

# 3535HP Series

# 1ZHP35AV27CH01Z4

- •Outline : 3.5\*3.5\*2.22mm
- High efficiency
- Good thermal dissipation & optical uniformity

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#### Features

- RoHS2.0 and REACH-compliant
- ➢ MSL2 qualified according to J-STD 020
- ESD 8KV (HBM : MIL-STD-883 Class 3B)

#### Applications

- Portable lighting
- Outdoor lighting
- Indoor lighting
- Commercial lighting
- Industrial lighting
- Decorative lighting
- Agricultural lighting



#### Product Code

# 1 - Z - HP35 - A - V27C - H - 0 - 1 - Z - 4

1 2 3 4 5 6 7 8 9 0

1	2	3	4	5	
Process type	Cotogony	Specification Long Angle code D		Dice wavelength	
Process type	Calegory	Specification	Lens Angle code	& Luminous rank	
1: Normal	Z: High Power	HP35: Ceramic	A: 120°	VXXX: red light &	
process	LED	3535		level	

6	Ø	8	9	0
Support code	Zene <mark>r &amp;</mark> High CRI	Cap color code	Module & Lens code	Current code
H: HTCC	0: None Zener	1: Series No.	Z: Molding	4: 350mA

#### Product list

Luminous Flux (lm)			Dominant Wavelength	Forward Voltage (V) @350mA		Viewing
Group	Min.	Max.	(nm)	Min.	Max.	Angle
B24	45	50	620-630			
B25	50	55		1.0	2.4	120°
B26	55	60		1.0	2.4	130
B27	60	65				

- 1. Forward voltage (V<sub>F</sub>) ±0.05V ; Luminous flux ( $\Phi$ v) ±7% ; Wavelength ( $\lambda$ d/ $\lambda$ p) ±1nm ; Viewing angle(2 $\theta$ <sub>1/2</sub>) ±10°
- 2. IS standard testing.



#### Maximum Rating (Ta : 25°C)

Characteristics	Symbol	Min.	Typical	Max.	Unit
DC Forward Current <sup>1</sup>	IF			700	mA
Pulse Forward Current <sup>2</sup>	IPF			1000	mA
Reverse Voltage	V <sub>R</sub>			5	V
Reverse Current	I <sub>R</sub>			10	μA
Junction Temperature <sup>3</sup>	Tj			150	°C
Storage Temperature Range	T <sub>stg</sub>	-40	_	100	°C
Soldering Temperature	T <sub>sol</sub>			250	°C

- 1. For other ambient, limited setting of current will depend on de-rating curves.
- 2. D=0.01s duty 1/10.
- 3. When drive on maximum current, Tj must be kept below 150°C



# Dominant Wavelength Binning

Bin code (350mA)	Min. λ <sub>d</sub> (nm)	Max. λ <sub>d</sub> (nm)
R620	620	625
R625	625	630

# Intensity Binning

Min. Φ <sub>v</sub>	Max. Φ <sub>v</sub>
(Lm)	(lm)
45	50
50	55
55	60
60	65
	Min. Φv   (Lm)   45   50   55   60

# ■ Forward Voltage Binning

Bin code (350mA)	Min. V <sub>F</sub> (V)	Max. V <sub>F</sub> (V)
V1820	1.8	2.0
V2022	2.0	2.2
V2224	2.2	2.4



#### Relative Spectral Power Distribution



#### Electronic-Optical Characteristics



#### Typical Spatial Distribution



#### Thermal Design for De-rating

The maximum forward current is determined by the thermal resistance between the LED junction and ambient. It is crucial for the end product to be designed in a manner that minimizes the thermal resistance from the solder point to ambient in order to optimize lamp life and optical characteristics.





#### Dimensions



§ Tolerance is ±0.13mm unless other specified.

# Suggest Stencil Pattern (Recommendations for reference)





RECOMMENDED STENCIL PATTERN (HATCHED AREA IS OPENING)

§ Suggest stencil t =0.12 mm



Packing





# Unpackaged Reel Label Packaged Reel Label Label Label Inside box Maximums five reels

- 1. Each reel (minimum number of pieces is 100 and maximum is 1000 for 120 degree product) is packed in a moisture-proof bag along with a packs of desiccant and a humidity indicator card.
- A maximum of 5 moisture-proof bags are packed in an inner box (size: 260mm x 230mm x 100mm ±5mm).
- A maximum of 4 inner boxes are put in an outer box (size: 480mm x 275mm x 215mm ±5mm).
- 4. Part No., Lot No., quantity should be indicated on the label of the moisture-proof bag and the cardboard box.



#### **IR Reflow Soldering Profile**



- 1. The recommended reflow temperature is 240°C(±5°C). The maximum soldering temperature should be limited to 250-260°C.
- 2. Do not stress the silicone resin while it is exposed to high temperature.
- 3. The reflow process should not exceed 2 times.



#### Precautions

- 1. Recommendation for using LEDs
  - 1.1 The lens of LEDs should not be exposed to dust or debris. Excessive dust and debris may cause a drastic decrease in the luminosity.
  - 1.2 Avoid mechanical stress on LED lens.
  - 1.3 Do not touch the LED lens surface. It would affect the optical performance of the LED due to the LED lens' damage.
  - 1.4 Pick & place tools are recommended for the remove of LEDs from the factory tape & reel packaging
- 2. Pick & place nozzle

The pickup tool was recommended and shown as below



3. Lens handling

Please follow the guideline to pick LEDs.

- 3.1 Use tweezers to pick LEDs.
- 3.2 Do not touch the lens by using tweezers.
- 3.3 Do not touch lens with fingers.
- 3.4 Do not apply more than 4N (400gw) directly onto the lens.

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4. Lens cleaning

In the case which a small amount of dirt and dust particles remain on the lens surface, a suitable cleaning solution can be applied.

- 4.1 Try a gentle wiping with dust-free cloth.
- 4.2 If needed, use dust-free cloth and isopropyl alcohol to gently clean the dirt from the lens surface.
- 4.3 Do not use other solvents as they may directly react with the LED assembly.
- 4.4 Do not use ultrasonic cleaning which will damage the LEDs.
- 5. Carrier tape handling

The following items are recommended when handling the carrier tape of LEDs.

- 5.1 Do not twist the carrier tape.
- 5.2 The inward bending diameter should not be smaller than 6cm for each carrier tape.
- 5.3 Do not bend the tape outward.





- 6. Storage
  - 6.1 The moisture-proof bag is sealed :

The LEDs should be stored at 30°C or less and 90%RH or less. And the LEDs are limited to use within one year, while the LEDs is packed in moisture-proof package with the desiccants inside.

6.2 The moisture-proof bag is opened :

The LEDs should be stored at 30°C or less and 60%RH or less. Moreover, the LEDs are limited to solder process within 168hrs. If the humidity indicator card shows the pink color in 10% even higher or exceed the storage limiting time since opened, that we recommended to baking LEDs at 60°C at least 24hrs. To seal the remainder LEDs return to the moisture-proof bag, it's recommended to be with workable desiccants.





# Test Items and Results of Reliability

Test Item	Test Conditions	Duration/ Cycle	Number of Damage	Reference
Thermal Shock	–40°C 30min ↑↓5min 125°C 30min	1000 cycles	0/77	AEC-Q101
High Temperature Storage	T <sub>a</sub> =100°C	1000 hrs	0/22	EIAJ ED-4701 200 201
Humidity Heat Storage	T <sub>a</sub> =85°C RH=85%	1000 hrs	0/22	EIAJ ED-4701 100 103
Low Temperature Storage	T <sub>a</sub> =-40°C	1000 hrs	0/22	EIAJ ED-4701 200 202
Life Test	T <sub>a</sub> =25°C If=350mA	1000 hrs	0/22	
High Humidity Heat Operation	85°C RH=85% If=350mA	1000 hrs	0/22	
High Temperature Operation	T <sub>a</sub> =85℃ If=350mA	1000 hrs	0/22	
ESD(HBM)	2KV at 1.5kΩ;100pf	3 Times	0/22	MIL-STD-883

Failure Criteria						
14.0.00	Ourseland	Criteria fo		Judgment		
Item	Symbol	Condition	Min	Max		
Forward Voltage	V <sub>F</sub>	lf=350mA	-	USL <sup>1</sup> ×1.1		
Reverse Current	I <sub>R</sub>	V <sub>R</sub> =5V	-	100µA		
Luminous Intensity	lv	lf=350mA	LSL <sup>2</sup> ×0.7	-		

Notes:

1. USL: Upper specification level

2. LSL: Lower specification level