

# HVO-3528DES



## 3528 PLCC4

## Products Series

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High luminous efficiency, consistency, stability and reliability, it is mainly used in automobile applications.

- PPA
- 50% I<sub>v</sub> 120
- 606nm
- AEC-Q102 & IEC 60810

## Features

- Package Colorless clear silicone in white PPA cup
- Viewing angle at 50% I<sub>v</sub>: 120
- Color: Orange (606nm)
- Qualifications: Passed reliability test per AEC-Q102 & IEC 60810 requirement

## Applications

- Signaling
- Interior and exterior lighting for automotive

## Ordering Information

Type	Luminous Intensity I <sub>v</sub> @ I <sub>f</sub> =50mA	Ordering Code
HVO-3528DES - XXXX - XX - XXXX       Brightness Color Forward Voltage	1.40 - 4.50 cd	XXXXXX

- HVO-3528DES-ABCB-XX-XXXX

4  
AB BA BB CA CB
- HVO-3528DES-XXXX-24-XXXX

4  
2 3 4
- HVO-3528DES-XXXX-XX-3A4B

4  
3A 3B 4A 4B

### Note

■ Brightness Grouping

Only one brightness group will be packed in one reel. Please refer to page #4 for details.  
E.g.: HVO-3528DES-ABCB-XX-XXXX, means only one bin of AB, BA, BB, CA or CB is in one reel.

■ Color Groups

Only one color group will be packed in one reel. Please refer to page #4 for details.  
E.g.: HVO-3528DES-XXXX-24-XXXX, means only one bin of 2, 3 or 4 is in one reel.

■ Forward Voltage Groups

Only one forward voltage group will be packed in one reel. Please refer to page #4 for details.  
E.g.: HVO-3528DES-XXXX-XX-3A4B, means only one bin of 3A, 3B, 4A or 4B is in one reel.



Brightness Grouping ( $T_s$   $f = 50$  mA)

Grouping	Luminous Intensity $I_v$ min.	Luminous Intensity $I_v$ max.	Luminous Flux $\Phi_v$ typ.
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### Information on Label

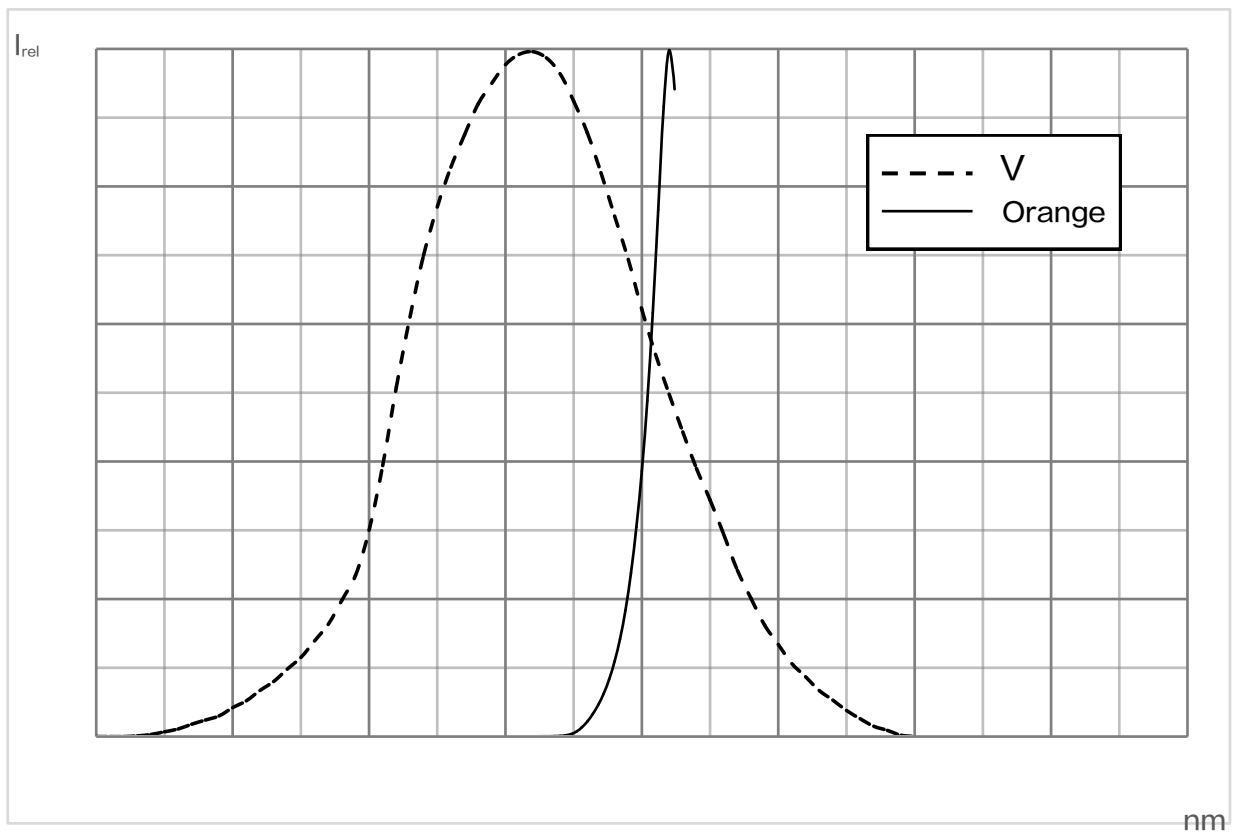
E.g. BA-2-3A

Brightness	Color	Forward Voltage
BA	2	3A

$$- V(\lambda) =$$

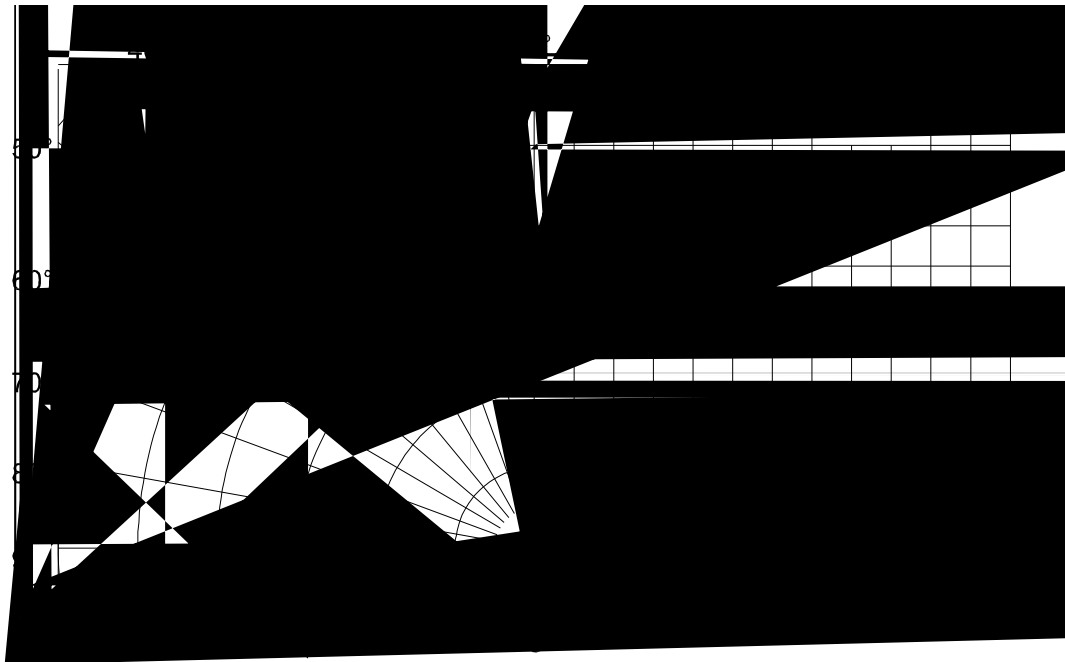
Relative Spectral Emission -  $V(\lambda)$  = Standard Eye Response Curve

$$I_{rel} = f(\lambda); T_s \quad I_f = 50 \text{ mA}$$



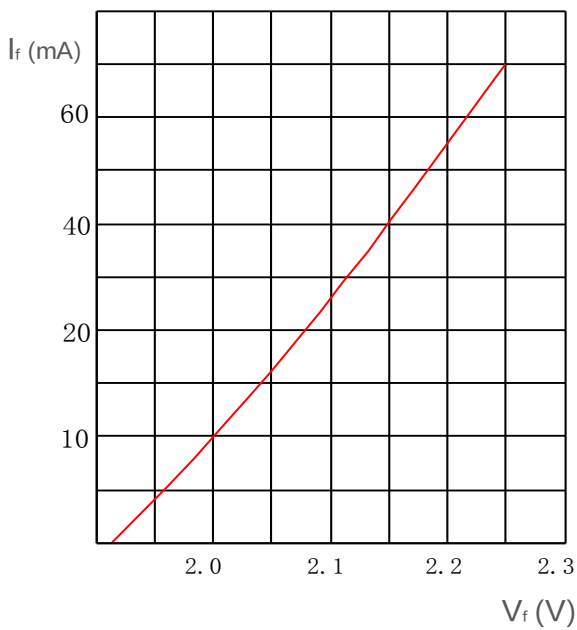
Radiation Characteristics

$I_{rel} = f(\theta) \quad T_s = 25$



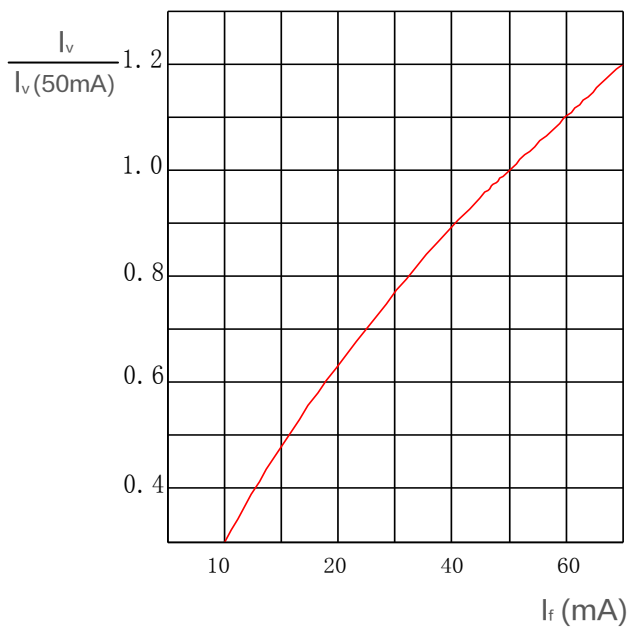
Forward Current

$I_f = f(V_f); T_a$



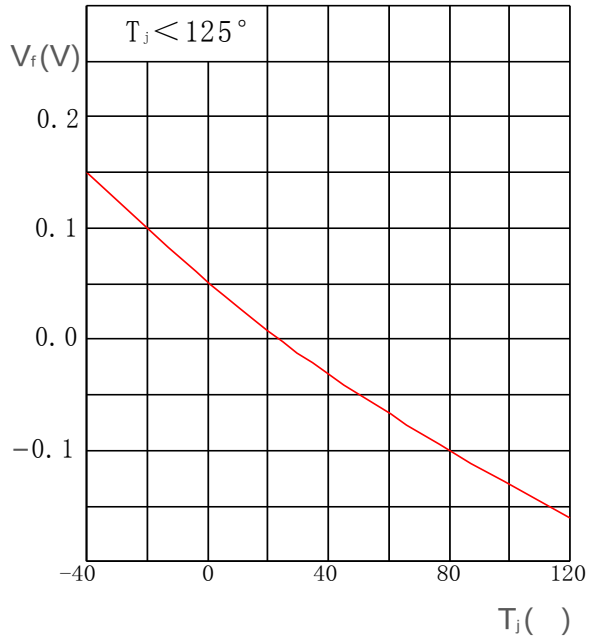
Relative Luminous Intensity

$I_v/I_v(50\text{ mA}) = f(I_f); T_a$



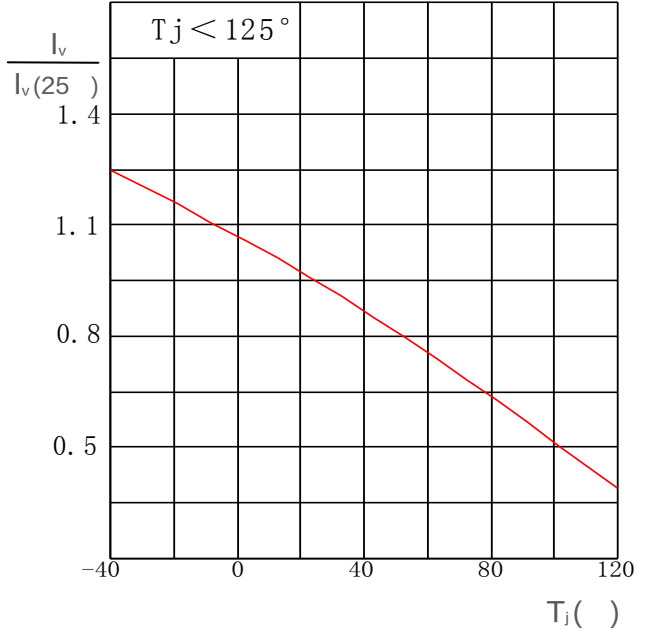
Relative Forward Voltage

$V_f = V_f - V_f$  ;  $I_f = 50 \text{ mA}$



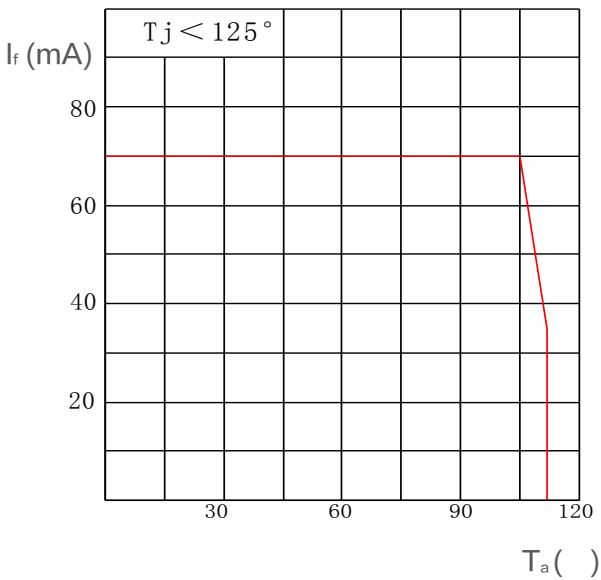
Relative Luminous Intensity

$I_v/I_v$  ;  $I_f = 50 \text{ mA}$

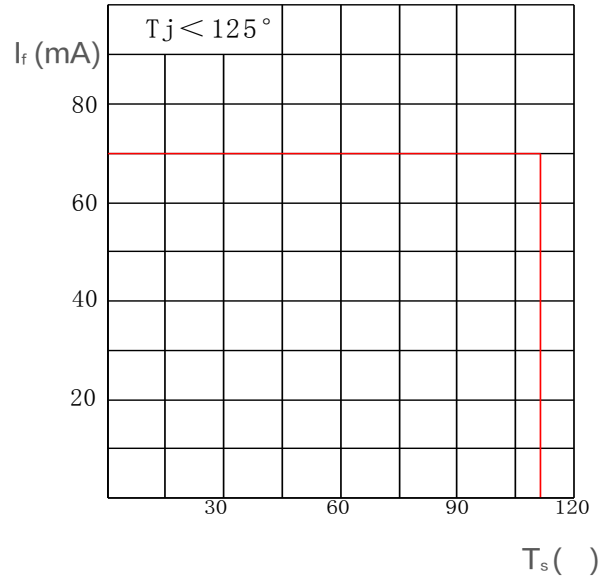


Solder Point Temperature

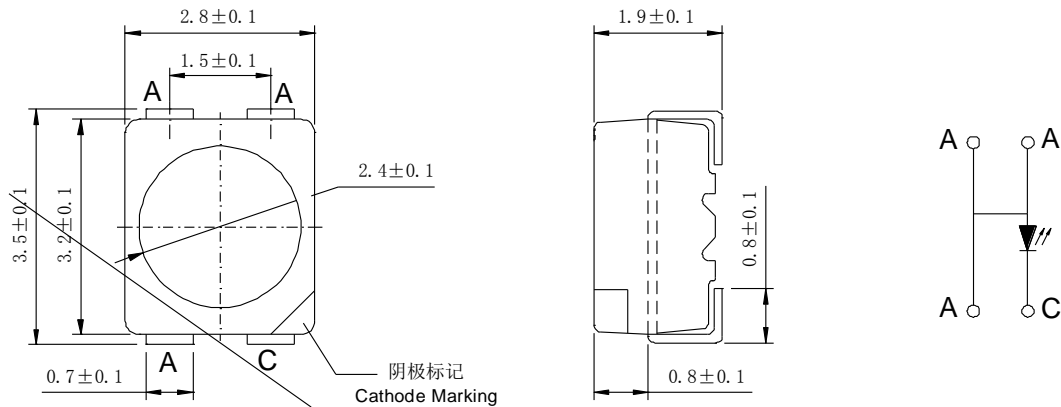
Ambient Temperature vs. Forward Current  
 $I_f = f(T_a)$



vs. Forward Current  
 $I_f = f(T_s)$



## Package Outline

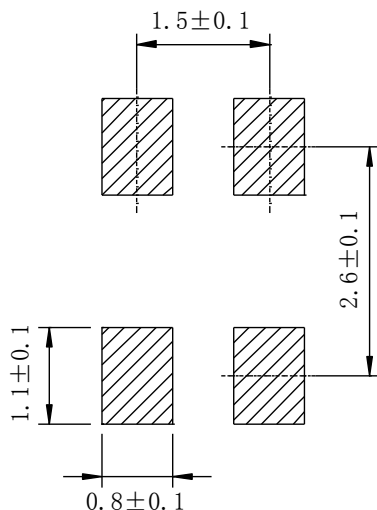


- 30mg
- Class 3B
- : 1) H<sub>2</sub>S , 336 IEC 60068-2-43)
- 2) IEC 60068-2-60 4: 10ppb H<sub>2</sub>S, 200ppb SO<sub>2</sub>, 200ppb NO<sub>2</sub>, 10ppb Cl<sub>2</sub>)

### NOTE

- Approximate Weight: 30mg
- Mark: Cathode
- Corrosion test: Class 3B
- Test conditions: 1) H<sub>2</sub>S test , 15ppm, 336hours  
(Standards IEC 60068-2-43)
- 2) Flowing  
(Standards IEC 60068-2-60 test method 4: 10ppb H<sub>2</sub>S, 200ppb SO<sub>2</sub>, 200ppb NO<sub>2</sub>, 10ppb Cl<sub>2</sub>)

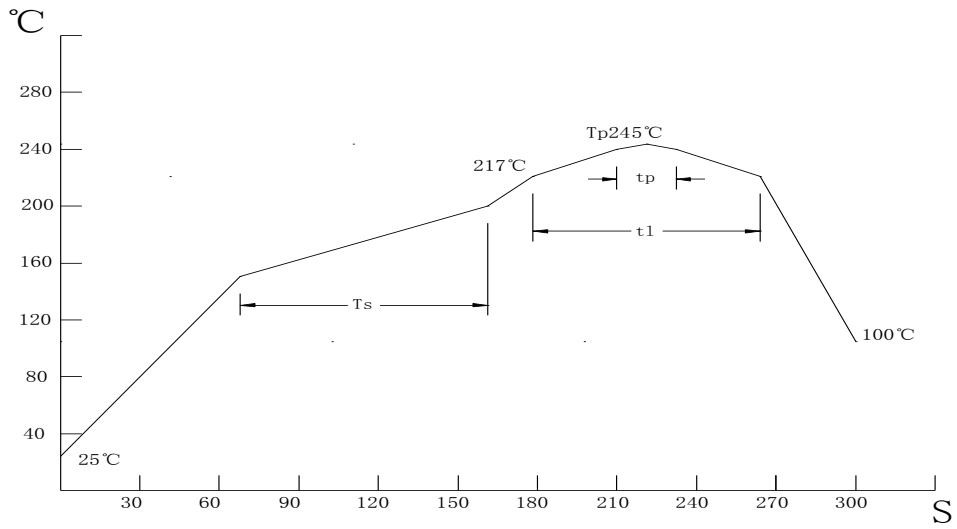
## Recommended Solder Pad



- NOTE
- Package not suitable for ultrasonic cleaning



## Reflow Soldering Profile



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Profile Feature

Symbol

Pb-Free (SnAgCu) Assembly

min.

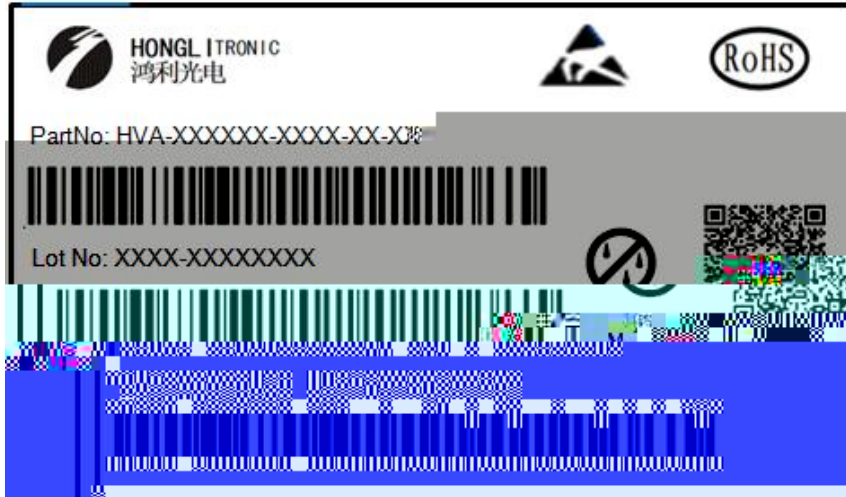
rec.

Unit

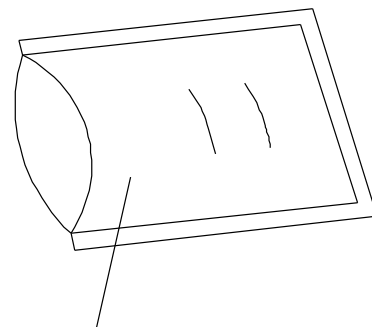
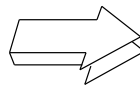
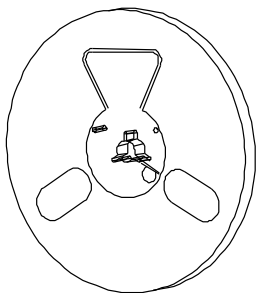
ma01 EMC fET EMC /P /MCID 22 B



## Barcode-Product-Label (BPL)



## Dry Packing Process and Materials



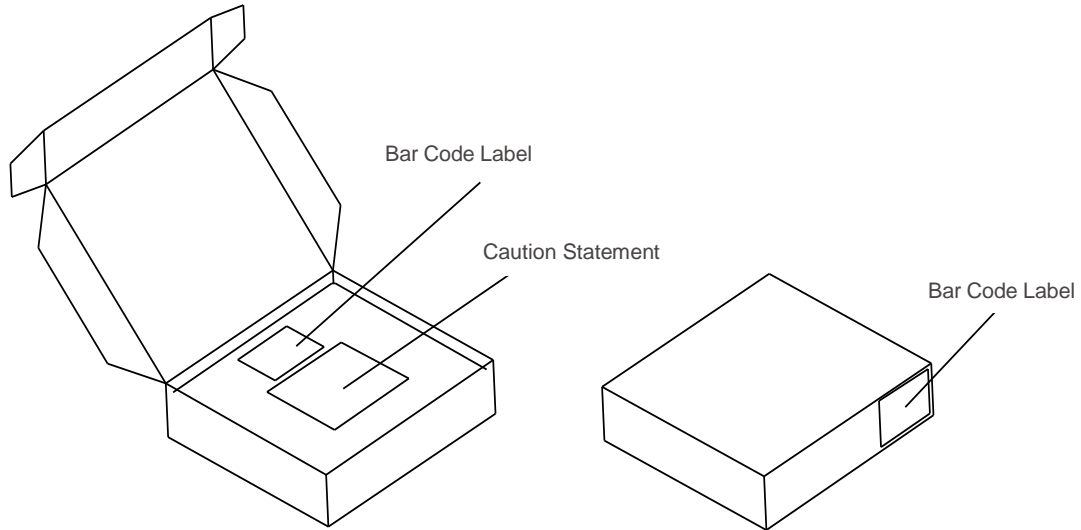
Aluminum moisture-proof bag

JEDEC

### NOTE

Moisture-sensitive product is packed in a dry bag containing desiccant and HIC (humidity indicator card). Regarding dry pack you may find further information in the internet or JEDEC.

## Transportation Packing and Materials



### Dimensions of Transportation Box (mm)

Width	Length	Height
256 5	223 5	62 5
256 5	223 5	124 5

:			
:	,		
	8ms	0.05V	0.1V
	GUM K=3		
	25ms	0.5nm	1nm
	GUM K=3		
	25ms	8%	11%
	GUM K=3		

## Glossary

**Typical Values:** Actual values of each product may differ from these statistical values .

**Tolerance of Measure:** Unless otherwise noted in drawing, tolerances are specified with +/-0.1mm.

**Forward Voltage:** The forward voltage is measured during a current pulse of typically 8 ms,

GUM with a coverage factor of k = 3).

**Wavelength:** The wavelength is measured at a current pulse of typically 25 ms,

GUM with a coverage factor of k = 3).

**Brightness:** Brightness values are measured during a current pulse of typically 25 ms,

with a coverage factor of k = 3).

**Special Statement:** The final interpretation of this specification shall be vested in Honglitronic, in the case of ambiguity, the Chinese version shall prevail.