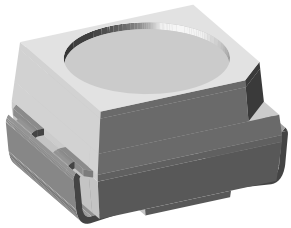
Low Current SMD LED

Description

These new devices have been designed to meet the increasing demand for AlInGaP based low current SMD LEDs.

The package of the TLM.300. is the P-LCC-2 package.

It consists of a lead frame which is embedded in a white thermoplast. The reflector inside this package is filled up with clear epoxy.



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Features

- SMD LED with exceptional brightness
- Compatible with automatic placement equipment
- EIA and ICE standard package
- Compatible with infrared, vapor phase and wave solder processes according to CECC
- Available in 8 mm tape
- Low profile package
- Non-diffused lens: excellent for coupling to light pipes and backlighting
- Very low power consumption
- Luminous intensity ratio in one packaging unit $I_{Vmax}/I_{Vmin} \leq 2.0$
- ESD withstand voltage up to 1 KV

Applications

Automotive: Backlighting in dashboards and switches

Telecommunication: Indicator and backlighting in telephone and fax

Indicator and backlight for audio and video equipment

Indicator and backlight for battery driven equipment

Indicator and backlight in office equipment

Flat backlight for LCDs, switches and symbols

General use

Parts Table

Part	Color, Luminous Intensity	Angle of Half Intensity (±φ)	Technology
TLMS3000	Super red, I_V = 2.8 mcd (typ.)	60 °	AlInGaP
TLMS3001	Super red, I_V = 4.5 mcd (typ.)	60 °	AlInGaP
TLMO3000	Orange, I_V = 5.6 mcd (typ.)	60 °	AlInGaP
TLMO3001	Orange, I_V = 9.0 mcd (typ.)	60 °	AlInGaP
TLMY3000	Yellow, I_V = 4.5 mcd (typ.)	60 °	AlInGaP
TLMY3001	Yellow, I_V = 7.1 mcd (typ.)	60 °	AlInGaP

Absolute Maximum Ratings

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

TLM.300.

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	6	V
DC Forward current		I_F	15	mA
Surge forward current	$t_p \leq 10$ µs	I_{FSM}	0.1	A

Parameter	Test condition	Symbol	Value	Unit
Power dissipation	$T_{amb} \leq 90$ °C	P_V	40	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	$t \leq 5$ 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

Super red

TLMS300.

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Luminous intensity [1]	I_F = 2 mA	TLMS3000	I_V	2.5			mcd
	I_F = 10 mA	TLMS3000	I_V		20		mcd
	I_F = 2 mA	TLMS3001	I_V	4.0		12.5	mcd
Dominant wavelength	I_F = 2 mA		λ_d	624		636	nm
Peak wavelength	I_F = 2 mA		λ_p		635		nm
Angle of half intensity	I_F = 2 mA		φ		± 60		deg
Forward voltage	I_F = 2 mA		V_F		1.8	2.2	V
Reverse voltage	I_R = 10 µA		V_R	6	15		V

[1] in one Packing Unit $I_{Vmax}/I_{Vmin} \leq 2.0$

Orange

TLMO300.

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Luminous intensity [1]	I_F = 2 mA	TLMO3000	I_V	5.0			mcd
	I_F = 10 mA	TLMO3000	I_V		50		mcd
	I_F = 2 mA	TLMO3001	I_V	6.3		20	mcd
Dominant wavelength	I_F = 2 mA		λ_d	600		609	nm
Peak wavelength	I_F = 2 mA		λ_p		610		nm
Angle of half intensity	I_F = 2 mA		φ		± 60		deg
Forward voltage	I_F = 2 mA		V_F		1.8	2.2	V
Reverse voltage	I_R = 10 µA		V_R	6	15		V

[1] in one Packing Unit $I_{Vmax}/I_{Vmin} \leq 2.0$

Yellow

TLMY300.

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Luminous intensity [1]	I_F = 2 mA	TLMY3000	I_V	4.0			mcd
	I_F = 10 mA	TLMY3000	I_V		50		mcd
	I_F = 2 mA	TLMY3001	I_V	6.3		20	mcd
Dominant wavelength	I_F = 2 mA		λ_d	581		594	nm
Peak wavelength	I_F = 2 mA		λ_p		585		nm
Angle of half intensity	I_F = 2 mA		φ		± 60		deg
Forward voltage	I_F = 2 mA		V_F		1.8	2.2	V
Reverse voltage	I_R = 10 µA		V_R	6	15		V

[1] in one Packing Unit $I_{Vmax}/I_{Vmin} \leq 2.0$

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

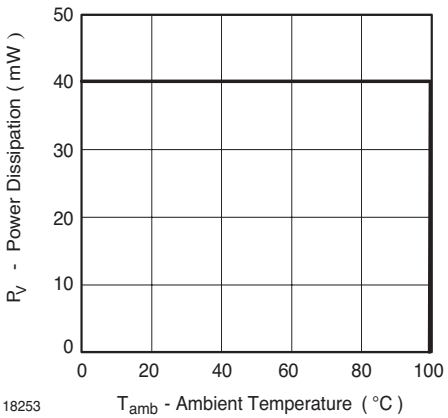


Figure 1. Power Dissipation vs. Ambient Temperature

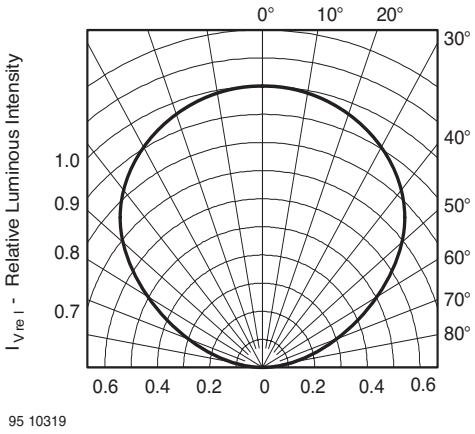


Figure 3. Rel. Luminous Intensity vs. Angular Displacement

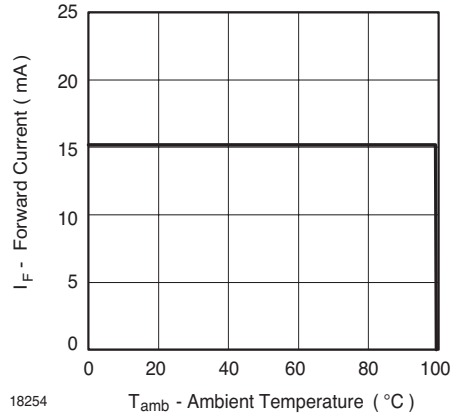


Figure 2. Forward Current vs. Ambient Temperature

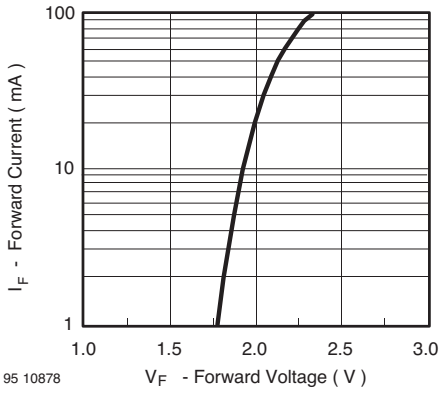


Figure 4. Forward Current vs. Forward Voltage

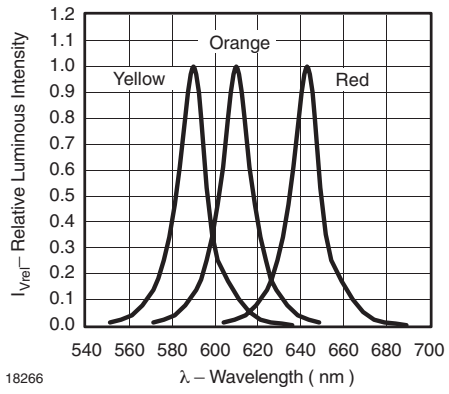


Figure 5. Relative Intensity vs. Wavelength

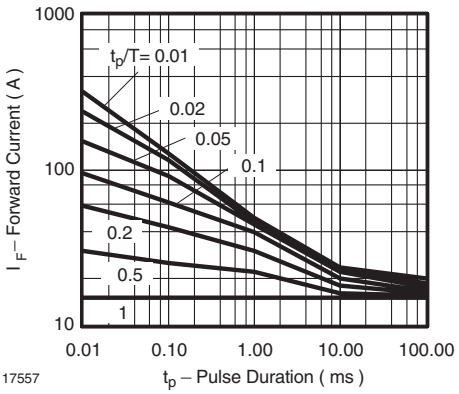


Figure 8. Forward Current vs. Pulse Length

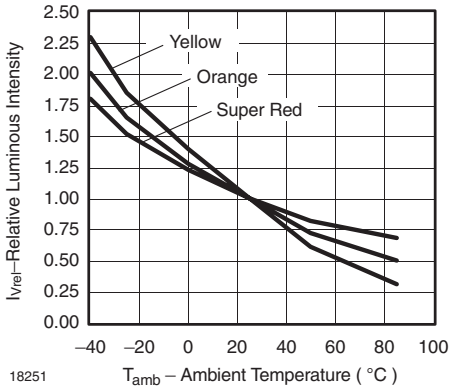


Figure 6. Rel. Luminous Intensity vs. Ambient Temperature

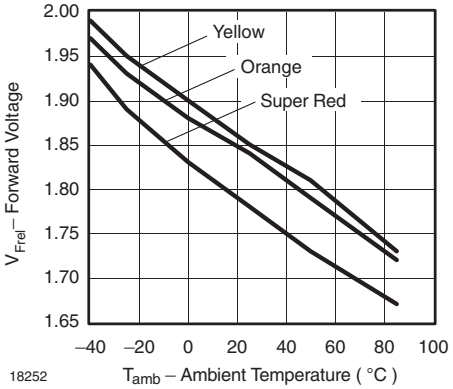
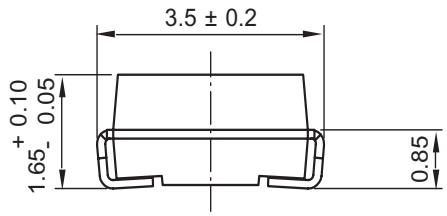
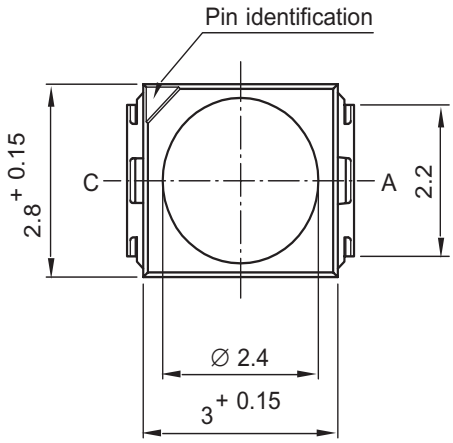


Figure 7. Forward Voltage vs. Ambient Temperature

Package Dimensions in mm



technical drawings
according to DIN
specifications



Drawing-No. : 6.541-5025.01-4
Issue: 7; 05.04.04

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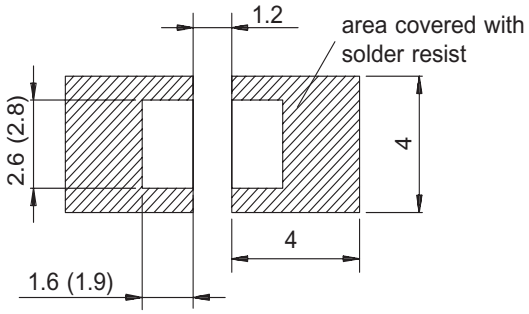
Mounting Pad Layout



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 operatingsystems 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