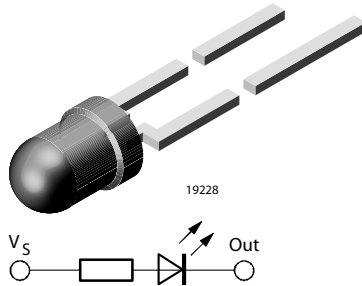


Resistor LED for 12 V Supply Voltage



DESCRIPTION

These devices are developed for the automotive industry with special requirements as for EMC (electro magnetic compatibility) in motor vehicles with 12 V supply voltage.

The TLRY4220CU 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.

FEATURES

- With current limiting resistor for 12 V
- Resistant against transient high voltage spikes
- Cost effective: save space and resistor cost
- Standard \varnothing 3 mm (T-1) package
- High luminous intensity
- Luminous intensity categorized
- Yellow color categorized
- Lead (Pb)-free device


RoHS
COMPLIANT

APPLICATIONS

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

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 3 mm
- Product series: resistor
- Angle of half intensity: $\pm 22^\circ$

PARTS TABLE

PART	COLOR, LUMINOUS INTENSITY	TECHNOLOGY
TLRY4220CU	Yellow, $I_V > 6.3$ mcd	GaAsP on GaP

ABSOLUTE MAXIMUM RATINGS ¹⁾ TLRY4220CU

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V_R	6	V
Forward voltage	$T_{amb} \leq 65^\circ\text{C}$	V_F	16	V
Power dissipation	$T_{amb} \leq 65^\circ\text{C}$	P_V	240	mW
Junction temperature		T_J	100	$^\circ\text{C}$
Operating temperature range		T_{amb}	- 40 to + 100	$^\circ\text{C}$
Storage temperature range		T_{stg}	- 55 to + 100	$^\circ\text{C}$
Soldering temperature	$t \leq 5$ s, 2 mm from body	T_{sd}	260	$^\circ\text{C}$
Thermal resistance junction/ambient		R_{thJA}	150	K/W

Note:

¹⁾ $T_{amb} = 25^\circ\text{C}$ unless otherwise specified

OPTICAL AND ELECTRICAL CHARACTERISTICS ¹⁾ TLRY4220CU, YELLOW						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity ²⁾	$V_S = 12\text{ V}$	I_V	6.3	15		mcd
Dominant wavelength	$V_S = 12\text{ V}$	λ_d	581		594	nm
Peak wavelength	$V_S = 12\text{ V}$	λ_p		585		nm
Angle of half intensity	$V_S = 12\text{ V}$	ϕ		± 22		deg
Forward current	$V_S = 12\text{ V}$	I_F		10	12	mA
Breakdown voltage	$I_R = 10\ \mu\text{A}$	V_{BR}	6	70		V
Junction capacitance	$V_R = 0, f = 1\text{ MHz}$	C_j		50		pF

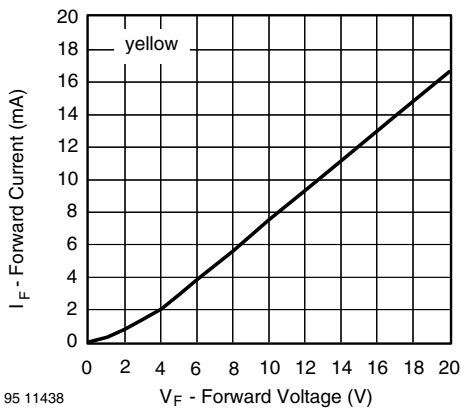
Note:

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

2) In one packing unit $I_{Vmin}/I_{Vmax} \leq 0.5$

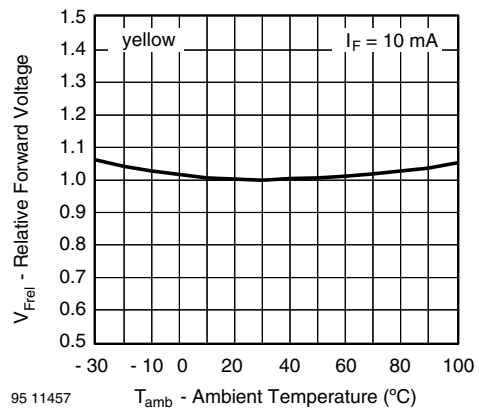
TYPICAL CHARACTERISTICS

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



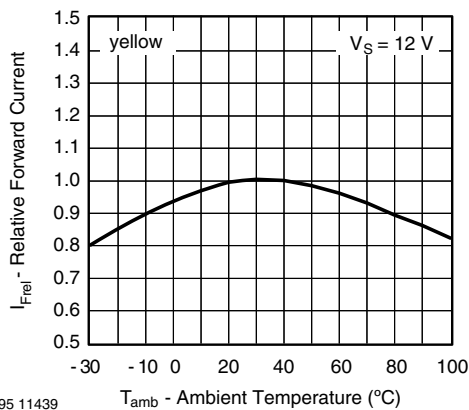
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Figure 1. Forward Current vs. Forward Voltage



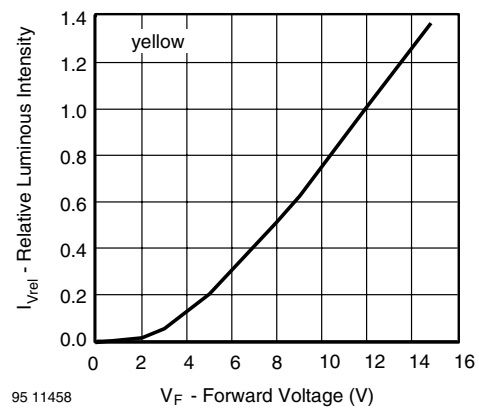
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Figure 3. Relative Forward Voltage vs. Ambient Temperature



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Figure 2. Relative Forward Current vs. Ambient Temperature



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Figure 4. Relative Luminous Intensity vs. Forward Voltage

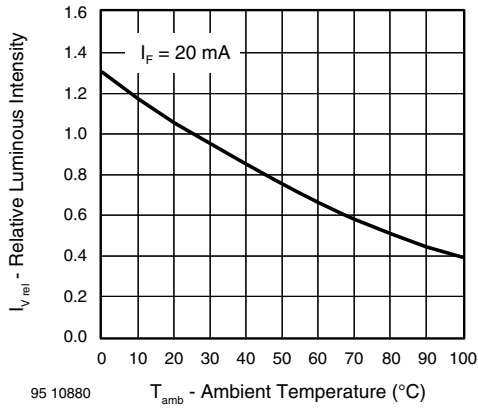


Figure 5. Rel. Luminous Intensity vs. Ambient Temperature

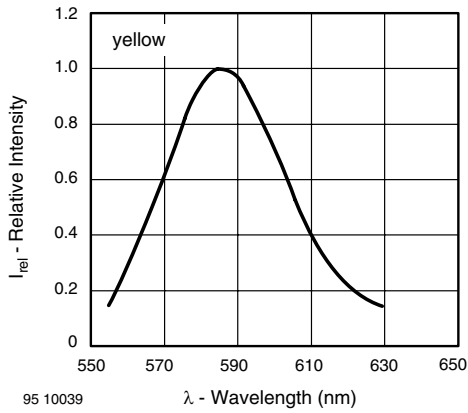


Figure 6. Relative Intensity vs. Wavelength

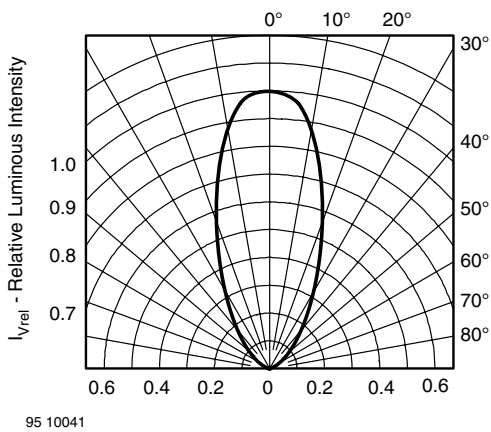


Figure 7. Rel. Luminous Intensity vs. Angular Displacement



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