Enable High Flux and Wide View Angle

Filament PKG

SFW8C3XX-XX

LM-80 | RoHS | MacAdam 5-Step

Product Brief

Description

- Filament PKG series are LED arrays which provide High Flux and High Efficacy.
- Especially it is designed for easy assembly of lighting fixtures.
- Filament PKG series are ideal light sources for general lighting applications including Replacement Lamps, Industrial & Commercial Lightings and other high lumen required applications.

Features and Benefits

- Size 38.0 x 1.8 (mm)
- Viewing angle : 360°
- MacAdam 5-step binning
- High Color quality with CRI Min.80
- No blue light Hazard
- High Heat conductivity efficiency
- RoHS compliant

Key Applications

- Retrofits and fixtures
- Home lighting

Table 1. Product Selection Table

Part Number	CCT [K]	
	Color	Typ.
SFW8C32A-DK	Warm White	2700K

Performance Characteristics

Table 2. Electro Optical Characteristics, I_F=15mA , T_j=25ºC

Part Number	CCT (K) [1]	Luminous Flux [2] Φ_V [3] (lm)		Forward Voltage [4] (V)		CRI [5], R_a	Viewing Angle (degrees) 2Θ ½
		Min.	Max.	Min.	Max.	Min.	Typ.
SFW8C32A-DK	2700	210	250	84	90	80	360

Notes for Table 2:

1. Correlated Color Temperature is derived from the CIE 1931 Chromaticity diagram. Color coordinate : ±0.01, CCT ±5% tolerance.
2. Seoul Semiconductor maintains a tolerance of ±7% on flux and power measurements.
3. Φ_V is the total luminous flux output as measured with an integrating sphere.
4. Tolerance is ±3% on forward voltage measurements.
5. Tolerance is ±2 on CRI measurements.

* No values are provided by real measurement. Only for reference purpose.

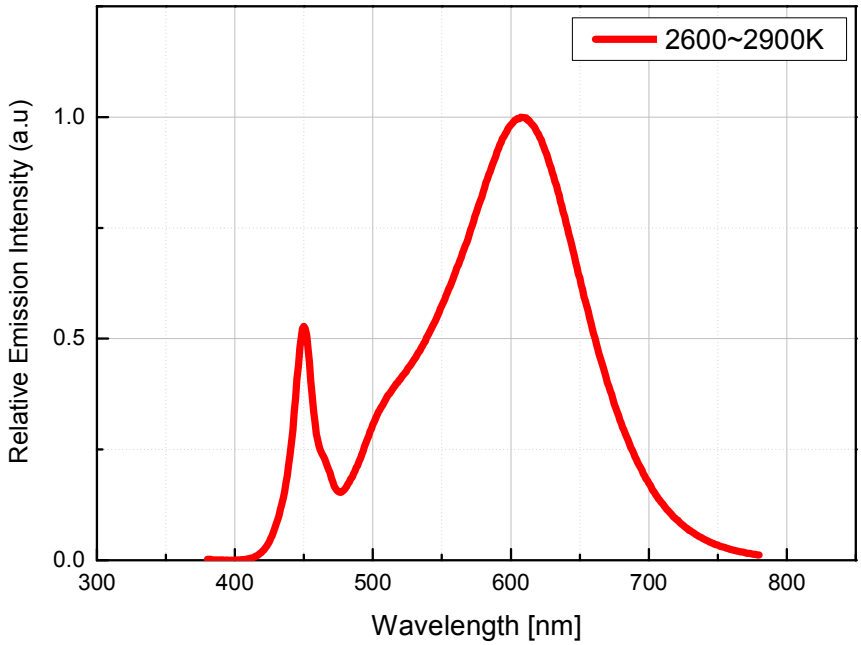
Performance Characteristics

Table 3. Absolute Maximum Characteristics, T_j=25ºC

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
Forward Current	I_F	-	15	20	mA
Power Dissipation	P_d	-	1.0	1.4	W
Junction Temperature	T_j	-	-	125	ºC
Operating Temperature	T_{opr}	-40	-	85	ºC
Storage Temperature	T_{stg}	-40	-	100	ºC

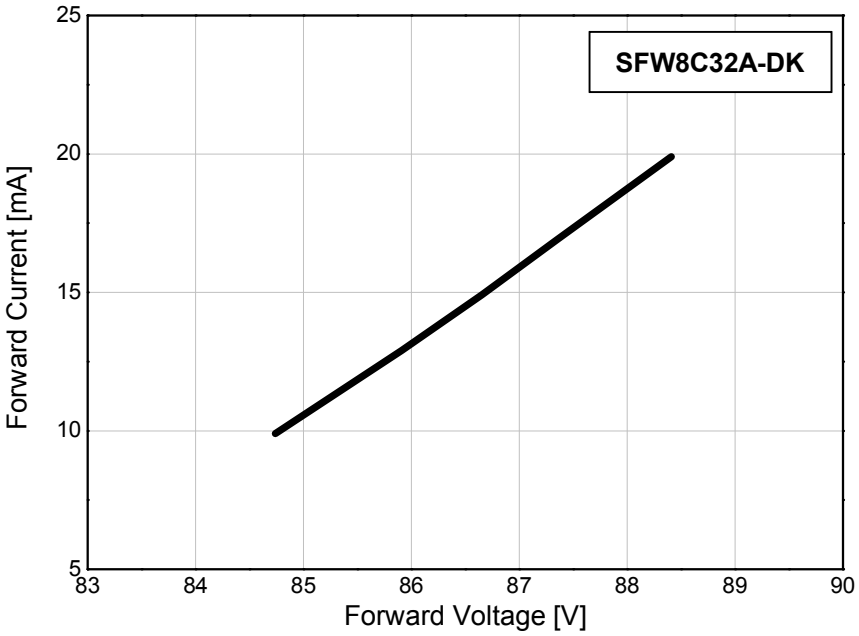
Relative Spectral Distribution

Fig 1. Color Spectrum, T_j=25℃



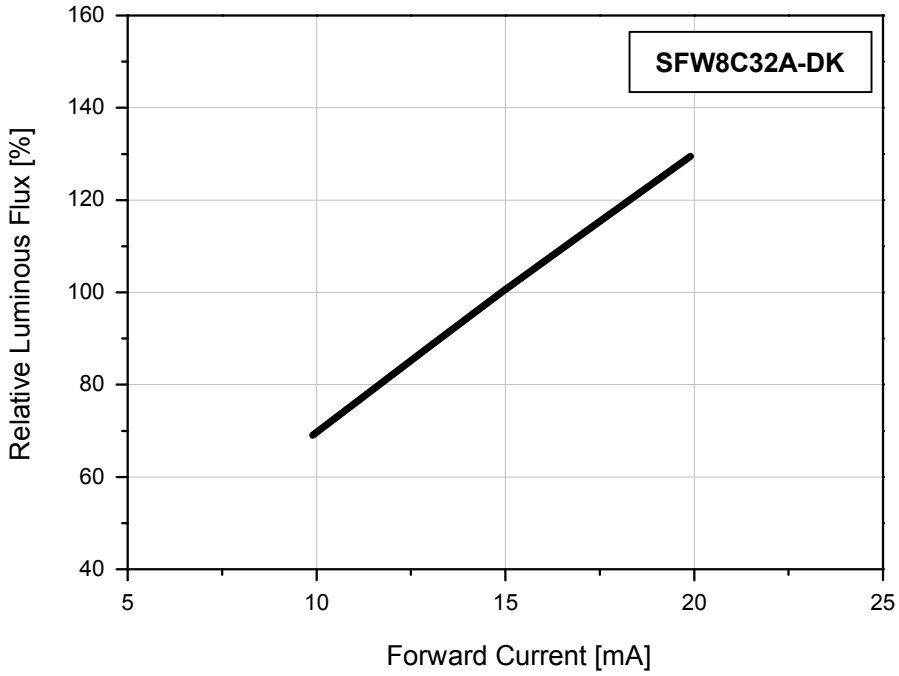
Forward Current Characteristics

Fig 2. Forward Voltage vs. Forward Current, T_j=25℃



Forward Current Characteristics

Fig 3. Forward Current vs. Relative Luminous Flux, T_j=25℃



Product Nomenclature

Table 4. Part Numbering System : $X_1X_2X_3X_4X_5X_6X_7X_8$

Part Number Code	Description	Part Number	Value
X_1	Company	S	SSC
X_2	Package type	F	Filament
X_3X_4	Color Specification	W8	CRI 80
X_5X_6	Package series	C3	C series
X_7	Characteristic code	2	-
X_8	Rev.	A	-

Table 5. Lot Numbering System : $Y_1Y_2Y_3Y_4Y_5Y_6Y_7Y_8Y_9Y_{10} - Y_{11}Y_{12}Y_{13}Y_{14}Y_{15}Y_{16}Y_{17}$

Lot Number Code	Description	Lot Number	Value
Y_1Y_2	Year		
Y_3	Month		
Y_4Y_5	Day		
Y_6	Filament LED series		
$Y_7Y_8Y_9Y_{10}$	Mass order		
$Y_{11}Y_{12}Y_{13}Y_{14}Y_{15}Y_{16}Y_{17}$	Internal Number		

Color Bin Structure

CIE Chromaticity Diagram

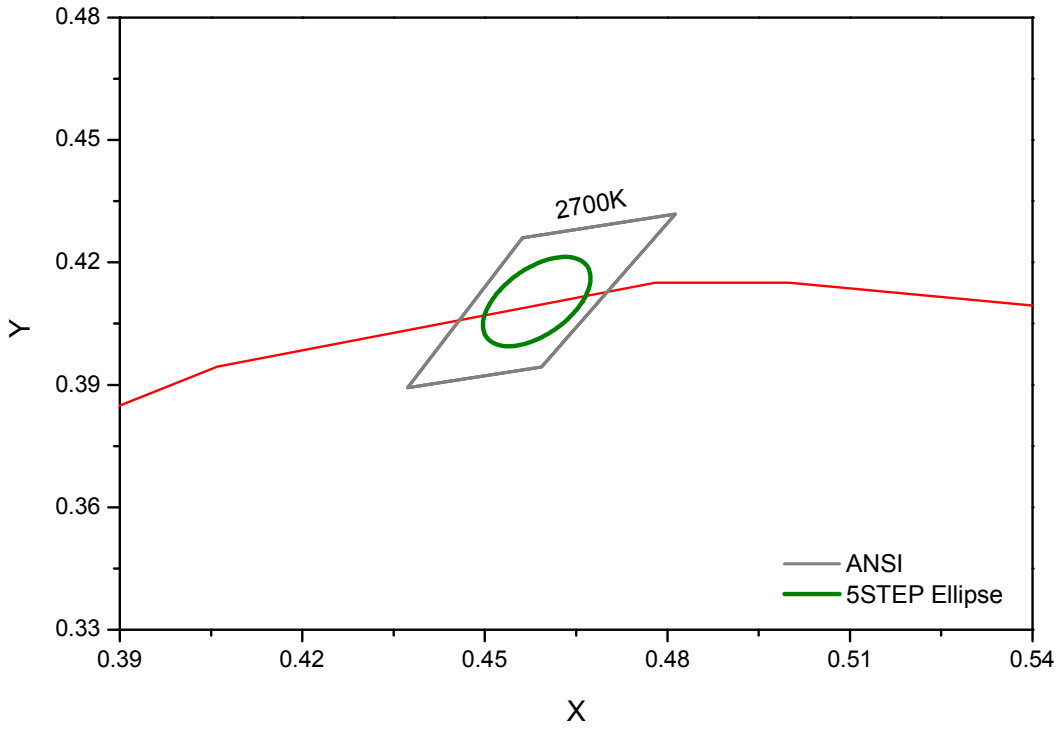


Table 6. CIE Bin Code description

CCT	Rank	Center Point		Major Axis a	Minor Axis b	Ellipse Rotation Angle(degrees)
		Cx	Cy			
2700K	EH5	0.4585	0.4104	0.0133	0.0068	54

Notes :

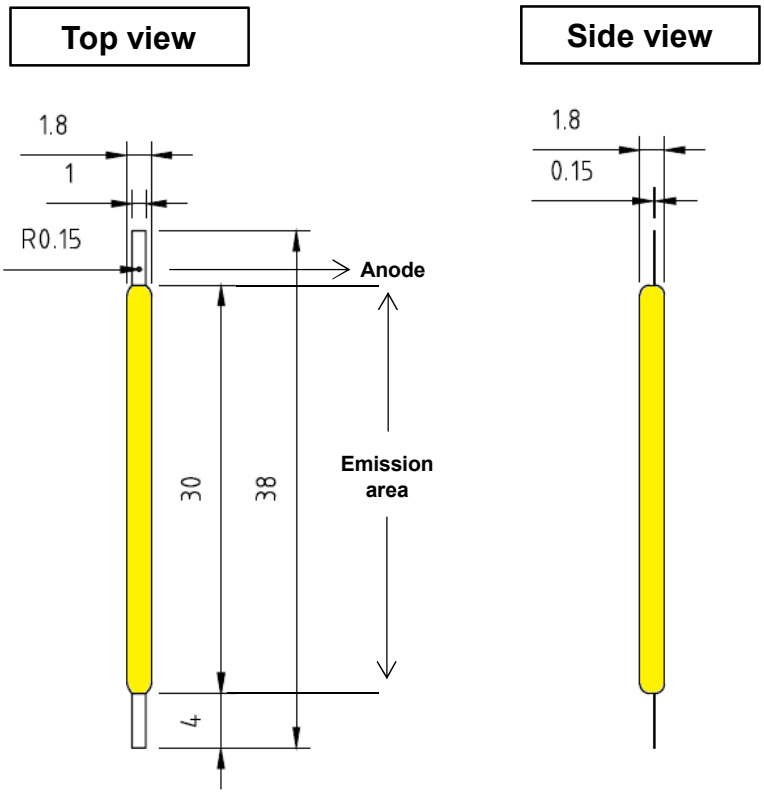
1. Energy Star binning applied to all 2600~2900K.
2. Measurement Uncertainty of the Color Coordinates : ± 0.005

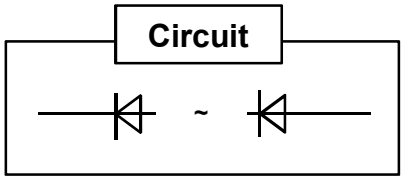
Color Bin Structure

Table 7. Bin Code description, I_F=15mA , T_j=25ºC

Part Number	Luminous Flux (lm)			Color Chromaticity Coordinate	Typical Forward Voltage (V)		
	Bin Code	Min.	Typ.		Bin Code	Min.	Max.
SFW8C32A-DK	D1	210	250	Refer to page. 8	W	84	90

Mechanical Dimensions





Notes :

1. All dimensions are in millimeters.
2. Scale : none

Precaution for Use

(1) Storage

To avoid the moisture penetration, we recommend storing LEDs in a dry box with a desiccant.
The recommended storage temperature range is 5C to 30C and a maximum humidity of 50%.

(2) Use Precaution after Opening the Packaging. Pay attention to the following:

a. Recommend conditions after opening the package

- Sealing
- Temperature : 5 ~ 40℃ Humidity : less than RH30%

b. If the package has been opened more than 4 week or the color of the desiccant changes.

(3) For Filament PKG

Because of the special structure of the Filament PKG, please follow the below notes when inspection and spot welding:

a. When testing the incoming material, the test stick should not direct contact with the silicone surface.

b. Spot welding workshop temperature should keep 23-25 degrees, humidity below 60% RH (avoid using sweat hands to handle silicone surface of the filament PKG when in hot temperature).

c. Spot welding operator should not have long fingernails, should wear finger sleeve during the process.

d. When pick filament PKG by hand, should use the finger belly touch the adhesive surface, do not clip the filament chip by fingertips with long nails.

e. The unpacked filament PKG that not finished welding should be put into the drying cabinet or oven, the parameters are set as follows:

- Drying cabinet set parameters: 23-25 degrees, humidity 30% -35% RH (preferred);
- Oven set Parameters: 60-65 degrees;
- Unpacked filament PKG that not used in case of holiday leave, suggest re-evacuated storage

f. Make sure the product surface clean. If there is something sprayed on the surface, please clean It with Ethyl alcohol.

g. Dust sensitivity silicone resin need containers having cover for storage.

h. The recommended storage conditions are temperature 5 to 30 and 70%RH or less.

I. The appearance and specifications of the product may be modified for improvement without notice.

(4) Radioactive exposure is not considered for the products listed here in.

(5) It is dangerous to drink the liquid or inhale the gas generated by such products when chemically disposed of.

Precaution for Use

(6) This device should not be used in any type of fluid such as water, oil, organic solvent and etc. When washing is required, IPA (Isopropyl Alcohol) should be used.

(8) When the LEDs are in operation the maximum current should be decided after measuring the package temperature.

(9) LEDs must be stored properly to maintain the device. If the LEDs are stored for 3 months or more after being shipped from Seoul Semiconductor, a sealed container with vacuum atmosphere should be used for storage.

(10) The appearance and specifications of the product may be modified for improvement without notice.

(11) Long time exposure of sun light or occasional UV exposure will cause silicone discoloration.

(12) Attaching LEDs, do not use adhesive that outgas organic vapor.

(13) The driving circuit must be designed to allow forward voltage only when it is ON or OFF. If the reverse voltage is applied to LED, migration can be generated resulting in LED damage.

(14) Please do not touch any of the circuit board, components or terminals with bare hands or metal while circuit is electrically active.

(15) VOCs (Volatile organic compounds) emitted from materials used in the construction of fixtures can penetrate silicone encapsulants of LEDs and discolor when exposed to heat and photonic energy. The result can be a significant loss of light output from the fixture. Knowledge of the properties of the materials selected to be used in the construction of fixtures can help prevent these issues.

(16) LEDs are sensitive to Electro-Static Discharge (ESD) and Electrical Over Stress (EOS). Below is a list of suggestions that Seoul Semiconductor purposes to minimize these effects.

Precaution for Use

a. ESD (Electro Static Discharge)

Electrostatic discharge (ESD) is the defined as the release of static electricity when two objects come into contact. While most ESD events are considered harmless, it can be an expensive problem in many industrial environments during production and storage. The damage from ESD to an LEDs may cause the product to demonstrate unusual characteristics such as:

- Increase in reverse leakage current lowered turn-on voltage
- Abnormal emissions from the LED at low current

The following recommendations are suggested to help minimize the potential for an ESD event.
One or more recommended work area suggestions:

- Ionizing fan setup
- ESD table/shelf mat made of conductive materials
- ESD safe storage containers

One or more personnel suggestion options:
- Antistatic wrist-strap
- Antistatic material shoes
- Antistatic clothes

Environmental controls:
- Humidity control (ESD gets worse in a dry environment)

b. EOS (Electrical Over Stress)

Electrical Over-Stress (EOS) is defined as damage that may occur when an electronic device is subjected to a current or voltage that is beyond the maximum specification limits of the device.
The effects from an EOS event can be noticed through product performance like:

- Changes to the performance of the LED package
  (If the damage is around the bond pad area and since the package is completely encapsulated the package may turn on but flicker show severe performance degradation.)
- Changes to the light output of the luminaire from component failure
- Components on the board not operating at determined drive power

Failure of performance from entire fixture due to changes in circuit voltage and current across total circuit causing trickle down failures. It is impossible to predict the failure mode of every LED exposed to electrical overstress as the failure modes have been investigated to vary, but there are some common signs that will indicate an EOS event has occurred:

- Damaged may be noticed to the bond wires (appearing similar to a blown fuse)
- Damage to the bond pads located on the emission surface of the LED package
  (shadowing can be noticed around the bond pads while viewing through a microscope)
- Anomalies noticed in the encapsulation and phosphor around the bond wires.
- This damage usually appears due to the thermal stress produced during the EOS event.

Precaution for Use

c. To help minimize the damage from an EOS event Seoul Semiconductor recommends utilizing:

- A surge protection circuit
- An appropriately rated over voltage protection device
- A current limiting device

Company Information

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Seoul Semiconductor (SeoulSemicon.com) manufacturers and packages a wide selection of light emitting diodes (LEDs) for the automotive, general illumination/lighting, appliance, signage and back lighting markets. The company is the world's fifth largest LED supplier, holding more than 10,000 patents globally, while offering a wide range of LED technology and production capacity in areas such as "nPola", deep UV LEDs, "Acrich", the world's first commercially produced AC LED, and "Acrich MJT - Multi-Junction Technology" a proprietary family of high-voltage LEDs. The company's broad product portfolio includes a wide array of package and device choices such as Acrich, high-brightness LEDs, mid-power LEDs, side-view LEDs, through-hole type LED lamps, custom displays, and sensors. The company is vertically integrated from epitaxial growth and chip manufacture in it's fully owned subsidiary, Seoul Viosys, through packaged LEDs and LED modules in three Seoul Semiconductor manufacturing facilities. Seoul Viosys also manufactures a wide range of unique deep-UV wavelength devices.

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