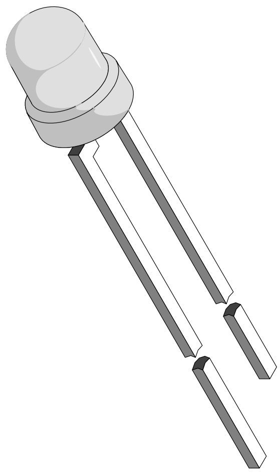
Low Current LED in ø 3 mm Tinted Diffused Package

Color	Type	Technology	Angle of Half Intensity ±φ
High efficiency red	TLLR440.	GaAsP on GaP	25°
Yellow	TLLY440.	GaAsP on GaP	25°
Green	TLLG440.	GaP on GaP	25°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Features

- Low power consumption
- High brightness
- CMOS/MOS compatible
- Specified at I_F = 2 mA
- Luminous intensity categorized
- Yellow and green color categorized

Applications

Low power DC circuits

Absolute Maximum Ratings

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

TLLR440. ,TLLY440. ,TLLG440. ,

Parameter	Test Conditions	Symbol	Value	Unit
Reverse voltage		V_R	6	V
DC forward current		I_F	7	mA
Surge forward current	$t_p \leq 10\ \mu s$	I_{FSM}	0.15	A
Power dissipation	$T_{amb} \leq 84$°C	P_V	20	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}	800	K/W

Optical and Electrical Characteristics

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

High efficiency red (**TLLR440.**)

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Luminous intensity [1)]	I_F = 2 mA	TLLR4400	I_V	0.63	1.2		mcd
		TLLR4401	I_V	1	2		mcd
Dominant wavelength	I_F = 2 mA		λ_d	612		625	nm
Peak wavelength	I_F = 2 mA		λ_p		635		nm
Angle of half intensity	I_F = 2 mA		φ		±25		deg
Forward voltage	I_F = 2 mA		V_F		1.9	2.4	V
Reverse voltage	I_R = 10 μA		V_R	6	20		V
Junction capacitance	V_R = 0, f = 1 MHz		C_j		50		pF
[1)] in one Packing Unit I_VMin./ I_V Max. ≤ 0.5							

Yellow (**TLLY440.**)

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Luminous intensity [1)]	I_F = 2 mA	TLLY4400	I_V	0.63	1.2		mcd
		TLLY4401	I_V	1	2		mcd
Dominant wavelength	I_F = 2 mA		λ_d	581		594	nm
Peak wavelength	I_F = 2 mA		λ_p		585		nm
Angle of half intensity	I_F = 2 mA		φ		±25		deg
Forward voltage	I_F = 2 mA		V_F		2.4	2.9	V
Reverse voltage	I_R = 10 μA		V_R	6	20		V
Junction capacitance	V_R = 0, f = 1 MHz		C_j		50		pF
[1)] in one Packing Unit I_VMin./ I_V Max. ≤ 0.5							

Green (**TLLG440.**)

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Luminous intensity [1)]	I_F = 2 mA	TLLG4400	I_V	0.63	1.2		mcd
		TLLG4401	I_V	1	2		mcd
Dominant wavelength	I_F = 2 mA		λ_d	562		575	nm
Peak wavelength	I_F = 2 mA		λ_p		565		nm
Angle of half intensity	I_F = 2 mA		φ		±25		deg
Forward voltage	I_F = 2 mA		V_F		1.9	2.4	V
Reverse voltage	I_R = 10 μA		V_R	6	20		V
Junction capacitance	V_R = 0, f = 1 MHz		C_j		50		pF
[1)] in one Packing Unit I_VMin./ I_V Max. ≤ 0.5							

Typical Characteristics (T$_{amb}$ = 25°C, unless otherwise specified)

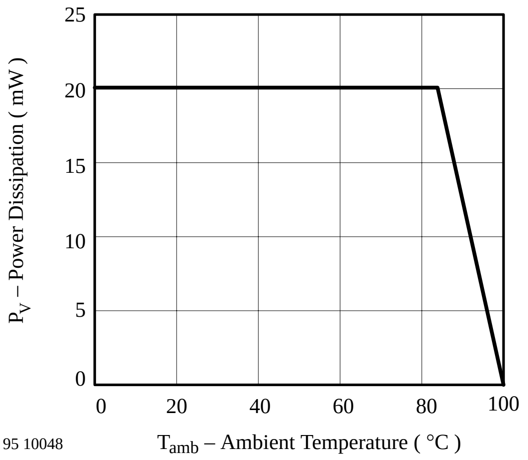


Figure 1. Power Dissipation vs. Ambient Temperature

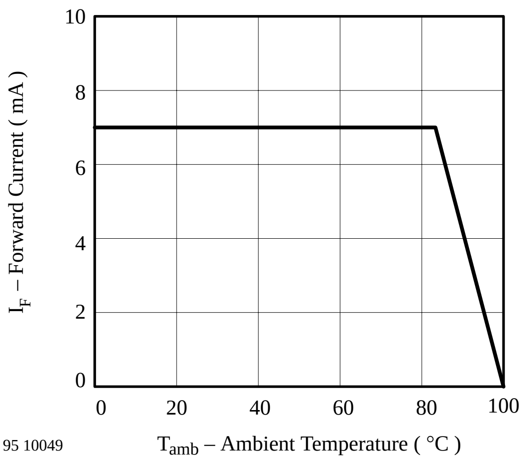


Figure 2. Forward Current vs. Ambient Temperature

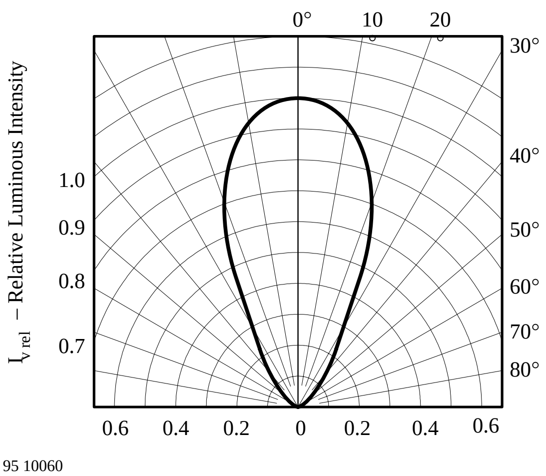


Figure 3. Rel. Luminous Intensity vs. Angular Displacement

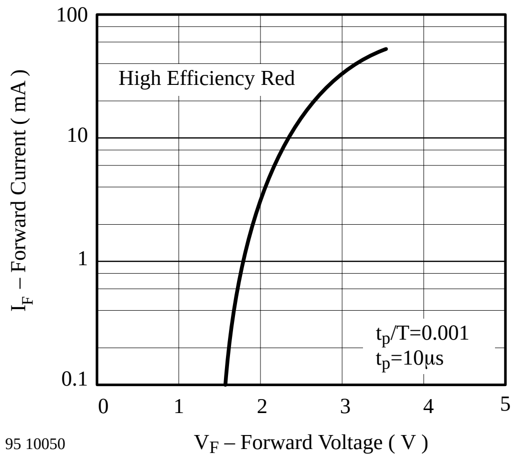


Figure 4. Forward Current vs. Forward Voltage

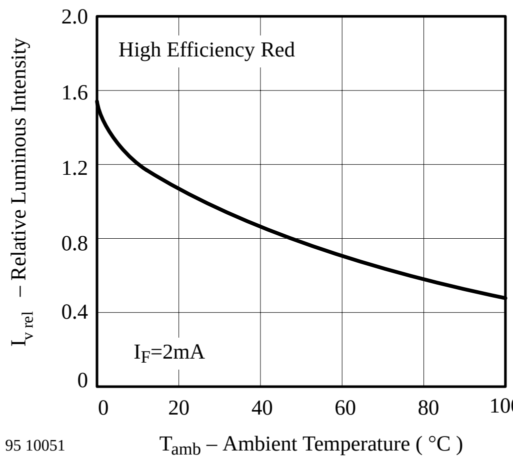


Figure 5. Rel. Luminous Intensity vs. Ambient Temperature

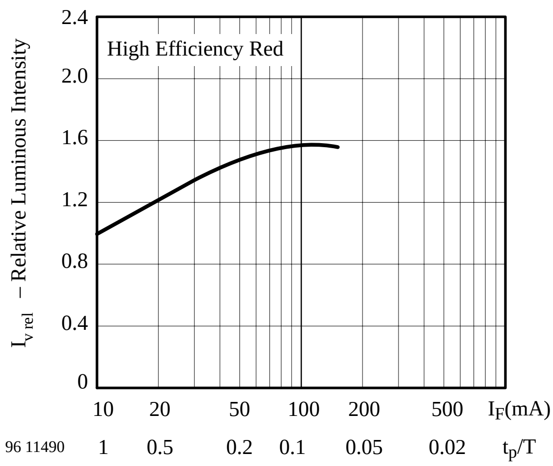


Figure 6. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

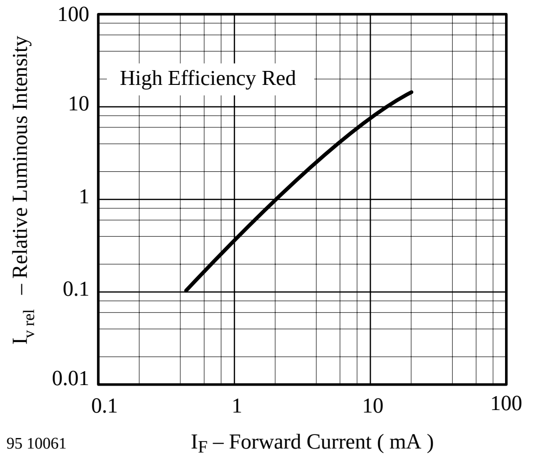


Figure 7. Relative Luminous Intensity vs. Forward Current

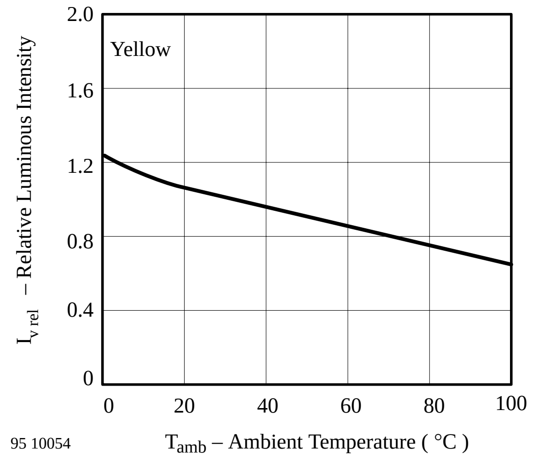


Figure 10. Rel. Luminous Intensity vs. Ambient Temperature

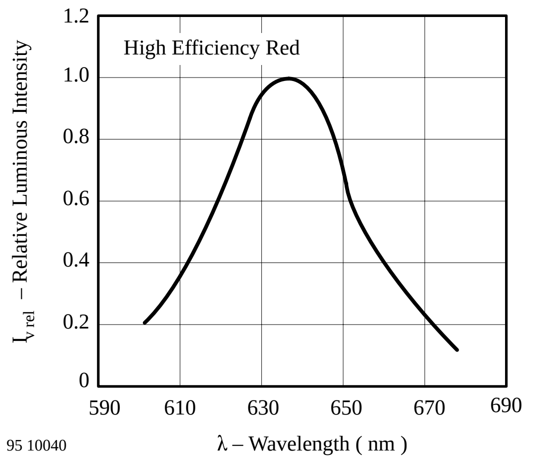


Figure 8. Relative Luminous Intensity vs. Wavelength

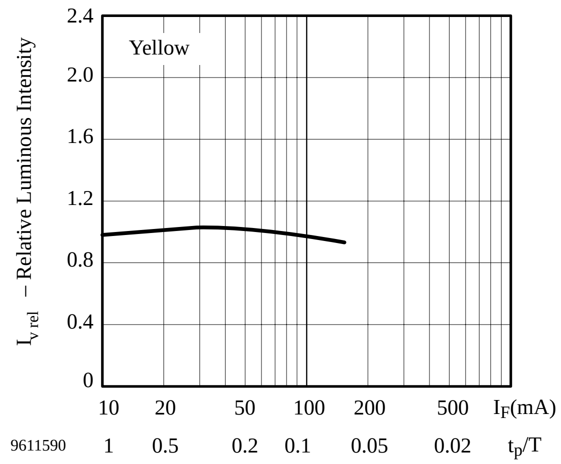


Figure 11. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

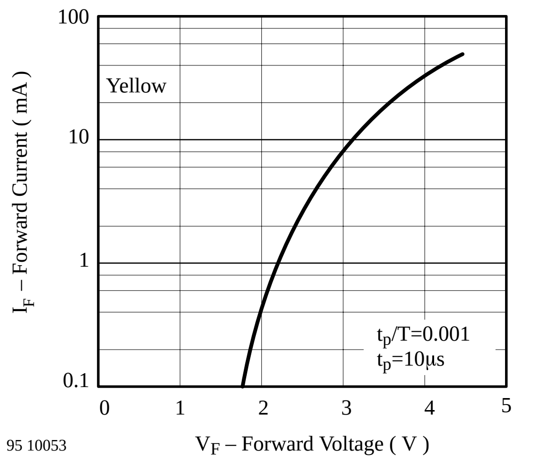


Figure 9. Forward Current vs. Forward Voltage

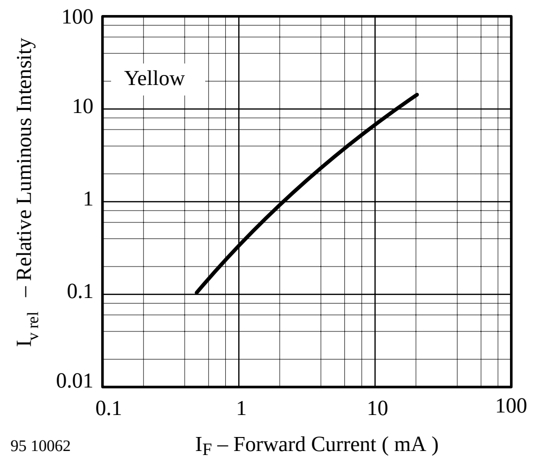


Figure 12. Relative Luminous Intensity vs. Forward Current

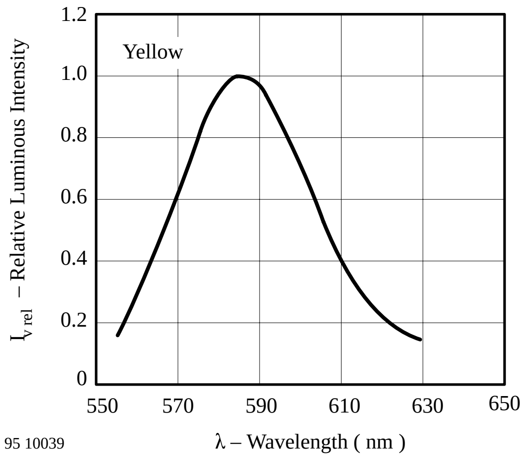


Figure 13. Relative Luminous Intensity vs. Wavelength

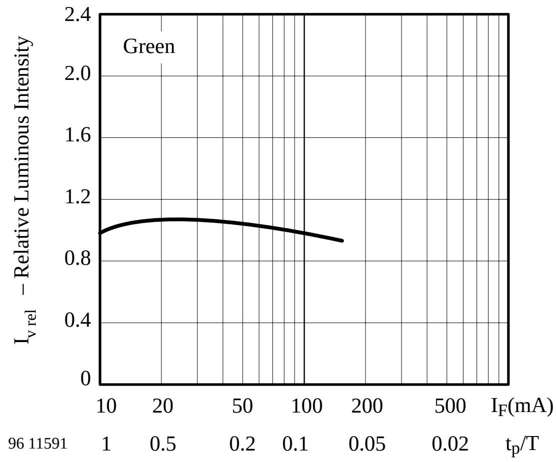


Figure 16. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

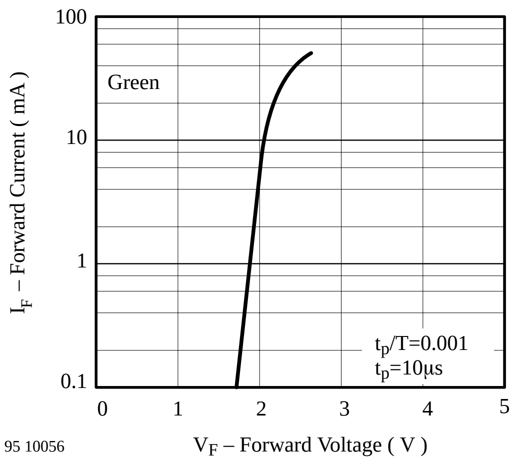


Figure 14. Forward Current vs. Forward Voltage

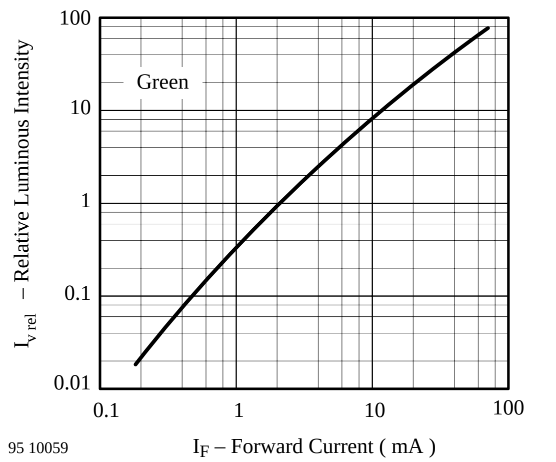


Figure 17. Relative Luminous Intensity vs. Forward Current

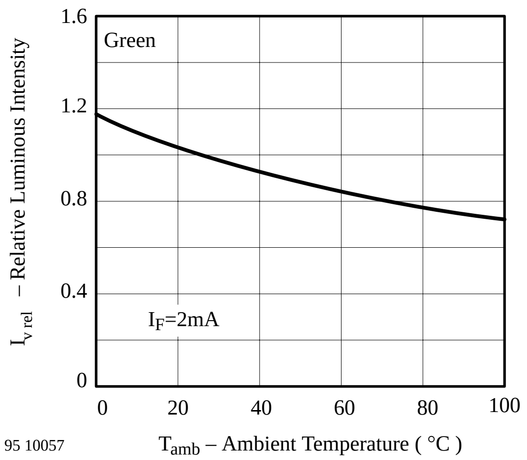


Figure 15. Rel. Luminous. Intensity vs. Ambient Temperature

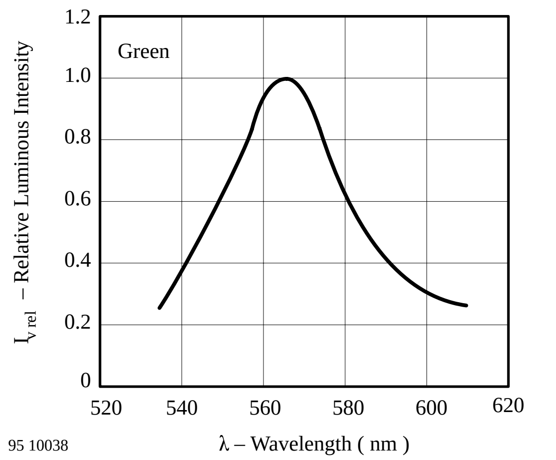
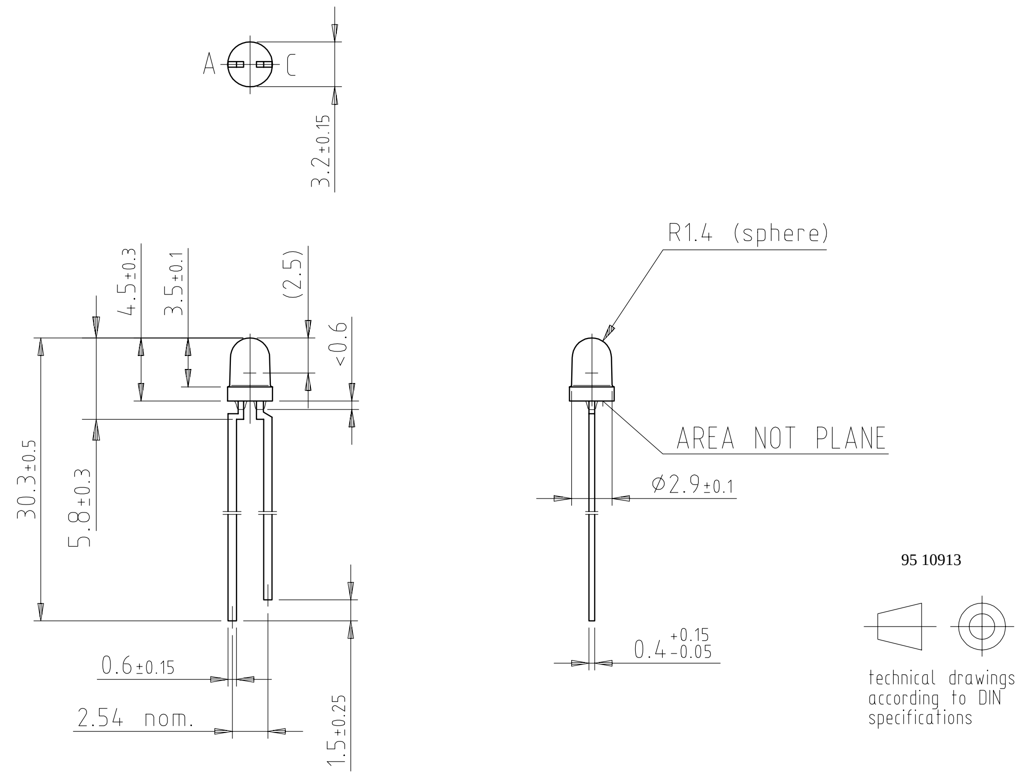


Figure 18. Relative Luminous Intensity vs. Wavelength

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 operating systems 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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