

Specification

AX32X0

SSC		고객명
Drawn	Approval	Approval

Rev. 07

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AX32X0

Description

The Acriche series of LEDs are designed for AC operation and high flux output applications. Acriche LEDs are an environmentally friendly semiconductor lighting source that can be directly connected to an AC power source without any DC conversion required.

Acriche's thermal management performance exceeds other power LED solutions by incorporating stateof-the-art SMD design and use of specialized thermal emission material. Acriche is an ideal light source for general purpose illumination applications



AX32X0

Features

- Connect directly
 to AC power
- Power Saving
- Long Life
- Simplified B.O.M
- Small design footprint
- Low thermal resistance
- SMT solderbility
- Lead Free and RoHS
 compliant

Applications

- Architectural lighting
- Task lighting
- Decorative and Pathway lighting
- White goods and gaming
- Spot lighting

* product specification may change without notice

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Part number of AX32X0

1. Part Number form : A $X_1 X_2 X_3 X_4 X_5$

X ₁	Color
W	Pure White
Ν	Warm White

X ₂	Acriche Series			
1	-			
2	-			
3	A3			

X ₃	LENS Type
2	Dome Type

X ₄	Operating Voltage [V]				
0	100 / 110 / 120				
1	-				
2	220 / 230				
3	-				

X ₅	РСВ Туре			
0	Emitter			
1	-			

2. Part Number of AX32X0

Part number Operating voltage		Operating current
AW3200 / AN3200 100V/110V/120 [RMS]		40mA [RMS]
AW3220 / AN3220	220V/230V [RMS]	20mA [RMS]

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Acriche semiconductor eco lighting



Outline dimensions

1. AX3200



2. AX3220



Notes :

- [1] All dimensions are in millimeters. (tolerance: ± 0.2)
- [2] Scale : none
- [3] Slug of package is electrically isolated
- [4] NC pin has no electrical or thermal connection

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1. AW3200

1-1 Electro-Optical characteristics at 100V/110V/120V Ta=25°C

Parameter	Symbol	Value			Unit
Parameter	Symbol	Min	Тур	Max	Onit
Luminous Flux ^[1]	Φ _V ^[2]	-	260	-	lm
Illuminance ^[3]	Φ _I	-	290	-	lx
Correlated Color Temperature [4]	ССТ	-	6300	-	К
CRI	R_{a}	-	65	-	-
Operating Current	I _{opt}	-	40	-	mA [RMS]
Power Dissipation	P _D	3.3		W	
Operating Frequency	Freq	50 / 60		Hz	
View Angle	2⊖ 1/2		130		deg.

1-2 Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Operating Voltage	V _{opt} ^[5]	115/127/138	V [RMS]
Power Dissipation	P _D	6.4	W
Junction Temperature	Tj	125	°C
Operating Temperature	T _{opr}	-40 ~ +85	°C
Storage Temperature	T _{stg}	-40 ~ +120	°C
ESD Sensitivity	-	±2,000V HBM	-

*Notes :

- [1] Acriche series maintains a tolerance of $\pm 10\%$ on flux and power measurements.
- [2] Φ_V is the total luminous flux output as measured with an integrating sphere.
- [3] Illuminance is measured at 50cm distance
- [4] Correlated Color Temperature is derived from the CIE 1931 Chromaticity diagram. CCT $\pm 5\%$ tester tolerance
- [5] 'Operating Voltage' doesn't indicate the maximum voltage which customers use, but it means tolerable voltage according to the voltage variation rate by one's country. It is recommended that the temperature of lead frame should be below 70 °C.

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2. AN3200

1-1 Electro-Optical characteristics at 100V/110V/120V Ta=25°C

Parameter	Symbol	Value			Unit
Parameter	Symbol	Min	Тур	Max	Onit
Luminous Flux ^[1]	Φ _V ^[2]	-	180	-	lm
Illuminance ^[3]	Φ _I	-	200	-	lx
Correlated Color Temperature [4]	ССТ	-	3000	-	К
CRI	R_{a}	-	80	-	-
Operating Current	I _{opt}	-	40	-	mA [RMS]
Power Dissipation	P _D	3.3		W	
Operating Frequency	Freq	50 / 60		Hz	
View Angle	2⊖ 1/2		130		deg.

1-2 Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Operating Voltage	V _{opt} ^[5]	115/127/138	V [RMS]
Power Dissipation	P _D	6.4	W
Junction Temperature	Tj	125	°C
Operating Temperature	T _{opr}	-40 ~ +85	°C
Storage Temperature	T _{stg}	-40 ~ +120	°C
ESD Sensitivity	-	±2,000V HBM	-

*Notes :

- [1] Acriche series maintains a tolerance of $\pm 10\%$ on flux and power measurements.
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- [3] Illuminance is measured at 50cm distance
- [4] Correlated Color Temperature is derived from the CIE 1931 Chromaticity diagram. CCT $\pm 5\%$ tester tolerance
- [5] 'Operating Voltage' doesn't indicate the maximum voltage which customers use, but it means tolerable voltage according to the voltage variation rate by one's country. It is recommended that the temperature of lead frame should be below 70 °C.

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3. AW3220

1-1 Electro-Optical characteristics at 220V/230V Ta=25°C

Parameter	Symbol	Value			Unit
Parameter	Symbol	Min	Тур	Max	Onit
Luminous Flux ^[1]	Φ _V ^[2]	-	260	-	lm
Illuminance ^[3]	Φ _I	-	290	-	lx
Correlated Color Temperature [4]	ССТ	-	6300	-	К
CRI	R_{a}	-	65	-	-
Operating Current	I _{opt}	-	20	-	mA [RMS]
Power Dissipation	P _D	3.3		W	
Operating Frequency	Freq	50 / 60		Hz	
View Angle	2⊖ 1/2		130		deg.

1-2 Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Operating Voltage	V _{opt} ^[5]	253/265	V [RMS]
Power Dissipation	P _D	6.4	W
Junction Temperature	Тj	125	°C
Operating Temperature	T _{opr}	-40 ~ +85	°C
Storage Temperature	T _{stg}	-40 ~ +120	°C
ESD Sensitivity	-	±2,000V HBM	-

*Notes :

- [1] Acriche series maintains a tolerance of $\pm 10\%$ on flux and power measurements.
- [2] Φ_V is the total luminous flux output as measured with an integrating sphere.
- [3] Illuminance is measured at 50cm distance
- [4] Correlated Color Temperature is derived from the CIE 1931 Chromaticity diagram. CCT $\pm 5\%$ tester tolerance
- [5] 'Operating Voltage' doesn't indicate the maximum voltage which customers use, but it means tolerable voltage according to the voltage variation rate by one's country. It is recommended that the temperature of lead frame should be below 70 °C.

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4. AN3220

1-1 Electro-Optical characteristics at 220V/230V Ta=25°C

Parameter	Symbol	Value			Unit
Parameter		Min	Тур	Max	onit
Luminous Flux ^[1]	Φ _V ^[2]	-	180	-	lm
Illuminance ^[3]	Φ _I	-	200	-	lx
Correlated Color Temperature [4]	ССТ	-	3000	-	К
CRI	R_{a}	-	80	-	-
Operating Current	I _{opt}	-	20	-	mA [RMS]
Power Dissipation	P _D	3.3		W	
Operating Frequency	Freq	50 / 60		Hz	
View Angle	2⊖ 1/2	130		deg.	

1-2 Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Operating Voltage	V _{opt} ^[5]	253/265	V [RMS]
Power Dissipation	P _D	6.4	W
Junction Temperature	Tj	125	°C
Operating Temperature	T _{opr}	-40 ~ +85	°C
Storage Temperature	T _{stg}	-40 ~ +120	°C
ESD Sensitivity	-	±2,000V HBM	-

*Notes :

- [1] Acriche series maintains a tolerance of $\pm 10\%$ on flux and power measurements.
- [2] Φ_V is the total luminous flux output as measured with an integrating sphere.
- [3] Illuminance is measured at 50cm distance
- [4] Correlated Color Temperature is derived from the CIE 1931 Chromaticity diagram. CCT $\pm 5\%$ tester tolerance
- [5] 'Operating Voltage' doesn't indicate the maximum voltage which customers use, but it means tolerable voltage according to the voltage variation rate by one's country. It is recommended that the temperature of lead frame should be below 70 °C.

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Color spectrum, Ta=25°C





2. Warm white



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Current – Voltage characteristics, Ta=25°C



1. AX3200 with external resistor @100V

2. AX3200 with external resistor @110V



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Technical Data Sheet



Current – Voltage characteristics, Ta=25°C



3. AX3200 with external resistor @120V

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Current – Voltage characteristics, Ta=25°C

4. AX3220 with external resistor @220V

5. AX3220 with external resistor @230V



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Voltage – Relative flux characteristics, Ta=25°C



1. AX3200 with external resistor @100V

2. AX3200 with external resistor @110V



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Voltage – Relative flux characteristics, Ta=25°C



3. AX3200 with external resistor @120V

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Voltage – Relative flux characteristics, Ta=25°C



4. AX3220 with external resistor @220V

5. AX3220 with external resistor @230V



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Typical dome type radiation pattern, Ta=25°C

1. AX32X0



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Acriche Binning structure graphical representation

1. AX32X0



*Notes : For more detailed information on Acriche binning see the "Acriche Binning and Labeling" document at www.Acriche.com

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www.ACRICHE.com 서식번호 : SSC-QP-7-07-25 (Rev.00)

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Operating and biasing instructions of AX32X0

1. Operating circuit

Attention: see notes 1 through 4 below



2. Resistor sheet

	AX3200 ^[1]		AX3220 ^[1]			
VF	Drive current : 40mA [RMS] ^[2]		Drive c	urrent : 20m/	A [RMS] ^[2]	
Bin	Resistor value ^{[3] [4]}			Resistor value ^{[3] [4]}		
	100V	110V	120V	220V	230V	240V
Α	300 Ω	5 00 Ω	750 Ω	2.2k Ω	2.6kΩ	3kΩ
В	250 Ω	450 Ω	700 Ω	1.9k Ω	2.35kΩ	2.75kΩ
С	200 Ω	400 Ω	650 Ω	1.63kΩ	2.1kΩ	2.55kΩ
D	-	350 Ω	600 Ω	1.36kΩ	1.85kΩ	2.3kΩ

Notes :

- [1] External resistor is required for proper Acriche biasing.
- [2] Drive current and voltage levels must not cause Acriche to operate outside Absolute Maximum Rating for power dissipation in table 1-2.
- [3] Drive current tolerance is $\pm 10\%$ on each resistor value.
- [4] Resistor power value must be taken into consideration when choosing the type of resistor.[rated power = operating current² X resistance]

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Operating and biasing instructions of AX32X0

3. Operating temperature



Lead Temperature (TL)

Parameter	Value	Unit
R⊖ _{jL}	7	w∖3
T _j max	125	r
T _L max	100	C

4. Thermal modeling



Notes :

- [1] Acriche must be used with proper heat management.
- [2] It is recommended that the temperature of board should be below 70 $^\circ\!\!\!{\rm C}.$
- [3] For more information, refer to Z Power led Thermal Management Guide. (www.essc.co.kr/_HOMEPAGE/home_kor/product/spec/thermal.pdf)

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Operating and biasing instructions of AX32X0

5. Heat sink





Specification & Size	T _B (°C)	R⊖ _{BA} (°C ∕W)
$\begin{array}{llllllllllllllllllllllllllllllllllll$	73.8	10



Specification & Size	T _B (°C)	R⊖ _{BA} (°C ∕W)
$\begin{array}{llllllllllllllllllllllllllllllllllll$	56.2	5

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Recommended solder pad

1. Solder pad



2. Solder paste pattern



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Solder profile

echnical Data Sheet





Reflow condition	Pb-Free assembly
Average ramp-up rate (Ts-max to Peak)	2~3℃ / second
Preheat Temperature Min (Ts-min)	150℃
Preheat Temperature Max (Ts-max)	200℃
Time maintained above: : Liquidus Temperature (TL)	217~220℃
Time maintained above: Time (tL)	60~150 seconds
Peak Temperature (TP)	250℃
Time within 5℃ of actual Peak Temperature (tP)	20~40 seconds
ramp-down rate	4~6℃ / second
Time 25 °C to Peak Temperature	6 minutes max

2. Hand Solder conditions

- 2-1 Lead : Not more than 3 seconds @MAX280°C
- 2-2 Slug : Use a thermal adhesive

* Caution

- [1] Reflow soldering should not be done more than one time.
- [2] Repairs should not be done after the LED has been soldered to the board. If repairs are unavoidable, suitable tools must be used.
- [3] Die slug is to be soldered.
- [4] During the soldering process, do not put stress on the LED.
- [5] After soldering, do not warp or twist circuit board.
- [6] Recommend to use a convection type reflow machine with 7 ~ 8 zones. Rev. 07





Emitter Reel Packaging



Note :

- 1. The number of loaded products in the reel is 250ea
- 2. All dimensions are in millimeters
- 3. Scale none

*The appearance and specifications of the product may be changed for improvement without notice.

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Packaging Structure





Outer Box



Note :

- 1. 6~10 reels are loaded in box
- 2. Scale none
- 3. For more information about binning and labeling, refer to the Application Note 1

서식번호: SSC-QP-7-07-25 (Rev.00)

Acriche semiconductor eco lighting



Precautions for use

- [1] Please note Acriche runs on high voltage so use caution when near the leads or if a dome is inadvertently removed while circuit is active
- [2] Please do not touch any of the circuit board, components or terminals with bare hands or metal while circuit is electrically active.
- [3] Please do not add or change wires while Acriche circuit is active

Handling of silicone resin for LEDs

- [1] Acriche series is encapsulated by silicone resin for the highest flux efficiency.
- [2] Avoid touching silicone resin portion of LED especially with sharp tools such as Pincette (tweezers).
- [3] Avoid leaving fingerprints on silicone resin parts.
- [4] Silicone resin is dust sensitive and needs a covered container for storage
- [5] When populating boards in SMT production there are no unusual restrictions regarding the form of the pick and place nozzle except that mechanical essure on the surface of the resin must be avoided.
- [6] Please do not apply diagonal force to the silicone lens in excess of 3000gf or permanent and fatal damage will occur.
- [7] Please do not cover the silicone resin with any other resin (epoxy, urethane, etc)

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