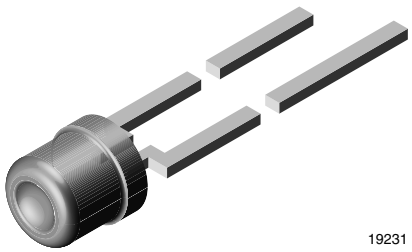
Backlighting LED in Ø 3 mm Tinted Non-Diffused Package



19231

FEATURES

- High light output
- Wide viewing angle
- Categorized for luminous flux
- Tinted clear package
- Low power dissipation
- Low self heating
- Rugged design
- High reliability
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

e3

RoHS COMPLIANT

HALOGEN FREE

GREEN (5-2008)

DESCRIPTION

The TLV.420. series was developed for backlighting. Due to its special shape the spatial distribution of the radiation is qualified for backlighting.

To optimize the brightness of backlighting a custom-built reflector (with scattering) is required. Uniform illumination can be enhanced by covering the front of the reflector with diffusor material.

This is a flexible solution for backlighting different areas.

APPLICATIONS

- Backlighting of display panels, LCD displays, symbols on switches, keyboards, graphic boards, and measuring scales
- Illumination of large areas e.g. dot matrix displays

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 3 mm backlighting
- Product series: standard
- Angle of half intensity: ± 85°

PARTS TABLE

PART	COLOR	LUMINOUS FLUX (mlm)			at I_F (mA)	WAVELENGTH (nm)			at I_F (mA)	FORWARD VOLTAGE (V)			at I_F (mA)	TECHNOLOGY
		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		
TLVH4200 (1)	Red	10	55	-	15	612	-	625	10	-	2.4	3	20	GaAsP on GaP
TLVY4200	Yellow	10	30	-	15	581	-	594	10	-	2.4	3	20	GaAsP on GaP
TLVG4200	Green	10	30	-	15	562	-	575	10	-	2.4	3	20	GaP on GaP
TLVP4200 (1)	Pure green	4	20	-	15	555	-	565	10	-	2.4	3	20	GaP on GaP
TLVP4201 (1)	Pure green	16	30	-	15	555	-	565	10	-	2.4	3	20	GaP on GaP
TLVP4202	Pure green	6.3	30	-	15	555	-	565	10	-	2.4	3	20	GaP on GaP

Note

(1) Not for new designs

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)
TLVH4200, TLVY4200, TLVG4200, TLVP420.

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage (1)		V_R	5	V
DC forward current	$T_{amb} \leq 60$ °C	I_F	30	mA
Surge forward current	$t_p \leq 10$ µs	I_{FSM}	1	A
Power dissipation		P_V	90	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 to ambient		R_{thJA}	400	K/W

Note

(1) Driving the LED in reverse direction is suitable for a short term application

For technical questions, contact: LED@vishay.com

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OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)
TLVH4200, RED

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux	I_F = 15 mA	TLVH4200 (1)	ϕ_V	10	55	-	mlm
Dominant wavelength	I_F = 10 mA		λ_d	612	-	625	nm
Peak wavelength	I_F = 10 mA		λ_p	-	635	-	nm
Angle of half intensity	I_F = 10 mA		φ	-	± 85	-	°
Forward voltage	I_F = 20 mA		V_F	-	2.4	3	V
Reverse voltage	I_R = 10 µA		V_R	6	15	-	V
Junction capacitance	V_R = 0 V, f = 1 MHz		C_j	-	50	-	pF

Note
(1) Not for new designs

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)
TLVY4200, YELLOW

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux	I_F = 15 mA	TLVY4200	ϕ_V	10	30	-	mlm
Dominant wavelength	I_F = 10 mA		λ_d	581	-	594	nm
Peak wavelength	I_F = 10 mA		λ_p	-	585	-	nm
Angle of half intensity	I_F = 10 mA		φ	-	± 85	-	°
Forward voltage	I_F = 20 mA		V_F	-	2.4	3	V
Reverse voltage	I_R = 10 µA		V_R	6	15	-	V
Junction capacitance	V_R = 0 V, f = 1 MHz		C_j	-	50	-	pF

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)
TLVG4200, GREEN

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux	I_F = 15 mA	TLVG4200	ϕ_V	10	30	-	mlm
Dominant wavelength	I_F = 10 mA		λ_d	562	-	575	nm
Peak wavelength	I_F = 10 mA		λ_p	-	555	-	nm
Angle of half intensity	I_F = 10 mA		φ	-	± 85	-	°
Forward voltage	I_F = 20 mA		V_F	-	2.4	3	V
Reverse voltage	I_R = 10 µA		V_R	6	15	-	V
Junction capacitance	V_R = 0 V, f = 1 MHz		C_j	-	50	-	pF

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)
TLVP420., PURE GREEN

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux	I_F = 15 mA	TLVP4200 (1)	ϕ_V	4	20	-	mlm
		TLVP4201 (1)	ϕ_V	16	30	-	mlm
		TLVP4202	ϕ_V	6.3	30	-	mlm
Dominant wavelength	I_F = 10 mA		λ_d	555	-	565	nm
Peak wavelength	I_F = 10 mA		λ_p	-	555	-	nm
Angle of half intensity	I_F = 10 mA		φ	-	± 85	-	°
Forward voltage	I_F = 20 mA		V_F	-	2.4	3	V
Reverse voltage	I_R = 10 µA		V_R	6	15	-	V
Junction capacitance	V_R = 0 V, f = 1 MHz		C_j	-	50	-	pF

Note
(1) Not for new designs

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LUMINOUS FLUX CLASSIFICATION

GROUP	LUMINOUS FLUX (mlm)	
STANDARD	MIN.	MAX.
P	4	8
Q	6.3	12.5
R	10	20
S	16	32
T	25	50
U	40	80
V	63	125
W	100	200
X	130	260
Y	180	360
Z	240	480

Note

- Luminous flux is tested at a current pulse duration of 25 ms.
  The above type numbers represent the order groups which include only a few brightness groups. Only one group will be shipped on each bag (there will be no mixing of two groups in each bag).
  In order to ensure availability, single brightness groups will 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 bag.
  In order to ensure availability, single wavelength groups will not be orderable

COLOR CLASSIFICATION

GROUP	DOM. WAVELENGTH (nm)					
	YELLLOW		GREEN		PURE GREEN	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
0	-	-	-	-	555	559
1	581	584	-	-	558	561
2	583	586	-	-	560	563
3	585	588	562	565	562	565
4	587	590	564	567	-	-
5	589	592	566	569	-	-
6	591	594	568	571	-	-
7	-	-	570	573	-	-
8	-	-	572	575	-	-

Note

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

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

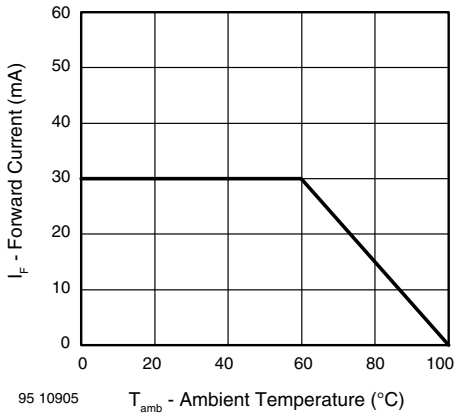

Fig. 1 - Forward Current vs. Ambient Temperature

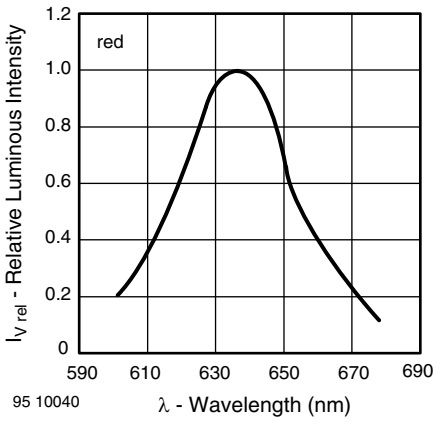

Fig. 4 - Relative Intensity vs. Wavelength

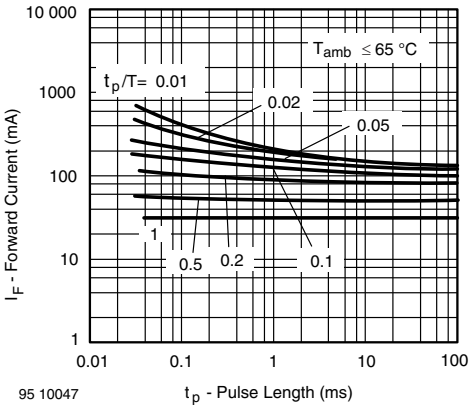

Fig. 2 - Forward Current vs. Pulse Length

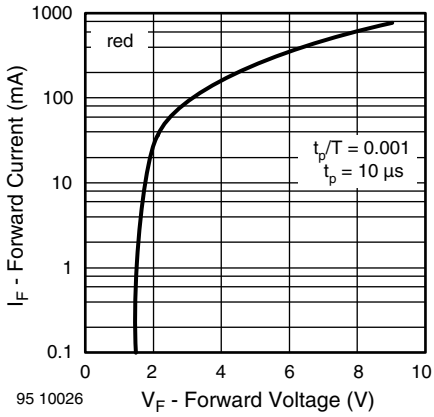

Fig. 5 - Forward Current vs. Forward Voltage

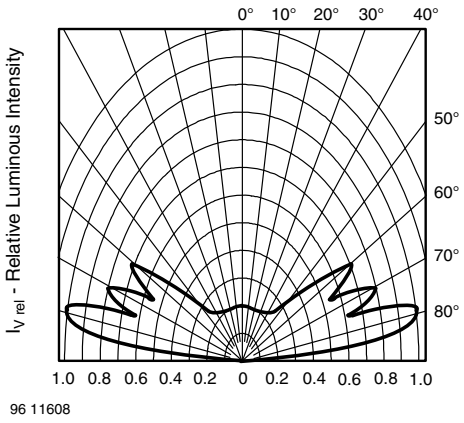

Fig. 3 - Relative Luminous Intensity vs.
Angular Displacement for 90 ° Emission Angle

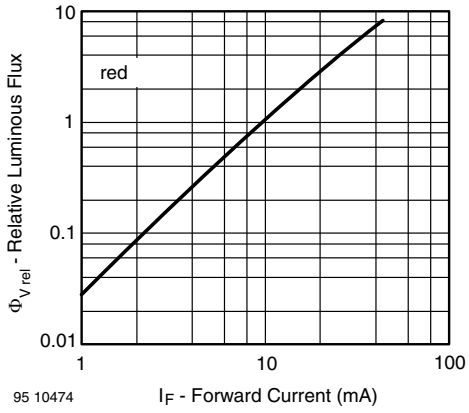

Fig. 6 - Relative Luminous Flux vs. Forward Current

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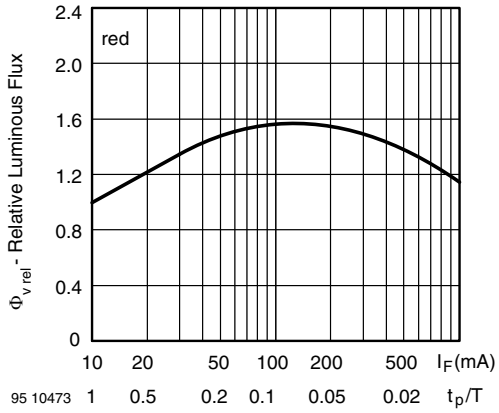

Fig. 7 - Relative Luminous Flux vs. Forward Current/Duty Cycle

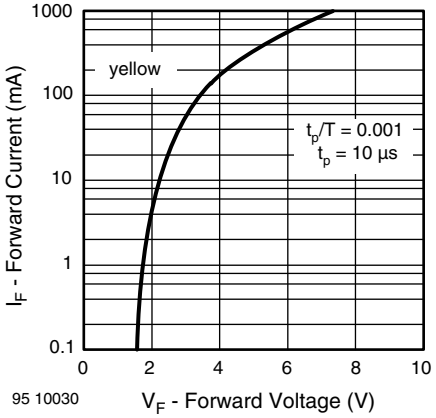

Fig. 10 - Forward Current vs. Forward Voltage

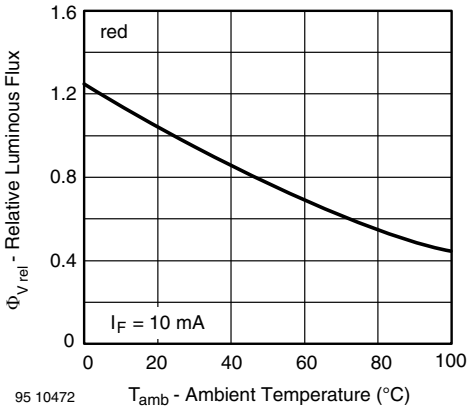

Fig. 8 - Relative Luminous Flux vs. Ambient Temperature

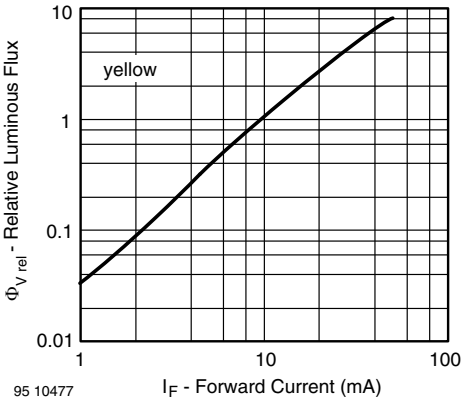

Fig. 11 - Relative Luminous Flux vs. Forward Current

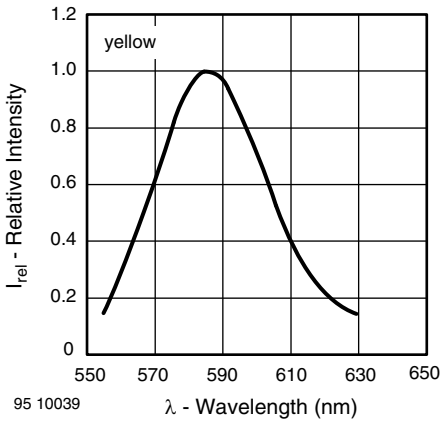

Fig. 9 - Relative Intensity vs. Wavelength

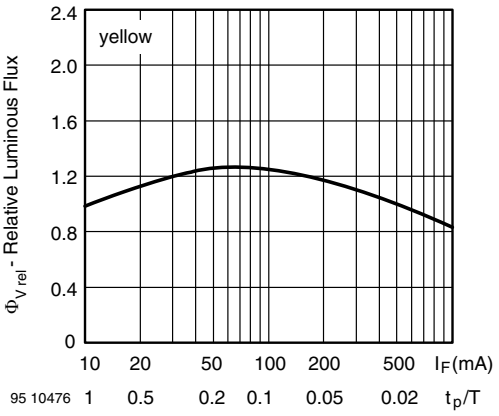

Fig. 12 - Relative Luminous Flux vs. Forward Current/Duty Cycle

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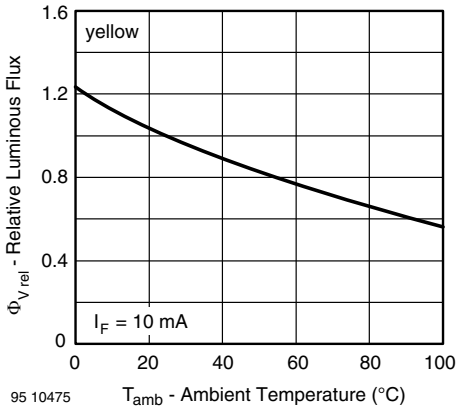

Fig. 13 - Relative Luminous Flux vs. Ambient Temperature

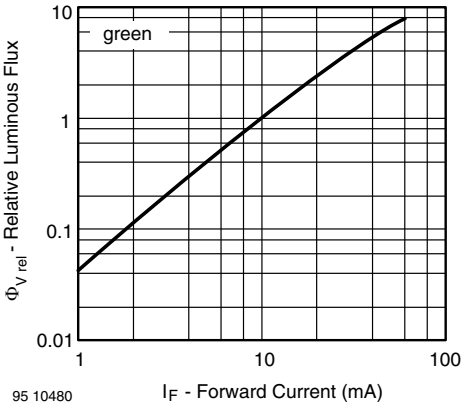

Fig. 16 - Relative Luminous Flux vs. Forward Current

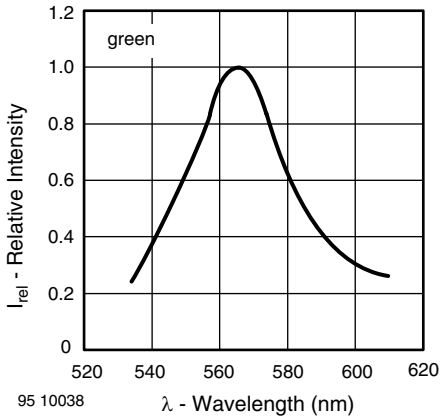

Fig. 14 - Relative Intensity vs. Wavelength

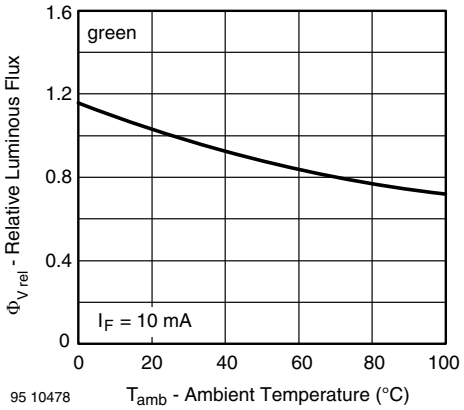

Fig. 17 - Relative Luminous Flux vs. Ambient Temperature

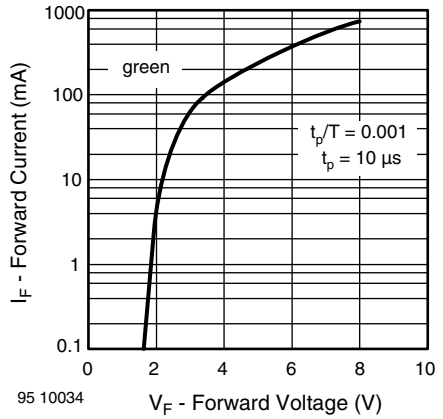

Fig. 15 - Forward Current vs. Forward Voltage

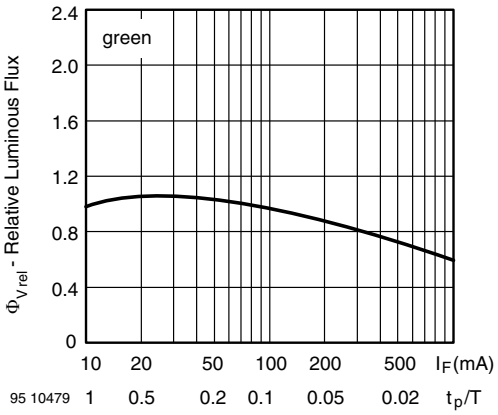

Fig. 18 - Relative Luminous Flux vs. Forward Current/Duty Cycle

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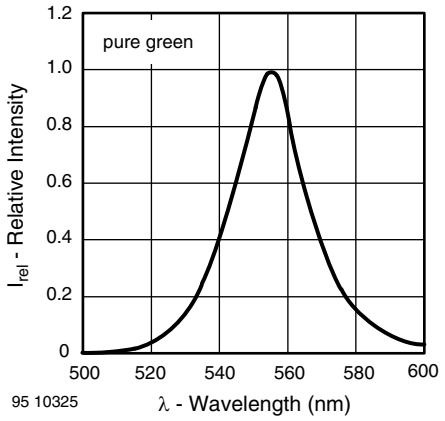

Fig. 19 - Relative Intensity vs. Wavelength

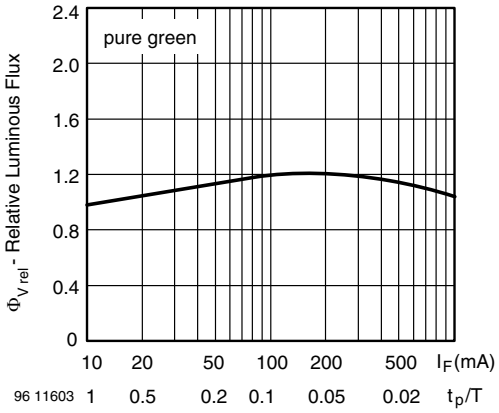

Fig. 22 - Relative Luminous Flux vs. Forward Current/Duty Cycle

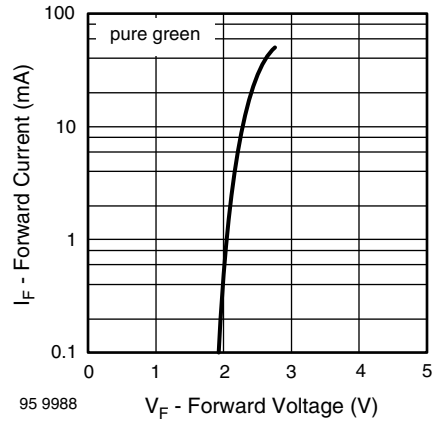

Fig. 20 - Forward Current vs. Forward Voltage

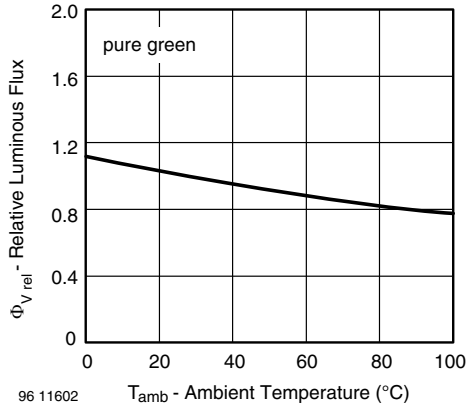

Fig. 23 - Relative Luminous Flux vs. Ambient Temperature

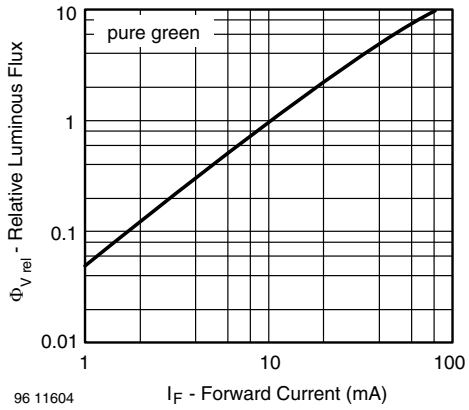

Fig. 21 - Relative Luminous Flux vs. Forward Current

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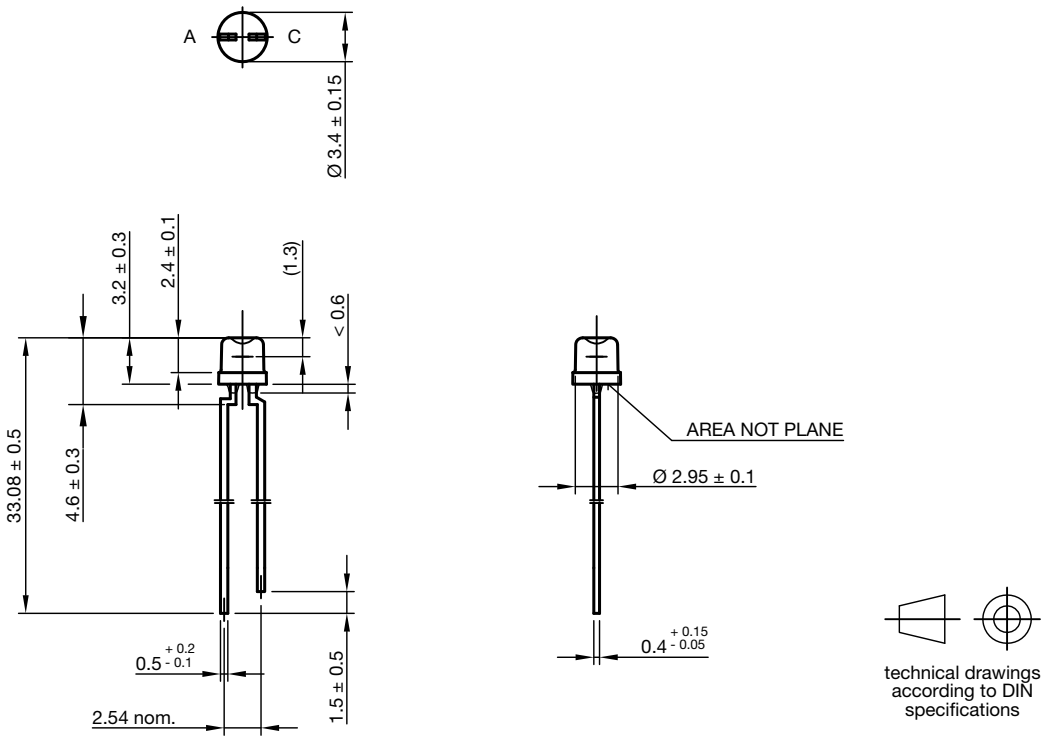
PACKAGE DIMENSIONS in millimeters



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