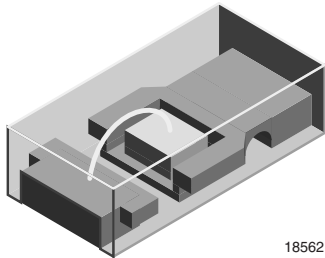


Standard 0603 SMD LED



18562

DESCRIPTION

The new 0603 LED series have been designed in the smallest SMD package. This innovative 0603 LED technology opens the way to

- smaller products of higher performance
- more design in flexibility
- enhanced applications

The 0603 LED is an obvious solution for small-scale, high power products that are expected to work reliably in an arduous environment.

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: SMD 0603
- Product series: standard
- Angle of half intensity: $\pm 80^\circ$

FEATURES

- Smallest SMD package 0603 with exceptional brightness
1.6 mm x 0.8 mm x 0.6 mm (L x W x H)
- High reliability lead frame based
- Temperature range - 40 °C to + 100 °C
- Footprint compatible to 0603 chipled
- Wavelength 633 nm (red)
- AllnGaP technology
- Viewing angle: extremely wide 160°
- Grouping parameter: luminous intensity, wavelength
- Available in 8 mm tape
- IR reflow and TTW soldering
- Lead (Pb)-free device



APPLICATIONS

- Backlight keypads
- Navigation systems
- Cellular phone displays
- Displays for industrial control systems
- Automotive features
- Miniaturized color effects
- Traffic displays

PARTS TABLE

PART	COLOR, LUMINOUS INTENSITY
TLMS1102-GS08	Red, $I_V = 100 - 250$ mcd



ABSOLUTE MAXIMUM RATINGS ¹⁾ TLMS1102				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage ²⁾		V_R	12	V
Forward current	$T_{amb} \leq 40\text{ }^\circ\text{C}, t_p \leq 1\text{s}, t_p/T \leq 0.1$	I_F	60	mA
DC Forward current	$T_{amb} \leq 60\text{ }^\circ\text{C}$	I_F	30	mA
Surge forward current	$t_p \leq 10\text{ }\mu\text{s}$	I_{FSM}	0.5	A
Power dissipation		P_V	90	mW
Junction temperature		T_j	120	$^\circ\text{C}$
Operating temperature range		T_{amb}	- 40 to + 100	$^\circ\text{C}$
Storage temperature range		T_{stg}	- 40 to + 100	$^\circ\text{C}$
Soldering temperature	acc. Vishay spec	T_{sd}	260	$^\circ\text{C}$
Thermal resistance junction/ ambient	mounted on PC board (pad size > 5 mm ²)	R_{thJA}	480	K/W

Note:

- $T_{amb} = 25\text{ }^\circ\text{C}$, unless otherwise specified
- Driving the LED in reverse direction is suitable for short term application.

OPTICAL AND ELECTRICAL CHARACTERISTICS ¹⁾ TLMS1102, RED						
PARAMETER	TEST CONDITION	SYMBOL	MIN	TYP.	MAX	UNIT
Luminous intensity ²⁾	$I_F = 60\text{ mA}$	I_V	100		250	mcd
Dominant wavelength	$I_F = 60\text{ mA}$	λ_d	627	633	639	nm
Peak wavelength	$I_F = 60\text{ mA}$	λ_p		645		nm
Angle of half intensity	$I_F = 60\text{ mA}$	φ		± 80		deg
Forward voltage	$I_F = 60\text{ mA}$	V_F		2.1	3.0	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$	V_R	6			V
Junction capacitance	$V_R = 0, f = 1\text{ MHz}$	C_j		15		pF

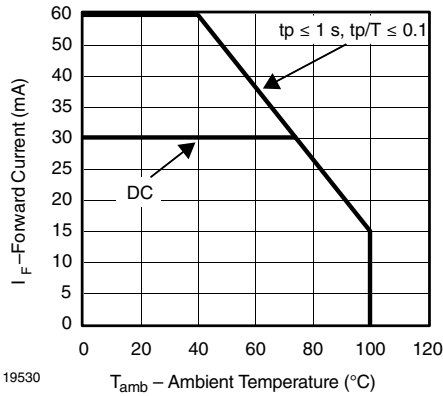
Note:

- $T_{amb} = 25\text{ }^\circ\text{C}$, unless otherwise specified
- In one Packing Unit $I_{Vmax}/I_{Vmin} \leq 1.6$

LUMINOUS INTENSITY CLASSIFICATION		
GROUP	LUMINOUS INTENSITY (MCD)	
	MIN	MAX
Wa	100	160
Wb	125	200
Xa	160	250

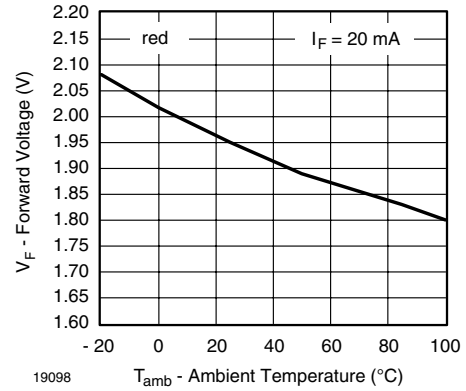
TYPICAL CHARACTERISTICS

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



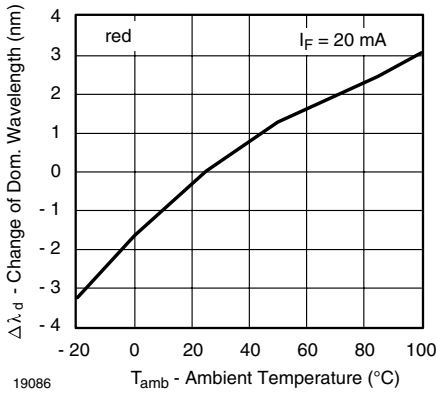
19530

Figure 1. Forward Current vs. Ambient Temperature



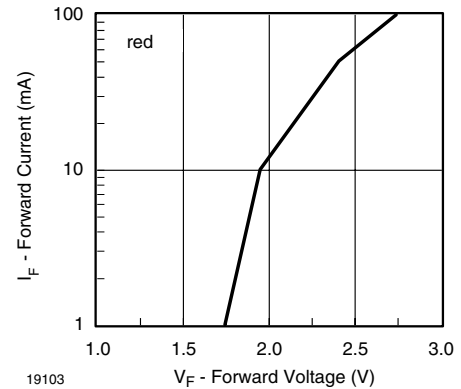
19098

Figure 4. Forward Voltage vs. Ambient Temperature



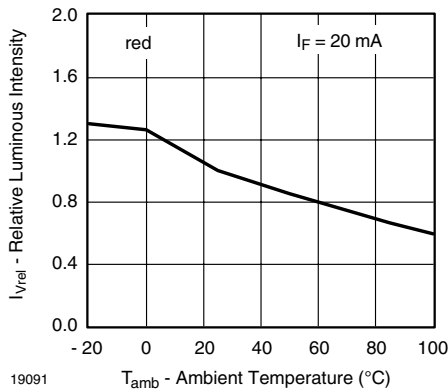
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Figure 2. Change of Dominant Wavelength vs. Ambient Temperature



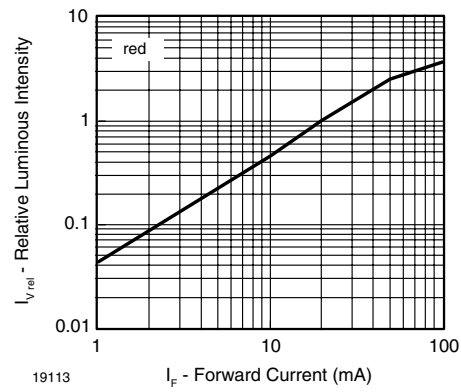
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Figure 5. Forward Current vs. Forward Voltage



19091

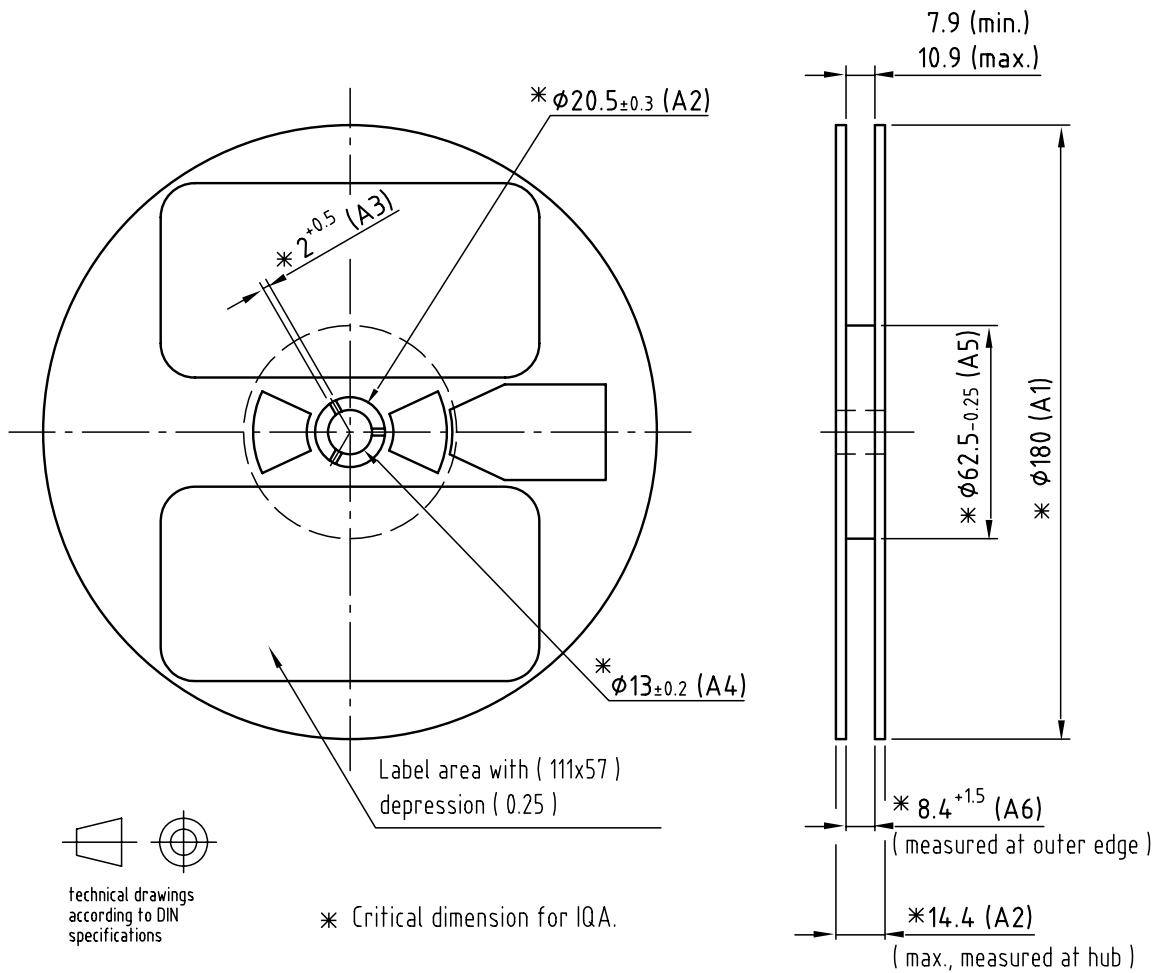
Figure 3. Relative Luminous Intensity vs. Amb. Temperature



19113

Figure 6. Relative Luminous Intensity vs. Forward Current

REEL DIMENSIONS in millimeters



technical drawings according to DIN specifications

\ast Critical dimension for IQA.

Drawing-No.: 9.800-5086.01-4

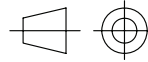
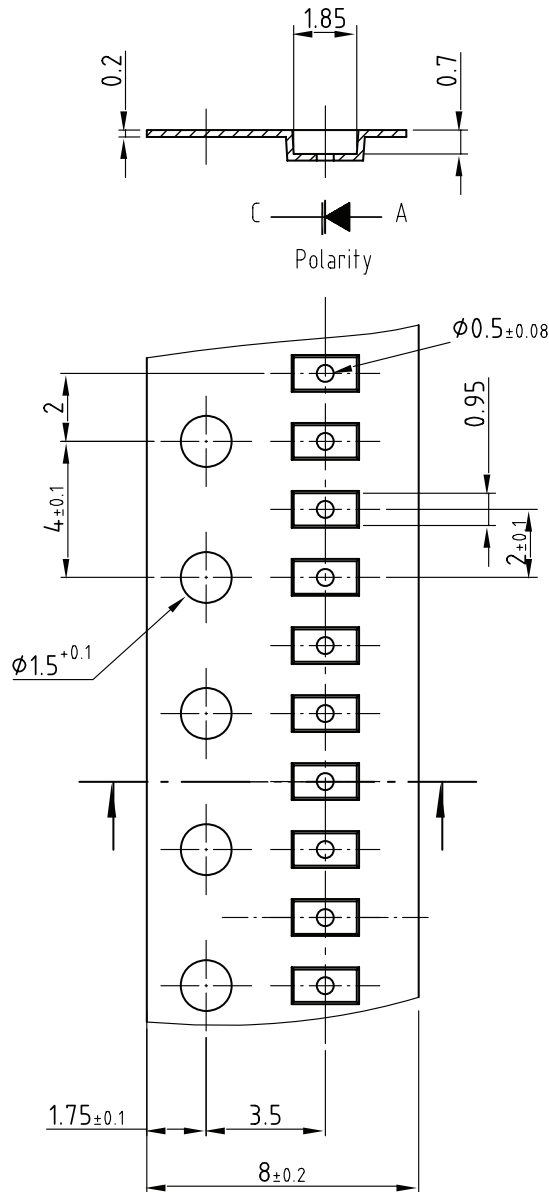
Issue: 1; 29.04.04

19043

Not indicated tolerances ± 0.05

Material: black static dissipative

TAPE DIMENSIONS in millimeters



Technical drawings according to DIN specifications

Not indicated tolerances ± 0.05

Material: Conductive black PC

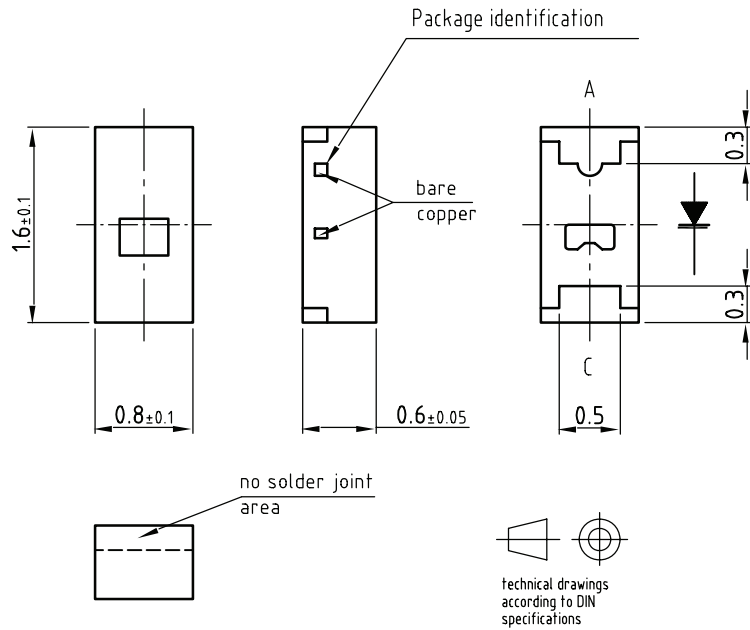
Direction of pulling out

Drawing-No.: 9.700-5290.01-4

Issue: 2; 10.07.06

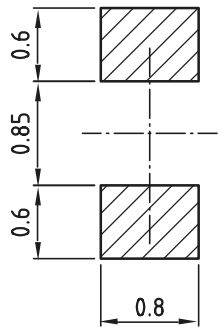
19044

PACKAGE DIMENSIONS in millimeters



Not indicated tolerances ± 0.1

Recommended solder pad



Drawing-No.: 6.541-5056.01-4

Issue: 2; 04.05.05

19426



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



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