Resistor LED for 12 V Supply Voltage

19228-1

V_S ———[ ]——▷|—— Out

19228-2
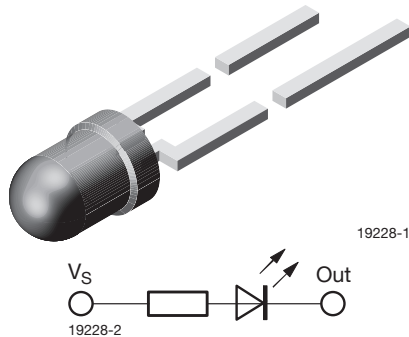
FEATURES

- With current limiting resistor for 12 V
- Cost effective: save space and resistor cost
- Standard Ø 3 mm (T-1) package
- High luminous intensity
- Luminous intensity categorized
- Color categorized
- Material categorization:
  For definitions of compliance please see www.vishay.com/doc?99912

Pb-free

e4

RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

DESCRIPTION

These devices are developed for the automotive industry and other industries which use 12 V source.

The TLRE4200 series contains an integrated resistor for current limiting in series with the LED chip. This allows the lamp to be driven from a 12 V source without an external current limiter.

These tinted non-diffused lamps provide a high luminous intensity.

These LEDs are intended for space critical applications such as automobile instrument panels, switches and others which are driven from a 12 V source.

APPLICATIONS

- Status light in cars
- Off/on indicator in cars
- Background illumination for switches
- Off/on indicator in switches

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 3 mm resistor
- Product series: standard
- Angle of half intensity: ± 22°

PARTS TABLE

PART	COLOR	LUMINOUS INTENSITY (mcd)			at V_S (V)	WAVELENGTH (nm)			at V_S (V)	FORWARD VOLTAGE (V)			at V_S (V)	TECHNOLOGY
		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		
TLRE4200	Yellow	25	70	-	12	581	588	594	12	-	10	12	12	AlInGaP on GaAs

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)
TLRE4200

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V_R	6	V
Forward voltage	$T_{amb} \leq 60$ °C	V_F	16	V
Power dissipation	$T_{amb} \leq 60$ °C	P_V	240	mW
Junction temperature		T_j	100	°C
Operating temperature range		T_{amb}	- 40 to + 100	°C
Storage temperature range		T_{stg}	- 55 to + 100	°C
Soldering temperature	$t \leq 5$ s, 2 mm from body	T_{sd}	260	°C
Thermal resistance junction/ambient		R_{thJA}	150	K/W

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)
TLRE4200, YELLOW

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity [1]	V_S = 12 V	I_V	25	70	-	mcd
Dominant wavelength	V_S = 12 V	λ_d	581	588	594	nm
Peak wavelength	V_S = 12 V	λ_p	-	590	-	nm
Angle of half intensity	V_S = 12 V	φ	-	± 22	-	deg
Forward current	V_S = 12 V	I_F	-	10	12	mA
Breakdown voltage	I_R = 10 µA	V_{BR}	6	50	-	V
Junction capacitance	V_R = 0 V, f = 1 MHz	C_j	-	50	-	pF

Note

[1] In one packing unit $I_{Vmin.}/I_{Vmax.} \leq 0.5$

LUMINOUS INTENSITY CLASSIFICATION

GROUP	LIGHT INTENSITY (mcd)	
STANDARD	MIN.	MAX.
T	25	50
U	40	80
V	63	125
W	100	200
X	130	260
Y	180	360
Z	240	480

Note

- Luminous intensity is tested at a current pulse duration of 25 ms. These type numbers represent the order groups which include only a few brightness groups. Only one group will be shipped on each reel (there will be no mixing of two groups on each reel). In order to ensure availability, single brightness groups are not be orderable.
  In a similar manner for colors where wavelength groups are measured and binned, single wavelength groups will be shipped on any one reel.
  In order to ensure availability, single wavelength groups are not be orderable.

COLOR CLASSIFICATION

GROUP	YELLLOW	
	DOM. WAVELENGTH (nm)	
	MIN.	MAX.
1	581	584
2	583	586
3	585	588
4	587	590
5	589	592
6	591	594

Note

- Wavelengths are tested at a current pulse duration of 25 ms.

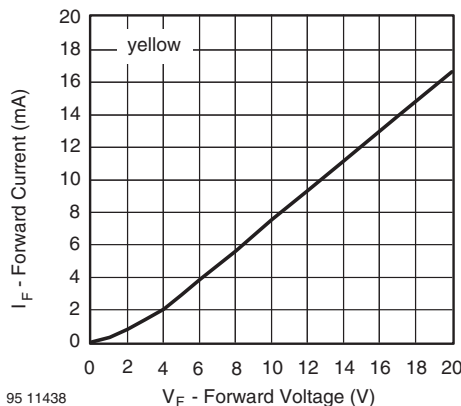## TYPICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)
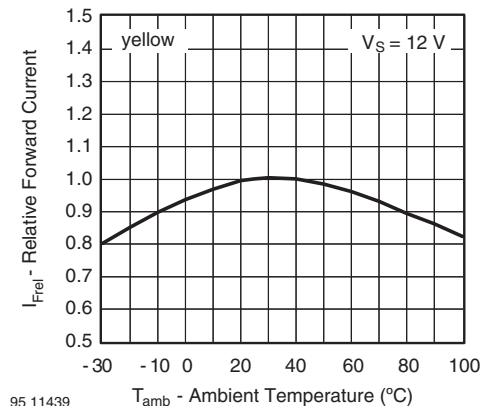

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Fig. 1 - Forward Current vs. Forward Voltage

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Fig. 2 - Relative Forward Current vs. Ambient Temperature

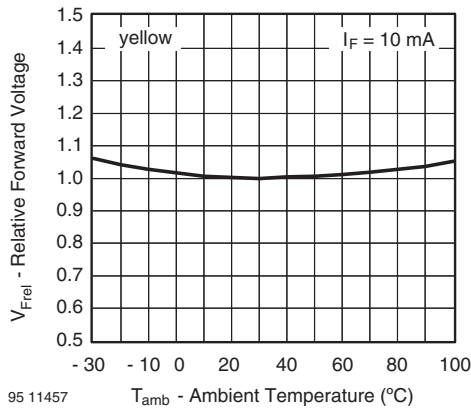For technical questions, contact: LED@vishay.com

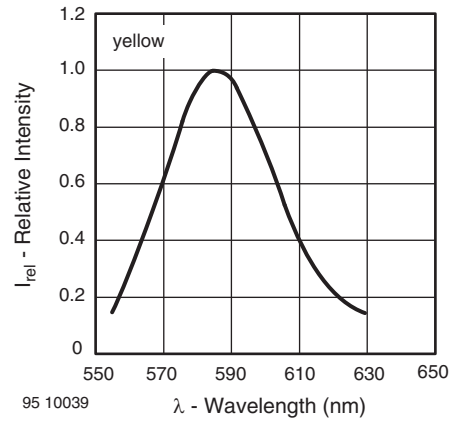Fig. 3 - Relative Forward Voltage vs. Ambient Temperature
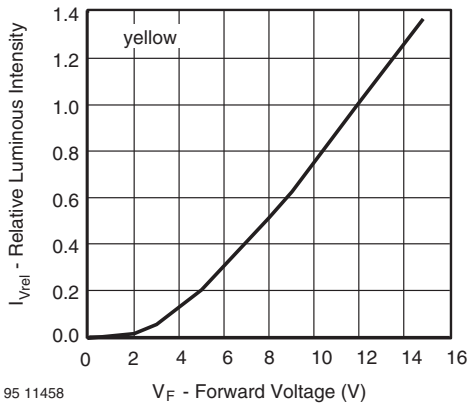

Fig. 6 - Relative Intensity vs. Wavelength

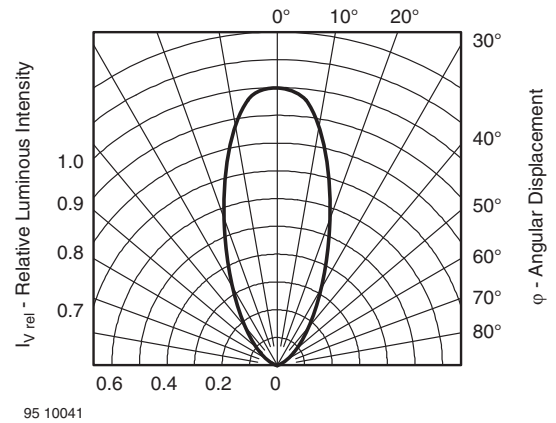Fig. 4 - Relative Luminous Intensity vs. Forward Voltage

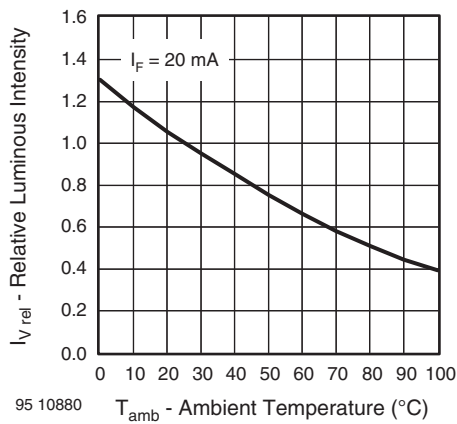Fig. 7 - Relative Luminous Intensity vs. Angular Displacement

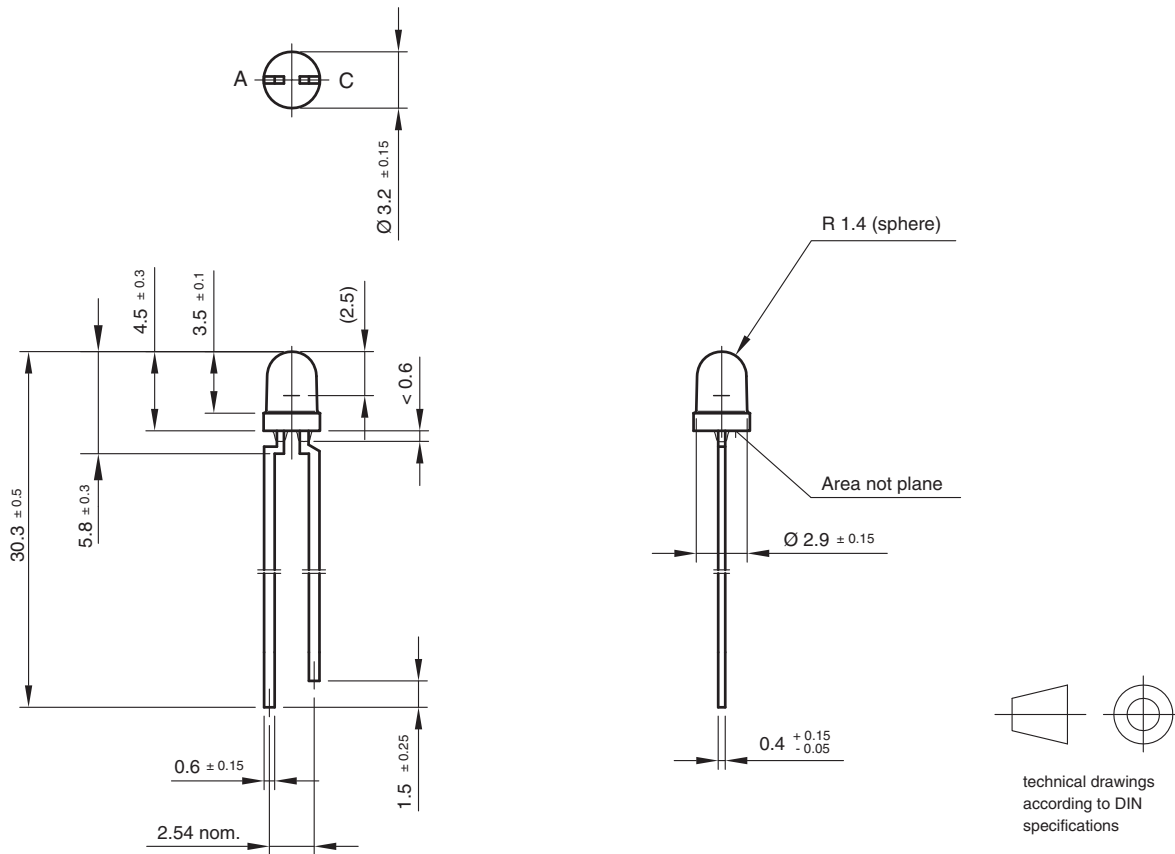Fig. 5 - Relative Luminous Intensity vs. Ambient Temperature

For technical questions, contact: LED@vishay.com

PACKAGE DIMENSIONS in millimeters

A ─ C

Ø 3.2 ± 0.15

4.5 ± 0.3

3.5 ± 0.1

(2.5)

< 0.6

R 1.4 (sphere)

30.3 ± 0.5

5.8 ± 0.3

Area not plane

Ø 2.9 ± 0.15

0.6 ± 0.15

1.5 ± 0.25

2.54 nom.

0.4 +0.15 -0.05

technical drawings
according to DIN
specifications

Drawing-No.: 6.544-5255.01-4
Issue: 7; 25.09.08
95 10913

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