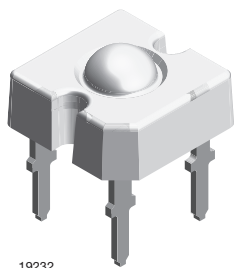


## TELUX LED



19232

### DESCRIPTION

The VLWTG9600 is a clear, non diffused LED for applications where high luminous flux is required.

It is designed in an industry standard 7.62 mm square package utilizing highly developed InGaN technology.

The supreme heat dissipation of VLWTG9600 allows applications at high ambient temperatures.

All packing units are binned for luminous flux, forward voltage and color to achieve the most homogenous light appearance in application.

### PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: TELUX
- Product series: power
- Angle of half intensity:  $\pm 30^\circ$

### FEATURES

- High luminous flux
- Supreme heat dissipation:  $R_{thJP}$  is 90 K/W
- High operating temperature:  
 $T_{amb} = -40^\circ\text{C}$  to  $+110^\circ\text{C}$
- Packed in tubes for automatic insertion
- Luminous flux and color categorized for each tube
- Small mechanical tolerances allow precise usage of external reflectors or lightguides
- Compatible with wave solder processes according to CECC 00802 and J-STD-020
- ESD-withstand voltage: Up to 1 kV according to JESD22-A114-B
- AEC-Q101 qualified
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

AUTOMOTIVE  
GRADE

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

### APPLICATIONS

- Exterior lighting
- Replaces small incandescent lamps
- Traffic signals and signs

### 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.		
VLWTG9600	True green	2000	2500	-	50	509	523	535	50	-	3.9	4.7	50	InGaN on SiC

### ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25^\circ\text{C}$ , unless otherwise specified) VLWTG9600

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage	$I_R = 10 \mu\text{A}$	$V_R$	5	V
DC forward current	$T_{amb} \leq 50^\circ\text{C}$	$I_F$	50	mA
Surge forward current	$t_p \leq 10 \mu\text{s}$	$I_{FSM}$	0.1	A
Power dissipation		$P_V$	230	mW
Junction temperature		$T_j$	100	$^\circ\text{C}$
Operating temperature range		$T_{amb}$	-40 to +110	$^\circ\text{C}$
Storage temperature range		$T_{stg}$	-55 to +110	$^\circ\text{C}$
Soldering temperature	$t \leq 5 \text{ s}$ , 1.5 mm from body preheat temperature $100^\circ\text{C}/30 \text{ s}$	$T_{sd}$	260	$^\circ\text{C}$
Thermal resistance junction/ambient	With cathode heatsink of $70 \text{ mm}^2$	$R_{thJA}$	200	K/W
Thermal resistance junction/pin		$R_{thJP}$	90	K/W

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)  
**VLWTG9600, TRUE GREEN**

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Total flux	$I_F = 50\text{ mA}$ , $R_{thJA} = 200\text{ K/W}$	$\phi_V$	2000	2500	-	lm
Luminous intensity/total flux	$I_F = 50\text{ mA}$ , $R_{thJA} = 200\text{ K/W}$	$I_V/\phi_V$	-	0.8	-	mcd/lm
Dominant wavelength	$I_F = 50\text{ mA}$ , $R_{thJA} = 200\text{ K/W}$	$\lambda_d$	509	523	535	nm
Peak wavelength	$I_F = 50\text{ mA}$ , $R_{thJA} = 200\text{ K/W}$	$\lambda_p$	-	518	-	nm
Angle of half intensity	$I_F = 50\text{ mA}$ , $R_{thJA} = 200\text{ K/W}$	$\varphi$	-	$\pm 30$	-	deg
Total included angle	90 % of total flux captured	$\varphi_{0.9V}$	-	75	-	deg
Forward voltage	$I_F = 50\text{ mA}$ , $R_{thJA} = 200\text{ K/W}$	$V_F$	-	3.9	4.7	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$	$V_R$	5	10	-	V
Junction capacitance	$V_R = 0$ , $f = 1\text{ MHz}$	$C_j$	-	50	-	pF
Temperature coefficient of $< \lambda_{dom}$	$I_F = 30\text{ mA}$	$T_C\lambda_{dom}$	-	0.02	-	nm/K

**LUMINOUS FLUX CLASSIFICATION**

GROUP	LUMINOUS FLUX (lm)	
	MIN.	MAX.
D	2000	3000
E	2500	3600
F	3000	4200

**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 tube (there will be no mixing of two groups on each tube).  
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 tube.  
In order to ensure availability, single wavelength groups will not be orderable.

**COLOR CLASSIFICATION**

GROUP	DOM. WAVELENGTH (nm)	
	MIN.	MAX.
2	509	517
3	515	523
4	521	529
5	527	535

**Note**

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

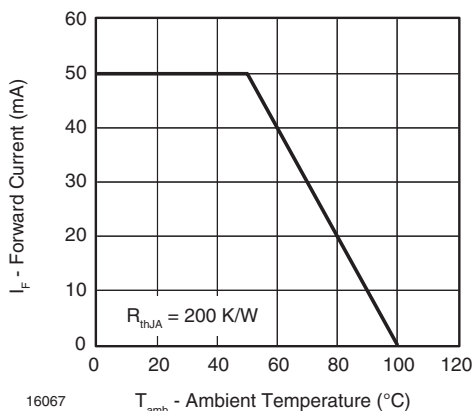
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


Fig. 1 - Forward Current vs. Ambient Temperature for InGaN

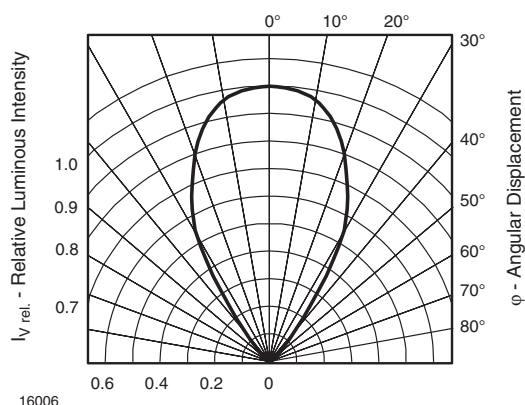


Fig. 2 - Relative Luminous Intensity vs. Angular Displacement

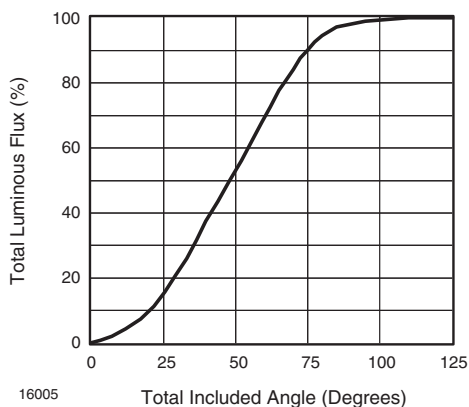


Fig. 3 - Percentage Total Luminous Flux vs. Total Included Angle for 90° Emission Angle

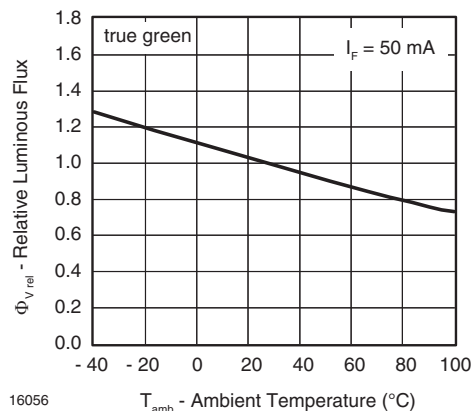


Fig. 6 - Relative Luminous Flux vs. Ambient Temperature

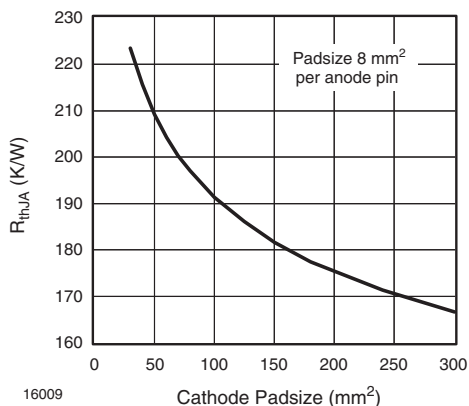


Fig. 4 - Thermal Resistance Junction Ambient vs. Cathode Padsize

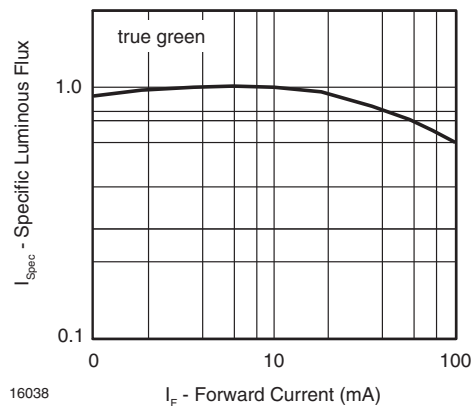


Fig. 7 - Specific Luminous Flux vs. Forward Current

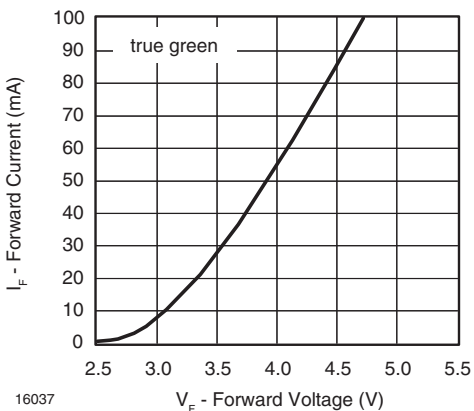


Fig. 5 - Forward Current vs. Forward Voltage

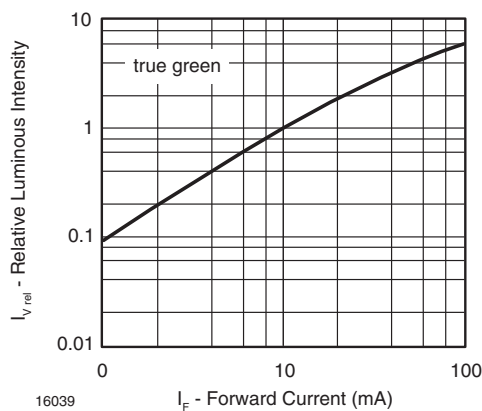


Fig. 8 - Relative Luminous Intensity vs. Forward Current

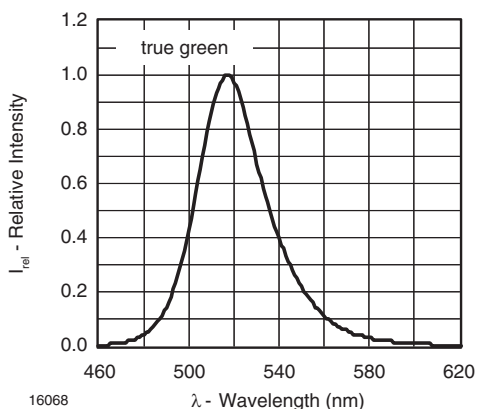


Fig. 9 - Relative Intensity vs. Wavelength

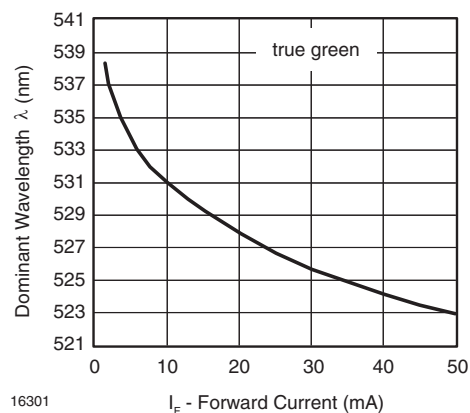
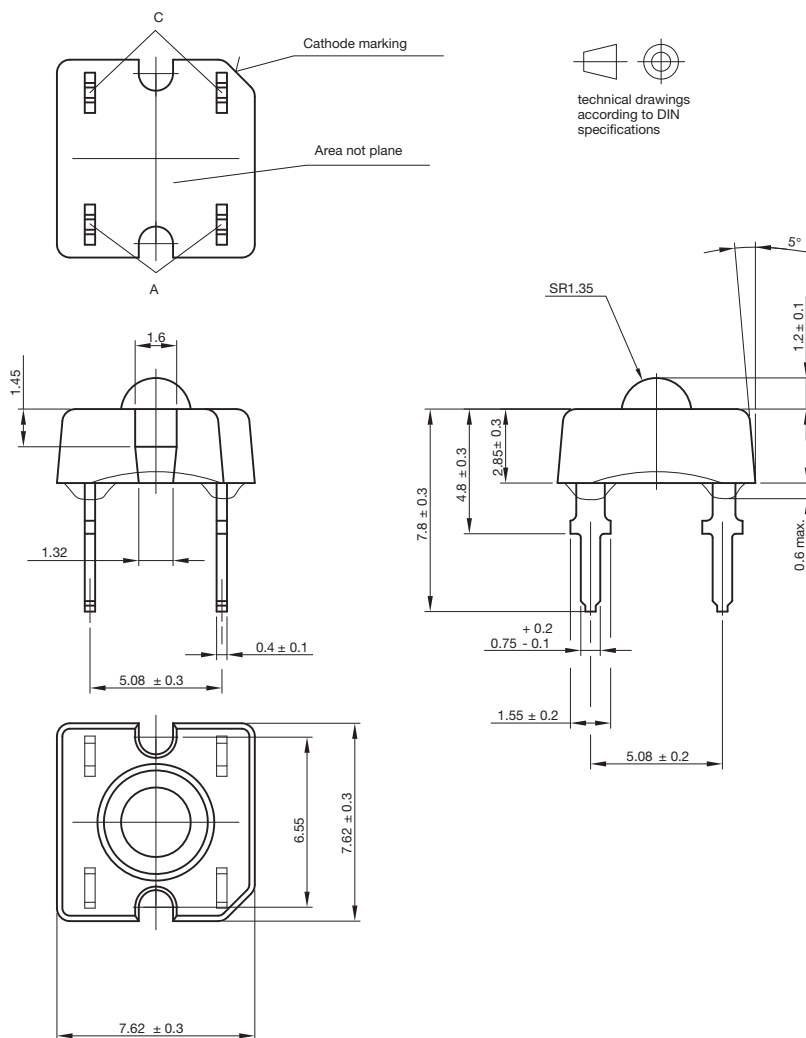
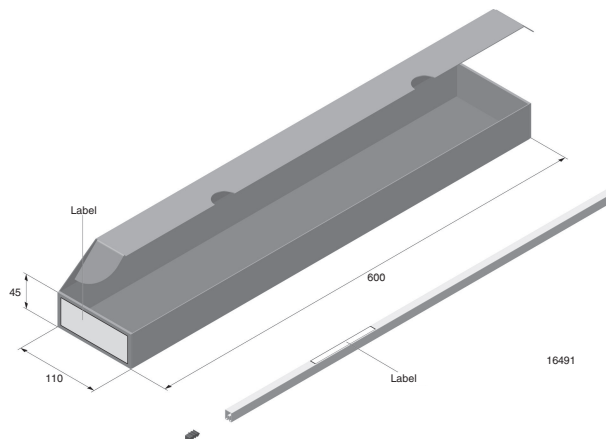
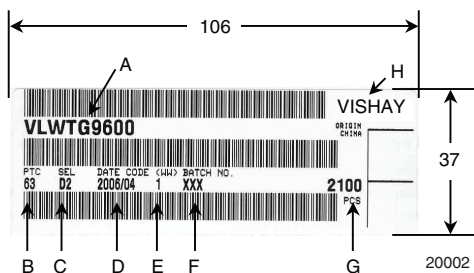


Fig. 10 - Dominant Wavelength vs. Forward Current

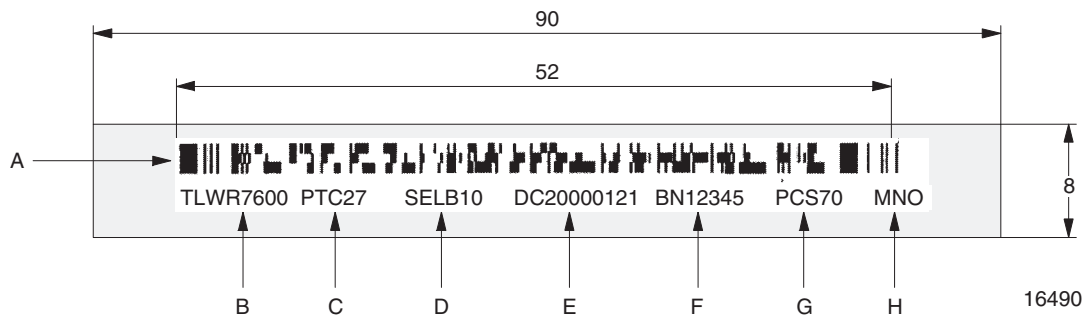
### PACKAGE DIMENSIONS in millimeters



Drawing-No.: 6.544-5321.02-4  
Issue: 3; 26.06.06  
16004

**FAN FOLD BOX DIMENSIONS** in millimeters

**LABEL OF FAN FOLD BOX**


- A. Type of component
- B. Manufacturing plant
- C. SEL - selection code (bin):  
e.g.: D = code for luminous intensity group  
2 = code for color group
- D. Date code year/week
- E. Day code (e.g. 1: Monday)
- F. Batch: no.
- G. Total quantity
- H. Company code

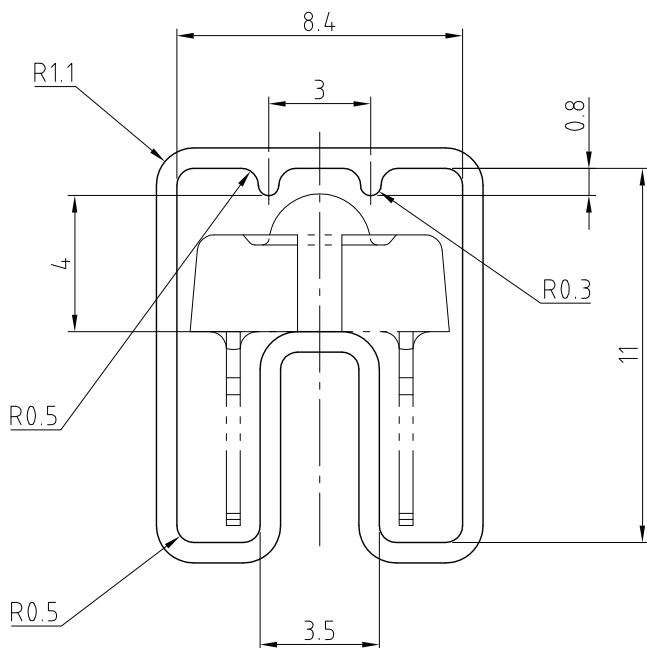
**EXAMPLE FOR TELUX TUBE LABEL DIMENSIONS** in millimeters


- A. Bar code
- B. Type of component
- C. Manufacturing plant
- D. SEL - selection code (bin):  
digit 1 - code for luminous flux group  
digit 2 - code for dominant wavelength group  
digit 3 - code for forward voltage group
- E. Date code
- F. Batch: no.
- G. Total quantity
- H. Company code

**TUBE WITH BAR CODE LABEL DIMENSIONS** in millimeters

"X"

90° gedreht / 90° turned



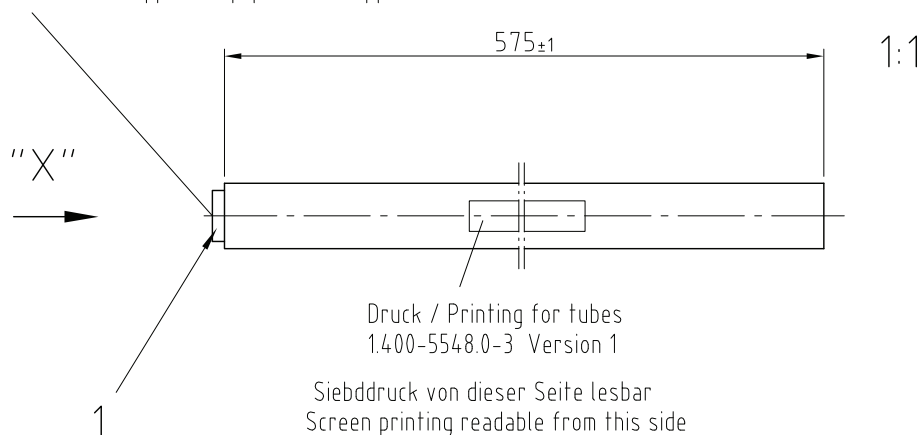
Wanddicke/wall thickness:  $0.6 \pm 0.1$

Geradheit/Straightness 2

Schnittwinkel/cut  $90^\circ \pm 1^\circ$

Geprüft nach/approved to: LV 5145

Bestücken mit 1 Stopper / equip with 1 stopper



Druck / Printing for tubes  
1.400-5548.0-3 Version 1

Siebdruck von dieser Seite lesbar  
Screen printing readable from this side

Drawing-No.: 9.700-5223.0-4

Rev. 2; Date: 23.08.99

20438

Drawing Proportions not Scaled



## 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. 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.

## Material Category Policy

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.**

**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.**

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Vishay:](#)

[VLWTG9600](#)