HVO-3528DER

3528 PLCC4 ! Products Series

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

- PPA
- 50% I_V 1200
- 606nm
- AEC-Q19422f1 0 0 1 1728282 0.773 RG06B2 TJETBT/F3 9.BTuBT12 &F3 1 E4.04 T(t)-/F4

! Ordering Information

Type				Luminous Intensity I_V @ I_f=50mA	Ordering Code
HVO-3528DER	– XXXX Brightness	– XX Color	– XXXX Forward Voltage	1.80 – 5.60 cd	XXXXXX

■

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HVO-3528DER-BADA-XX-XXXX BA BB CA CB DA

■

4

HVO-3528DER-XXXX-24-XXXX 2 3 4

■

4

HVO-3528DER-XXXX-XX-3A4B 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-3528DER-BADA-XX-XXXX, means only one bin of BA, BB, CA, CB or DA 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-3528DER-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-3528DER-XXXX-XX-3A4B, means only one bin of 3A, 3B, 4A or 4B is in one reel.

! Maximum Ratings

Parameters	Symbol	Rating	Unit
! Junction Temperature	T_j	125	
! Forward Current (T_s=25	I_f	70	mA
Peak Forward Current (t 10us D=0.005 T_s=25	I_{fp}	100	mA
! Reverse Voltage (T_s=25	V_r	12	V
Electrostatic Discharge (HBM)	V_{ESD}	2000	V
! Operating Temperature	T_{opr}	−40 ~ +100	
! Storage Temperature	T_{stg}	−40 ~ +100	

! Characteristics (T_s $_f$ = 50 mA)

Parameters		Symbol	Rating	Unit
! Wavelength at Peak Emission	typ.	λ_{peak}	610	nm
! Dominant Wavelength	min. typ. max.	λ_{dom} λ_{dom} λ_{dom}	600 606 609	nm nm nm
! Spectral Bandwidth at 50% I_{rel} max	typ.	$\Delta\lambda$	17	nm
50 % I_V ! Viewing Angle at 50 % I_V	typ.	2Φ	120	0
! Forward Voltage	min. typ. max	V_f V_f V_f	1.90 2.15 2.50	V V V
! Reverse Current V_R=12V)	typ. max.	I_r I_r	0.2 10	uA 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 $_f$ = 50 mA)

Grouping	Luminous Intensity I_V min.	Luminous Intensity I_V max.	Luminous Flux Φ_v typ.
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
CB	3.55 cd	4.50 cd	12.10 lm
DA	4.50 cd	5.60 cd	15.20 lm

! Forward Voltage Grouping (T_s $_f$ = 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 $_f$ = 50 mA)

Grouping	Dominant Wavelength λ_{dom} min.	Dominant Wavelength λ_{dom} max.
2	600 nm	603 nm
3	603 nm	606 nm
4	606 nm	609 nm

! Information on Label

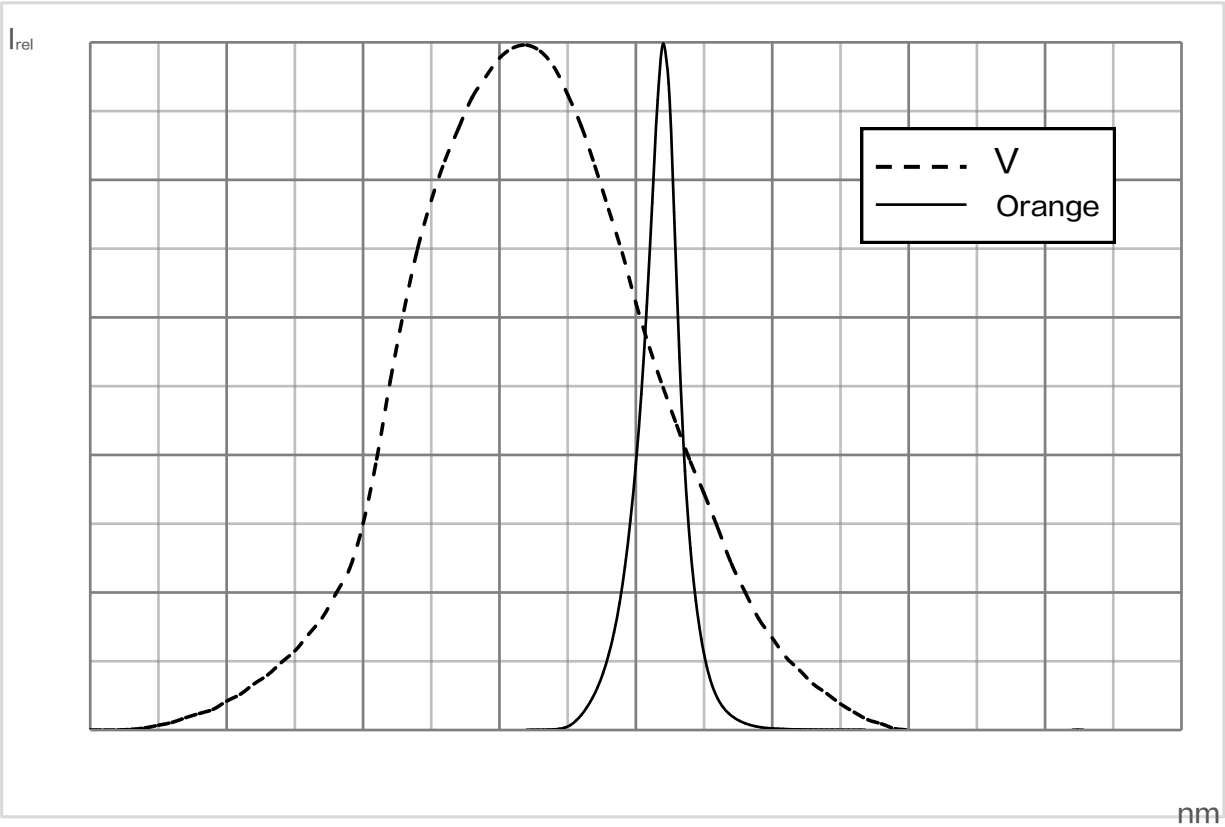
! E.g. BA-2-3A

! Brightness	! Color	! Forward Voltage
BA	2	3A

- V( ) =

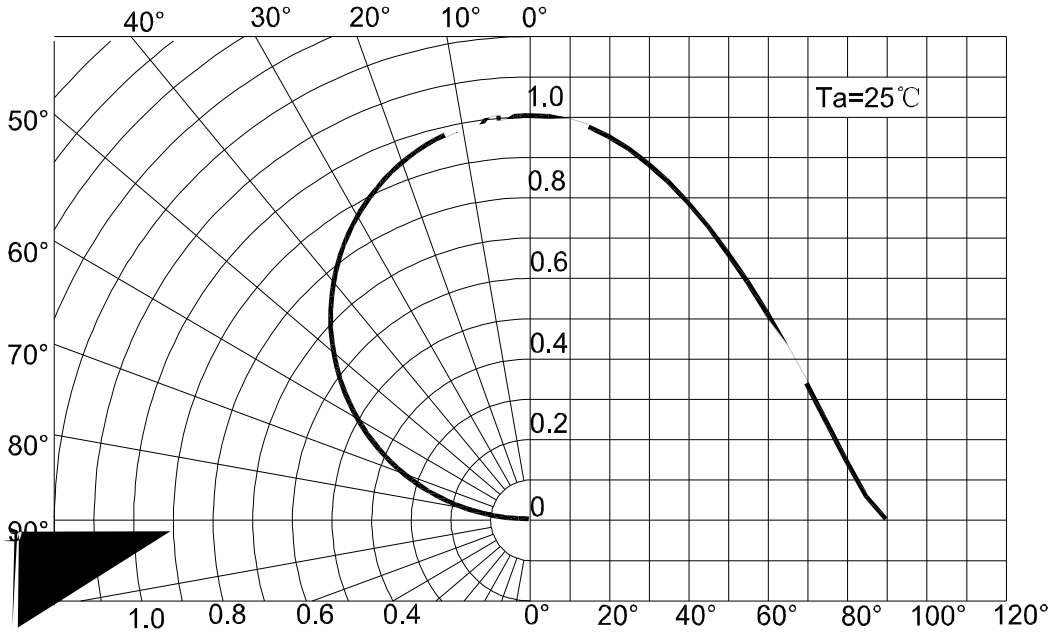
Relative Spectral Emission - V( ) = Standard Eye Response Curve

I_{rel} = f ( ); T_s $_f$ = 50 mA



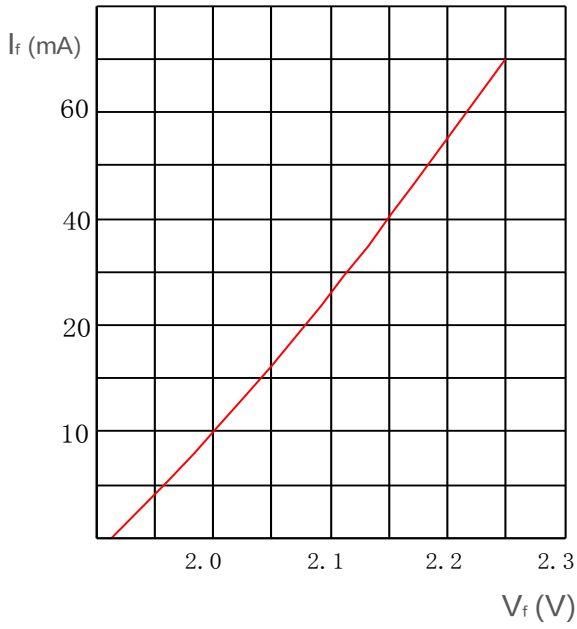
! Radiation Characteristics

$I_{rel} = f(\phi)$; $T_s = 25$



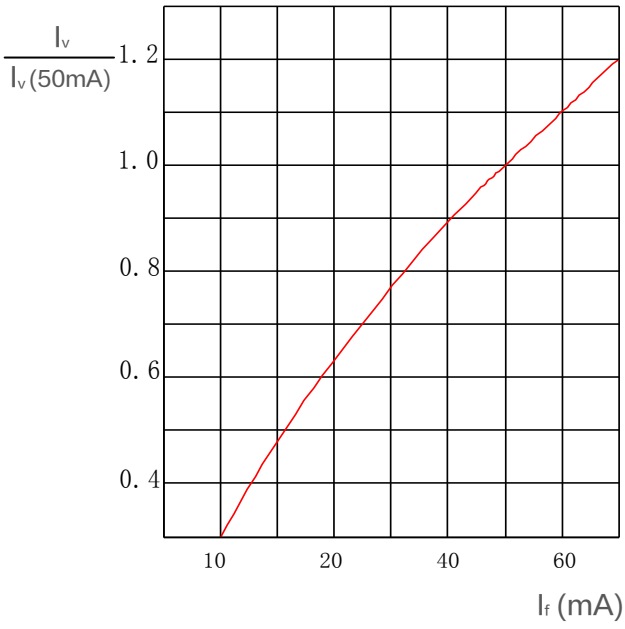
! Forward Current

$I_f = f(V_f)$; T_a



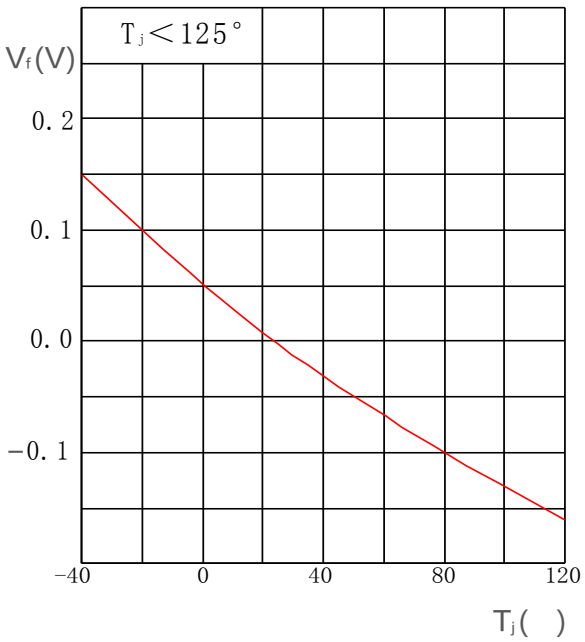
! Relative Luminous Intensity

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



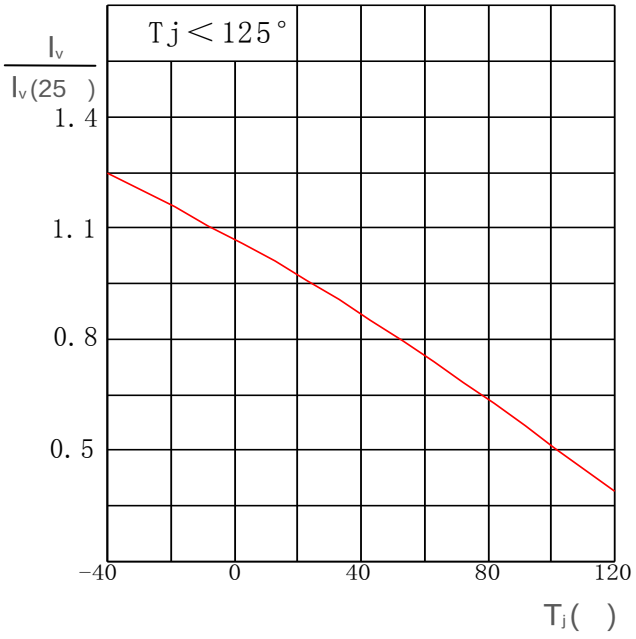
! Relative Forward Voltage

$\Delta V_f = V_f - V_f$ $_j$); I_f = 50 mA



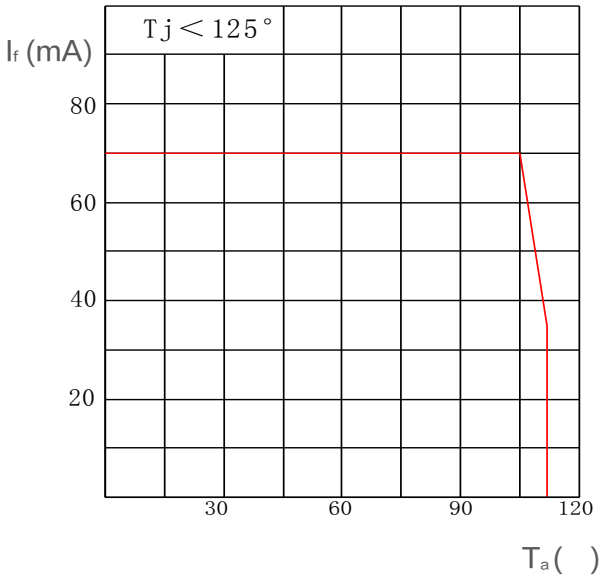
! Relative Luminous Intensity

I_v / I_v $_j$); I_f = 50 mA



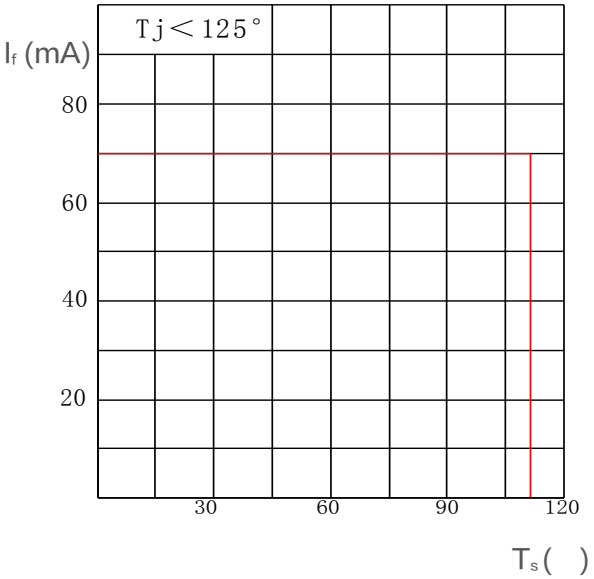
Ambient Temperature vs. Forward Current

$I_f = f(T_a)$

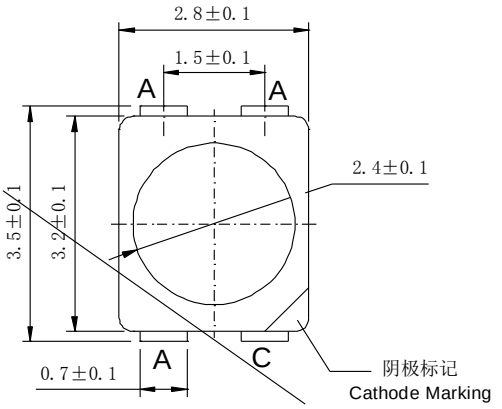


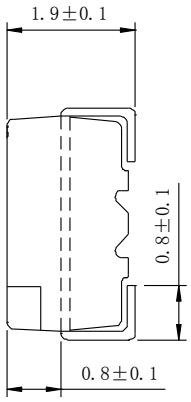
! Solder Point Temperature vs. Forward Current

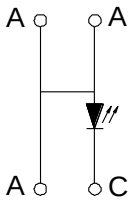
$I_f = f(T_s)$



! Package Outline







- 30mg
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- Class 3B

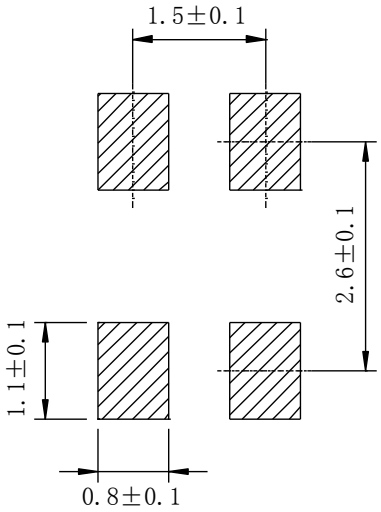
: 1) H_2S ! ! ! , 336 IEC 60068-2-43)
2) !
IEC 60068-2-60 4: 10ppb H_2S, 200ppb SO_2, 200ppb NO_2, 10ppb Cl_2)

NOTE

- Approximate Weight: 30mg
- Mark: Cathode
- Corrosion test: Class 3B

Test conditions: 1) H2S test ! , 15ppm, 336hours
(Standards IEC 60068-2-43)
2) Flowing !
(Standards IEC 60068-2-60 test method 4: 10ppb H_2S, 200ppb SO_2, 200ppb NO_2, 10ppb Cl_2)

! Recommended Solder Pad



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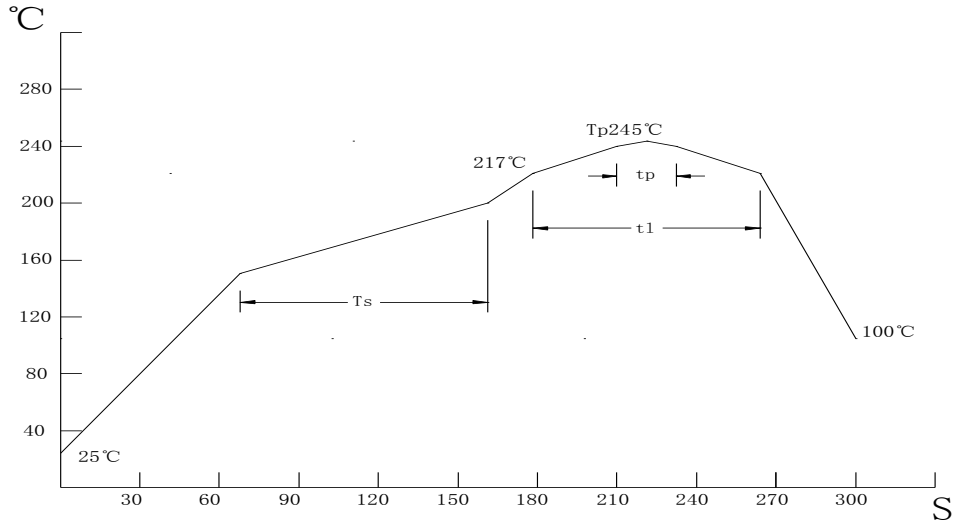
NOTE

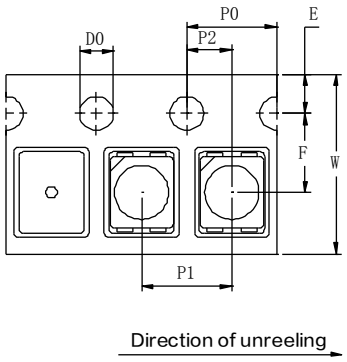
- Package not suitable for ultrasonic cleaning

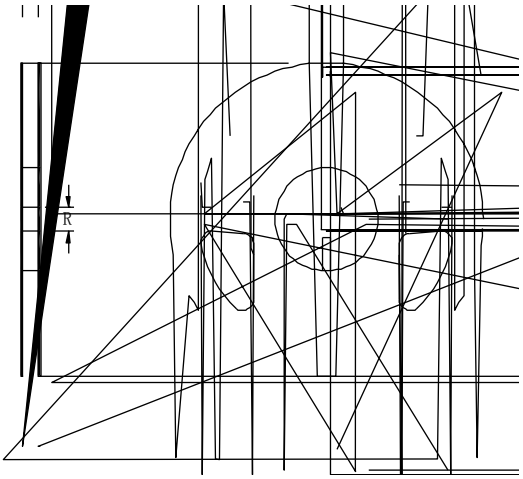
! Reflow Soldering Profile



Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly		Unit
		min.	rec.	

! Tape and Reel





400 mm 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

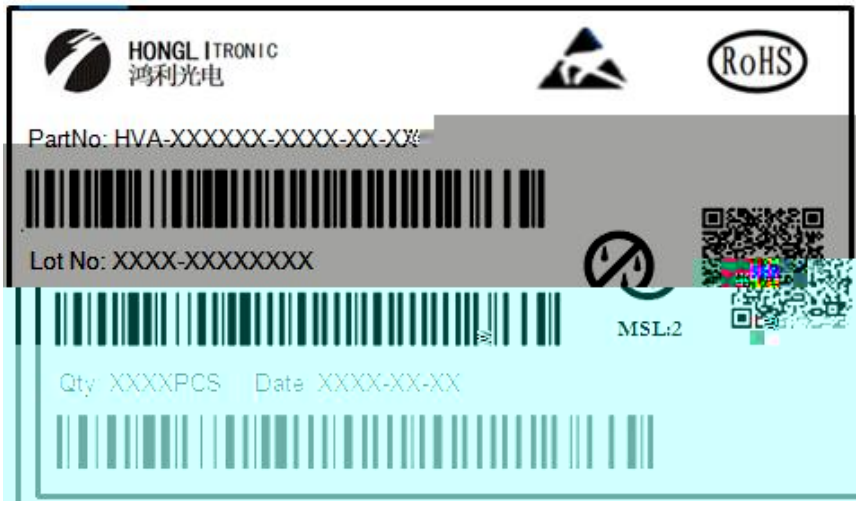
! Tape Dimensions mm

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

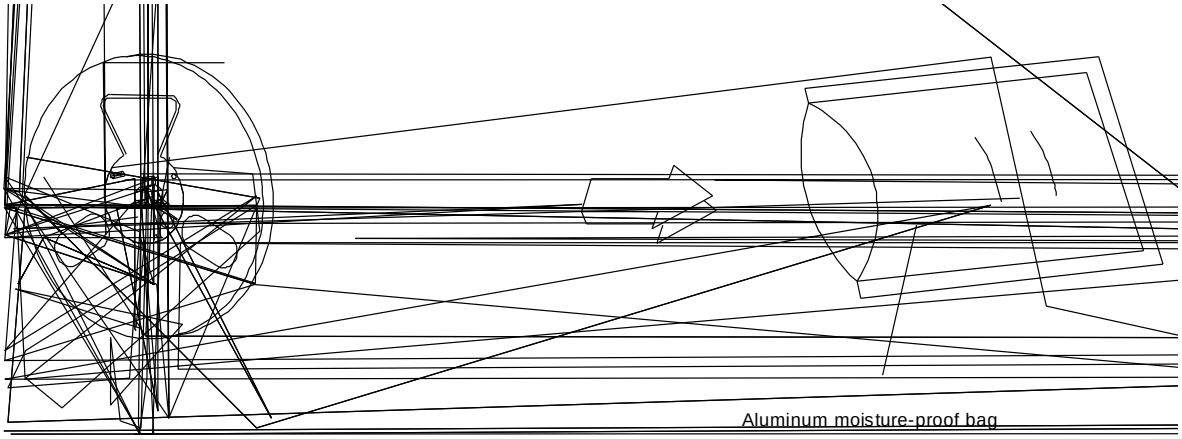
! Reel Dimensions mm

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

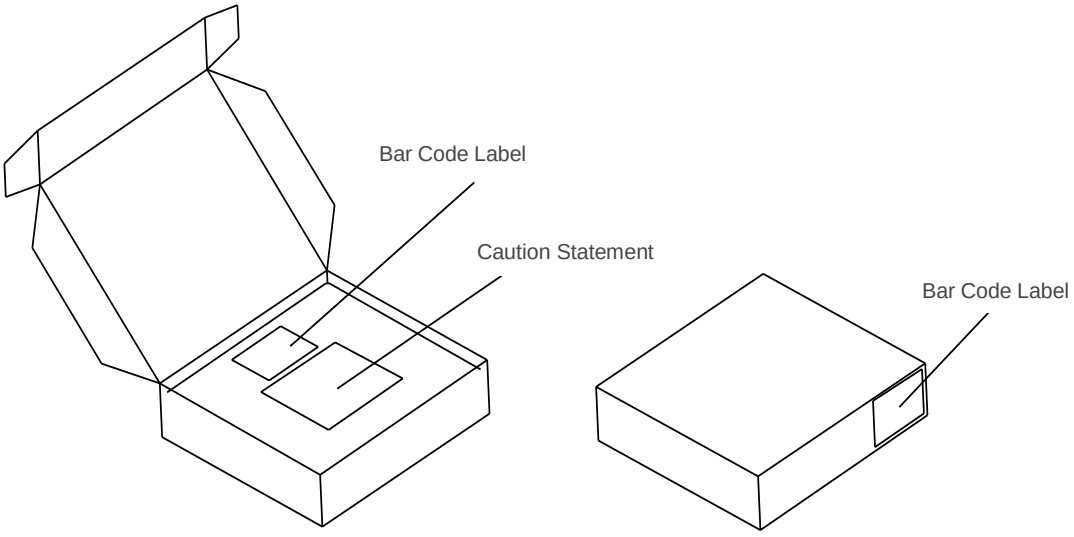


JEDEC

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

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

Glossary

Typical Values