

10 mm Seven Segment Display

Color	Type	Circuitry
Red	TDSR315.	Common anode
Red	TDSR316.	Common cathode
Orange red	TDSO315.	Common anode
Orange red	TDSO316.	Common cathode
Yellow	TDSY315.	Common anode
Yellow	TDSY316.	Common cathode
Green	TDSG315.	Common anode
Green	TDSG316.	Common cathode

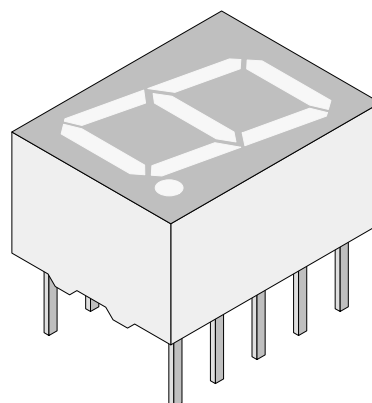
Description

The TDS.31.. series are 10 mm character seven segment LED displays in a very compact package.

The displays are designed for a viewing distance up to 6 meters and available in four bright colors. The grey package surface and the evenly lighted untinted segments provide an optimum on-off contrast.

All displays are categorized in luminous intensity groups. That allows users to assemble displays with uniform appearance.

Typical applications include instruments, panel meters, point-of-sale terminals and household equipment.



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Features

- Evenly lighted segments
- Grey package surface
- Untinted segments
- Luminous intensity categorized
- Yellow and green categorized for color
- Wide viewing angle
- Suitable for DC and high peak current

Applications

Panel meters

Test- and measure- equipment

Point-of-sale terminals

Control units

Absolute Maximum Ratings

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

TDSR315. /TDSR316. , TDSO315. /TDSO316. , TDSY315. /TDSY316. , TDSG315. /TDSG316. , /

Parameter	Test Conditions	Type	Symbol	Value	Unit
Reverse voltage per segment or DP			V_R	6	V
DC forward current per segment or DP		TDSR315./316.	I_F	30	mA
		TDSO315./316.	I_F	20	mA
		TDSY315./316.	I_F	20	mA
		TDSG315./316.	I_F	20	mA
Surge forward current per segment or DP	$t_p \leq 10 \mu\text{s}$ (non repetitive)	TDSR315./316.	I_{FSM}	0.5	A
		TDSO315./316.	I_{FSM}	0.15	A
		TDSY315./316.	I_{FSM}	0.15	A
		TDSG315./316.	I_{FSM}	0.15	A
Power dissipation	$T_{amb} \leq 45^{\circ}\text{C}$		P_V	480	mW
Junction temperature			T_j	100	$^{\circ}\text{C}$
Operating temperature range			T_{amb}	-40 to + 85	$^{\circ}\text{C}$
Storage temperature range			T_{stg}	-40 to + 85	$^{\circ}\text{C}$
Soldering temperature	$t \leq 3 \text{ sec}$, 2mm below seating plane		T_{sd}	260	$^{\circ}\text{C}$
Thermal resistance LED junction/ambient			R_{thJA}	120	K/W

Optical and Electrical Characteristics

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

Red (TDSR315. , TDSR316.)

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Luminous intensity per segment (digit average) ¹⁾	$I_F = 10 \text{ mA}$	TDSR 3150/3160	I_V	180			μcd
Dominant wavelength	$I_F = 10 \text{ mA}$		λ_d		655		nm
Peak wavelength	$I_F = 10 \text{ mA}$		λ_p		660		nm
Angle of half intensity	$I_F = 10 \text{ mA}$		ϕ		± 50		deg
Forward voltage per segment or DP	$I_F = 20 \text{ mA}$		V_F		1.6	2	V
Reverse voltage per segment or DP	$I_R = 10 \mu\text{A}$		V_R	6	15		V
¹⁾ I_{Vmin} and I_V groups are mean	values of segments a to g						

**Orange red (TDSO315. , TDSO316.)**

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Luminous intensity per segment (digit average) ¹⁾	$I_F = 10 \text{ mA}$	TDSO 3150/3160	I_V	450			μcd
Dominant wavelength	$I_F = 10 \text{ mA}$		λ_d	612		625	nm
Peak wavelength	$I_F = 10 \text{ mA}$		λ_p		630		nm
Angle of half intensity	$I_F = 10 \text{ mA}$		ϕ		± 50		deg
Forward voltage per segment or DP	$I_F = 20 \text{ mA}$		V_F		2	3	V
Reverse voltage per segment or DP	$I_R = 10 \mu\text{A}$		V_R	6	15		V
¹⁾ $I_{V\min}$ and I_V groups are mean	values of segments a to g						

Yellow (TDSY315. , TDSY316.)

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Luminous intensity per segment (digit average) ¹⁾	$I_F = 10 \text{ mA}$	TDSY 3150/3160	I_V	450			μcd
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		± 50		deg
Forward voltage per segment or DP	$I_F = 20 \text{ mA}$		V_F		2.4	3	V
Reverse voltage per segment or DP	$I_R = 10 \mu\text{A}$		V_R	6	15		V
¹⁾ $I_{V\min}$ and I_V groups are mean	values of segments a to g						

Green (TDSG315. , TDSG316.)

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Luminous intensity per segment (digit average) ¹⁾	$I_F = 10 \text{ mA}$	TDSG 3150/3160	I_V	450			μcd
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		± 50		deg
Forward voltage per segment or DP	$I_F = 20 \text{ mA}$		V_F		2.4	3	V
Reverse voltage per segment or DP	$I_R = 10 \mu\text{A}$		V_R	6	15		V
¹⁾ $I_{V\min}$ and I_V groups are mean	values of segments a to g						

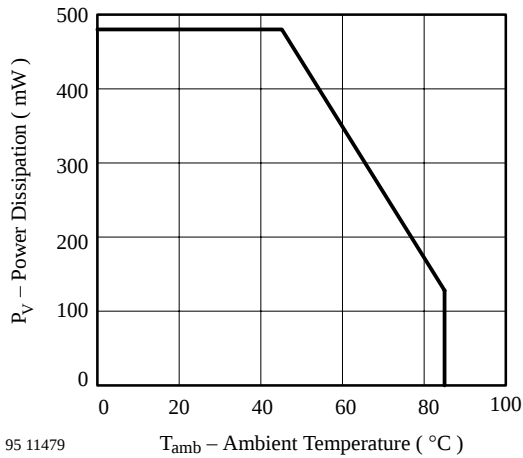
Typical Characteristics ($T_{amb} = 25^{\circ}\text{C}$, unless otherwise specified)


Figure 1. Power Dissipation vs. Ambient Temperature

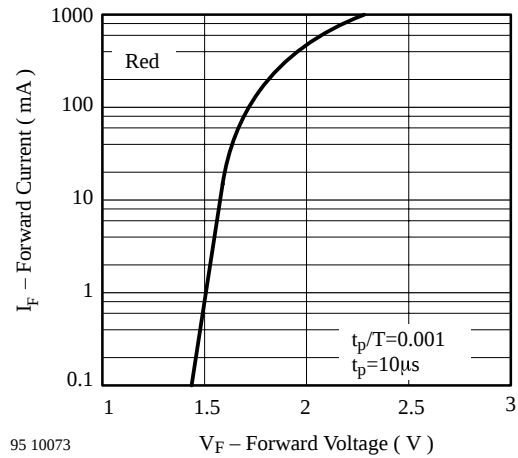


Figure 4. Forward Current vs. Forward Voltage

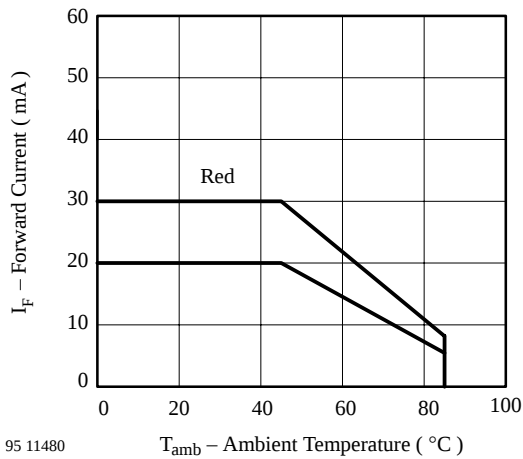


Figure 2. Forward Current vs. Ambient Temperature

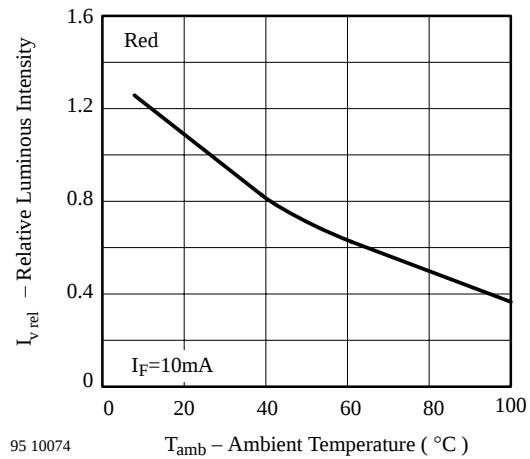


Figure 5. Rel. Luminous Intensity vs. Ambient Temperature

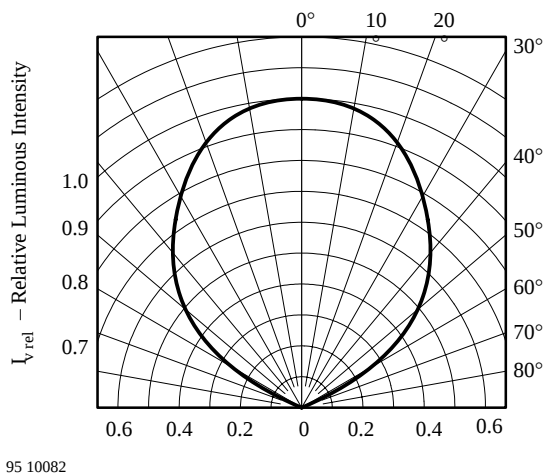


Figure 3. Rel. Luminous Intensity vs. Angular Displacement

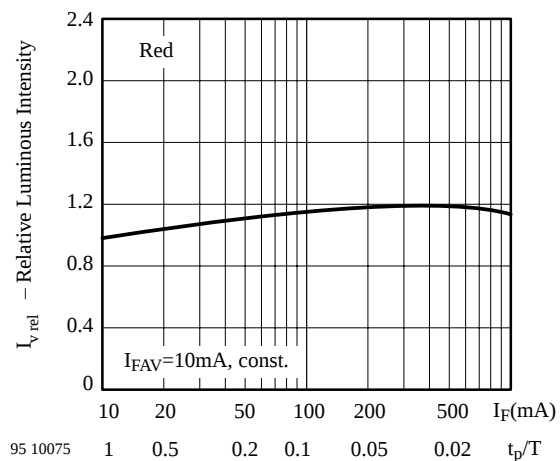


Figure 6. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

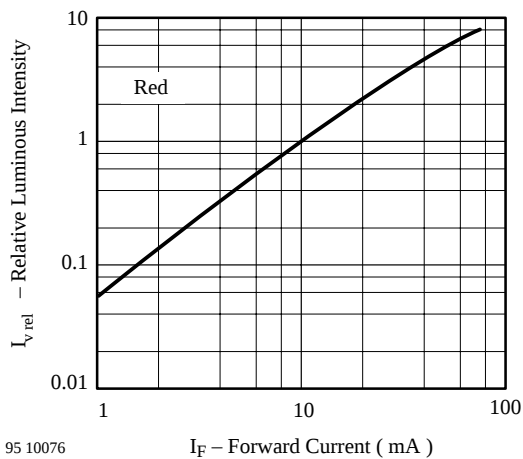


Figure 7. Relative Luminous Intensity vs. Forward Current

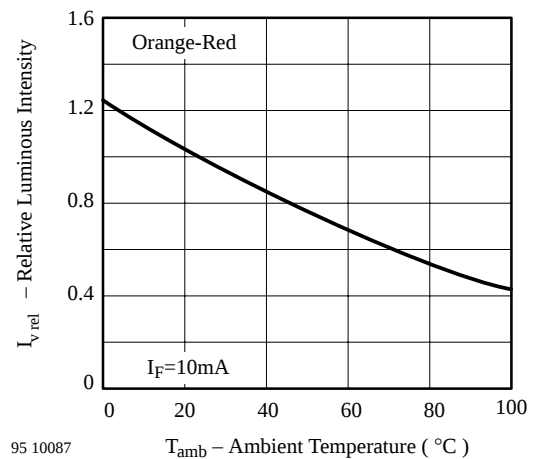


Figure 10. Rel. Luminous Intensity vs. Ambient Temperature

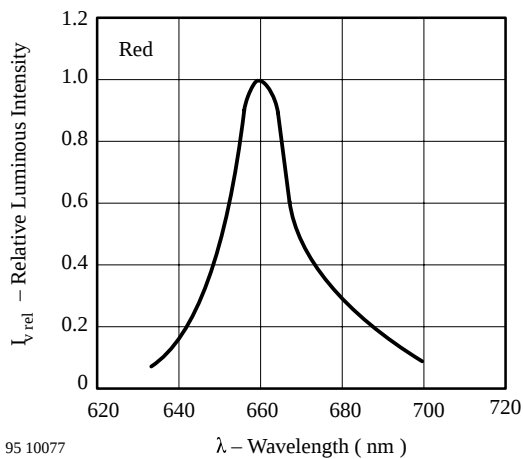


Figure 8. Relative Luminous Intensity vs. Wavelength

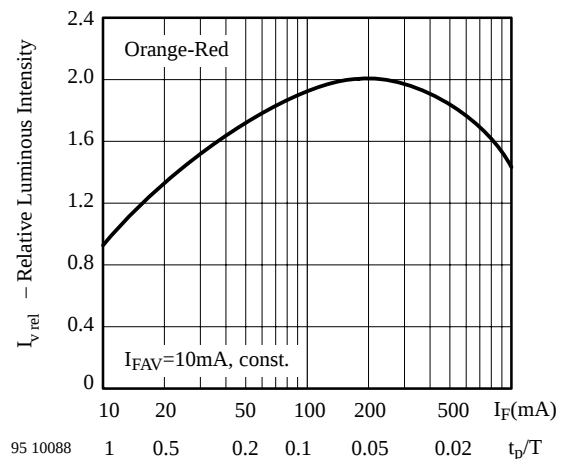


Figure 11. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

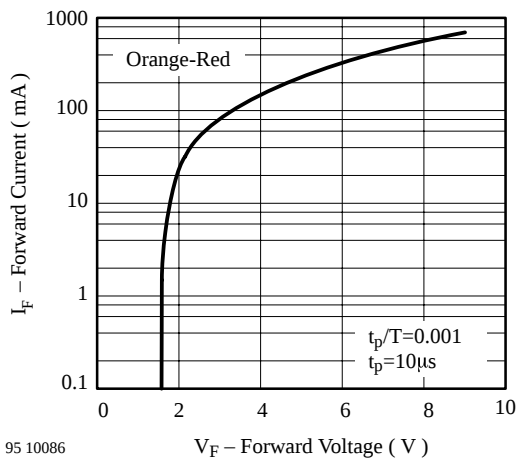


Figure 9. Forward Current vs. Forward Voltage

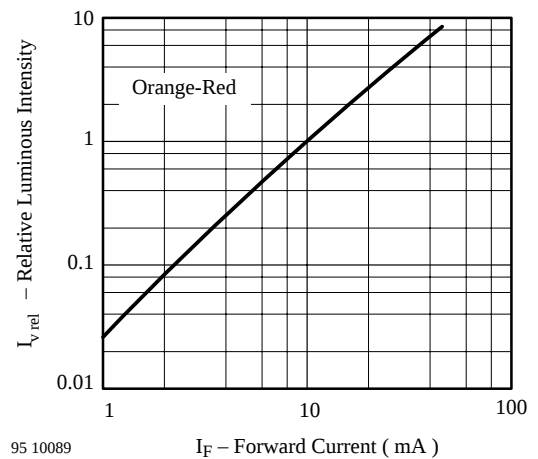


Figure 12. Relative Luminous Intensity vs. Forward Current

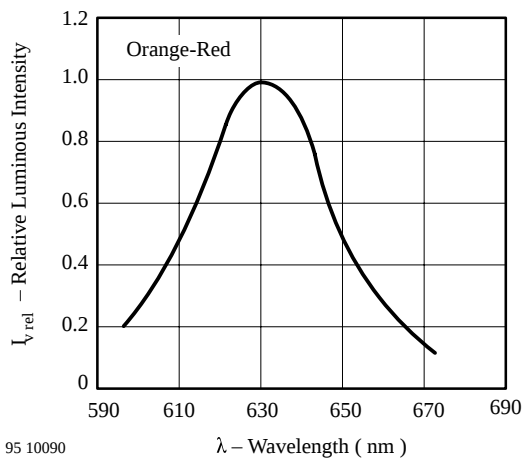


Figure 13. Relative Luminous Intensity vs. Wavelength

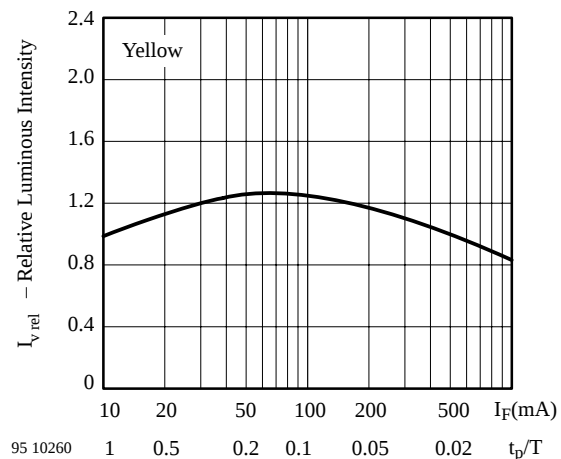


Figure 16. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

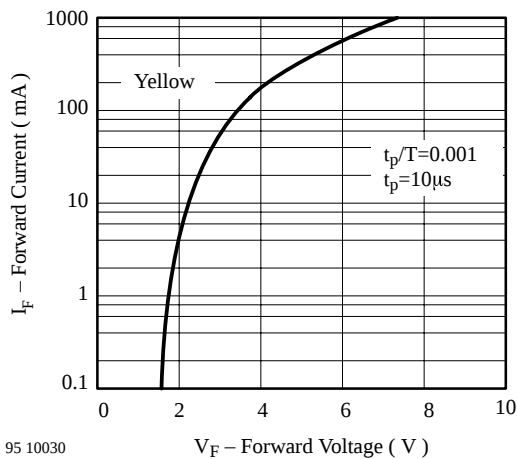


Figure 14. Forward Current vs. Forward Voltage

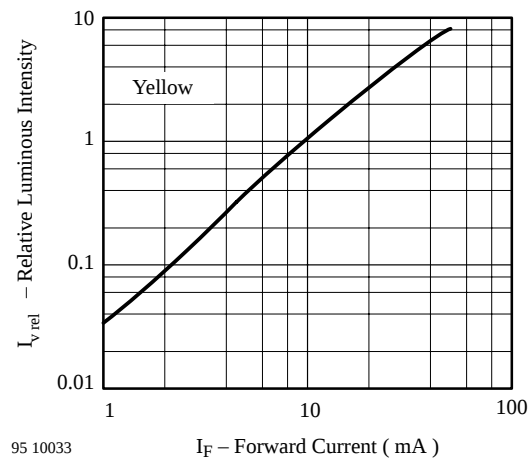


Figure 17. Relative Luminous Intensity vs. Forward Current

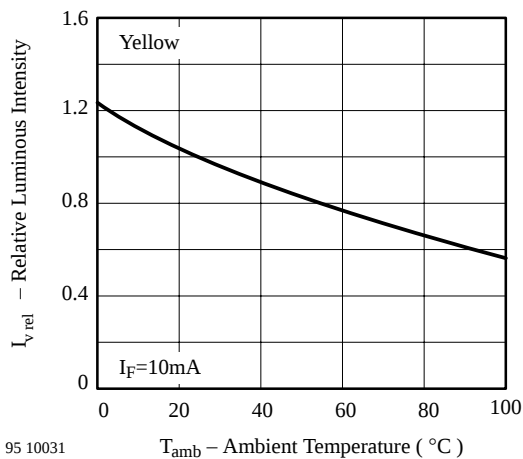


Figure 15. Rel. Luminous Intensity vs. Ambient Temperature

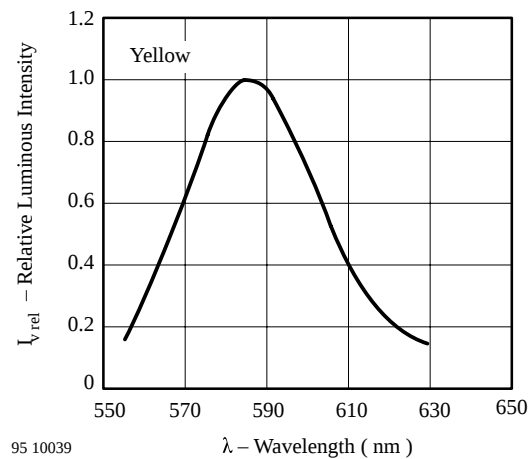


Figure 18. Relative Luminous Intensity vs. Wavelength

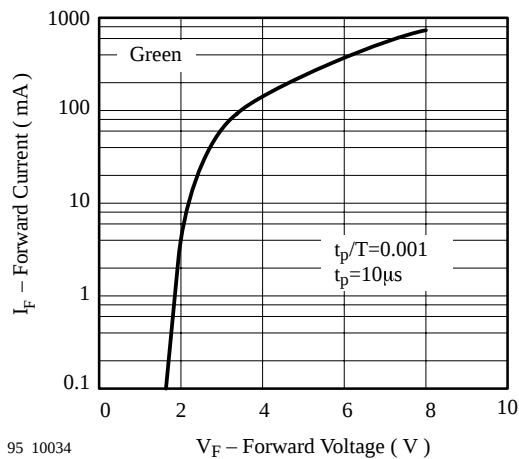


Figure 19. Forward Current vs. Forward Voltage

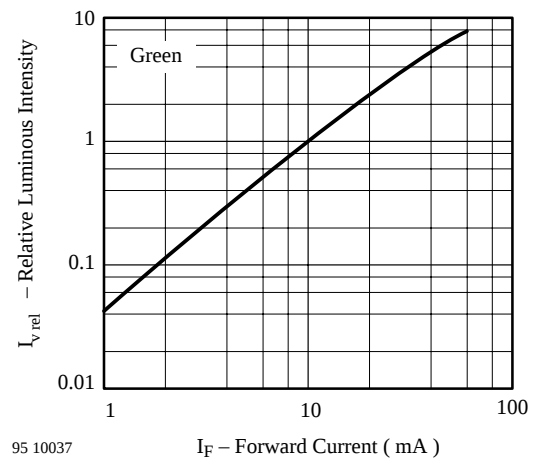


Figure 22. Relative Luminous Intensity vs. Forward Current

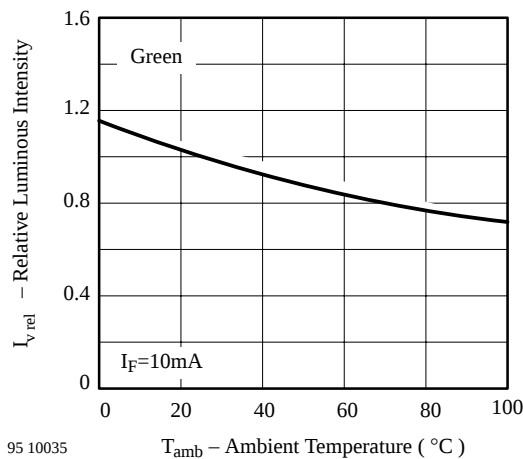


Figure 20. Rel. Luminous Intensity vs. Ambient Temperature

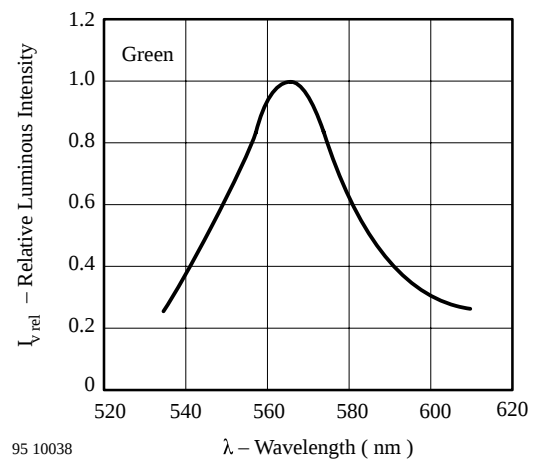


Figure 23. Relative Luminous Intensity vs. Wavelength

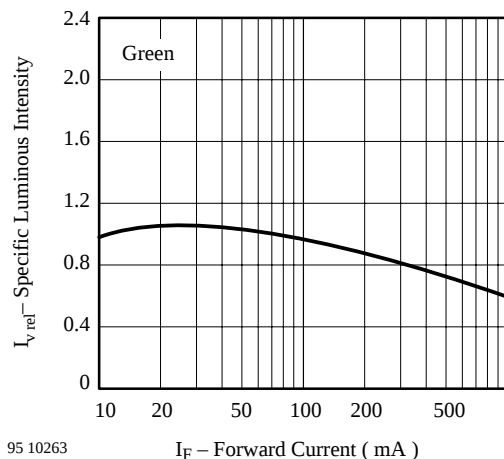
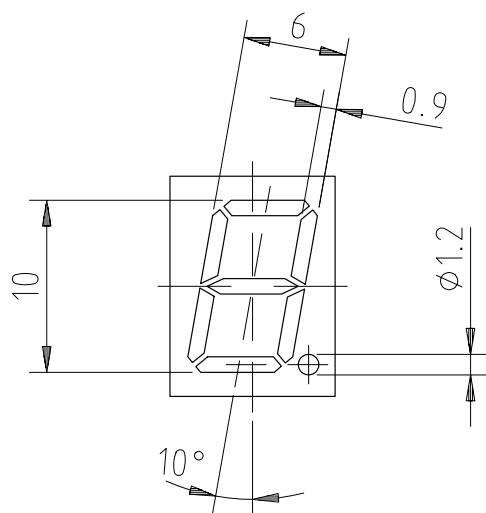
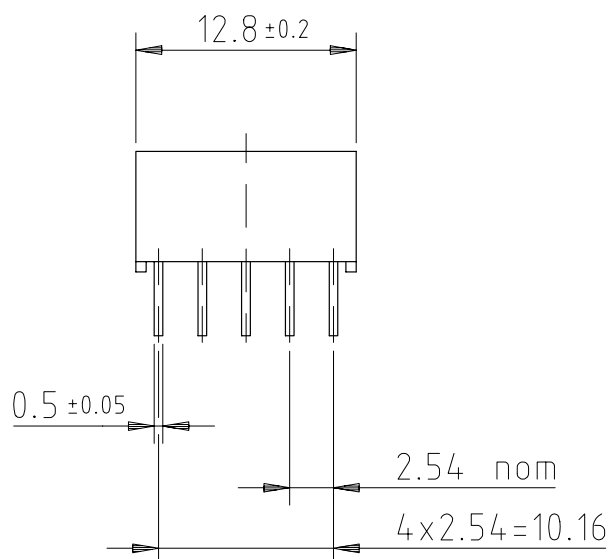
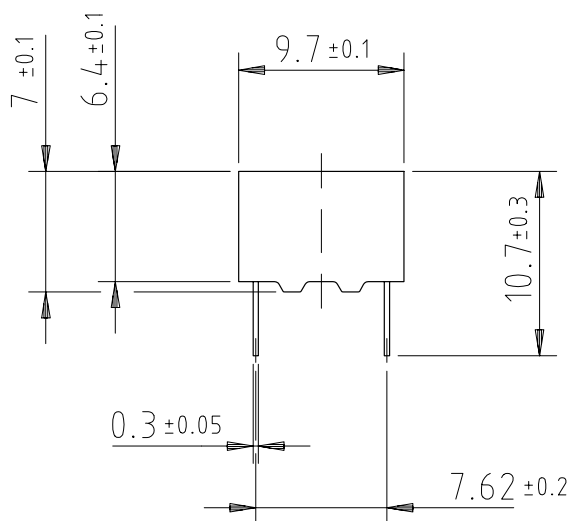
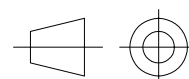


Figure 21. Specific Luminous Intensity vs. Forward Current

Dimensions in mm

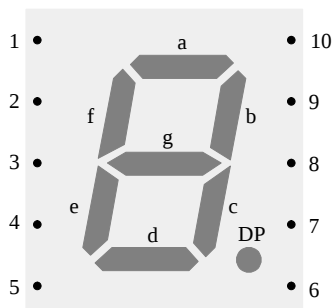


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technical drawings
according to DIN
specifications

Pin connections



- | | |
|----|-------|
| 1 | g |
| 2 | f |
| 3 | A (C) |
| 4 | e |
| 5 | d |
| 6 | DP |
| 7 | c |
| 8 | A (C) |
| 9 | b |
| 10 | a |

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