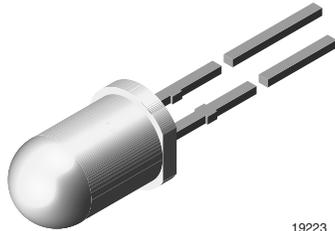


High Efficiency LED, Ø 5 mm Tinted Non-Diffused Package



19223

FEATURES

- Choice of three bright colors
- Standard T-1³/₄ package
- Small mechanical tolerances
- Suitable for DC and high peak current
- Small viewing angle
- Luminous intensity categorized
- Yellow and green color categorized
- TLH.52.. with stand-offs
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC


RoHS
COMPLIANT

DESCRIPTION

The TLH.52.. series was developed for standard applications like general indicating and lighting purposes.

It is housed in a 5 mm tinted non-diffused plastic package. The small viewing angle of these devices provides a high brightness.

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.

APPLICATIONS

- Status lights
- Off/on indicator
- Background illumination
- Readout lights
- Maintenance lights
- Legend light

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 5 mm
- Product series: standard
- Angle of half intensity: $\pm 14^\circ$

PARTS TABLE		
PART	COLOR, LUMINOUS INTENSITY	TECHNOLOGY
TLHR5200	Red, $I_V = 50$ mcd (typ.)	GaAsP on GaP
TLHR5201	Red, $I_V = 60$ mcd (typ.)	GaAsP on GaP
TLHR5205	Red, $I_V = 70$ mcd (typ.)	GaAsP on GaP
TLHY5200	Yellow, $I_V = 50$ mcd (typ.)	GaAsP on GaP
TLHG5200	Green, $I_V = 40$ mcd (typ.)	GaP on GaP
TLHG5201	Green, $I_V = 45$ mcd (typ.)	GaP on GaP
TLHG5201-AS12Z	Green, $I_V = 45$ mcd (typ.)	GaP on GaP
TLHG5205	Green, $I_V = 50$ mcd (typ.)	GaP on GaP
TLHG5205-AS21	Green, $I_V = 50$ mcd (typ.)	GaP on GaP

ABSOLUTE MAXIMUM RATINGS ¹⁾ TLHR520. TLHY520. , TLHG520.				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V_R	6	V
DC Forward current	$T_{amb} \leq 65\text{ }^\circ\text{C}$	I_F	30	mA
Surge forward current	$t_p \leq 10\text{ }\mu\text{s}$	I_{FSM}	1	A
Power dissipation	$T_{amb} \leq 65\text{ }^\circ\text{C}$	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	$t \leq 5\text{ s, } 2\text{ mm from body}$	T_{sd}	260	$^\circ\text{C}$
Thermal resistance junction/ambient		R_{thJA}	350	K/W

Note:

¹⁾ $T_{amb} = 25\text{ }^\circ\text{C}$, unless otherwise specified

OPTICAL AND ELECTRICAL CHARACTERISTICS ¹⁾ TLHR520., RED							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity ²⁾	$I_F = 10\text{ mA}$	TLHR5200	I_V	10	50		mcd
		TLHR5201	I_V	16	60		mcd
		TLHR5205	I_V	25	70		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		± 14		deg
Forward voltage	$I_F = 20\text{ mA}$		V_F		2	3	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$		V_R	6	15		V
Junction capacitance	$V_R = 0, f = 1\text{ MHz}$		C_j		50		pF

Note:

¹⁾ $T_{amb} = 25\text{ }^\circ\text{C}$, unless otherwise specified

²⁾ In one packing unit $I_{Vmin.}/I_{Vmax.} \leq 0.5$

OPTICAL AND ELECTRICAL CHARACTERISTICS ¹⁾ TLHY520., YELLOW							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity ²⁾	$I_F = 10\text{ mA}$	TLHY5200	I_V	10	50		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		± 14		deg
Forward voltage	$I_F = 20\text{ mA}$		V_F		2.4	3	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$		V_R	6	15		V
Junction capacitance	$V_R = 0, f = 1\text{ MHz}$		C_j		50		pF

Note:

¹⁾ $T_{amb} = 25\text{ }^\circ\text{C}$, unless otherwise specified

²⁾ In one packing unit $I_{Vmin.}/I_{Vmax.} \leq 0.5$

OPTICAL AND ELECTRICAL CHARACTERISTICS ¹⁾ TLHG520., GREEN							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity ²⁾	$I_F = 10 \text{ mA}$	TLHG5200	I_V	16	40		mcd
		TLHG5201	I_V	25	45		mcd
		TLHG5205	I_V	40	50		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		± 14		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

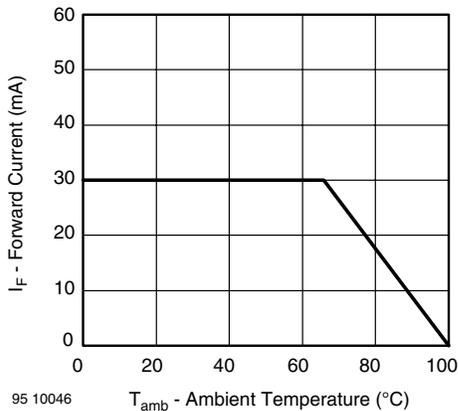
Note:

¹⁾ $T_{amb} = 25 \text{ }^\circ\text{C}$, unless otherwise specified

²⁾ In one packing unit $I_{Vmin.}/I_{Vmax.} \leq 0.5$

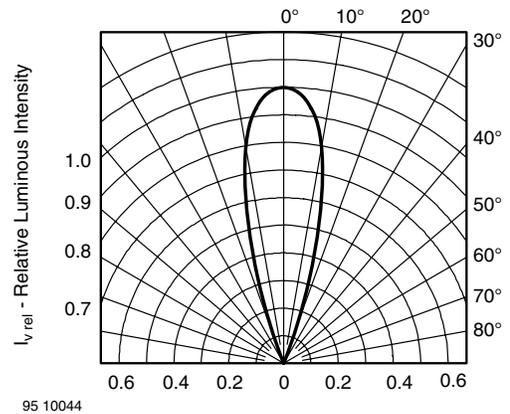
TYPICAL CHARACTERISTICS

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



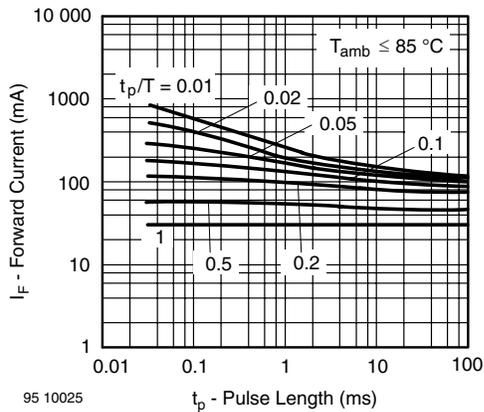
95 10046 T_{amb} - Ambient Temperature ($^\circ\text{C}$)

Figure 1. Forward Current vs. Ambient Temperature



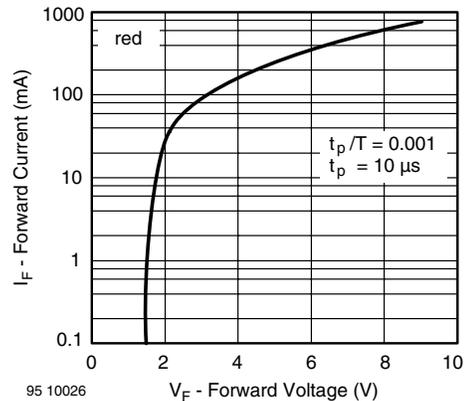
95 10044

Figure 3. Rel. Luminous Intensity vs. Angular Displacement



95 10025

Figure 2. Forward Current vs. Pulse Length



95 10026

Figure 4. Forward Current vs. Forward Voltage

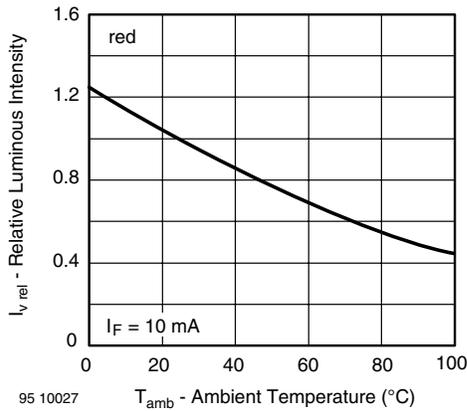


Figure 5. Rel. Luminous Intensity vs. Ambient Temperature

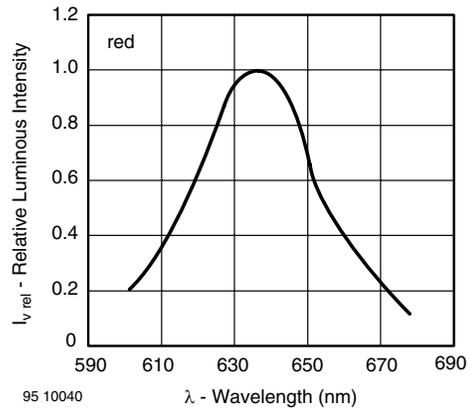


Figure 8. Relative Intensity vs. Wavelength

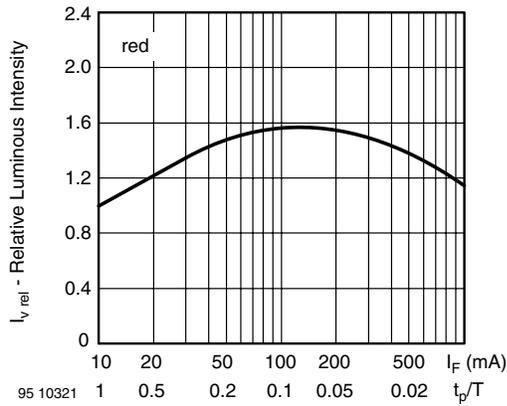


Figure 6. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

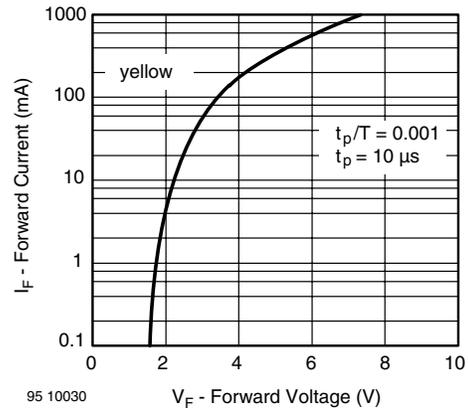


Figure 9. Forward Current vs. Forward Voltage

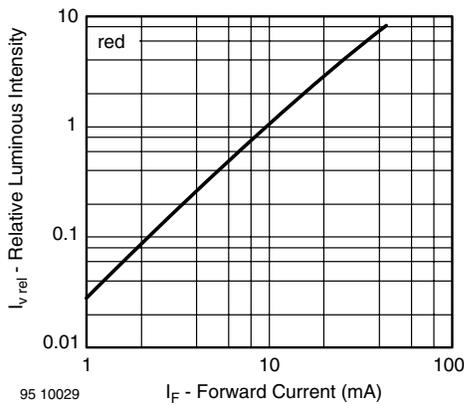


Figure 7. Relative Luminous Intensity vs. Forward Current

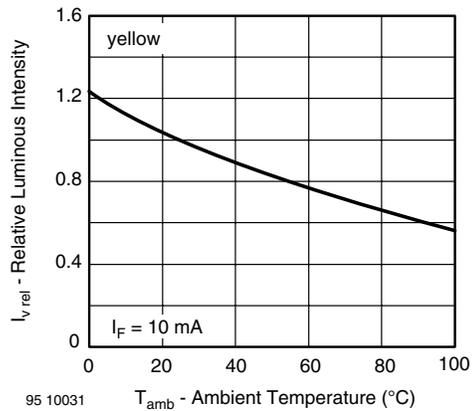


Figure 10. Rel. Luminous Intensity vs. Ambient Temperature

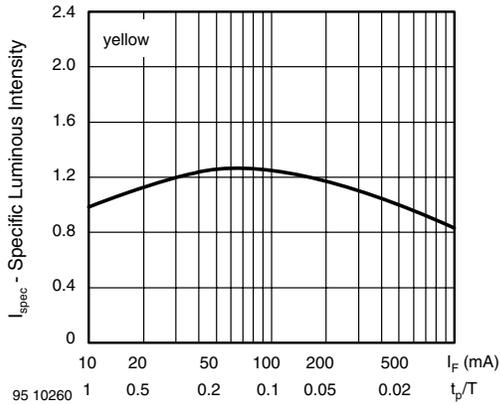


Figure 11. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

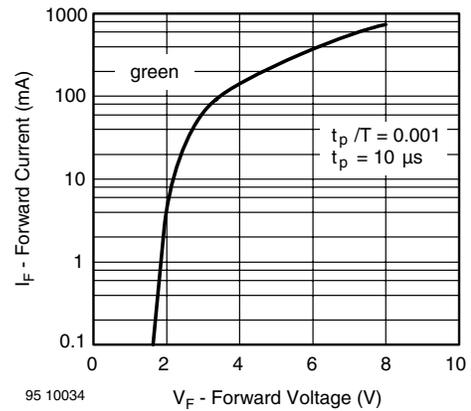


Figure 14. Forward Current vs. Forward Voltage

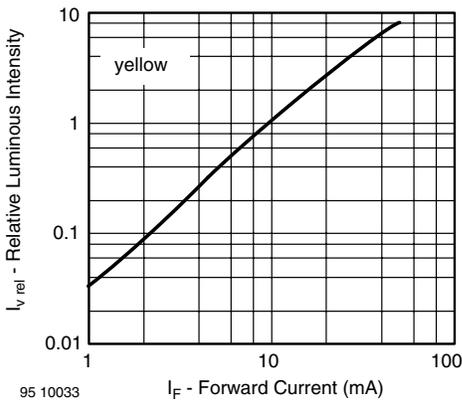


Figure 12. Relative Luminous Intensity vs. Forward Current

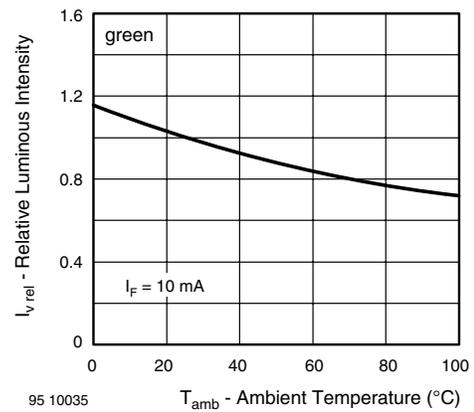


Figure 15. Rel. Luminous Intensity vs. Ambient Temperature

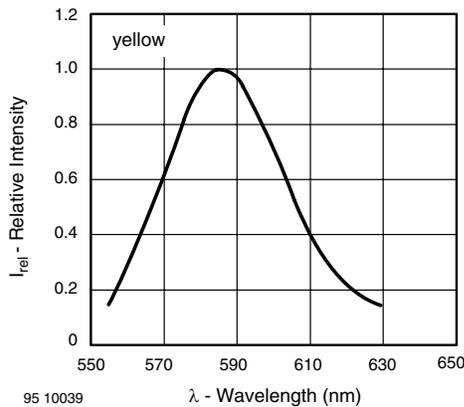


Figure 13. Relative Intensity vs. Wavelength

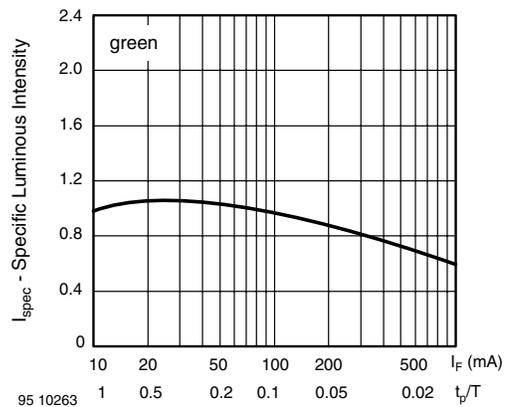


Figure 16. Specific Luminous Intensity vs. Forward Current

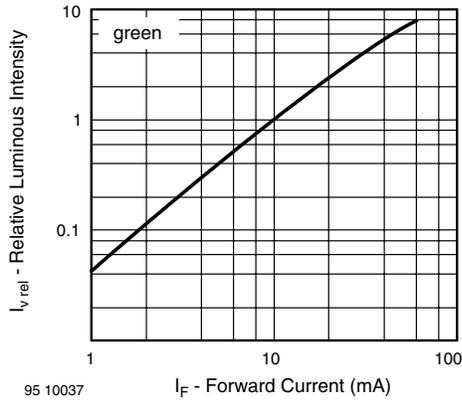


Figure 17. Relative Luminous Intensity vs. Forward Current

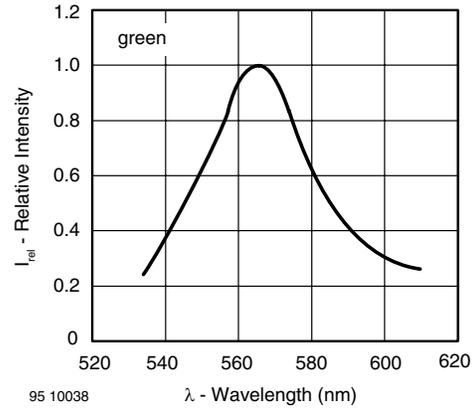
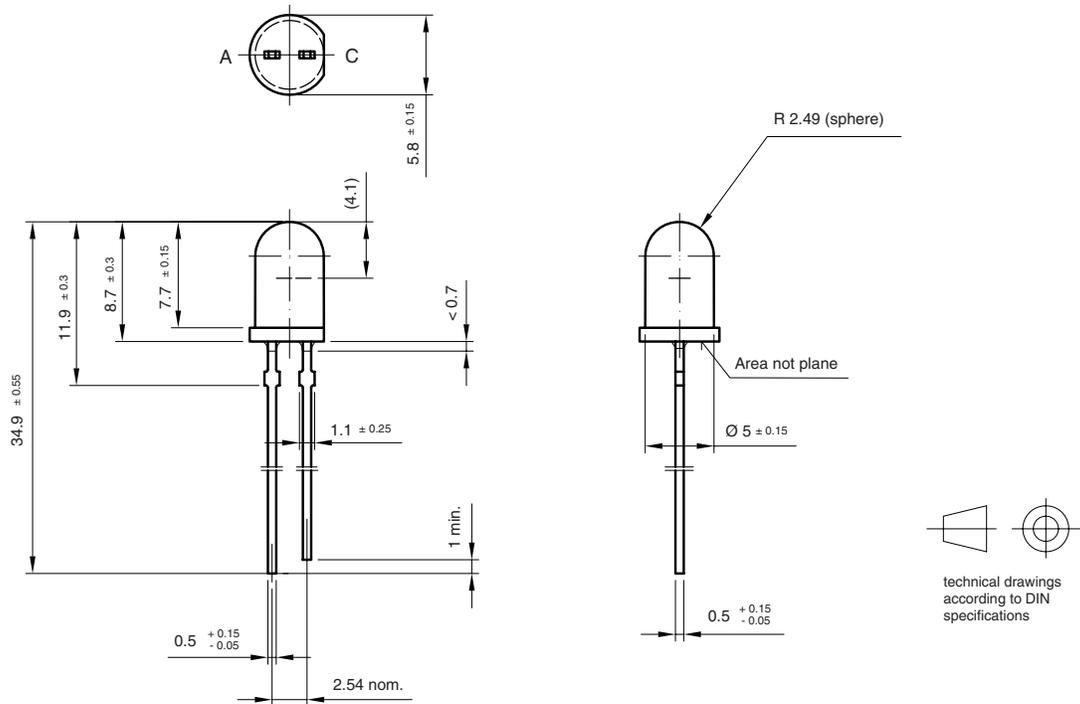


Figure 18. Relative Intensity vs. Wavelength

PACKAGE DIMENSIONS in millimeters



6.544-5258.01-4
Issue: 5; 19.05.09
96 12119

REEL

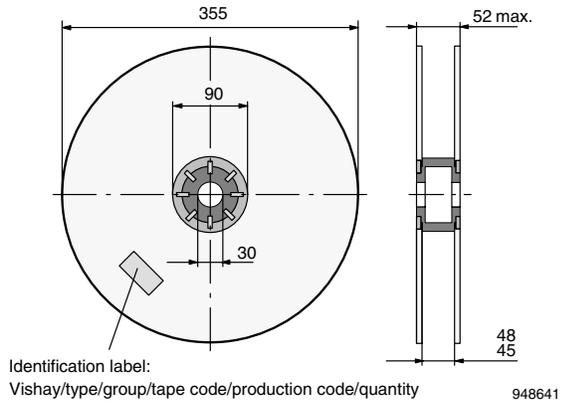


Figure 19. Reel Dimensions

AS12 = cathode leaves tape first
AS21 = anode leaves tape first

AMMOPACK

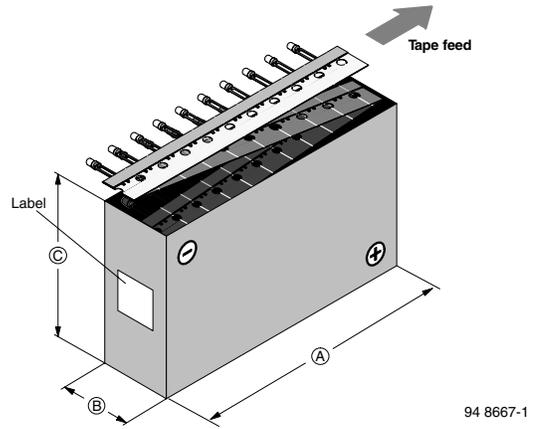


Figure 21. Tape Direction

Note:
AS12Z and AS21Z still valid for already existing types BUT NOT FOR NEW DESIGN

TAPE

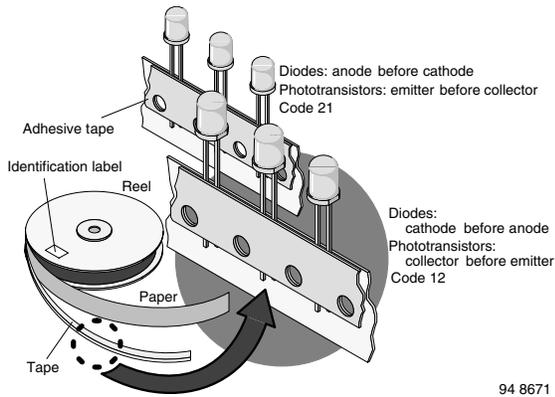
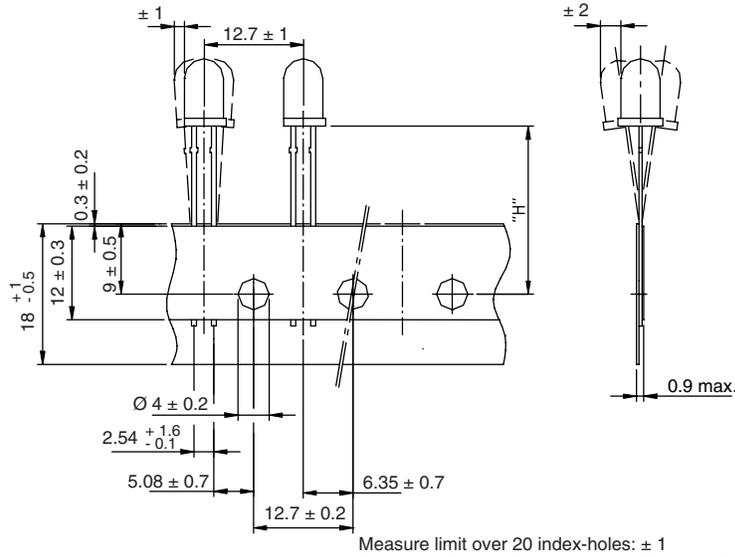


Figure 20. LED in Tape

TAPE DIMENSIONS



Quantity per:	Reel (Mat.-no. 1764)
	1000

94 8172

Option	Dim. "H" ± 0.5 mm
AS	17.3



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk and agree to fully indemnify and hold Vishay and its distributors harmless from and against any and all claims, liabilities, expenses and damages arising or resulting in connection with such use or sale, including attorneys fees, even if such claim alleges that Vishay or its distributor was negligent regarding the design or manufacture of the part. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.