Resistor LED for 12 V Supply Voltage

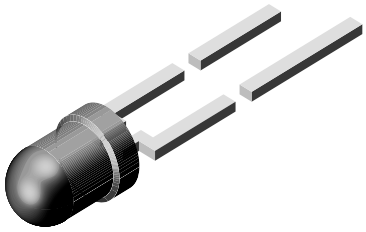
Description

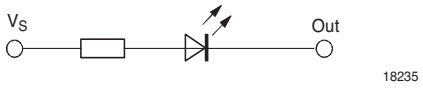
These devices are developed for the automotive industry in motor vehicles with 12 V supply voltage.

The TLRE4406 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.





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Features

- With current limiting resistor for 12 V
- Cost effective: save space and resistor cost
- Standard ∅ 3 mm (T-1) package
- High luminous intensity
- Luminous intensity categorized
- Yellow color categorized

Applications

Status light in cars

OFF / ON indicator in cars

Background illumination for switches

Off / On indicator in switches

Parts Table

Part	Color, Luminous Intensity	Angle of Half Intensity (±φ)	Technology
TLRE4406	Yellow, I_V > 63 mcd	30 °	AlInGaAs on GaAs

Absolute Maximum Ratings

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

TLRE4406

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	13.5	V
Forward voltage	$T_{amb} \leq 65$ °C	V_F	16	V
Power dissipation	$T_{amb} \leq 65$ °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 ≤ 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

Yellow

TLRE4406

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Luminous intensity [1]	V_S = 12 V	I_V	63		260	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		± 30		deg
Forward current	V_S = 12 V	I_F		10	12	mA
Breakdown voltage	I_R = 10 µA	V_{BR}	13.5	50		V
Junction capacitance	V_R = 0, f = 1 MHz	C_j		50		pF

[1] in one Packing Unit $I_{Vmin}/I_{Vmax} \leq 0.5$

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

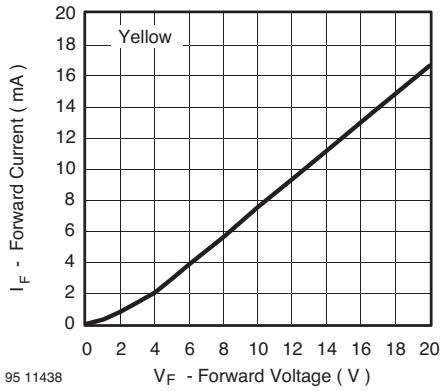


Figure 1. Forward Current vs. Forward Voltage

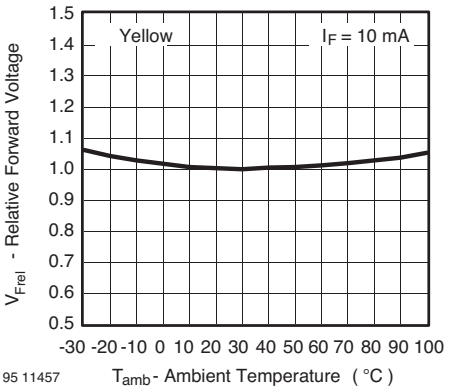


Figure 3. Relative Forward Voltage vs. Ambient Temperature

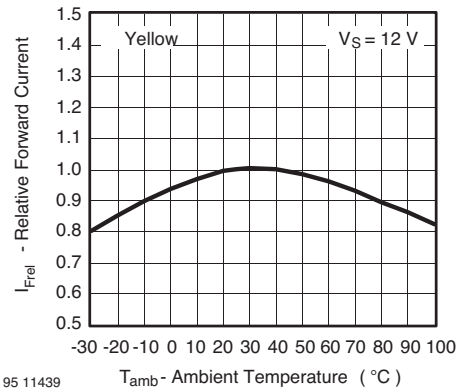


Figure 2. Relative Forward Current vs. Ambient Temperature

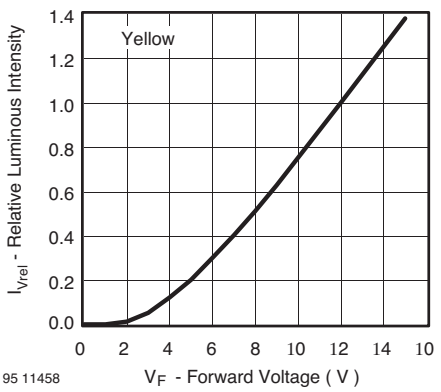


Figure 4. Relative Luminous Intensity vs. Forward Voltage

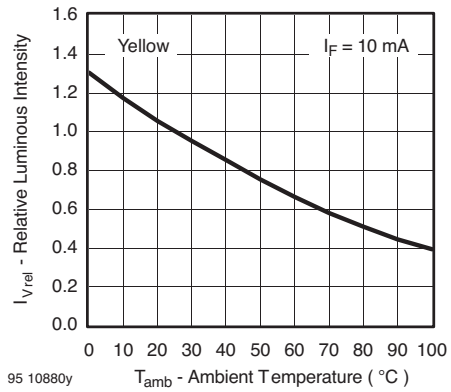


Figure 5. Rel. Luminous Intensity vs. Ambient Temperature

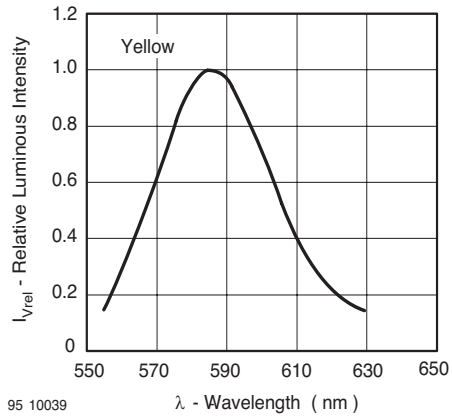


Figure 6. Relative Intensity vs. Wavelength

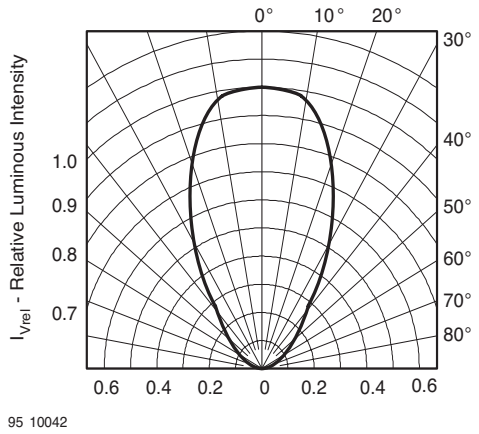
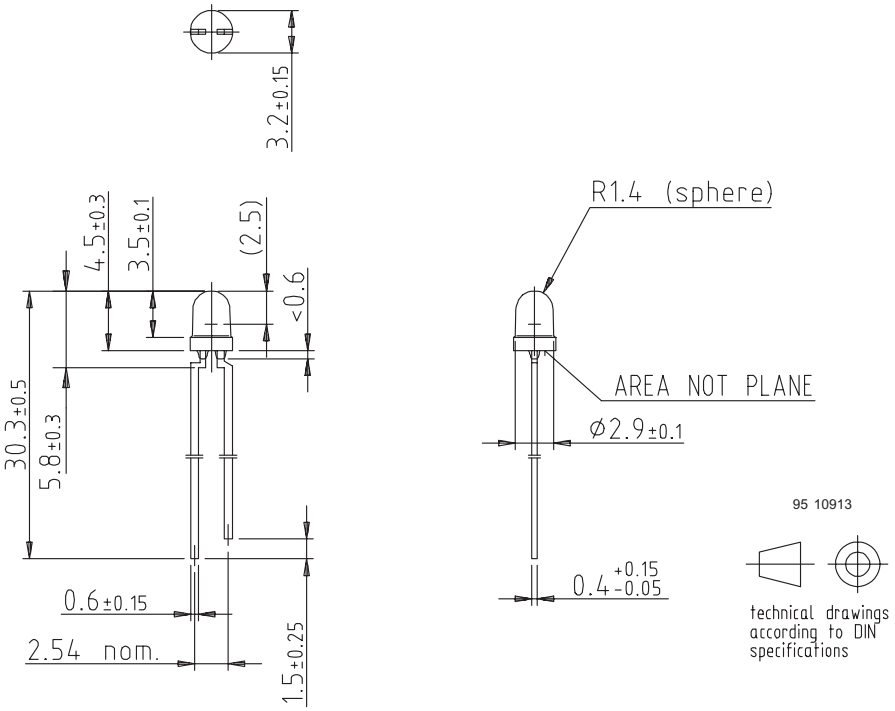


Figure 7. Rel. Luminous Intensity vs. Angular Displacement

Package Dimensions in mm



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.

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