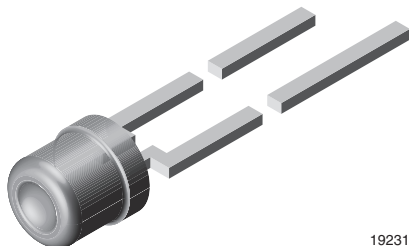


# DH Backlighting LED in Ø 3 mm Tinted Non-Diffused Package



19231

## DESCRIPTION

The TLVD42.... series was developed for backlighting in the extrem bright double heterojunction (DH) red GaAlAs on GaAs technology. Due to its special shape the spatial distribution of the radiation is qualified for backlighting.

To optimize the brightness of backlighting a custom-built reflector (with scattering) is required. Uniform illumination can be enhanced by covering the front of the reflector with diffusor material.

This is a bright and flexible solution for backlighting different areas.

## PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 3 mm backlighting
- Product series: standard
- Angle of half intensity:  $\pm 85^\circ$

## FEATURES

- High brightness
- Wide viewing angle
- Categorized for luminous flux
- Available in DH red
- Tinted clear package
- Low power dissipation
- Low self heating
- Rugged design
- High reliability
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

## APPLICATIONS

- Backlighting of display panels, LCD displays, symbols on switches, keyboards, graphic boards, and measuring scales
- Illumination of large areas e.g. dot matrix displays

## PARTS TABLE

PART	COLOR	LUMINOUS FLUX (mlm)			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.		
TLVD42Q1S2	Red	71	80	280	15	630	640	650	10	-	1.8	2.2	20	GaAlAs on GaAs
TLVD42R1S2	Red	112	130	280	15	630	640	650	10	-	1.8	2.2	20	GaAlAs on GaAs

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

### TLVD42....

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		$V_R$	6	V
DC forward current		$I_F$	50	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		$T_{amb}$	- 40 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)  
**TLVD42...., RED**

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux	$I_F = 15\text{ mA}$	TLVD42Q1S2	$\phi_V$	71	80	280	mIm
		TLVD42R1S2	$\phi_V$	112	130	280	mIm
Dominant wavelength	$I_F = 10\text{ mA}$	$\lambda_d$	$\lambda_d$	630	640	650	nm
Peak wavelength	$I_F = 10\text{ mA}$	$\lambda_p$	$\lambda_p$	-	650	-	nm
Angle of half intensity	$I_F = 10\text{ mA}$	$\phi$	$\phi$	-	$\pm 85$	-	deg
Forward voltage	$I_F = 20\text{ mA}$	$V_F$	$V_F$	-	1.8	2.2	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$	$V_R$	$V_R$	6	15	-	V
Junction capacitance	$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$	$C_j$	$C_j$	-	50	-	pF

**LUMINOUS FLUX CLASSIFICATION**

GROUP	LUMINOUS FLUX (mIm)		
	OPTIONAL	MIN.	MAX.
Q	1	71	90
	2	90	112
R	1	112	140
	2	140	180
S	1	180	224
	2	224	280

**Note**

- Luminous flux 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 in 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 on any one bag.  
In order to ensure availability, single wavelength groups will not be orderable.

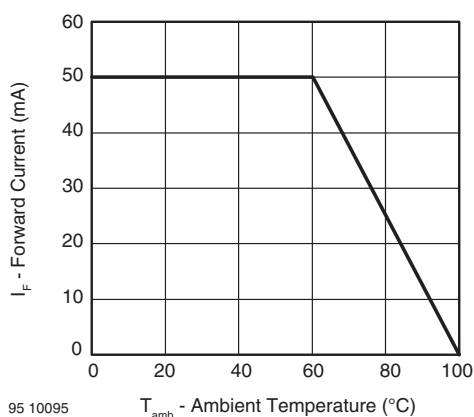
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25^{\circ}\text{C}$ , unless otherwise specified)


Fig. 1 - Forward Current vs. Ambient Temperature

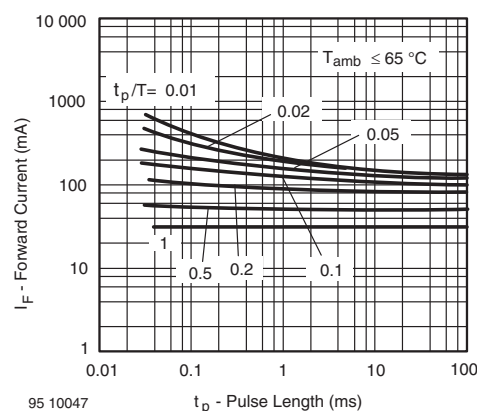


Fig. 2 - Forward Current vs. Pulse Length

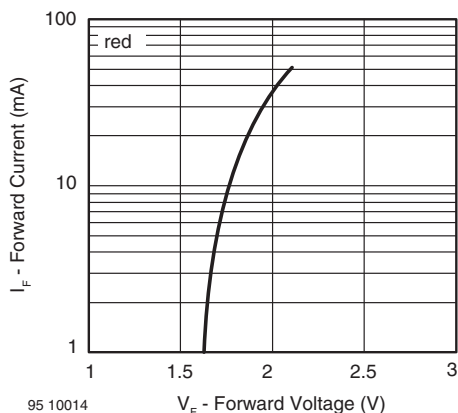


Fig. 3 - Forward Current vs. Forward Voltage

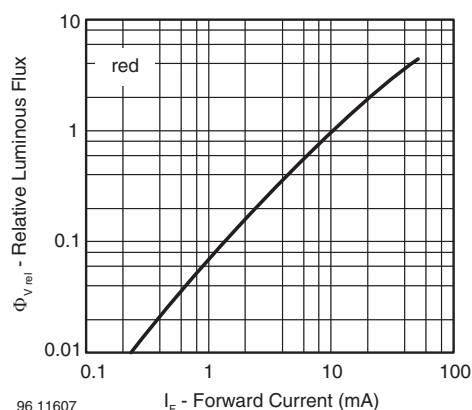


Fig. 6 - Relative Luminous Flux vs. Forward Current

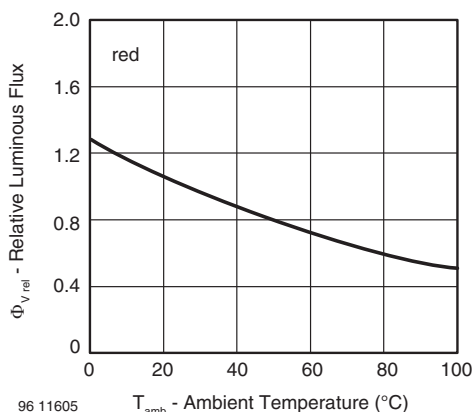


Fig. 4 - Relative Luminous Flux vs. Ambient Temperature

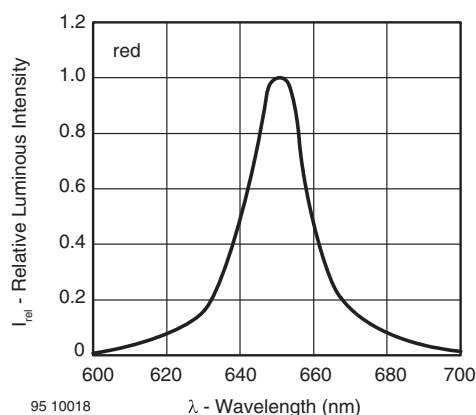


Fig. 7 - Relative Intensity vs. Wavelength

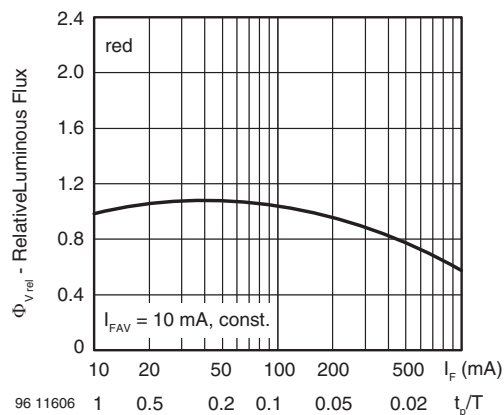


Fig. 5 - Relative Luminous Flux vs. Forward Current/Duty Cycle

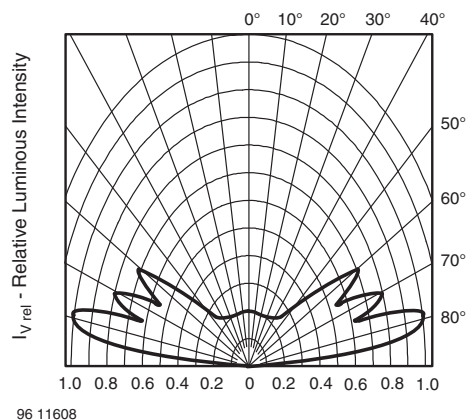

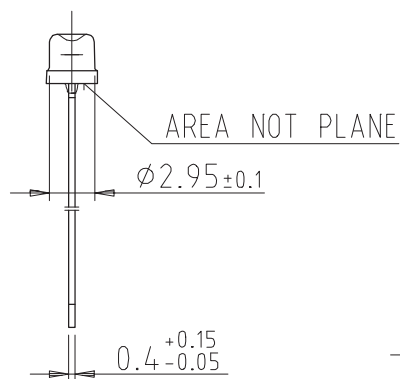
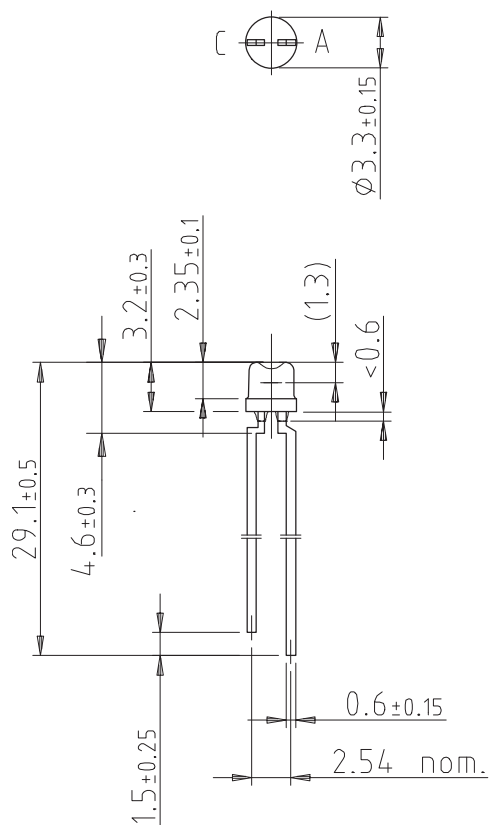


Fig. 8 - Relative Luminous Intensity vs. Angular Displacement for 90° Emission Angle

### PACKAGE DIMENSIONS in millimeters



technical drawings  
according to DIN  
specifications

9510953



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