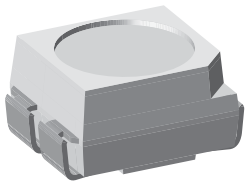
Bicolor SMD LED PLCC-4



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FEATURES

- SMD LED with exceptional brightness
- Multicolored
- Luminous intensity categorized
- EIA and ICE standard package
- Compatible with automatic placement equipment
- Suitable for reflow and TTW soldering
- Available in 8 mm tape
- Low profile package
- Non-diffused lens: excellent for coupling to light pipes and backlighting
- Low power consumption
- Luminous intensity ratio in one packaging unit $I_{Vmax}/I_{Vmin} \leq 1.6$
- Lead (Pb)-free product - RoHS compliant - Lead (Pb)-free soldering
- Jedec level 2a

DESCRIPTION

These devices have been designed to meet the increasing demand for surface mounting technology.

The package of the TLMKE340. is the PLCC-4.

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

This SMD device consists of a red and yellow chip. So it is possible to choose the color in one device.

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: SMD PLCC-4
- Product series: bicolor
- Angle of half intensity: ± 60°

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 in office equipment
- Flat backlight for LCDs, switches and symbols
- General use

PARTS TABLE

PART	COLOR, LUMINOUS INTENSITY	TECHNOLOGY
TLMKE3400-GS08	Red/yellow, I_V > 50 mcd	AlInGaP on GaAs
TLMKE3401-GS08	Red/yellow, I_V > 63 mcd	AlInGaP on GaAs

ABSOLUTE MAXIMUM RATINGS[1] TLMKE340.				
PARAMETER	**TEST CONDITION**	**SYMBOL**	**VALUE**	**UNIT**
Reverse voltage per diode	I_R = 10 µA	V_R	6	V
DC Forward current per diode	$T_{amb} \leq 80$ °C	I_F	30	mA
Surge forward current per diode	$t_p \leq 10$ µs	I_{FSM}	0.1	A
Power dissipation per diode		P_V	80	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}	560	K/W

Note:
[1] T_{amb} = 25 °C, unless otherwise specified

OPTICAL AND ELECTRICAL CHARACTERISTICS[1] TLMKE340., RED							
PARAMETER	**TEST CONDITION**	**PART**	**SYMBOL**	**MIN**	**TYP.**	**MAX**	**UNIT**
Luminous intensity	I_F = 20 mA	TLMKE3400	I_V	50		200	mcd
		TLMKE3401	I_V	63		160	mcd
Dominant wavelength	I_F = 20 mA		λ_d		630		nm
Peak wavelength	I_F = 20 mA		λ_p		643		nm
Angle of half intensity	I_F = 20 mA		φ		± 60		deg
Forward voltage	I_F = 20 mA		V_F		1.9	2.6	V
Reverse voltage	I_R = 10 µA		V_R	6			V
Junction capacitance	V_R = 0, f = 1 MHz		C_j		15		pF

Note:
[1] T_{amb} = 25 °C, unless otherwise specified

OPTICAL AND ELECTRICAL CHARACTERISTICS[1] TLMKE340., YELLOW							
PARAMETER	**TEST CONDITION**	**PART**	**SYMBOL**	**MIN**	**TYP.**	**MAX**	**UNIT**
Luminous intensity	I_F = 20 mA	TLMKE3400	I_V	80		320	mcd
		TLMKE3401	I_V	100		250	mcd
Dominant wavelength	I_F = 20 mA		λ_d	581	588	594	nm
Peak wavelength	I_F = 20 mA		λ_p		590		nm
Angle of half intensity	I_F = 20 mA		φ		± 60		deg
Forward voltage	I_F = 20 mA		V_F		2	2.6	V
Reverse voltage	I_R = 10 µA		V_R	6			V
Junction capacitance	V_R = 0, f = 1 MHz		C_j		15		pF

Note:
[1] T_{amb} = 25 °C, unless otherwise specified

LUMINOUS INTENSITY CLASSIFICATION AND GROUP COMBINATIONS, TLMKE34..[1)]						
		RED				
		Ub 50...80 mcd	**Va** 63...100 mcd	**Vb** 80...125 mcd	**Wa** 100...160 mcd	**Wb** 125...200 mcd
YELLOW	**Vb** 80...125 mcd	**00**	**00**	**00**	**00**	**00**
	Wa 100...160 mcd	**00**	**00** **01**	**00** **01**	**00** **01**	**00**
	Wb 125...200 mcd	**00**	**00** **01**	**00** **01**	**00** **01**	**00**
	Xa 160...250 mcd	**00**	**00** **01**	**00** **01**	**00** **01**	**00**
	Xb 200...320 mcd	**00**	**00**	**00**	**00**	**00**

Note:
[1)] followed by 00 or 01

COLOR CLASSIFICATION		
GROUP	**DOMINANT WAVELENGTH (NM)**	
	YELLOW	
	MAX	**MAX**
1	581	584
2	583	586
3	585	588
4	587	590
5	589	592
6	591	594

TYPICAL CHARACTERISTICS

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

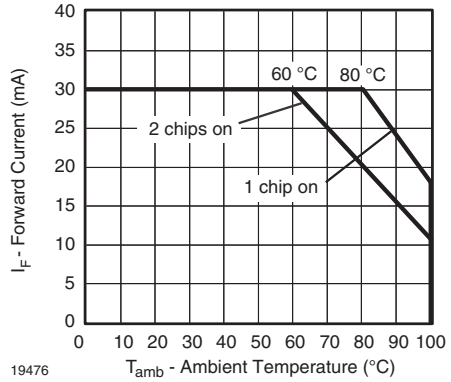


Figure 1. Forward Current vs. Ambient Temperature for InGaN

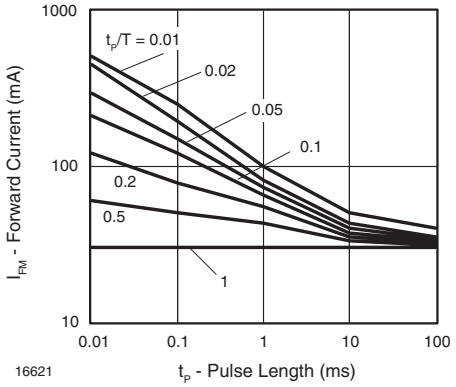


Figure 2. Forward Current vs. Pulse Duration

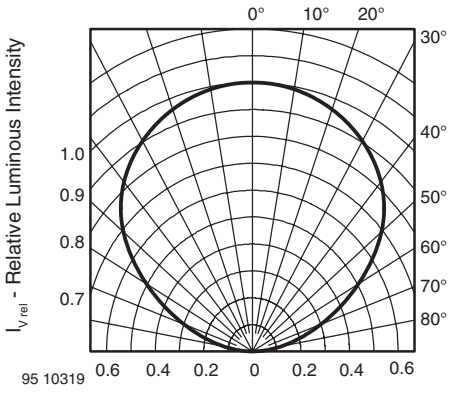


Figure 3. Rel. Luminous Intensity vs. Angular Displacement

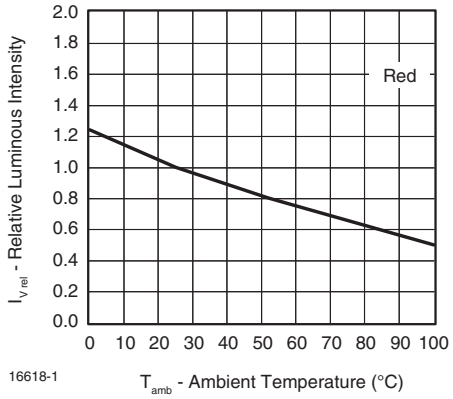


Figure 6. Rel. Luminous Intensity vs. Ambient Temperature

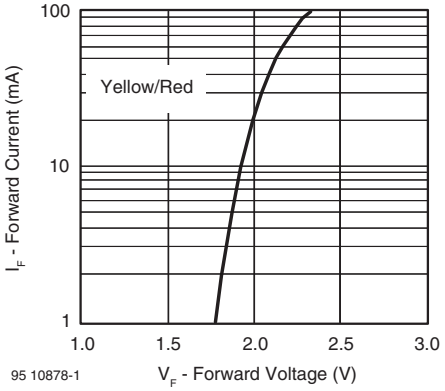


Figure 4. Forward Current vs. Forward Voltage

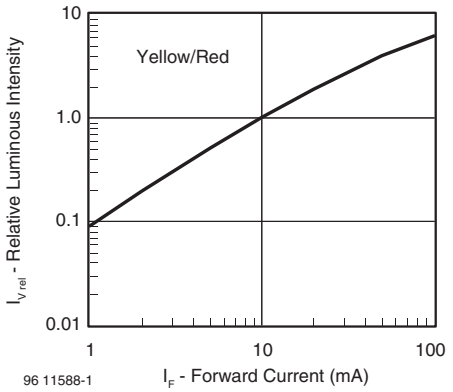


Figure 7. Relative Luminous Intensity vs. Forward Current

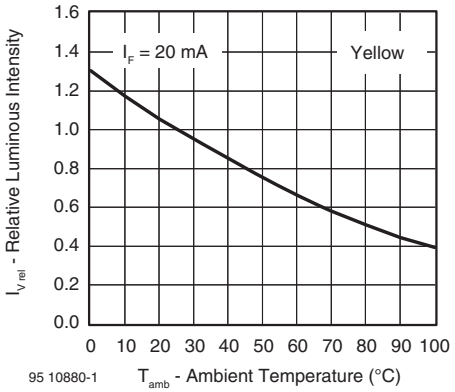


Figure 5. Rel. Luminous Intensity vs. Ambient Temperature

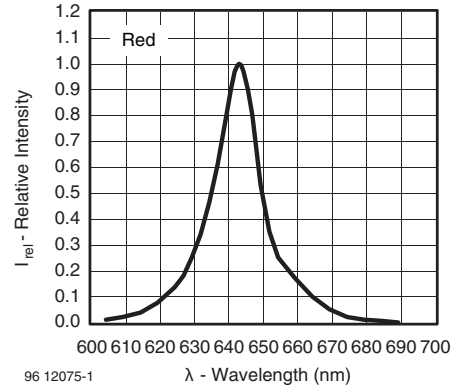


Figure 8. Relative Intensity vs. Wavelength

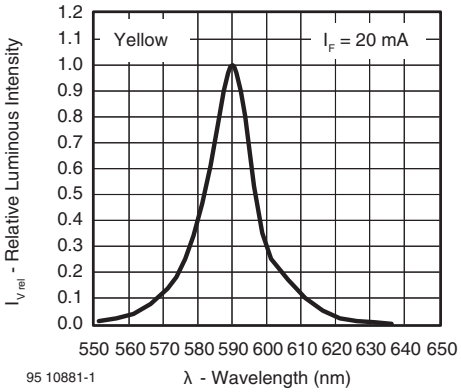


Figure 9. Relative Intensity vs. Wavelength

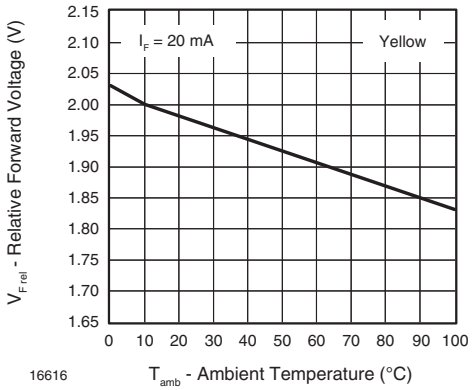


Figure 11. Relative Forward Voltage vs. Ambient Temperature

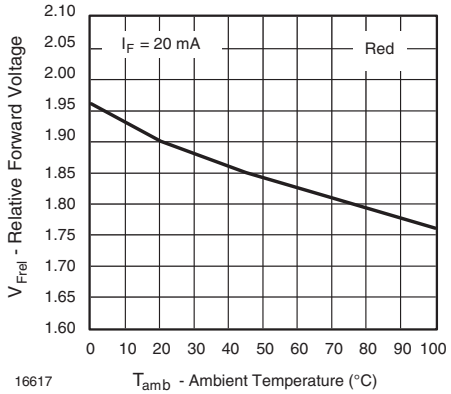
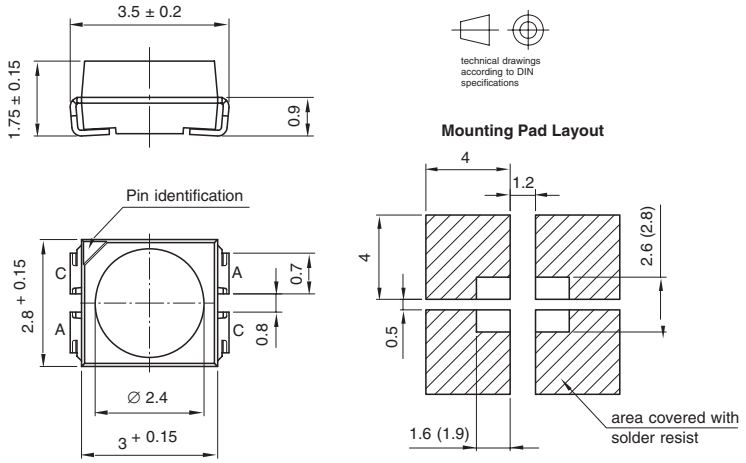


Figure 10. Relative Forward Voltage vs. Ambient Temperature

PACKAGE DIMENSIONS in millimeters



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Issue: 1; 15.07.04

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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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