

# HVA-3528DER



## 3528 PLCC4

## Products Series

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

- PPA
- 50% I<sub>v</sub> 120
- 617nm
- AEC-Q102 & IEC 60810

## Features

- Package Colorless clear resin in white PPA cup
- Viewing angle at 50% I<sub>v</sub>: 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 lv @ If=50mA	Ordering Code
HVA-3528DER - XXXX - XX -		

## Maximum Ratings

### Characteristics ( $T_s$ $f = 50$ mA)

Parameters		Symbol	Rating	Unit
Wavelength at Peak Emission	typ.	peak	624	nm
	min.	dom	612	nm
Dominant Wavelength	typ.	dom	617	nm
	max.	dom	624	nm

### Brightness Grouping ( $T_s$ $f = 50 \text{ mA}$ )

Grouping	Luminous Intensity $I_v$ min.	Luminous Intensity $I_v$ max.	Luminous Flux $\Phi_v$ typ.
BA	1.80 cd	2.24 cd	6.10 lm
BB	2.24 cd	2.80 cd	7.64 lm
CA	2.80 cd	3.55 cd	9.50 lm
CB	3.55 cd	4.50 cd	12.10 lm

### Forward Voltage Grouping ( $T_s$ $f = 50 \text{ mA}$ )

Grouping	Forward Voltage $V_f$ min.	Forward Voltage $V_f$ max.
3A	1.90 V	2.05 V
3B		

### Dominant Wavelength Grouping ( $T_s$ $f = 50 \text{ mA}$ )

Grouping	Dominant Wavelength $\lambda_{\text{dom}}$ min.	Dominant Wavelength $\lambda_{\text{dom}}$ max.

## Information on Label

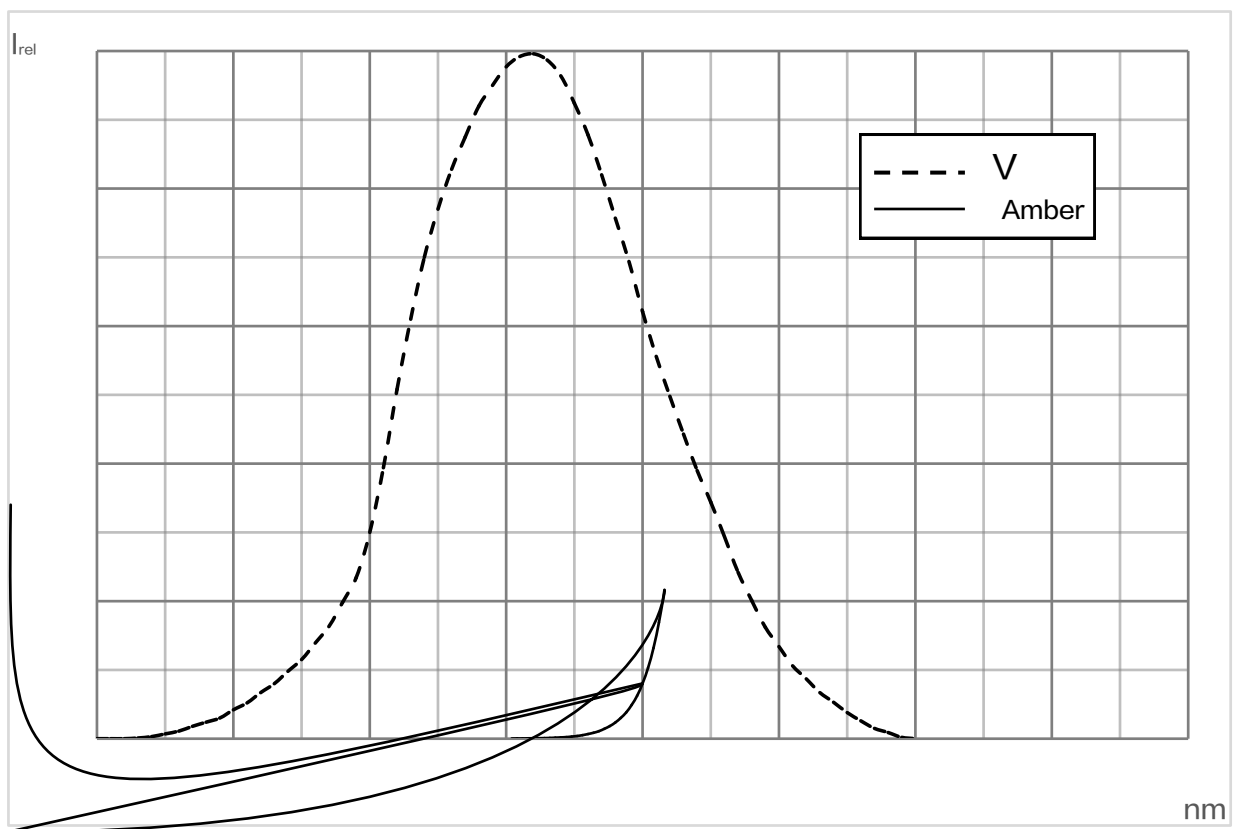
E.g. BA-2-3A

Brightness	Color	Forward Voltage
BA	2	3A

$$- V(\lambda) =$$

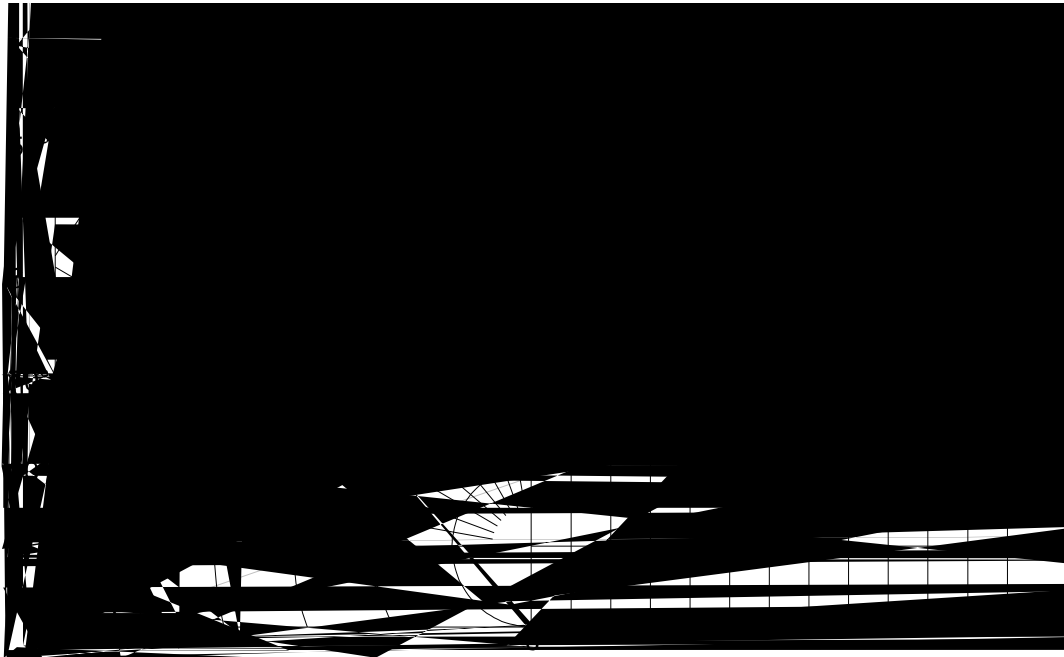
Relative Spectral Emission -  $V(\lambda)$  = Standard Eye Response Curve

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



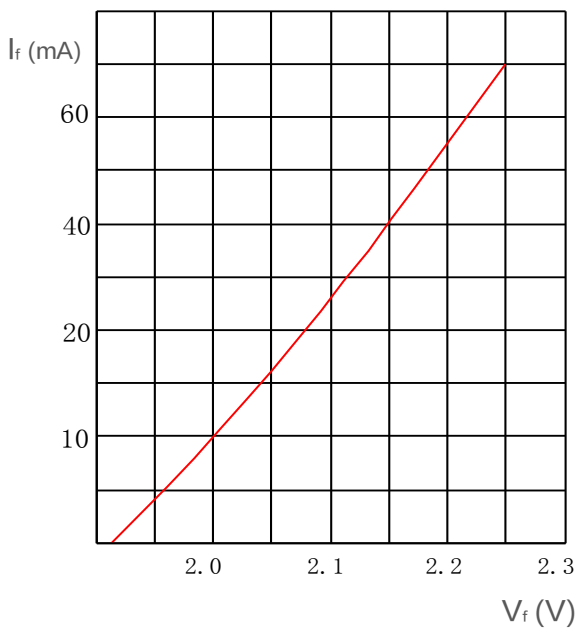
Radiation Characteristics

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



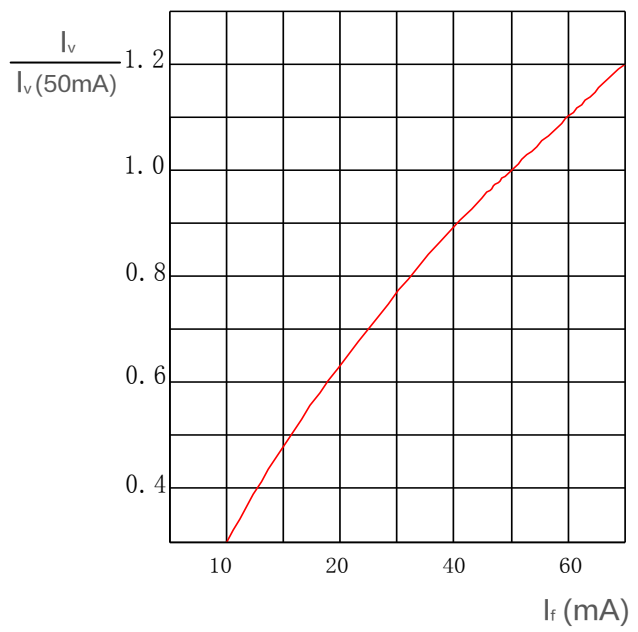
Forward Current

$I_f = f (V_f); T_a$



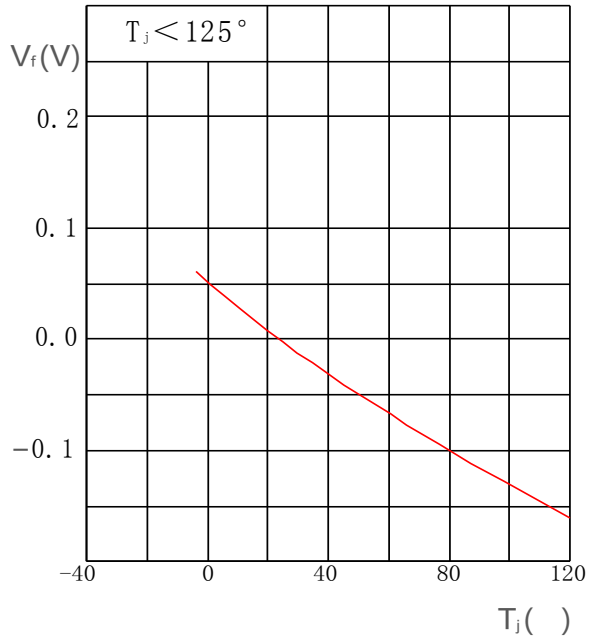
Relative Luminous Intensity

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



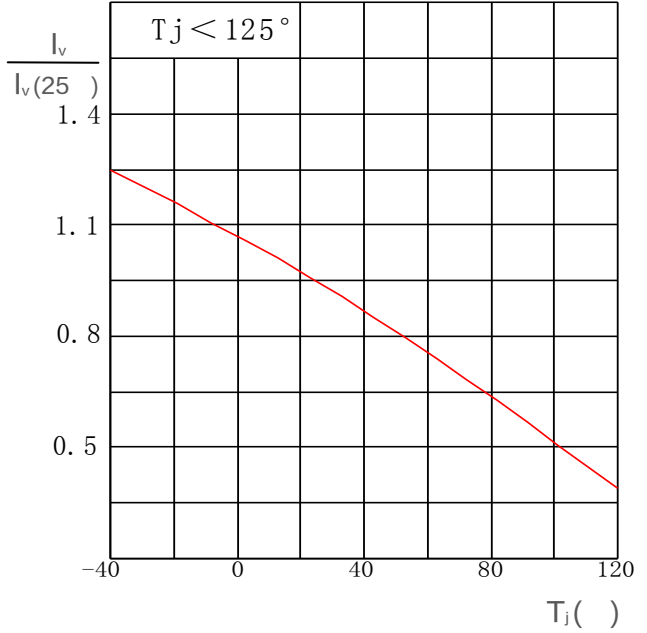
Relative Forward Voltage

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



Relative Luminous Intensity

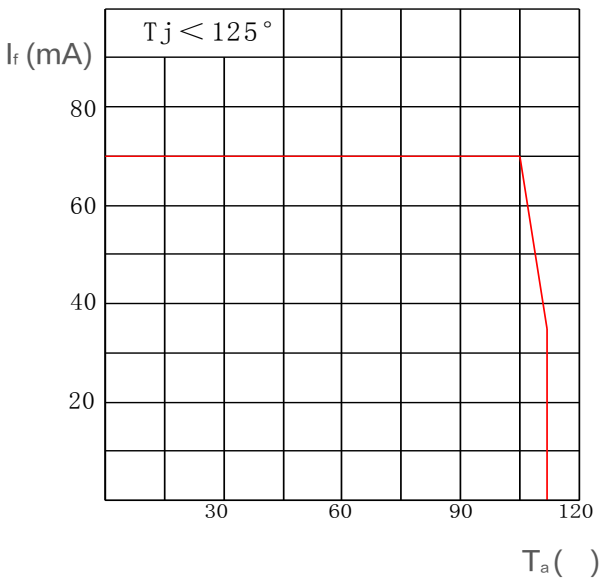
$I_v / I_v$ ;  $I_f = 50 \text{ mA}$



Solder Point Temperature

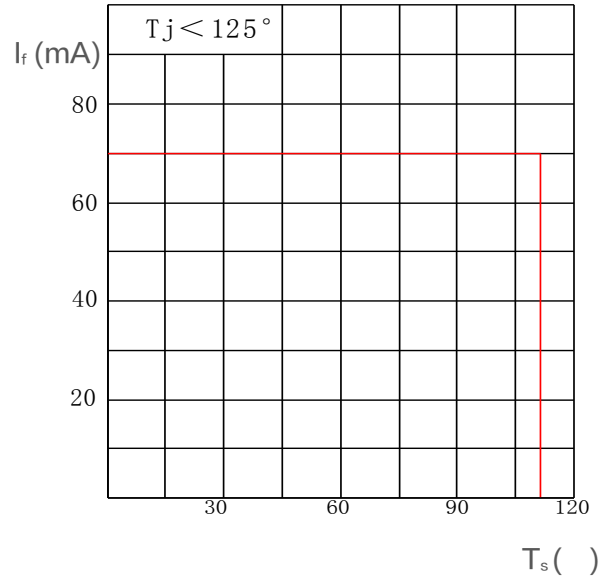
Ambient Temperature vs. Forward Current

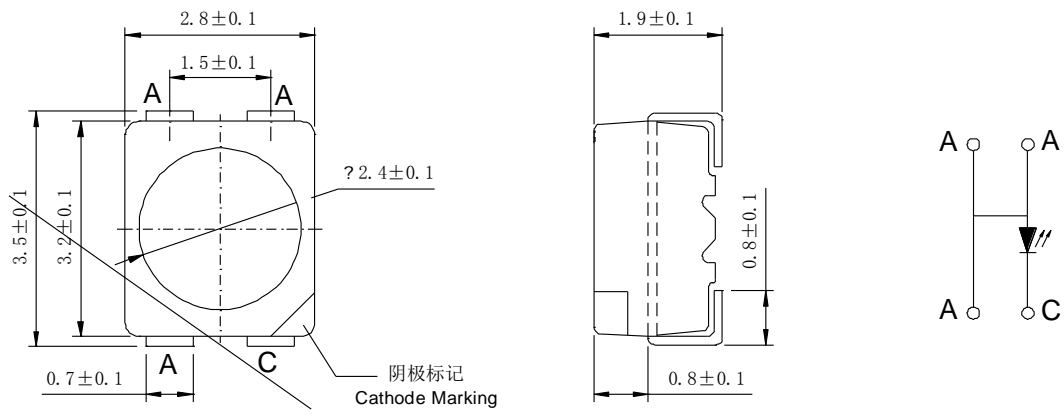
$I_f = f(T_a)$



vs. Forward Current

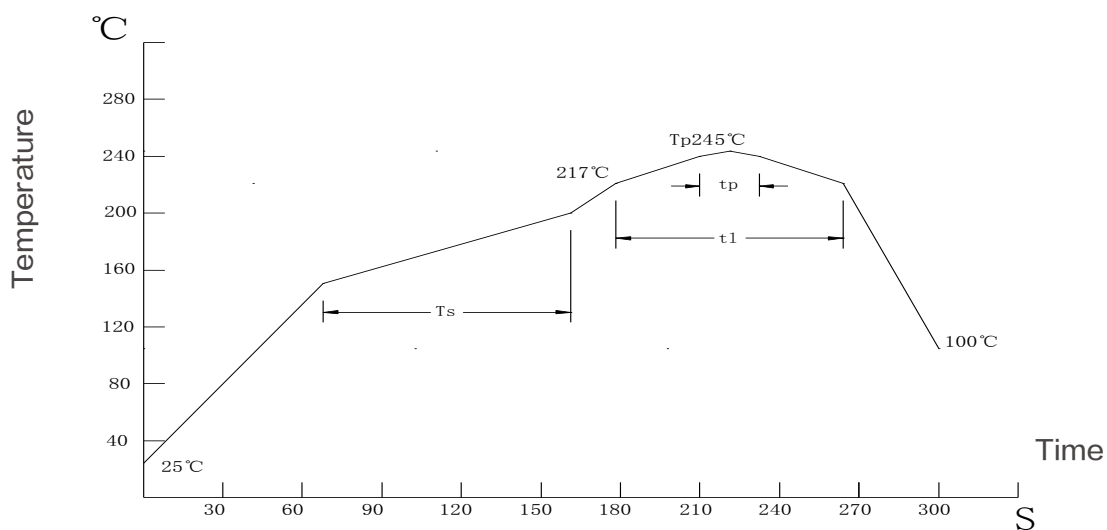
$I_f = f(T_s)$







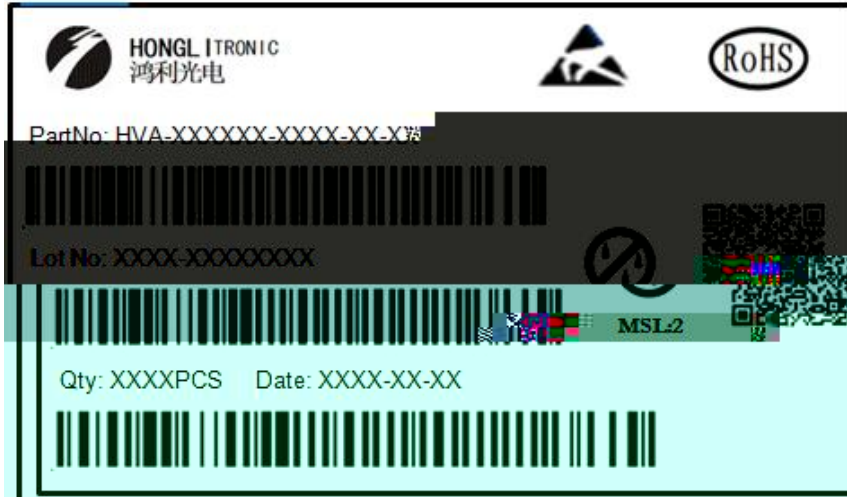
## Reflow Soldering Profile



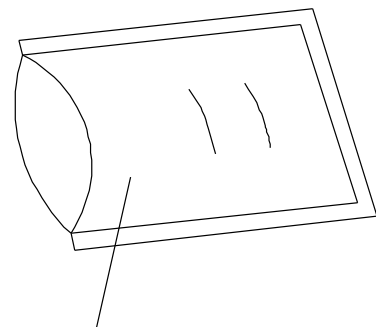
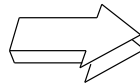
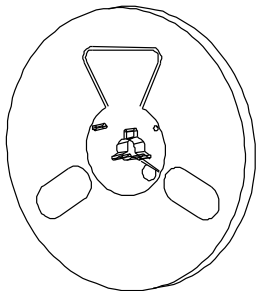
Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		min.	rec.	max.	
Ramp-up Rate to Preheat 25 -150	-	-	2	3	/s
Time $T_{smin}$ to $T_{smax}$	$T_s$	60	100	120	s
Ramp-up Rate to Peak $T_{smax}$ to $T_p$	-	-	2	3	s
Liquidus Temperature	$T_l$	-	217	-	-
Time above Liquidus Temperature	$t_l$	-	80	100	s
Peak Temperature	$T_p$	-	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

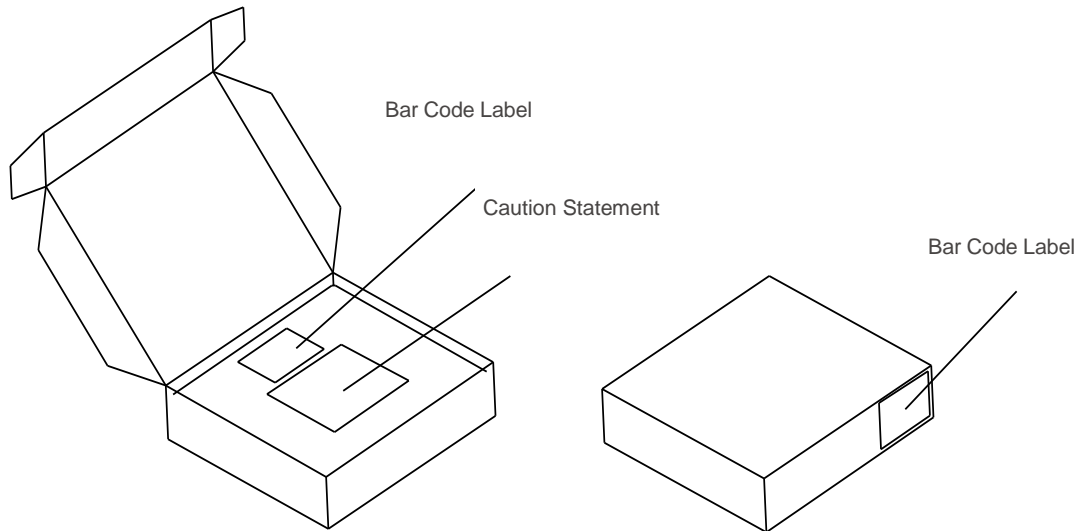
JEDEC

### 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