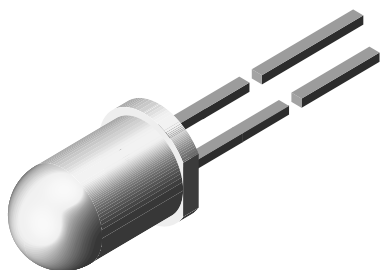


Ultrabright LED, Ø 5 mm Untinted Non-Diffused Package



DESCRIPTION

The TLC.61.. series is a clear, non-diffused 5 mm LED for high end applications where supreme luminous intensity required.

These lamps with clear untinted plastic case utilize the highly developed ultrabright AlInGaP (AS).

The lens and the viewing angle is optimized to achieve best performance of light output and visibility.

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 5 mm
- Product series: power
- Angle of half intensity: $\pm 9^\circ$

FEATURES

- Untinted non-diffused lens
- Utilizing ultrabright AlInGaP (AS)
- High luminous intensity
- High operating temperature: T_j (chip junction temperature) up to 125 °C for AlInGaP devices
- Luminous intensity and color categorized for each packing unit
- ESD-withstand voltage: up to 2 kV according to JESD22-A114-B
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



APPLICATIONS

- Interior and exterior lighting
- Outdoor LED panels
- Instrumentation and front panel indicators
- Central high mounted stop lights (CHMSL) for motor vehicles
- Replaces incandescent lamps
- Traffic signals
- Light guide design

PARTS TABLE

PART	COLOR	LUMINOUS INTENSITY (mcd)			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.		
TLCY6100	Yellow	3200	7500	-	50	585	590	597	50	-	2.1	2.7	50	AlInGaP on GaAs
TLCY6100-AS21	Yellow	3200	7500	-	50	585	590	597	50	-	2.1	2.7	50	AlInGaP on GaAs
TLCPG6100	Pure green	430	1250	-	50	555	562	567	50	-	2.1	2.7	50	AlInGaP on GaAs

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^\circ\text{C}$, unless otherwise specified)

TLCY6100, TLCPG6100

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage ⁽¹⁾		V_R	5	V
DC forward current	$T_{amb} \leq 85^\circ\text{C}$	I_F	50	mA
Surge forward current	$t_p \leq 10 \mu\text{s}$	I_{FSM}	1	A
Power dissipation		P_V	135	mW
Junction temperature		T_j	125	°C
Operating temperature range		T_{amb}	-40 to +100	°C
Storage temperature range		T_{stg}	-40 to +100	°C
Soldering temperature	$t \leq 5 \text{ s}$, 2 mm from body	T_{sd}	260	°C
Thermal resistance junction to ambient		R_{thJA}	300	K/W

Note

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

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)
TLCY6100, YELLOW

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity ⁽¹⁾	$I_F = 50\text{ mA}$	I_V	3200	7500	-	mcd
Dominant wavelength	$I_F = 50\text{ mA}$	λ_d	585	590	597	nm
Peak wavelength	$I_F = 50\text{ mA}$	λ_p	-	593	-	nm
Spectral bandwidth at 50 % $I_{rel\text{ max.}}$	$I_F = 50\text{ mA}$	$\Delta\lambda$	-	17	-	nm
Angle of half intensity	$I_F = 50\text{ mA}$	ϕ	-	± 9	-	$^{\circ}$
Forward voltage	$I_F = 50\text{ mA}$	V_F	-	2.1	2.7	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$	V_R	5	-	-	V
Temperature coefficient of V_F	$I_F = 50\text{ mA}$	TC_{V_F}	-	-3.5	-	mV/K
Temperature coefficient of λ_d	$I_F = 50\text{ mA}$	TC_{λ_d}	-	0.1	-	nm/K

Note⁽¹⁾ In one packing unit $I_{Vmax}/I_{Vmin.} \leq 2.0$ **OPTICAL AND ELECTRICAL CHARACTERISTICS** ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)
TLCPG6100, PURE GREEN

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity ⁽¹⁾	$I_F = 50\text{ mA}$	I_V	430	1250	-	mcd
Dominant wavelength	$I_F = 50\text{ mA}$	λ_d	555	562	567	nm
Peak wavelength	$I_F = 50\text{ mA}$	λ_p	-	563	-	nm
Spectral bandwidth at 50 % $I_{rel\text{ max.}}$	$I_F = 50\text{ mA}$	$\Delta\lambda$	-	20	-	nm
Angle of half intensity	$I_F = 50\text{ mA}$	ϕ	-	± 9	-	$^{\circ}$
Forward voltage	$I_F = 50\text{ mA}$	V_F	-	2.1	2.7	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$	V_R	5	-	-	V
Temperature coefficient of V_F	$I_F = 50\text{ mA}$	TC_{V_F}	-	-3.5	-	mV/K
Temperature coefficient of λ_d	$I_F = 50\text{ mA}$	TC_{λ_d}	-	0.1	-	nm/K

Note⁽¹⁾ In one packing unit $I_{Vmax}/I_{Vmin.} \leq 2.0$



LUMINOUS INTENSITY CLASSIFICATION		
GROUP	LUMINOUS INTENSITY (mcd)	
STANDARD	MIN.	MAX.
BB	430	860
CC	575	1150
DD	750	1500
EE	1000	2000
FF	1350	2700
GG	1800	3600
HH	2400	4800
II	3200	6400
KK	4300	8600
LL	5750	11 500
MM	7500	15 000
NN	10 000	20 000
PP	13 500	27 000
QQ	18 000	36 000
RR	24 000	48 000
SS	32 000	64 000
TT	43 000	86 000
UU	57 500	115 000

Note

- Luminous intensity is tested at a current pulse duration of 25 ms and an accuracy of $\pm 11\%$.

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 on 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 in any one bag.

In order to ensure availability, single wavelength groups will not be orderable

COLOR CLASSIFICATION				
GROUP	DOM. WAVELENGTH (nm)			
	YELLOW		PURE GREEN	
	MIN.	MAX.	MIN.	MAX.
0	585	588	555	559
1	587	591	558	561
2	589	594	560	563
3	592	597	562	565
4	-	-	564	567

Note

- Wavelengths are tested at a current pulse duration of 25 ms and an accuracy of $\pm 1\text{ nm}$

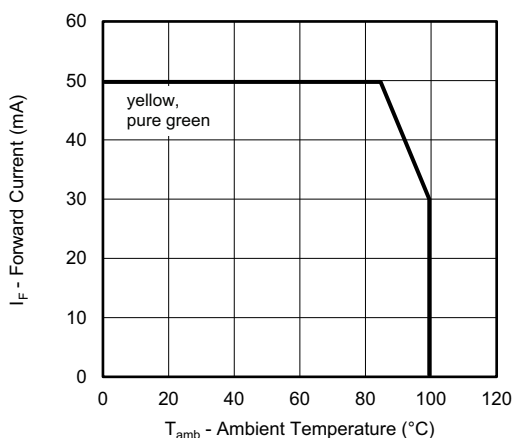
TYPICAL CHARACTERISTICS ($T_{\text{amb}} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 1 - Maximum Permissible Forward Current vs. Ambient Temperature

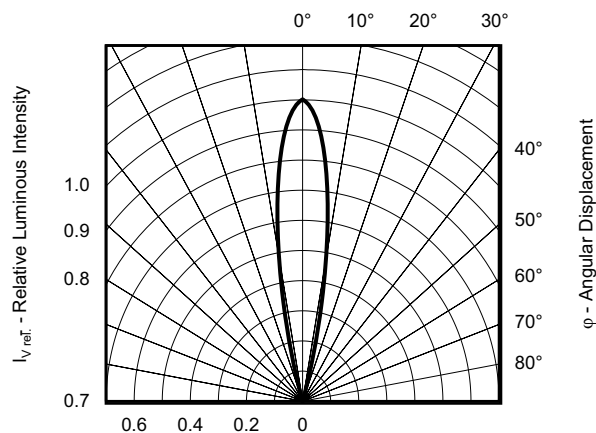


Fig. 2 - Relative Radiant Sensitivity vs. Angular Displacement

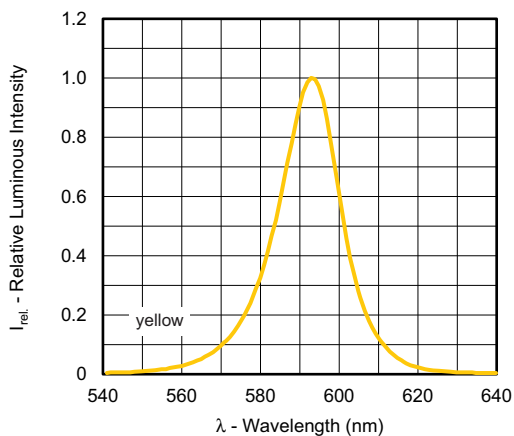


Fig. 3 - Relative Intensity vs. Wavelength

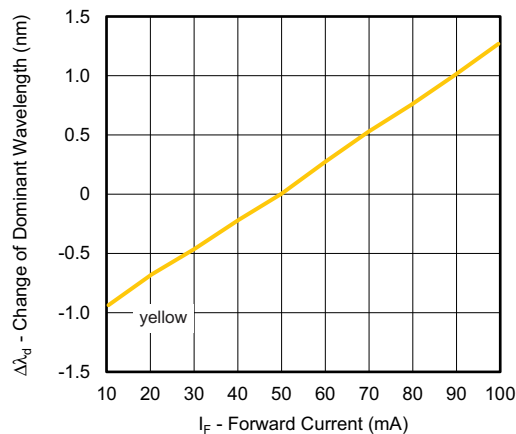


Fig. 6 - Change of Dominant Wavelength vs. Forward Current

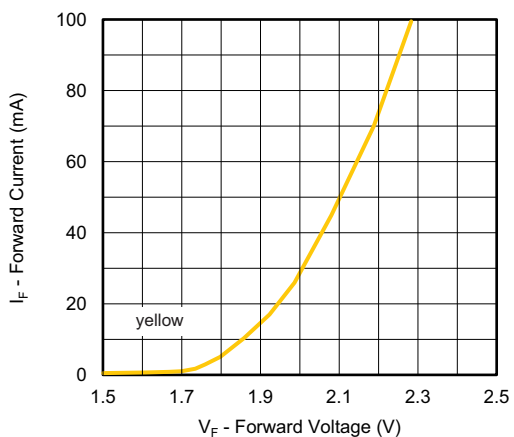


Fig. 4 - Forward Current vs. Forward Voltage

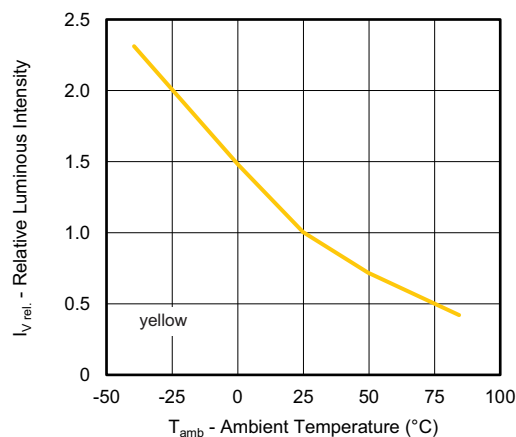


Fig. 7 - Relative Luminous Intensity vs. Ambient Temperature

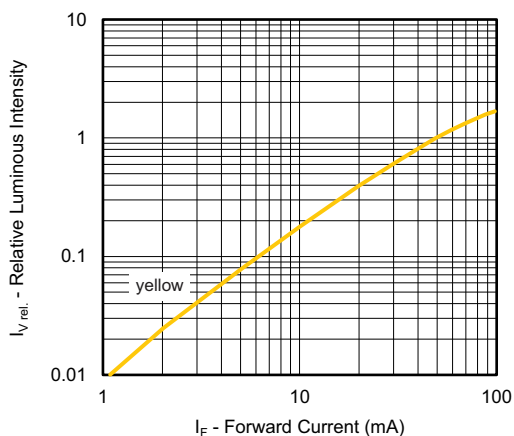


Fig. 5 - Relative Luminous Intensity vs. Forward Current

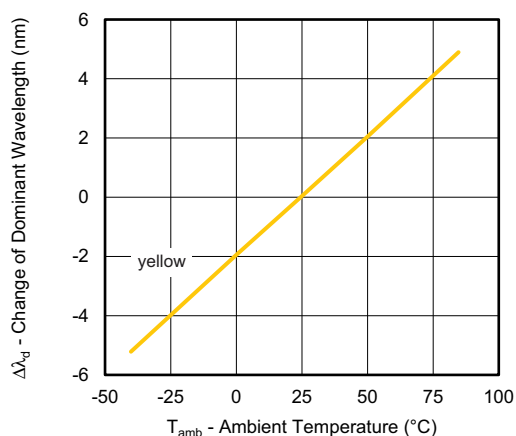


Fig. 8 - Change of Dominant Wavelength vs. Ambient Temperature

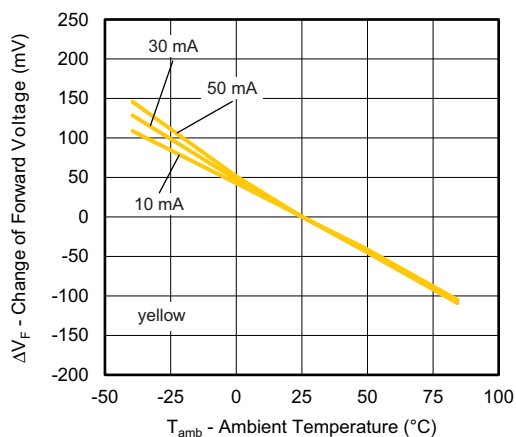


Fig. 9 - Change of Forward Voltage vs. Ambient Temperature

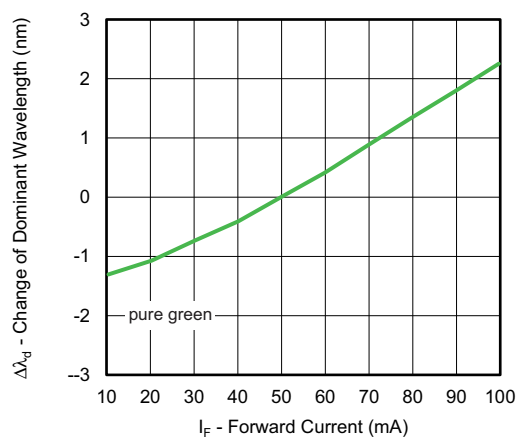


Fig. 12 - Change of Dominant Wavelength vs. Forward Current

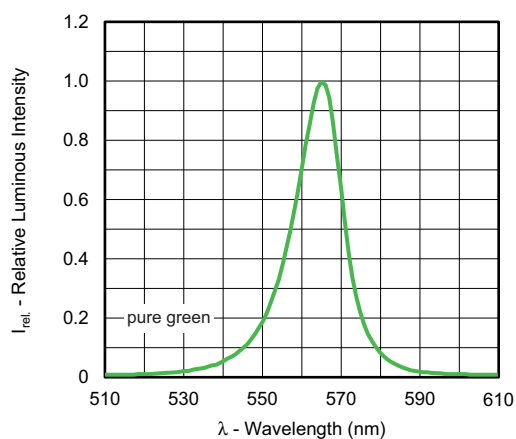


Fig. 10 - Relative Intensity vs. Wavelength

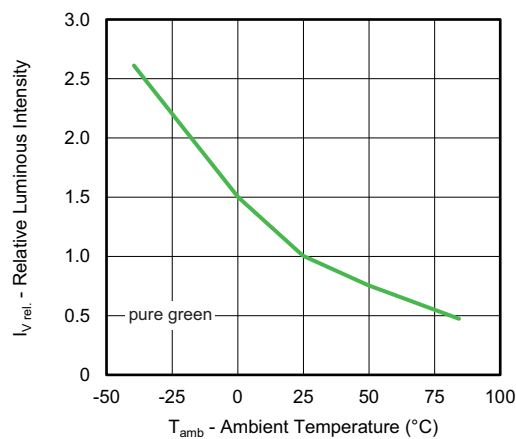


Fig. 13 - Relative Luminous Intensity vs. Ambient Temperature

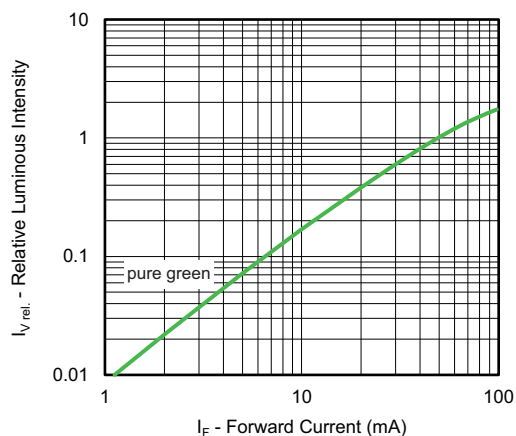


Fig. 11 - Relative Luminous Intensity vs. Forward Current

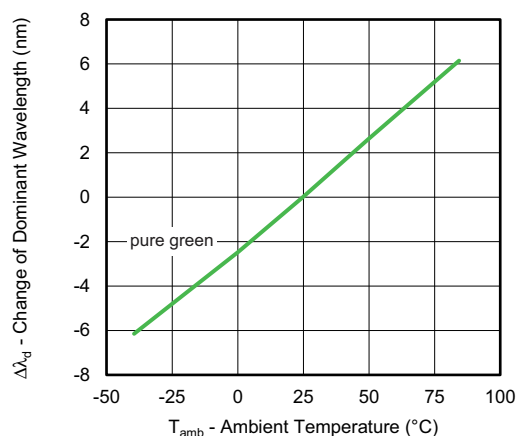


Fig. 14 - Change of Dominant Wavelength vs. Ambient Temperature

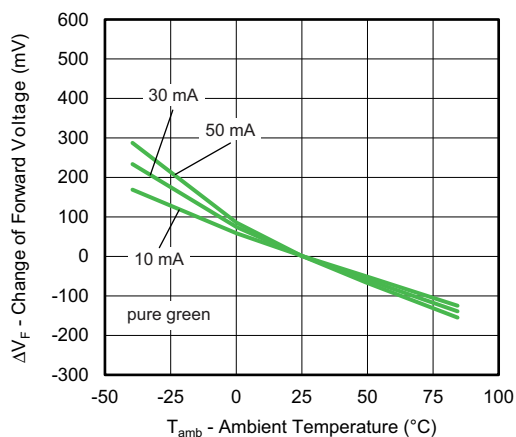
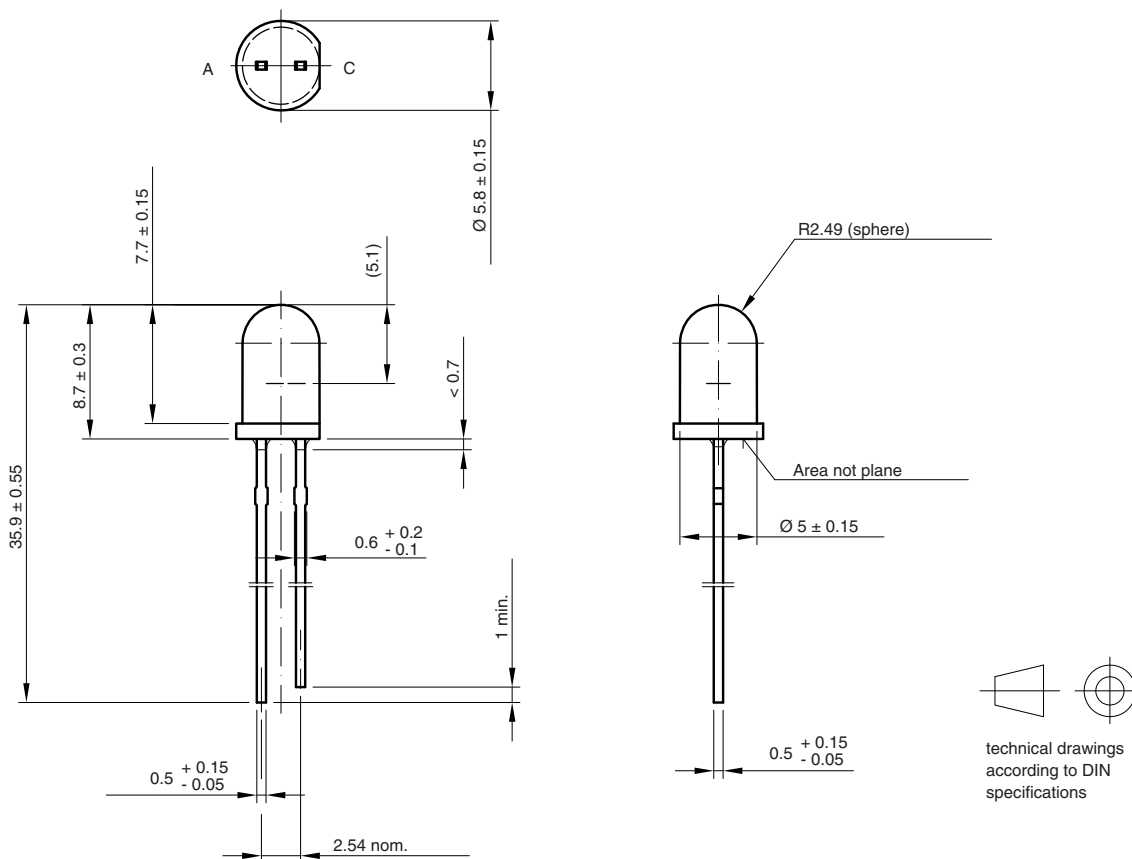


Fig. 15 - Change of Forward Voltage vs. Ambient Temperature

PACKAGE DIMENSIONS in millimeters



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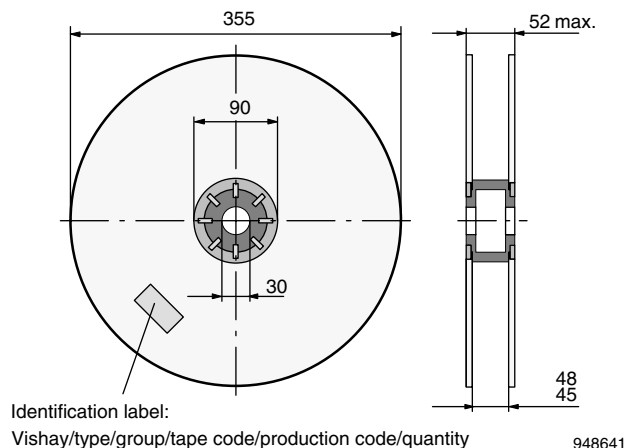
REEL


Fig. 16 - Reel Dimensions

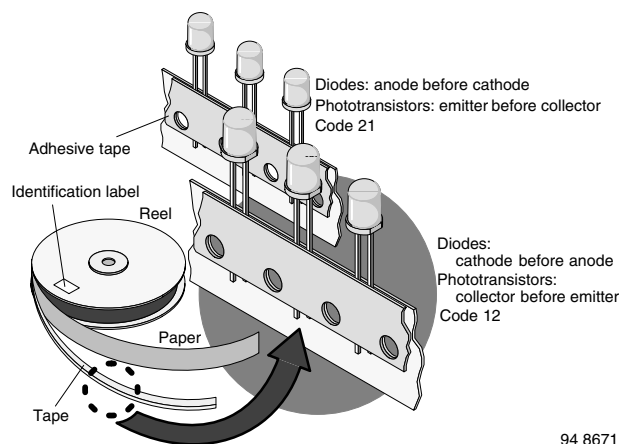
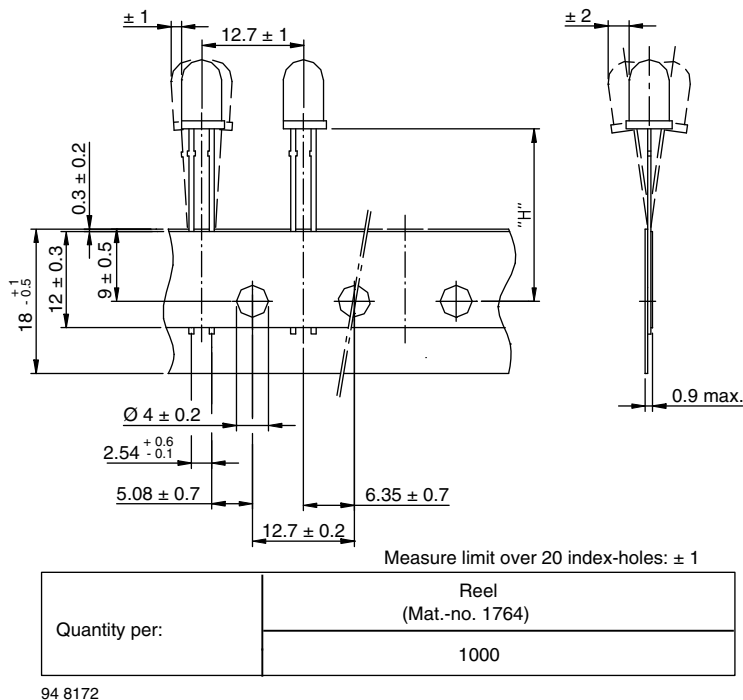
TAPE


Fig. 17 - LED in Tape

AS12 = cathode leaves tape first

AS21 = anode leaves tape first

TAPE DIMENSIONS in millimeters


Option	Dim. "H" ± 0.5 mm
AS	17.3

PACKING INFORMATION		
PART	BULK	TAPE AND REEL
TLCY6100	4000	-
TLCY6100-AS21	-	5 x 1000
TLCPG6100	4000	-



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