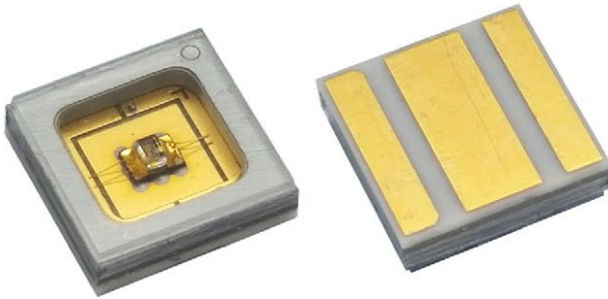


## UVC Emitting Diode in SMD Package



### DESCRIPTION

VLMU60CL..-280-125 is a ceramic based standard power UVC LED with quartz lens for long life time. The package size is 6 mm x 6 mm x 1.6 mm and the radiant power up to 3.3 mW at 20 mA in a wavelength range of 270 nm to 290 nm.

### PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: SMD ceramic
- Product series: standard power UV LED
- Angle of half intensity:  $\pm 62.5^\circ$
- Lead-finishing: Au

### FEATURES

- Ceramic SMT package with quartz lens
- Dimension (L x W x H) in mm: 6 x 6 x 1.6
- Forward current: up to 40 mA
- Radiant power (typ.): 2.4 mW at 20 mA
- Leads / terminations finish: gold plated (Au)
- Reflow soldering method
- MSL 3 according to J-STD-020
- Material categorization:  
for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### APPLICATIONS

- Sterilization
- Medical application
- Sensing of gases, germs, DNA, ...

### SAFETY ADVICES

Depending on the mode of operation, these devices emit highly concentrated non visible ultraviolet light which can be hazardous to the human eye. Products which incorporate these devices have to follow the safety precautions given in IEC 62471 "Photobiological Safety of Lamps and Lamp Systems".

### PARTS TABLE

PART	COLOR	RADIANT POWER (mW)			at I <sub>F</sub> (mA)	WAVELENGTH (nm)			at I <sub>F</sub> (mA)	FORWARD VOLTAGE (V)			at I <sub>F</sub> (mA)	TECHNOLOGY
		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		
VLMU60CL00-280-125	Ultraviolet	1.4	2.4	3.8	20	270	280	290	20	4.4	6.2	7.5	20	AlGaIn

### ABSOLUTE MAXIMUM RATINGS (T<sub>amb</sub> = 25 °C, unless otherwise specified)

#### VLMU60CL..-280-125

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
DC forward current		I <sub>F</sub>	40	mA
Power dissipation		P <sub>V</sub>	0.3	W
Electrostatic discharge	HBM: MIL-STD-883 C 3B	ESD	2000	V
Junction temperature		T <sub>j</sub>	+90	°C
Operating temperature range		T <sub>amb</sub>	-30 to +80	°C
Storage temperature range		T <sub>stg</sub>	-40 to +100	°C
Solder temperature		T <sub>sol</sub>	260	°C

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)  
**VLMU60CL00-280-125, ULTRAVIOLET**

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 20\text{ mA}$	$V_F$	4.4	6.2	7.5	V
Radiant power	$I_F = 20\text{ mA}$	$\phi_e$	1.4	2.4	3.8	mW
Peak wavelength	$I_F = 20\text{ mA}$	$\lambda_p$	270	280	290	nm
Angle of half intensity	$I_F = 20\text{ mA}$	$\varphi$	-	$\pm 62.5$	-	deg
Thermal resistance junction to solder pin		$R_{thJS}$	-	35	-	K/W

**Note**

- Tolerances:  $\pm 11\%$  for  $\phi_e$ ,  $\pm 0.1\text{ V}$  for  $V_F$ ,  $\pm 3\text{ nm}$  for  $\lambda_p$

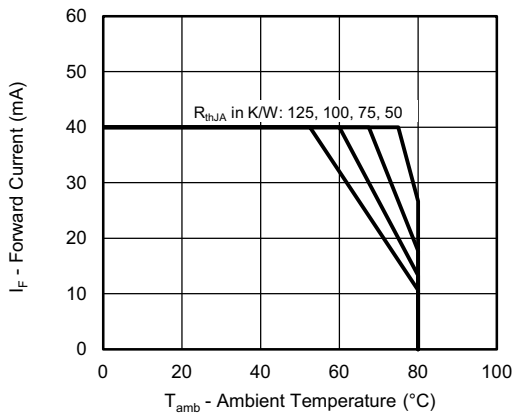
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


Fig. 1 - Maximum Forward Current vs. Ambient Temperature

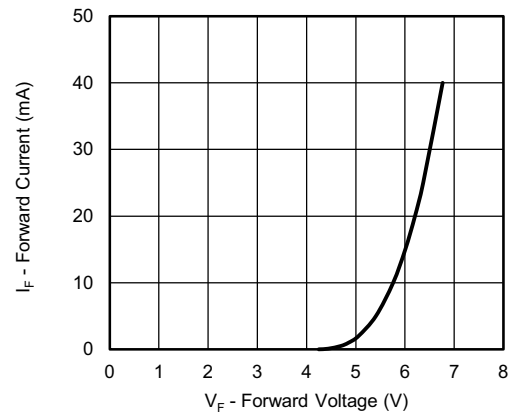


Fig. 3 - Forward Current vs. Forward Voltage

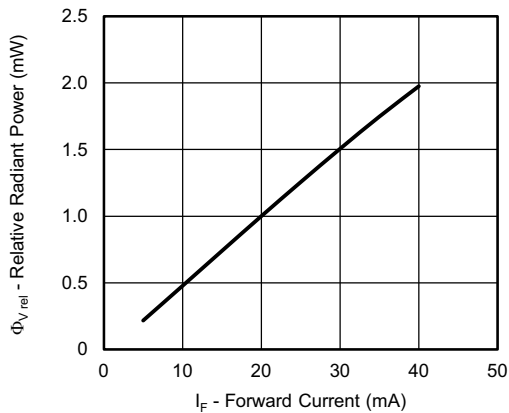


Fig. 2 - Relative Radiant Power vs. Forward Current

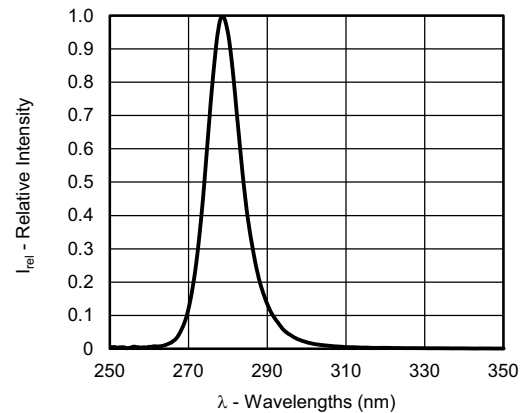


Fig. 4 - Relative Spectral Power vs. Wavelength

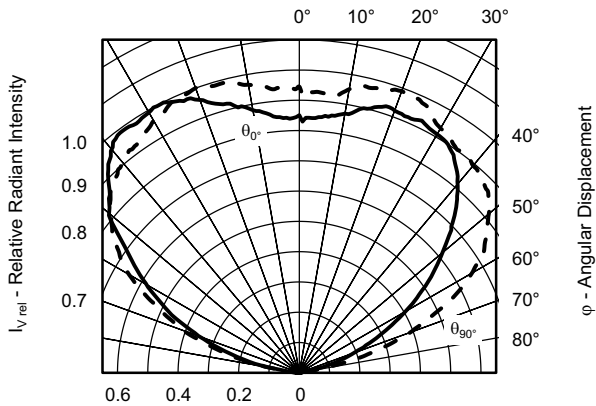


Fig. 5 - Relative Radiant Intensity vs. Angular Displacement

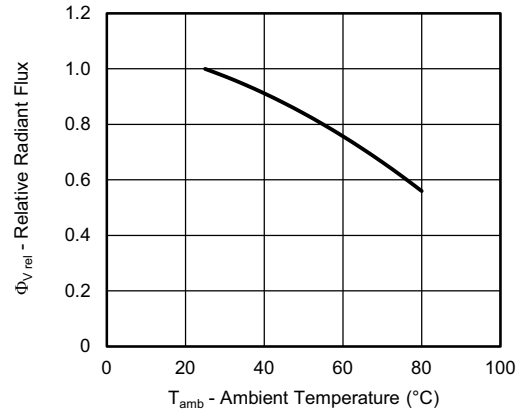
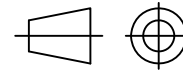
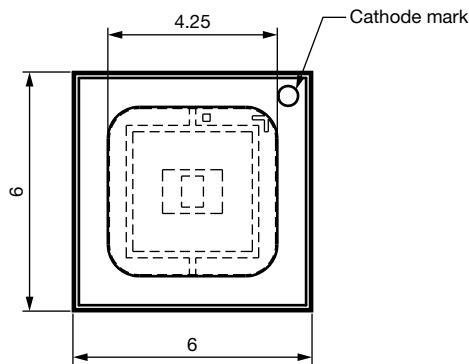


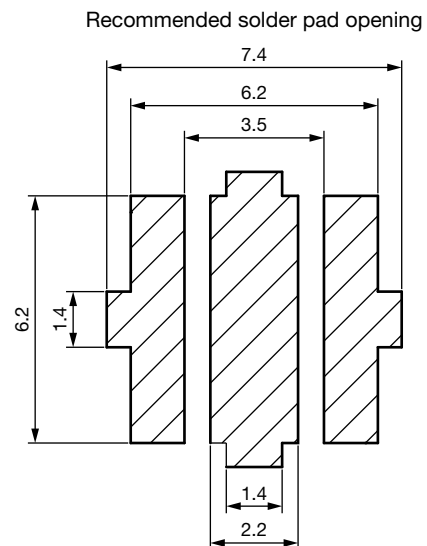
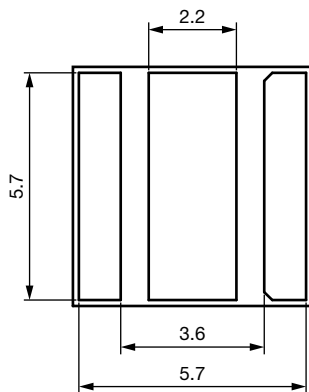
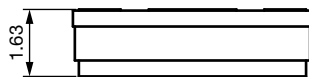
Fig. 6 - Relative Radiant Flux vs. Ambient Temperature

**PACKAGE DIMENSIONS** in millimeters



Technical drawings according to DIN specification.

Not indicated tolerances ± 0.2



**WIRING**

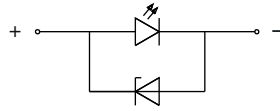
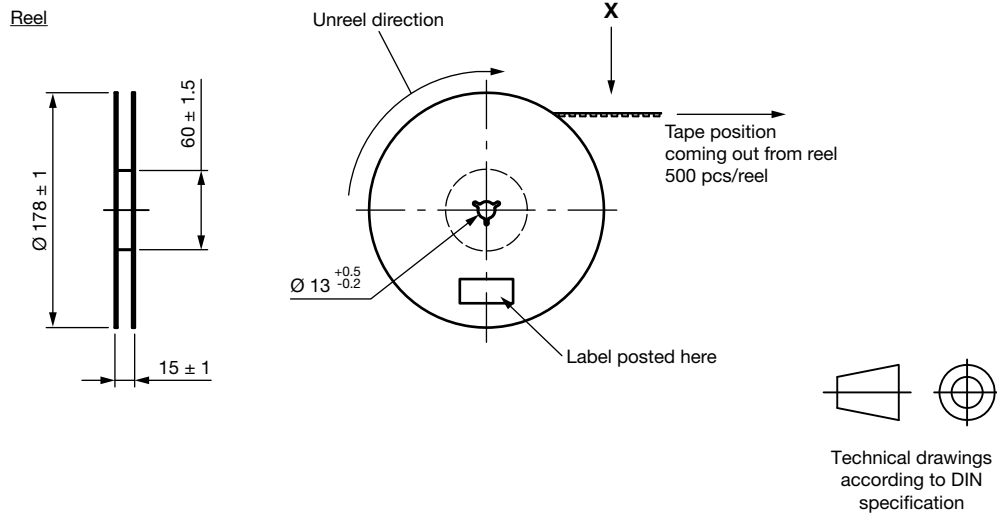
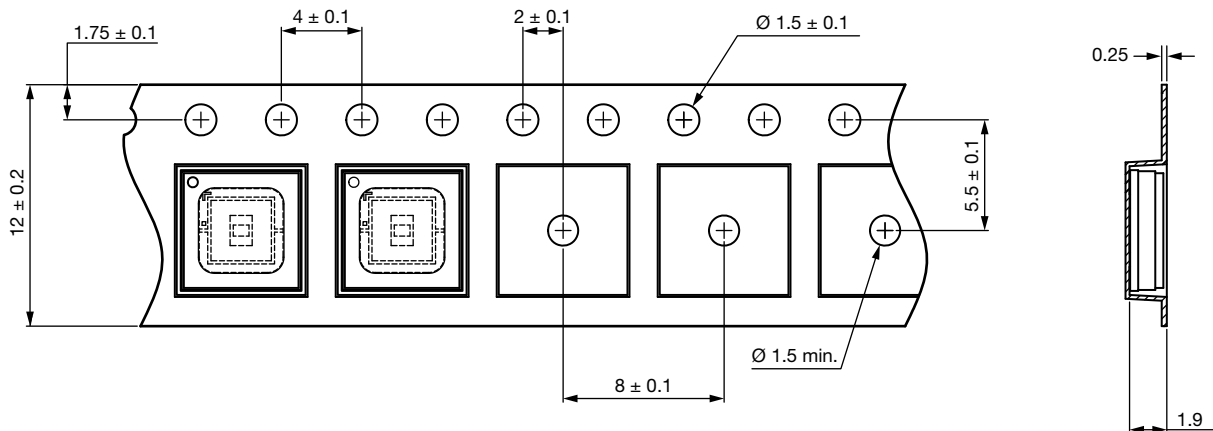
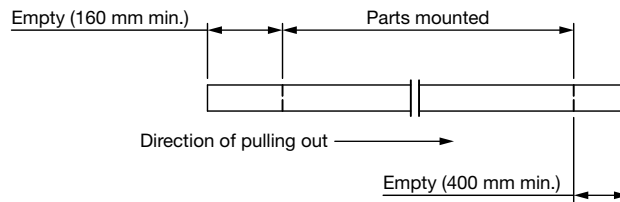


Fig. 7 - Wiring Diagram

**TAPE AND REEL DIMENSIONS** in millimeters



Leader and trailer tape



**SOLDERING PROFILE**

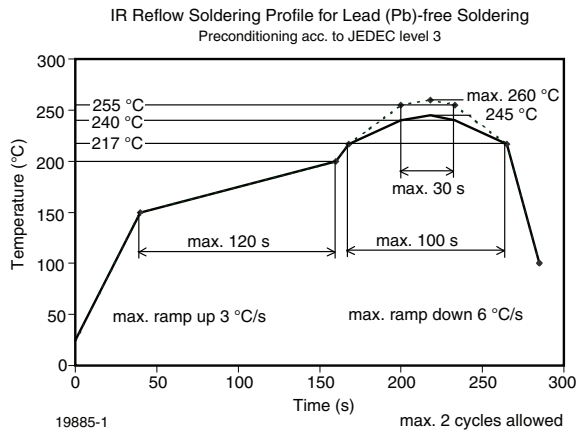


Fig. 8 - Vishay Lead (Pb)-free Reflow Soldering Profile (acc. to J-STD-020C)

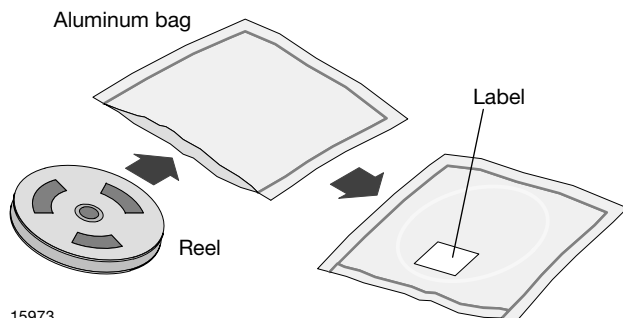
**BAR CODE PRODUCT LABEL (example only)**



- a. 2D barcode
- b. Vishay part number
- c. Quantity
- d. SEL = selection code (binning)
- e. Code of manufacturing plant
- f. Batch = date code: year / week / plant code
- g. Region code
- h. SL = sales location
- i. Terminations finishing
- j. Lead (Pb)-free symbol
- k. Halogen-free symbol
- l. RoHS symbol

**DRY PACKING**

The reel is packed in an anti-humidity bag to protect the devices from absorbing moisture during transportation and storage.



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**FINAL PACKING**

The sealed reel is packed into a cardboard box. A secondary cardboard box is used for shipping purposes.

**RECOMMENDED METHOD OF STORAGE**

Dry box storage is recommended as soon as the aluminum bag has been opened to prevent moisture absorption. The following conditions should be observed, if dry boxes are not available:

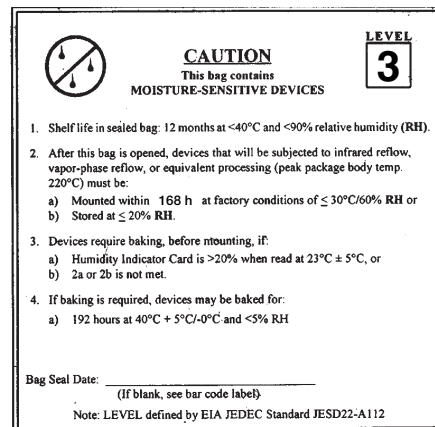
- Storage temperature 10 °C to 30 °C
- Storage humidity ≤ 60 % RH max.

After more than 168 h under these conditions moisture content will be too high for reflow soldering.

In case of moisture absorption, the devices will recover to the former condition by drying under the following condition:

- 192 h at 40 °C + 5 °C / - 0 °C and < 5 % RH (dry air / nitrogen) or
- 24 h at 60 °C + 5 °C and < 5 % RH for all device containers or
- 24 h at 100 °C + 5 °C not suitable for reel or tubes.

An EIA JEDEC® standard JESD22-A112 level 3 label is included on all dry bags.



17028-2

Example of JESD22-A112 level 3 label

**ESD PRECAUTION**

Proper storage and handling procedures should be followed to prevent ESD damage to the devices especially when they are removed from the antistatic shielding bag. Electrostatic sensitive devices warning labels are on the packaging.

**VISHAY SEMICONDUCTORS STANDARD BAR CODE LABELS**

The Vishay Semiconductors standard bar code labels are printed at final packing areas. The labels are on each packing unit and contain Vishay Semiconductors specific data.



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