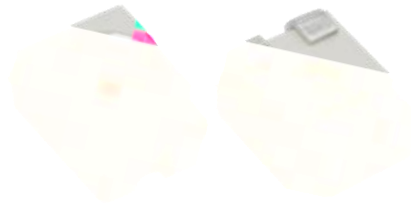


HVA-3528DES



3528 PLCC4 / Products Series

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

- PPA
- 50% I_v 120°
- 617nm
- AEC-Q102 & IEC 60810

Features

- Package Colorless clear silicone in white PPA cup
- Viewing angle at 50% I_v: 120°
- Color: Amber (617nm)
- Qualifications: Passed reliability test per AEC-Q102 & IEC 60810 requirement

Applications

- Signaling
- Interior and exterior lighting for automotive

/ Ordering Information

Type	Luminous Intensity I _v @ I _f =50mA	Ordering Code
HVA-3528DES- XXXX - XX - XXXX Brightness Color Forward Voltage	2.24- 4.50 cd	XXXXXX



HVA-3528DES-BBCB-XX-XXXX 4 BB CA CB



HVA-3528DES-XXXX-24-XXXX 4 2 3 4



HVA-3528DES-XXXX-XX-3A4B 4 3A 3B 4A 4B

Note

■ Brightness Grouping

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

■ Color Groups

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

■ Forward Voltage Groups

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

/Maximum Ratings

Parameters	Symbol	Rating	Unit
/ Junction Temperature	T_j	125	
($T_s=25$) / Forward Current	I_f	70	mA

/Characteristics ($T_s = 25$; $I_f = 50$ mA)

Parameters		Symbol	Rating	Unit
/ Wavelength at Peak Emission	typ.	λ_{peak}	624	nm
/ Dominant Wavelength	min.	λ_{dom}	612	nm
	typ.	λ_{dom}	617	nm
	max.	λ_{dom}	624	nm
/ Spectral Bandwidth at 50% I_{rel} max	typ.		18	nm
50 % I_v / Viewing Angle at 50 % I_v	typ.		120	°
/ Forward Voltage	min.	V_f	1.90	V
	typ.	V_f	2.15	V
	max	V_f	2.50	V
/ Reverse Current ($V_R=12V$)	typ.	I_r	0.2	uA
	max.	I_r	10	uA
PN - / Real Thermal Resistance (Junction / Ambient)	max.	$R_{th JA_{real}}$	300	K/W
PN - / Real Thermal Resistance (Junction / Solder Point)	max.	$R_{th JS_{real}}$	130	K/W

/Brightness Grouping ($T_s = 25$; $I_f = 50$ mA)

Grouping	Luminous Intensity I_v min.	Luminous Intensity I_v max.	Luminous Flux Φ_v typ.
BB	2.24 cd	2.80 cd	7.60 lm
CA	2.80 cd	3.55 cd	9.50 lm
CB	3.55 cd	4.50 cd	12.10 lm

/Forward Voltage Grouping ($T_s = 25$; $I_f = 50$ mA)

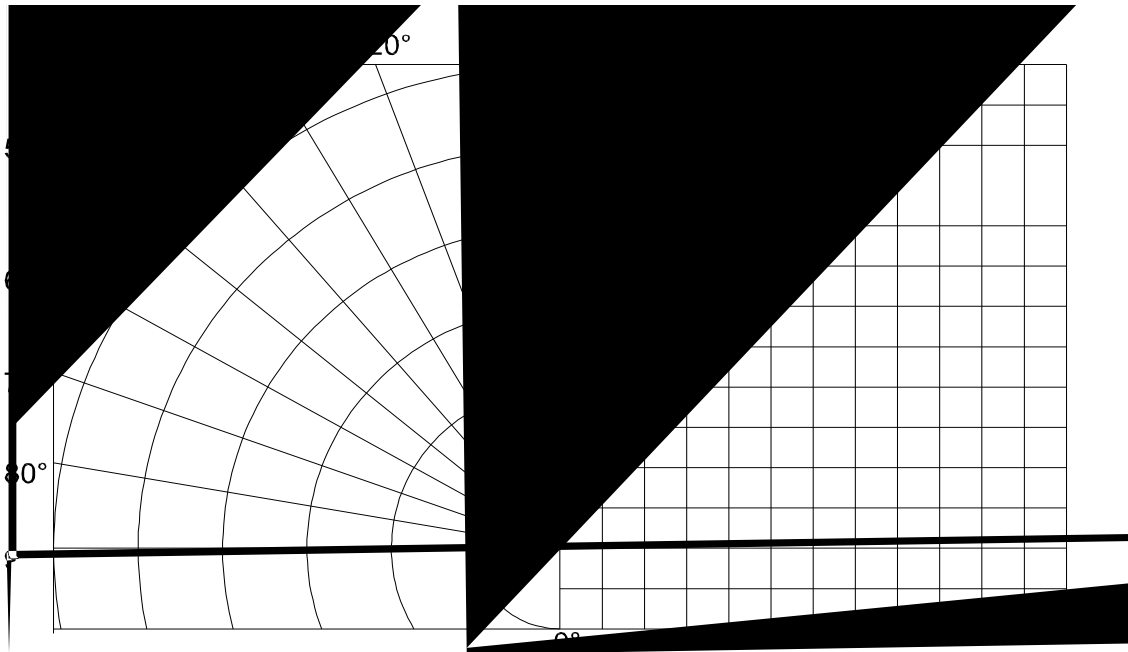
Grouping	Forward Voltage V_f min.	Forward Voltage V_f max.
3A	1.90 V	2.05 V
3B	2.05 V	2.20 V
4A	2.20 V	2.35 V
4B	2.35 V	2.50 V

/Dominant Wavelength Grouping ($T_s = 25$; $I_f = 50$ mA)

Grouping	Dominant Wavelength λ_{dom} min.	Dominant Wavelength λ_{dom} max.
2	612 nm	616 nm
3	616 nm	620 nm
4	620 nm	624 nm

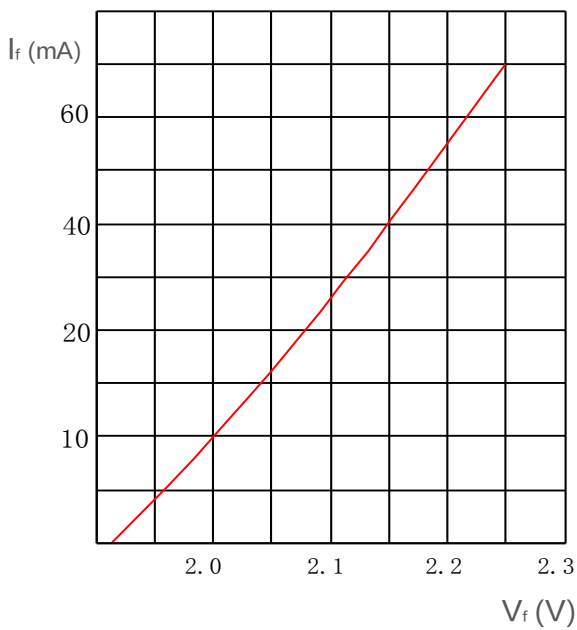
/Radiation Characteristics

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



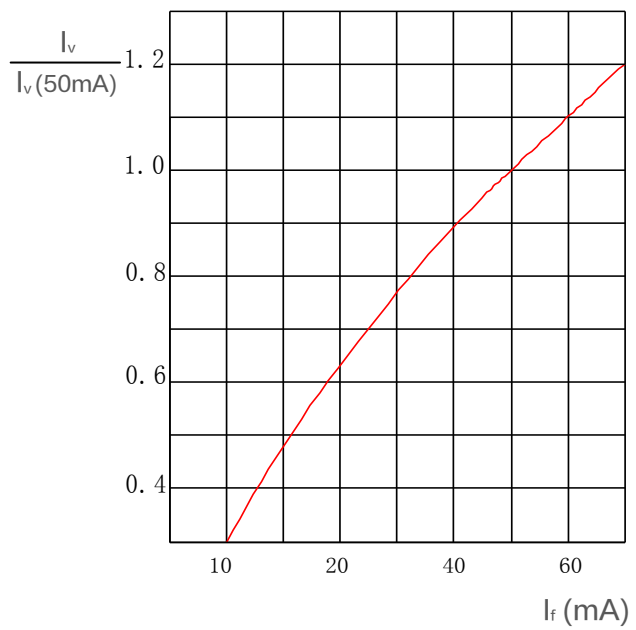
/Forward Current

$I_f = f(V_f); T_a = 25$



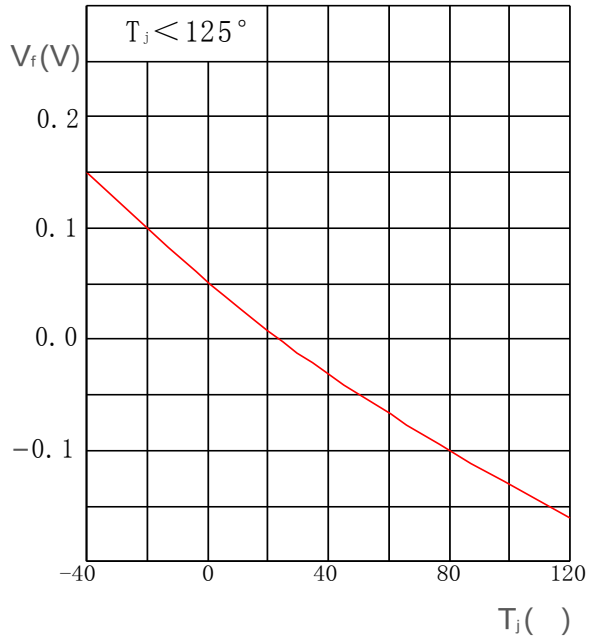
/Relative Luminous Intensity

$I_v/I_v(50\text{mA}) = f(I_f); T_a = 25$



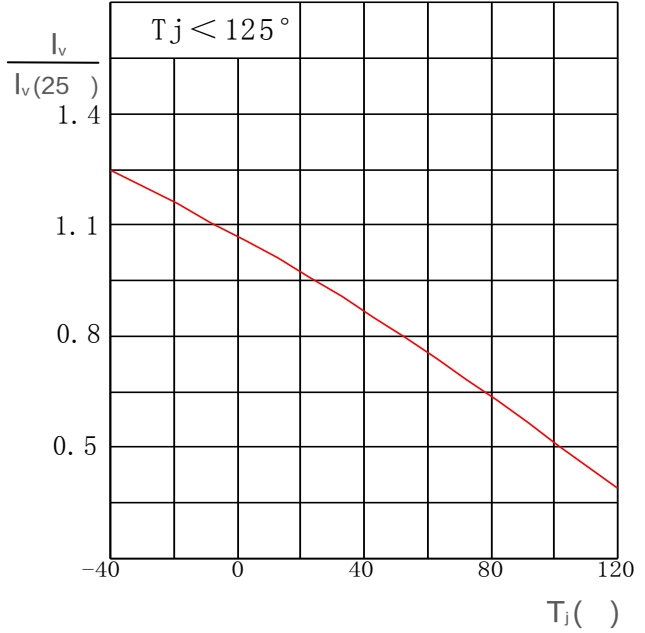
/Relative Forward Voltage

$V_f = V_f - V_f(25^\circ) = f(T_j); I_f = 50 \text{ mA}$

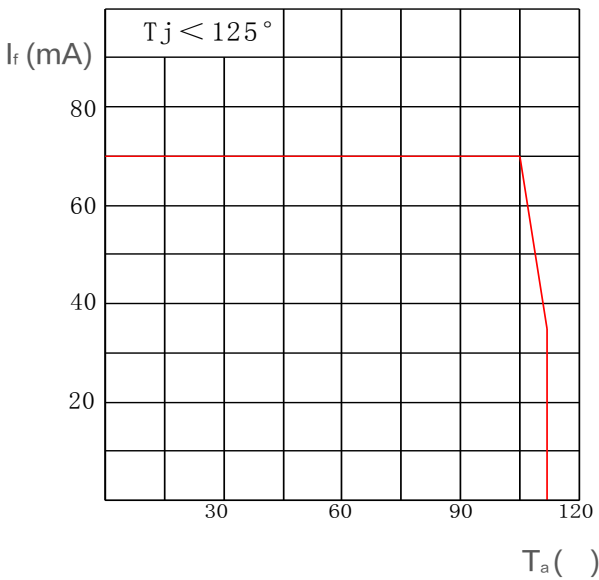


/Relative Luminous Intensity

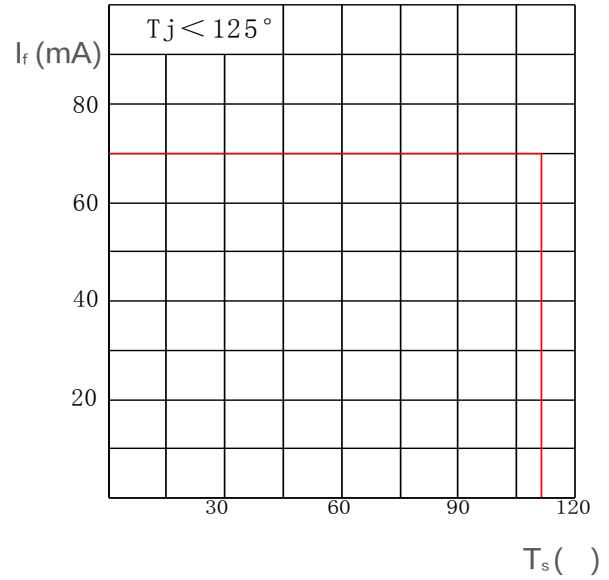
$I_v/I_v(25^\circ) = f(T_j); I_f = 50 \text{ mA}$



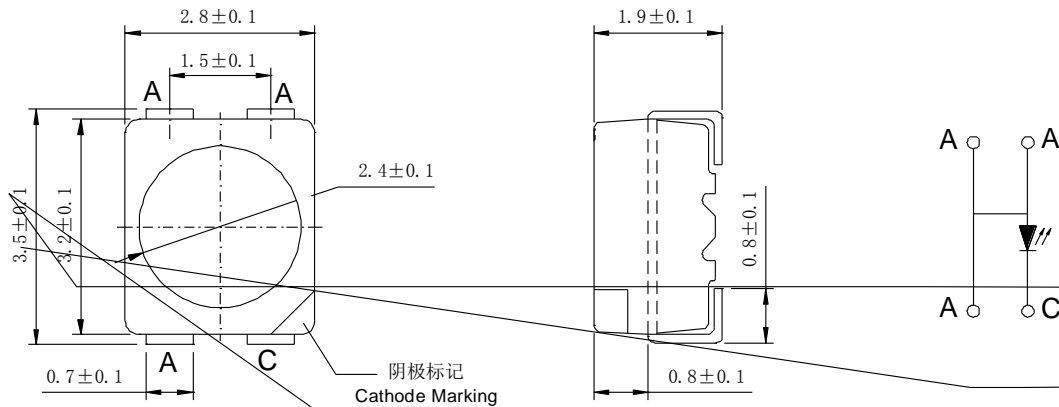
Ambient Temperature vs. Forward Current
 $I_f = f(T_a)$



/Solder Point Temperature vs. Forward Current
 $I_f = f(T_s)$



/Package Outline

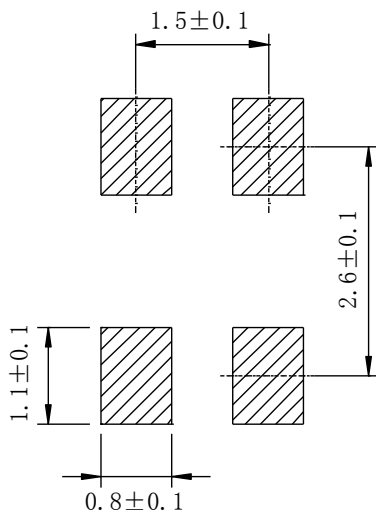


- 30mg
- Class 3B
- : 1) H₂S 40 /90% R.H, 15ppm, 336 (IEC 60068-2-43)
- 2) : 25 /75 % R.H, 500
- (IEC 60068-2-60 4: 10ppb H₂S, 200ppb SO₂, 200ppb NO₂, 10ppb Cl₂)

NOTE

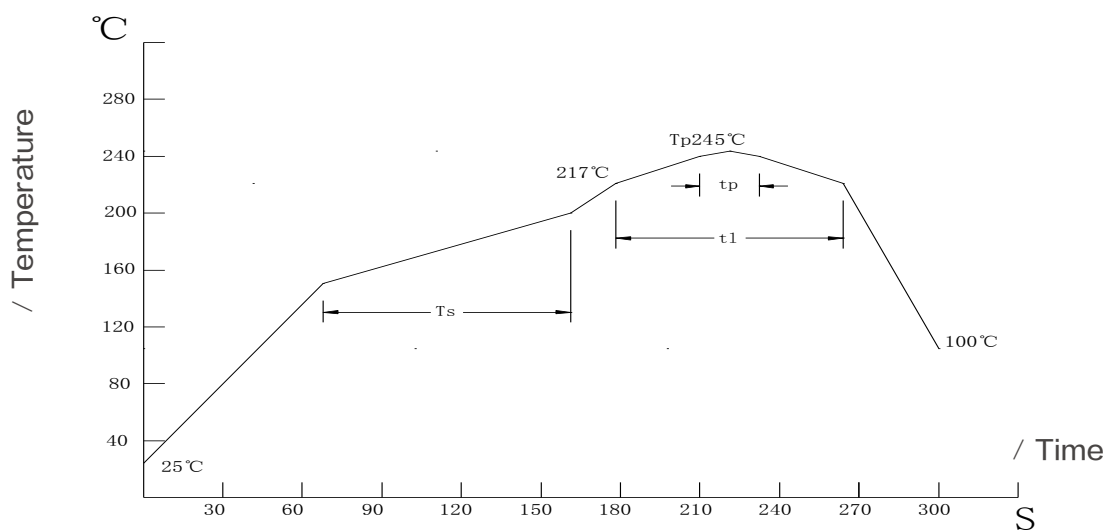
- Approximate Weight: 30mg
- Mark: Cathode
- Corrosion test: Class 3B
- Test conditions: 1) H₂S test 40 /90% R.H, 15ppm, 336hours
(Standards IEC 60068-2-43)
- 2) Flowing mixed gas test: 25 /75 % R.H, 500hours
(Standards IEC 60068-2-60 test method 4: 10ppb H₂S, 200ppb SO₂, 200ppb NO₂, 10ppb Cl₂)

/Recommended Solder Pad



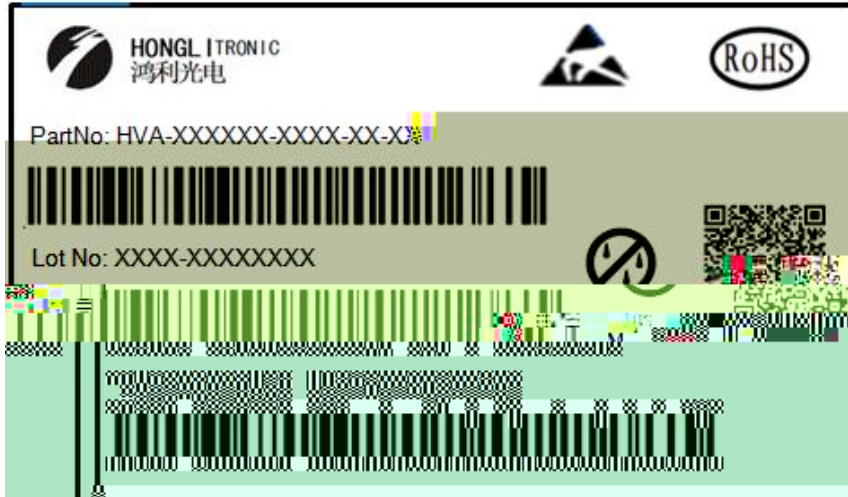
- NOTE
- Package not suitable for ultrasonic cleaning

/Reflow Soldering Profile

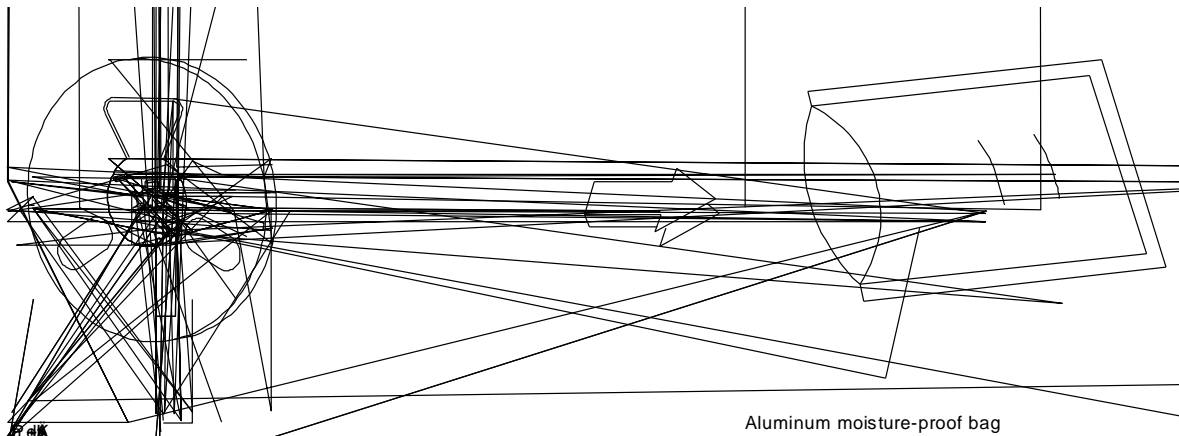


Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		min.	rec.	max.	
Ramp-up Rate to Preheat 25 -150	-	-	2	3	/s
/Time T_{smin} to T_{smax}	T_s	60	100	120	s
Ramp-up Rate to Peak T_{smax} to T_p	-	-	2	3	/s
Liquidus Temperature	T_l	-	217	-	-
Time above Liquidus Temperature	t_l	-	80	100	s
/Peak Temperature ± 5	T_p	-	245	260	-
Time within 5 of the Specified Peak Temperature	t_p	10	20	30	s
/Ramp-down Rate T_p to 100	-	-	3	6	/s
/Time 25 to T_p	-	-	-	480	s

/Barcode-Product-Label (BPL)



/Dry Packing Process and Materials



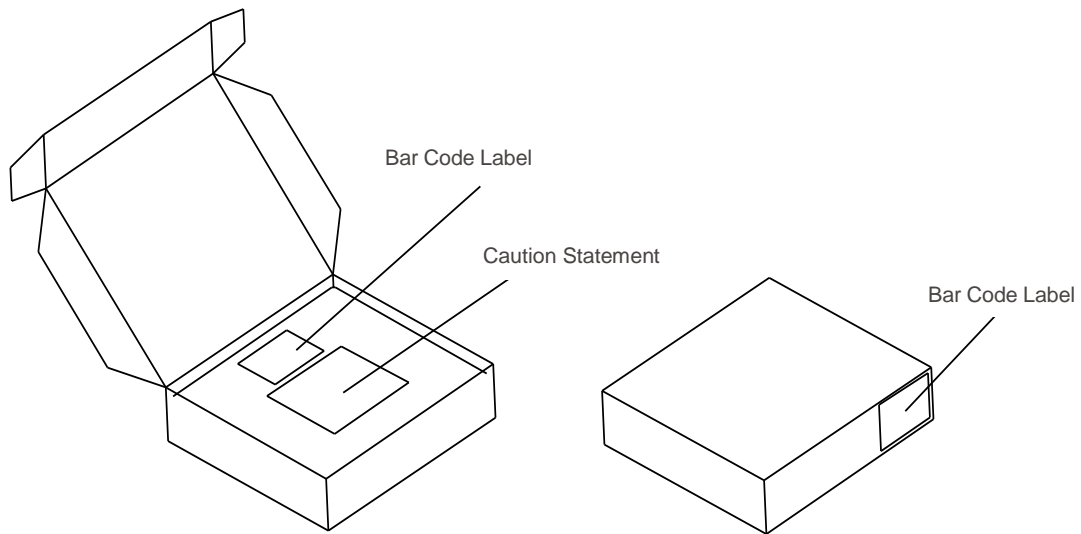
Aluminum moisture-proof bag

NOTE

JEDEC

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

:				
:	,	$\pm 0.1 \text{ mm}$		
	8ms		$\pm 0.05\text{V}$	$\pm 0.1\text{V}$
	GUM K=3			
	25ms		$\pm 0.5\text{nm}$	$\pm 1\text{nm}$
	GUM K=3			
	25ms		$\pm 8\%$	$\pm 11\%$
	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, with an internal reproducibility of $\pm 0.05 \text{ V}$ and an expanded uncertainty of $\pm 0.1 \text{ V}$ (acc. to GUM with a coverage factor of $k = 3$).

Wavelength: The wavelength is measured at a current pulse of typically 25 ms, with an internal reproducibility of $\pm 0.5 \text{ nm}$ and an expanded uncertainty of $\pm 1 \text{ nm}$ (acc. to GUM with a coverage factor of $k = 3$).

Brightness: Brightness values are measured during a current pulse of typically 25 ms, with an internal reproducibility of $\pm 8\%$ and an expanded uncertainty of $\pm 11\%$ (acc. to GUM 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.