

HVY-3528DER



3528 PLCC4 / Products Series

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

- PPA
- 50% I_v 120°
- 593nm
- AEC-Q102 & IEC 60810

Features

- Package Colorless clear resin in white PPA cup
- Viewing angle at 50% I_v: 120°
- Color: Yellow (593nm)
- 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
HVY-3528DER - XXXX - XX - XXXX Brightness Color Forward Voltage	1.12 - 3.55 cd	XXXXXX

- HVY-3528DER-AACA-XX-XXXX

4
AA AB BA BB CA
- HVY-3528DER-XXXX-36-XXXX

4
3 4 5 6
- HVY-3528DER-XXXX-XX-3B5A

4
3B 4A 4B 5A

Note

■ Brightness Grouping

Only one brightness group will be packed in one reel. Please refer to page #4 for details.

E.g.: HVY-3528DER-AACA-XX-XXXX, means only one bin of AA, AB, BA, BB or CA 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.: HVY-3528DER-XXXX-36-XXXX, means only one bin of 3, 4, 5 or 6 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.: HVY-3528DER-XXXX-XX-3B5A, means only one bin of 3B, 4A, 4B or 5A is in one reel.

/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.
AA	1.12 cd	1.40 cd	3.80 lm
AB	1.40 cd	1.80 cd	4.80 lm
BA	1.80 cd	2.24 cd	6.10 lm
BB	2.24 cd	2.80 cd	7.60 lm
CA	2.80 cd	3.55 cd	9.50 lm

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

Grouping	Forward Voltage V_f min.	Forward Voltage V_f max.
3B	2.05 V	2.20 V
4A	2.20 V	2.35 V
4B	2.35 V	2.50 V
5A	2.50 V	2.65 V

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

Grouping	Dominant Wavelength λ_{dom} min.	Dominant Wavelength λ_{dom} max.
3	583 nm	586 nm
4	586 nm	589 nm
5	589 nm	592 nm
6	592 nm	595 nm

/Information on Label

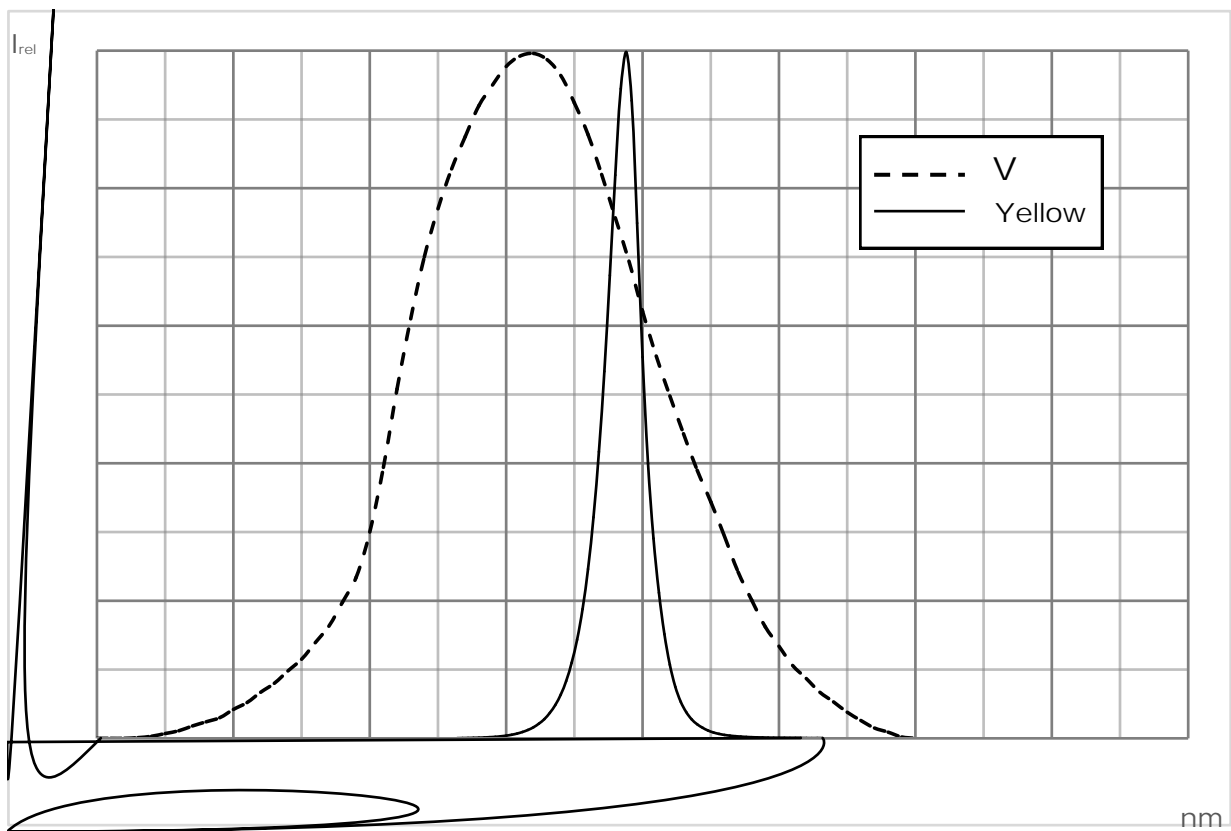
/E.g. BA-3-4A

/Brightness	/Color	/Forward Voltage
BA	3	4A

- $V(\lambda) =$

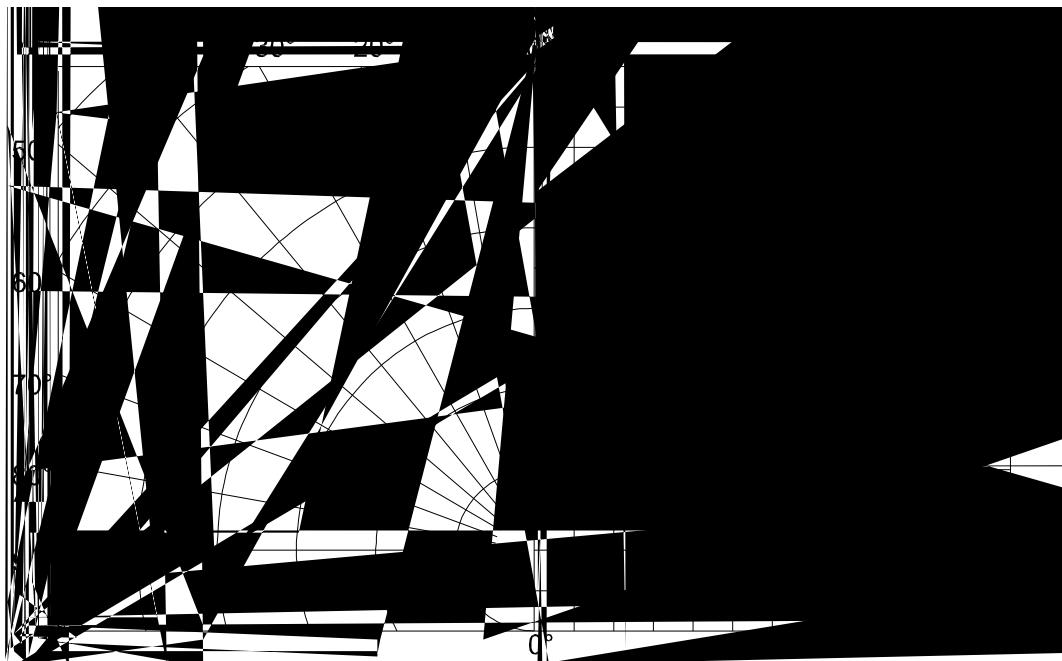
Relative Spectral Emission - $V(\lambda) =$ Standard Eye Response Curve

$I_{rel} = f(\lambda)$; $T_s = 25^\circ\text{C}$; $I_f = 50\text{ mA}$



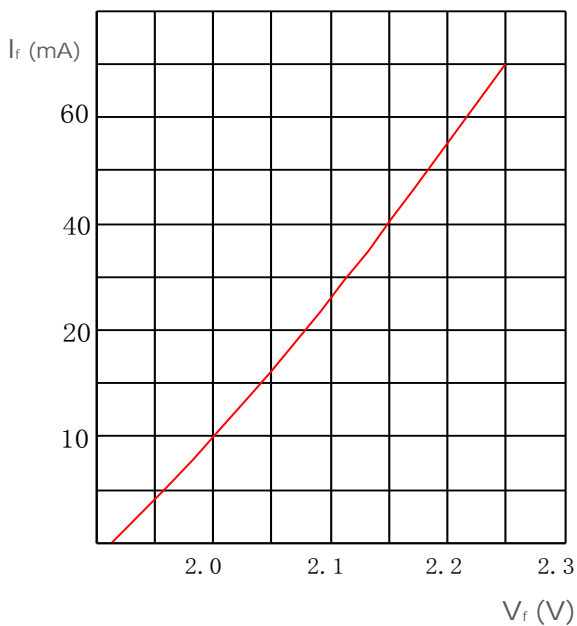
/Radiation Characteristics

$I_{rel} = f (T_s = 25$



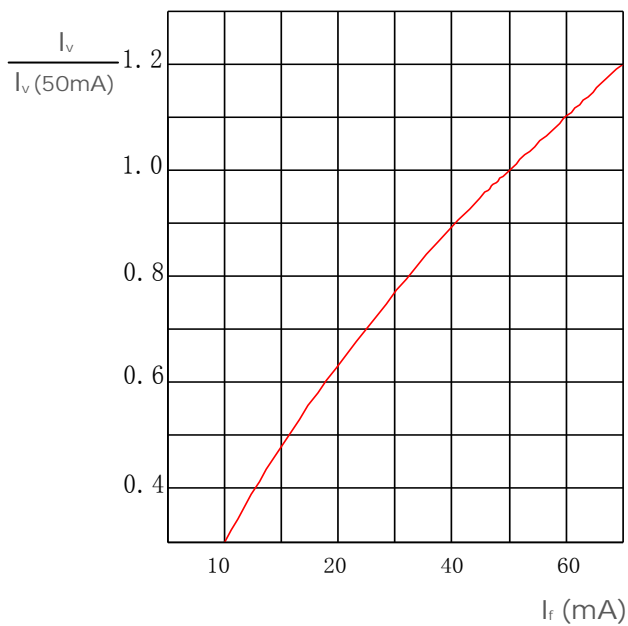
/Forward Current

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

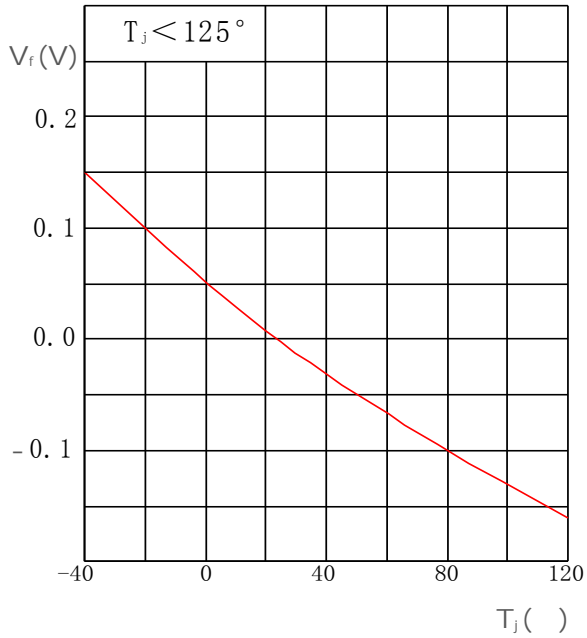


/Relative Luminous Intensity

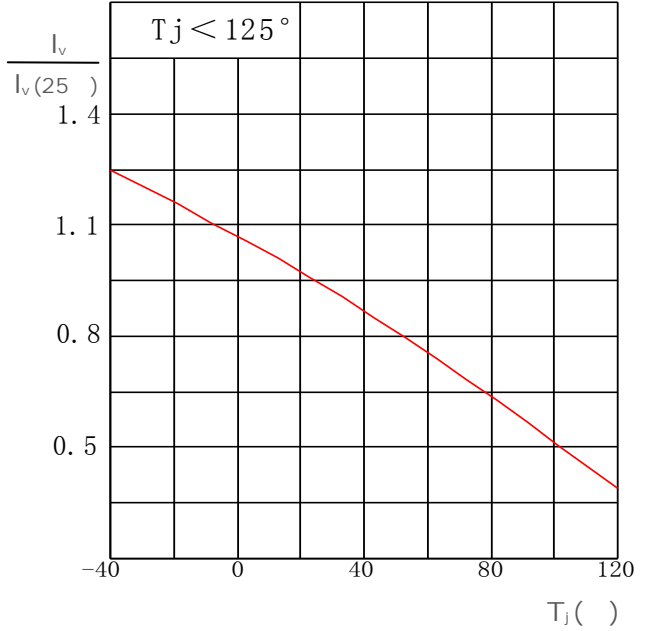
$I_v/I_v(50\text{mA}) = f (I_f); T_a = 25$



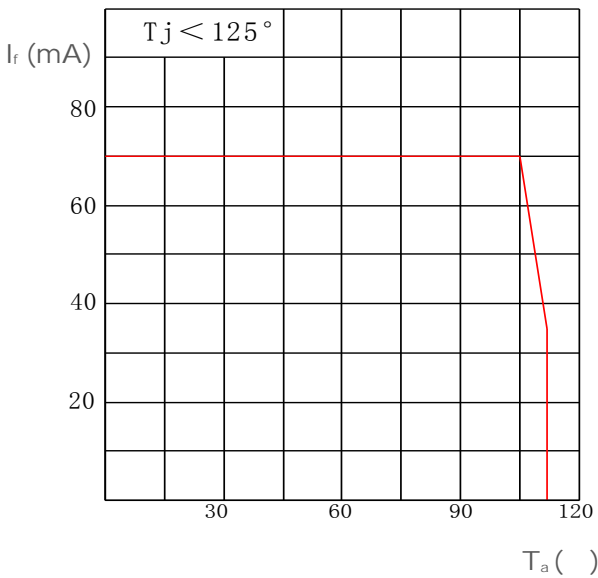
/Relative Forward Voltage
 $V_f = V_f - V_f(25^\circ) = f(T_j); I_f = 50 \text{ mA}$



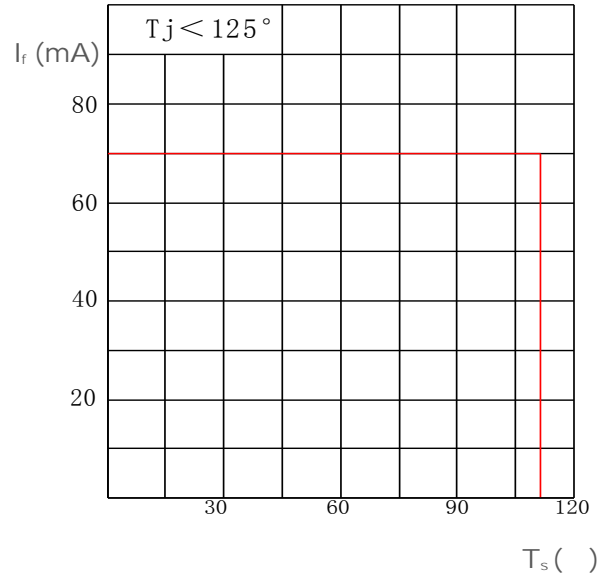
/Relative Luminous Intensity
 $I_v/I_v(25^\circ) = f(T_j); I_f = 50 \text{ mA}$



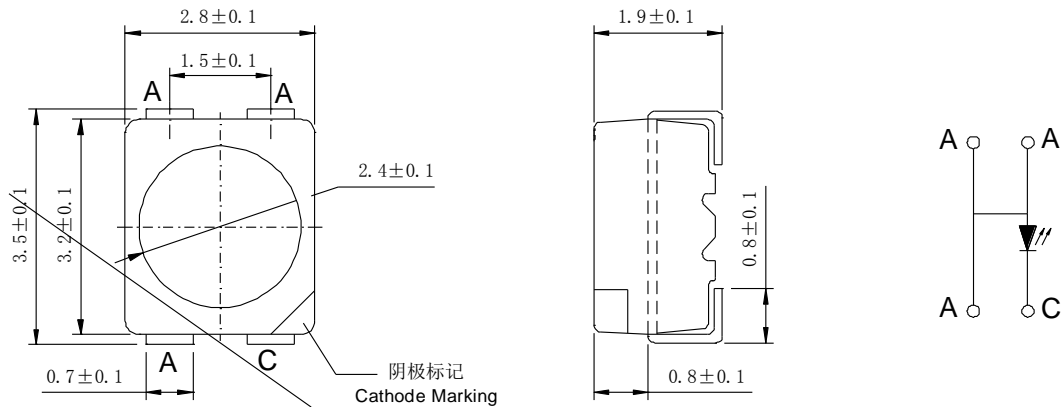
Ambient Temperature vs. Forward Current
 $I_f = f(T_a)$



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



/Package Outline

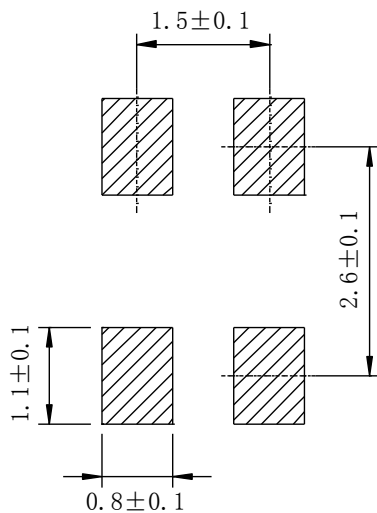


- 30mg
- Class 3B
- : 1) H₂S 40 /90% R.H, 15ppm, 336 (IEC 60068-2-43)
- 2) : 25 /75 % R.H, 500
- (IEC 60068-2-60 4: 10ppb H₂S, 200ppb SO₂, 200ppb NO₂, 10ppb Cl₂)

NOTE

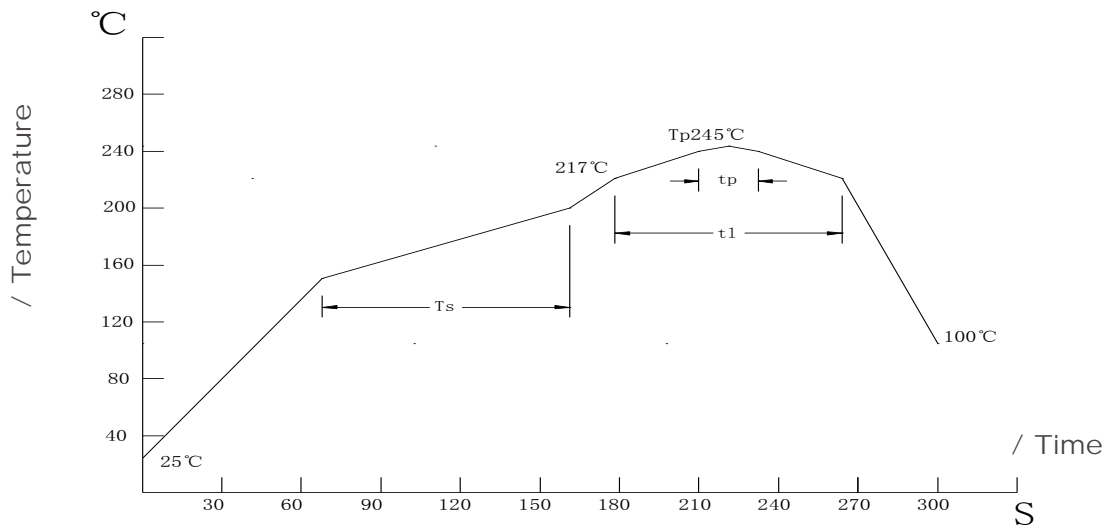
- Approximate Weight: 30mg
 - Mark: Cathode
 - Corrosion test: Class 3B
- Test conditions: 1) H₂S test 40 /90% R.H, 15ppm, 336hours
(Standards IEC 60068-2-43)
- 2) Flowing mixed gas test: 25 /75 % R.H, 500hours
(Standards IEC 60068-2-60 test method 4: 10ppb H₂S, 200ppb SO₂, 200ppb NO₂, 10ppb Cl₂)

/Recommended Solder Pad



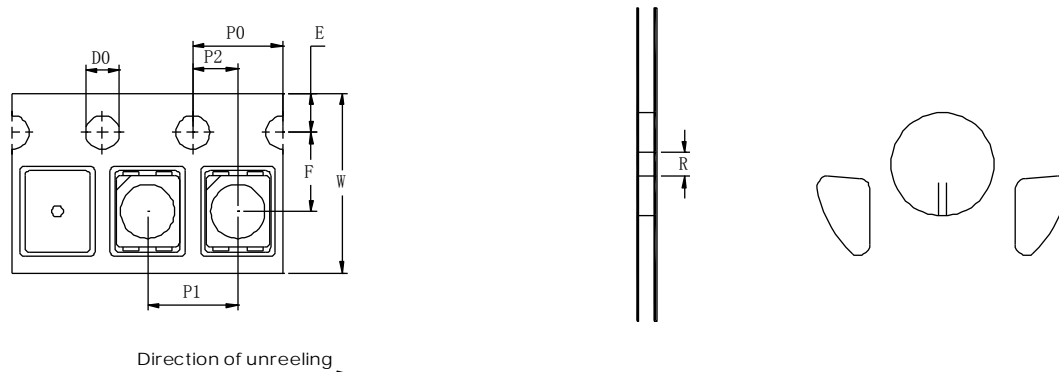
- NOTE
- Package not suitable for ultrasonic cleaning

/ 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

/Tape and Reel



W : 400 mm P1 : 160 mm IEC 60286-3, EIA 481-D

Leader: min. 400 mm Trailer: min. 160 mm Requirement acc. to IEC 60286-3, EIA 481-D

/Tape Dimensions mm

W	P0	P1	P2	D0	E	F
8± 0.1	4± 0.1	4± 0.1	2± 0.05	1.5± 0.1	1.75± 0.1	3.5± 0.05

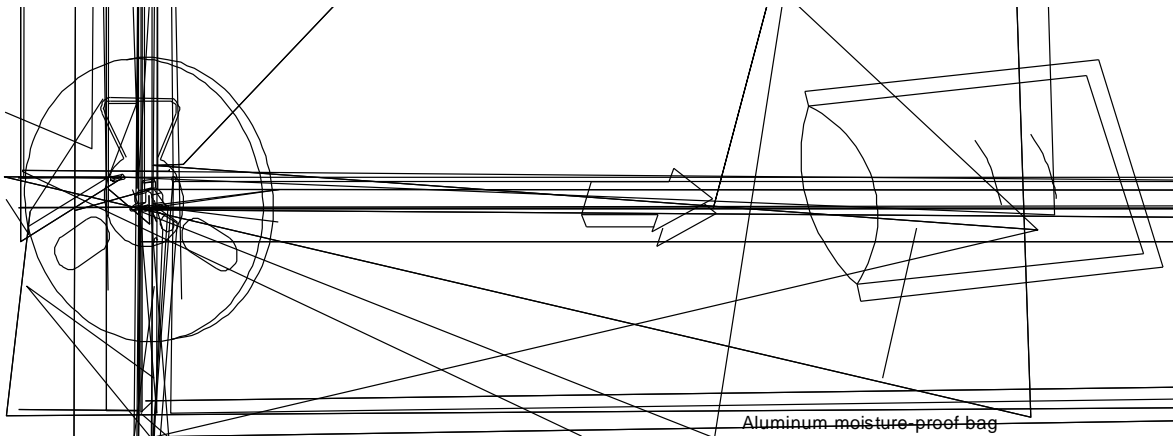
/Reel Dimensions mm

A	W1	W2	N	R
177.8	9.3± 0.3	11.2± 0.3	58.5± 0.2	13.5± 0.2

/Barcode- Product- Label (BPL)



/Dry Packing Process and Materials

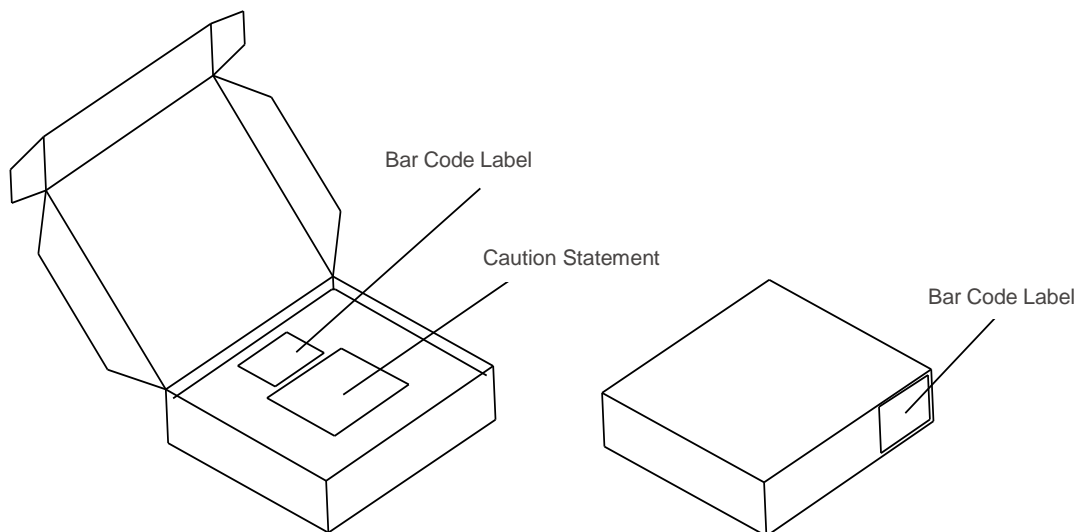


NOTE

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.