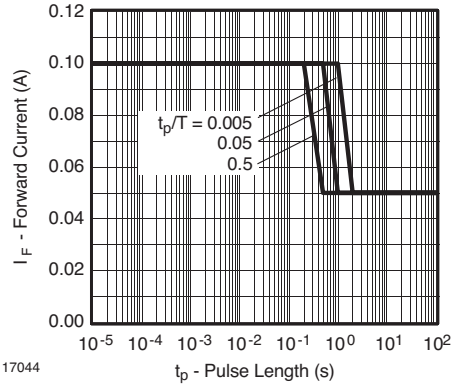
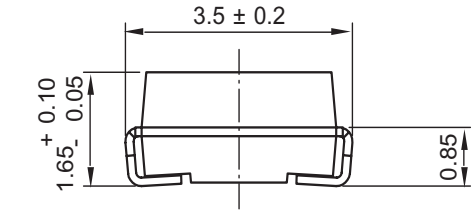
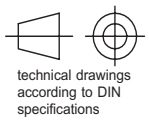
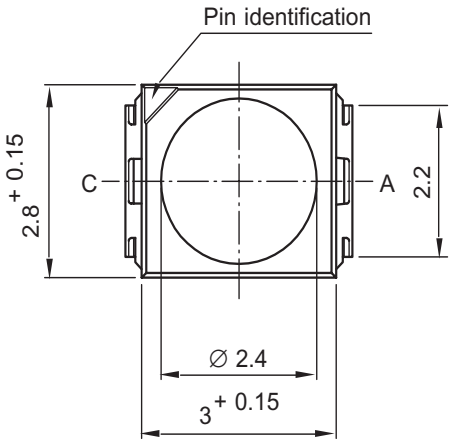


Figure 30. Forward Current vs. Pulse Length

Package Dimensions in mm







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Issue: 7; 05.04.04

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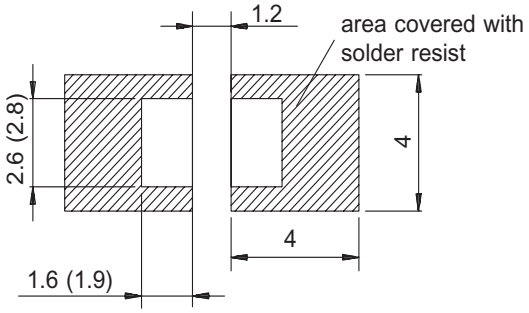
Mounting Pad Layout



Dimensions: IR and Vaporphase
(Wave Soldering)