

High Efficiency LED, ø 3 mm Tinted Undiffused Package

Color	Type	Technology	Angle of Half Intensity ±φ
High efficiency red	TLHR42..	GaAsP on GaP	22°
Soft orange	TLHO42..	GaAsP on GaP	
Yellow	TLHY42..	GaAsP on GaP	
Green	TLHG42..	GaP on GaP	
Pure green	TLHP42..	GaP on GaP	

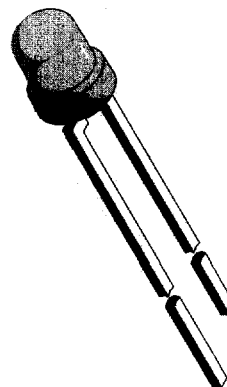
Description

The TLH.42.. series was developed for standard applications like general indicating and lighting purposes.

It is housed in a 3 mm tinted clear plastic package. The wide viewing angle of these devices provides a high on-off contrast.

Several selection types with different luminous intensities are offered. All LEDs are categorized in luminous intensity groups. The green and yellow LEDs are categorized additionally in wavelength groups.

That allows users to assemble LEDs with uniform appearance.



94 8488

Features

- Choice of five bright colors
- Standard T-1 package
- Small mechanical tolerances
- Suitable for DC and high peak current
- Wide viewing angle
- Luminous intensity categorized
- Yellow and green color categorized

Applications

Status lights
 OFF / ON indicator
 Background illumination
 Readout lights
 Maintenance lights
 Legend light

Absolute Maximum Ratings

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

TLHR42.., TLHO42.., TLHY42.., TLHG42.., TLHP42..

Parameter	Test Conditions	Type	Symbol	Value	Unit
Reverse voltage			V_R	6	V
DC forward current			I_F	30	mA
Surge forward current	$t_p \leq 10 \mu\text{s}$		I_{FSM}	1	A
Power dissipation	$T_{amb} \leq 60^{\circ}\text{C}$		P_V	100	mW
Junction temperature			T_j	100	$^{\circ}\text{C}$
Operating temperature range			T_{amb}	-20 to +100	$^{\circ}\text{C}$
Storage temperature range			T_{stg}	-55 to +100	$^{\circ}\text{C}$
Soldering temperature	$t \leq 5 \text{ s}$, 2 mm from body		T_{sd}	260	$^{\circ}\text{C}$
Thermal resistance junction/ambient			R_{thJA}	400	K/W

Optical and Electrical Characteristics

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

High efficiency red (TLHR42..)

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Luminous intensity	$I_F = 10 \text{ mA}$, $I_{Vmin}/I_{Vmax} \geq 0.5$	TLHR4200	I_V	4	8		mcd
		TLHR4201	I_V	6.3	10		mcd
		TLHR4205	I_V	10	15		mcd
Dominant wavelength	$I_F = 10 \text{ mA}$		λ_d	612		625	nm
Peak wavelength	$I_F = 10 \text{ mA}$		λ_p		635		nm
Angle of half intensity	$I_F = 10 \text{ mA}$		ϕ		± 22		deg
Forward voltage	$I_F = 20 \text{ mA}$		V_F		2	3	V
Reverse voltage	$I_R = 10 \mu\text{A}$		V_R	6	15		V
Junction capacitance	$V_R = 0$, $f = 1 \text{ MHz}$		C_j		50		pF

Soft orange (TLHO42..)

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Luminous intensity	$I_F = 10 \text{ mA}$, $I_{Vmin}/I_{Vmax} \geq 0.5$	TLHO4200	I_V	4	10		mcd
Dominant wavelength	$I_F = 10 \text{ mA}$		λ_d	598		611	nm
Peak wavelength	$I_F = 10 \text{ mA}$		λ_p		605		nm
Angle of half intensity	$I_F = 10 \text{ mA}$		ϕ		± 22		deg
Forward voltage	$I_F = 20 \text{ mA}$		V_F		2.4	3	V
Reverse current	$V_R = 6 \text{ V}$		I_R			10	μA
Junction capacitance	$V_R = 0$, $f = 1 \text{ MHz}$		C_j		50		pF

Yellow (TLHY42..)

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Luminous intensity	$I_F = 10 \text{ mA}$, $I_{V_{\min}}/I_{V_{\max}} \geq 0.5$	TLHY4200	I_V	4	10		mcd
		TLHY4201	I_V	6.3	15		mcd
		TLHY4205	I_V	10	20		mcd
Dominant wavelength	$I_F = 10 \text{ mA}$		λ_d	581		594	nm
Peak wavelength	$I_F = 10 \text{ mA}$		λ_p		585		nm
Angle of half intensity	$I_F = 10 \text{ mA}$		ϕ		± 22		deg
Forward voltage	$I_F = 20 \text{ mA}$		V_F		2.4	3	V
Reverse voltage	$I_R = 10 \mu\text{A}$		V_R	6	15		V
Junction capacitance	$V_R = 0$, $f = 1 \text{ MHz}$		C_j		50		pF

Green (TLHG42..)

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Luminous intensity	$I_F = 10 \text{ mA}$, $I_{V_{\min}}/I_{V_{\max}} \geq 0.5$	TLHG4200	I_V	6.3	10		mcd
		TLHG4201	I_V	10	15		mcd
		TLHG4205	I_V	16	20		mcd
Dominant wavelength	$I_F = 10 \text{ mA}$		λ_d	562		575	nm
Peak wavelength	$I_F = 10 \text{ mA}$		λ_p		565		nm
Angle of half intensity	$I_F = 10 \text{ mA}$		ϕ		± 22		deg
Forward voltage	$I_F = 20 \text{ mA}$		V_F		2.4	3	V
Reverse voltage	$I_R = 10 \mu\text{A}$		V_R	6	15		V
Junction capacitance	$V_R = 0$, $f = 1 \text{ MHz}$		C_j		50		pF

Pure green (TLHP42..)

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Luminous intensity	$I_F = 10 \text{ mA}$, $I_{V_{\min}}/I_{V_{\max}} \geq 0.5$	TLHP4200	I_V	2.5	7		mcd
Dominant wavelength	$I_F = 10 \text{ mA}$		λ_d	555		565	nm
Peak wavelength	$I_F = 10 \text{ mA}$		λ_p		555		nm
Angle of half intensity	$I_F = 10 \text{ mA}$		ϕ		± 22		deg
Forward voltage	$I_F = 20 \text{ mA}$		V_F		2.4	3	V
Reverse voltage	$I_R = 10 \mu\text{A}$		V_R	6	15		V
Junction capacitance	$V_R = 0$, $f = 1 \text{ MHz}$		C_j		50		pF

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

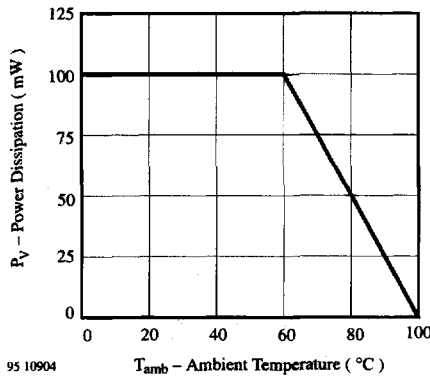


Figure 1. Power Dissipation vs. Ambient Temperature

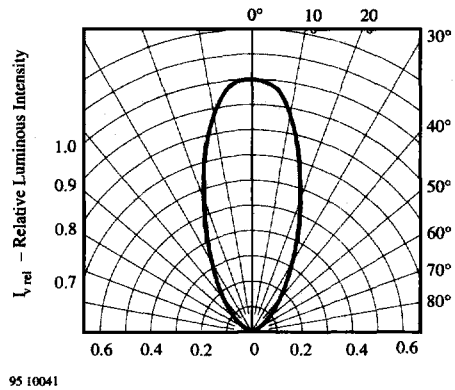


Figure 4. Rel. Luminous Intensity vs. Angular Displacement

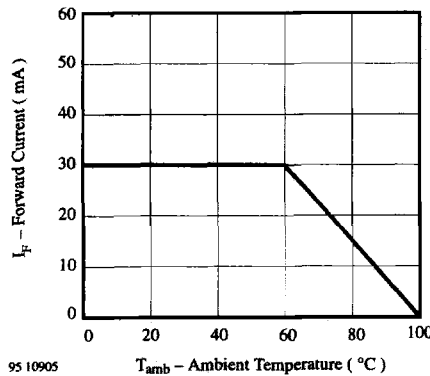


Figure 2. Forward Current vs. Ambient Temperature

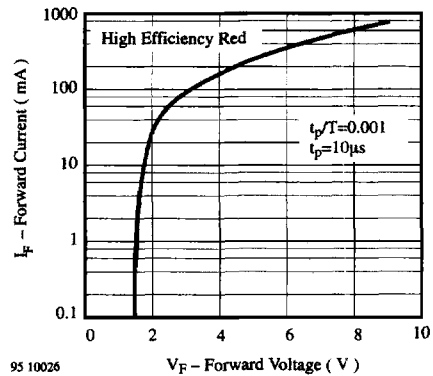


Figure 5. Forward Current vs. Forward Voltage

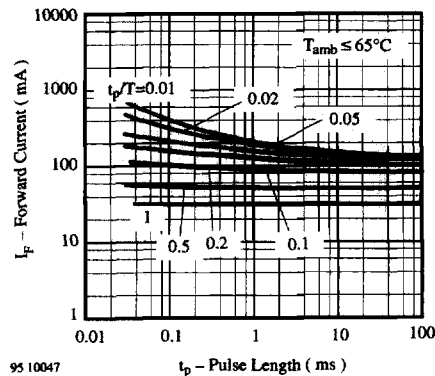


Figure 3. Forward Current vs. Pulse Length

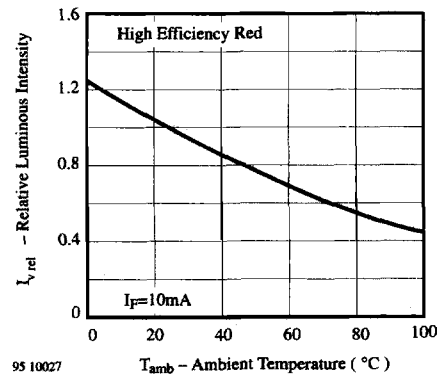


Figure 6. Rel. Luminous Intensity vs. Ambient Temperature

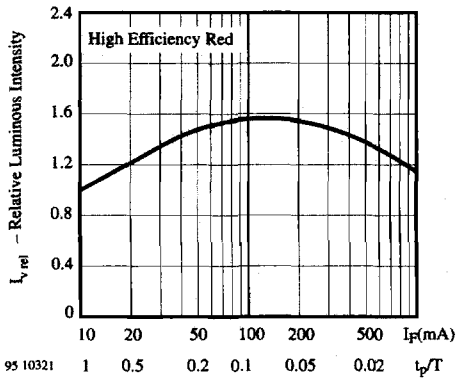


Figure 7. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

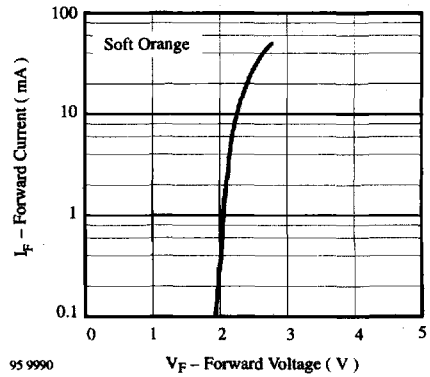


Figure 10. Forward Current vs. Forward Voltage

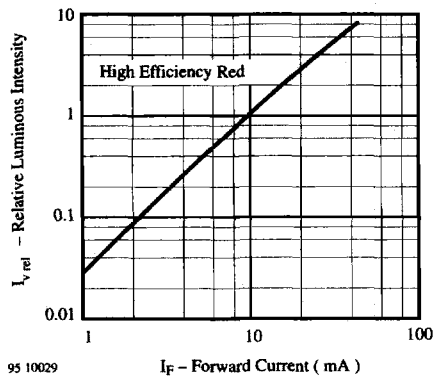


Figure 8. Relative Luminous Intensity vs. Forward Current

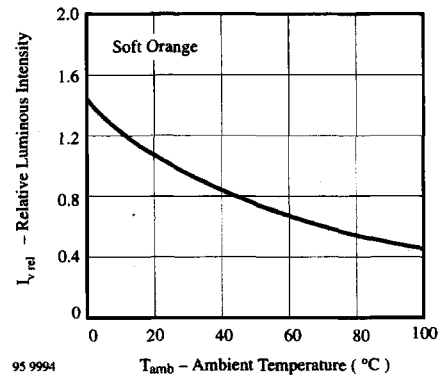


Figure 11. Rel. Luminous Intensity vs. Ambient Temperature

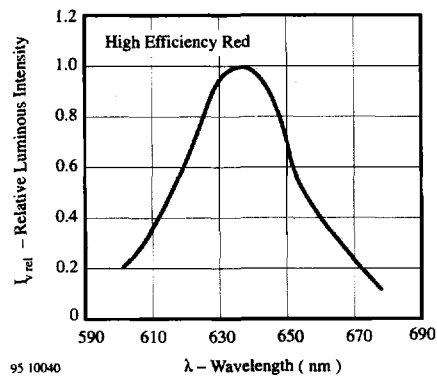


Figure 9. Relative Luminous Intensity vs. Wavelength

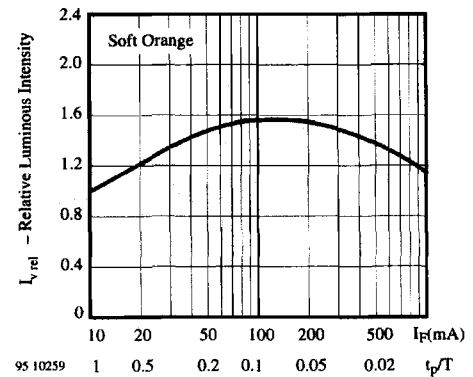


Figure 12. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

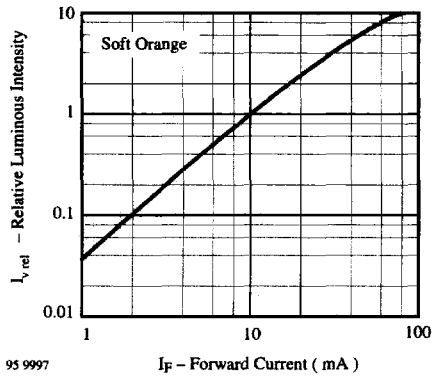


Figure 13. Relative Luminous Intensity vs. Forward Current

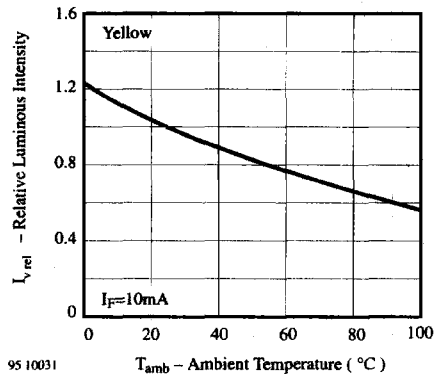


Figure 16. Rel. Luminous Intensity vs. Ambient Temperature

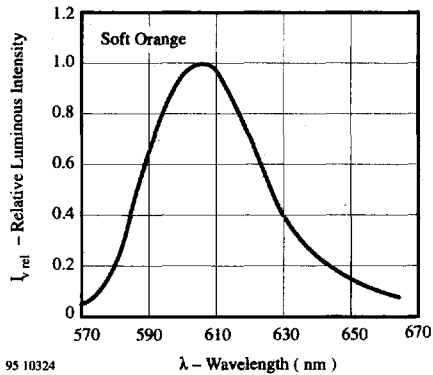


Figure 14. Relative Luminous Intensity vs. Wavelength

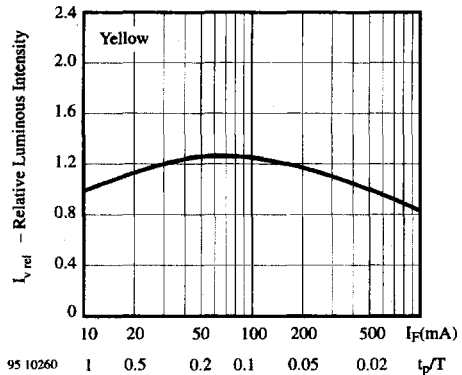


Figure 17. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

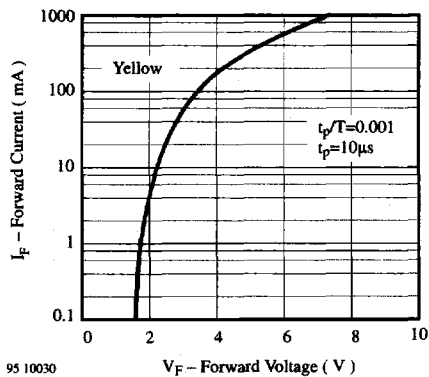


Figure 15. Forward Current vs. Forward Voltage

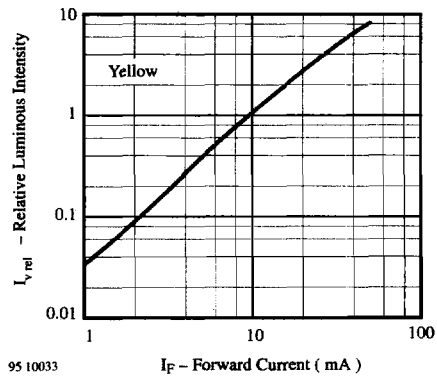


Figure 18. Relative Luminous Intensity vs. Forward Current

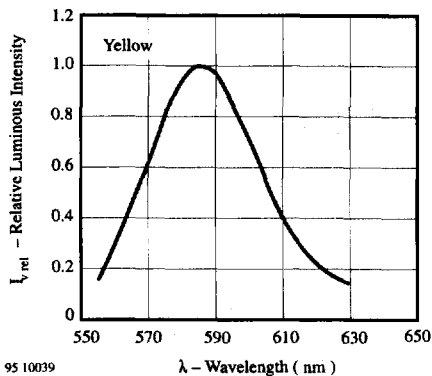


Figure 19. Relative Luminous Intensity vs. Wavelength

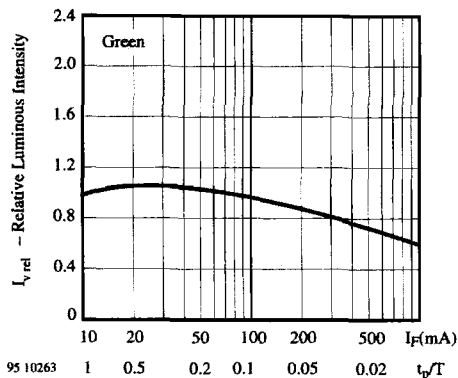


Figure 22. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

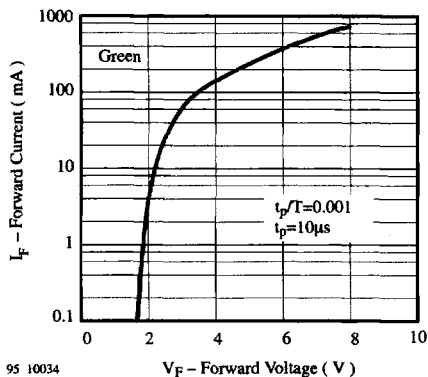


Figure 20. Forward Current vs. Forward Voltage

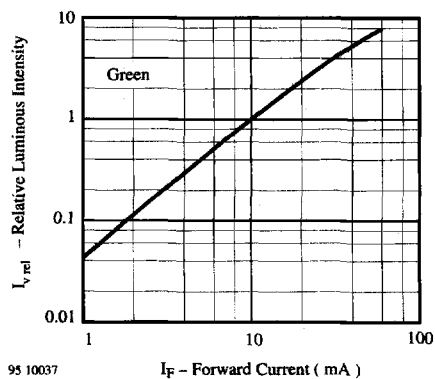


Figure 23. Relative Luminous Intensity vs. Forward Current

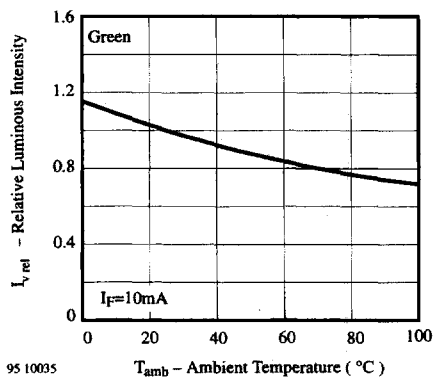


Figure 21. Rel. Luminous Intensity vs. Ambient Temperature

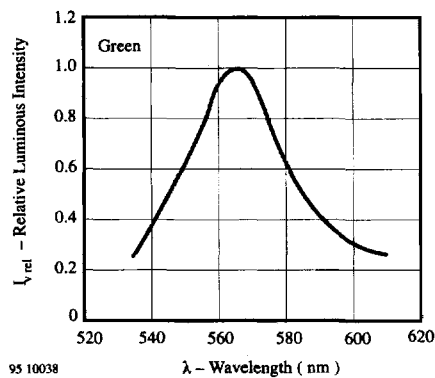
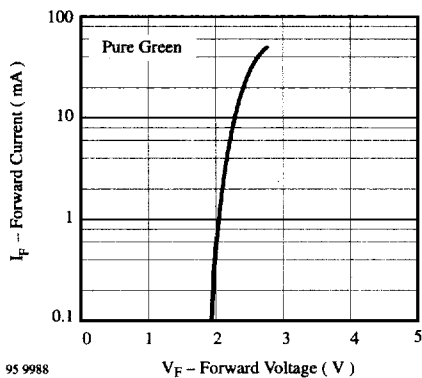
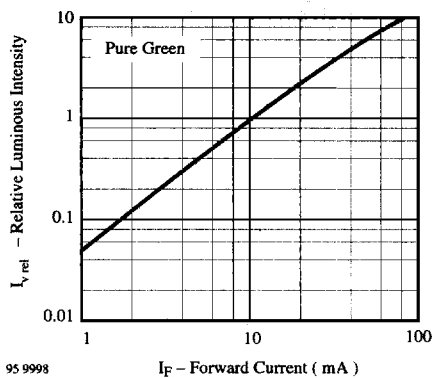


Figure 24. Relative Luminous Intensity vs. Wavelength



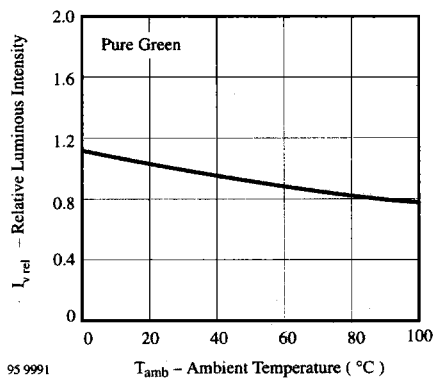
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Figure 25. Forward Current vs. Forward Voltage



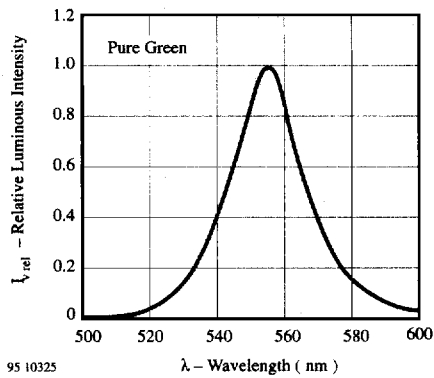
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Figure 28. Relative Luminous Intensity vs. Forward Current



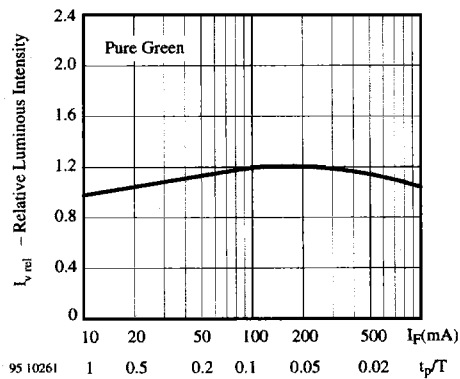
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Figure 26. Rel. Luminous Intensity vs. Ambient Temperature



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Figure 29. Relative Luminous Intensity vs. Wavelength

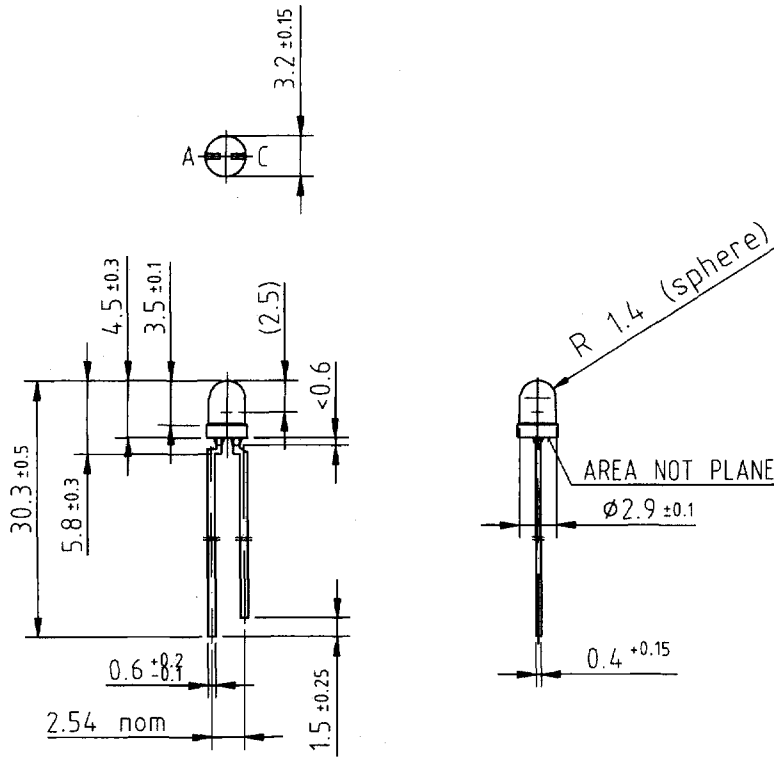


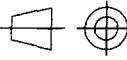
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Figure 27. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

Dimensions in mm

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 technical drawings
 according to DIN
 specifications