Kingbright

APG0603RWF-TT-5MAV

0.65 x 0.35 x 0.2 mm SMD Chip LED Lamp

DESCRIPTIONS

- The source color devices are made with InGaN on SiC substrate Light Emitting Diode
- Electrostatic discharge and power surge could damage the LEDs
- It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs
- All devices, equipments and machineries must be electrically grounded

FEATURES

- 0.65 mm x 0.35 mm SMD LED, 0.2 mm thickness
- Low power consumption
- Wide viewing angle
- Compatible with automatic placement equipment
- Package: 4000 pcs / reel
- Moisture sensitivity level: 2
- RoHS compliant

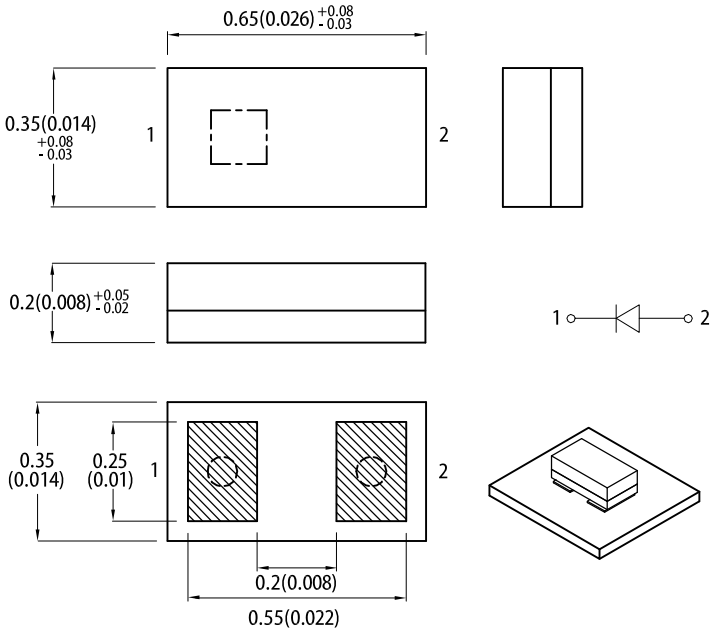
APPLICATIONS

- Backlight
- Status indicator
- Home and smart appliances
- Wearable and portable devices
- Healthcare applications

ATTENTION

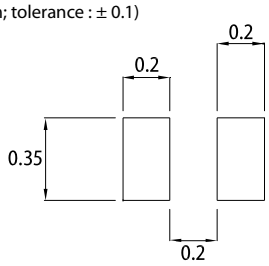
Observe precautions for handling electrostatic discharge sensitive devices

PACKAGE DIMENSIONS



RECOMMENDED SOLDERING PATTERN

(units : mm; tolerance : ± 0.1)



Mask open area ratio:80%
Mask thickness:80~100um

Notes:
1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.1(0.004") unless otherwise noted.
3. The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.
4. The device has a single mounting surface. The device must be mounted according to the specifications.

SELECTION GUIDE

Part Number	Emitting Color (Material)	Lens Type	Iv (mcd) @ 5mA [2]		Viewing Angle [1]
			Min.	Typ.	2θ1/2
APG0603RWF-TT-5MAV	White (InGaN)	Yellow Fluorescent	50	120	140°

Notes:
1. θ1/2 is the angle from optical centerline where the luminous intensity is 1/2 of the optical peak value.
2. Luminous intensity / luminous flux: +/-15%.
3. Luminous intensity value is traceable to CIE127-2007 standards.

ELECTRICAL / OPTICAL CHARACTERISTICS at T_A=25°C

Parameter	Symbol	Emitting Color	Value		Unit
			Typ.	Max.	
Chromaticity Coordinates x I_F = 5mA	x [1]	White	0.31	-	-
Chromaticity Coordinates y I_F = 5mA	y [1]	White	0.31	-	-
Forward Voltage I_F = 5mA	V_F [2]	White	2.9	3.1	V
Reverse Current (V_R = 5V)	I_R	White	-	50	μA
Temperature Coefficient of x I_F = 5mA, -10°C ≤ T ≤ 85°C	TC_x	White	-0.18	-	10^{-3}/°C
Temperature Coefficient of y I_F = 5mA, -10°C ≤ T ≤ 85°C	TC_y	White	-0.19	-	10^{-3}/°C
Temperature Coefficient of V_F I_F = 5mA, -10°C ≤ T ≤ 85°C	TC_V	White	-3.0	-	mV/°C

Notes:
1. Measurement tolerance of the chromaticity coordinates is ±0.01.
2. Forward voltage: ±0.1V.
3. Excess driving current and / or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.

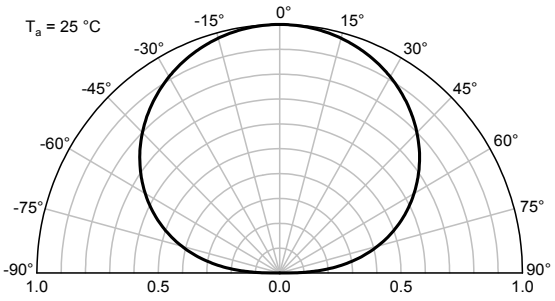
ABSOLUTE MAXIMUM RATINGS at T_A=25°C

Parameter	Symbol	Value	Unit
Power Dissipation	P_D	32	mW
Reverse Voltage	V_R	5	V
Junction Temperature	T_j	125	°C
Operating Temperature	T_{op}	-40 to +85	°C
Storage Temperature	T_{stg}	-40 to +85	°C
DC Forward Current	I_F	10	mA
Peak Forward Current	I_{FM} [1]	50	mA
Electrostatic Discharge Threshold (HBM)	-	1000	V
Thermal Resistance (Junction / Ambient)	$R_{th\ JA}$ [2]	380	°C/W
Thermal Resistance (Junction / Solder point)	$R_{th\ JS}$ [2]	240	°C/W

Notes:
1. 1/10 Duty Cycle, 0.1ms Pulse Width.
2. $R_{th\ JA}$,$R_{th\ JS}$ Results from mounting on PC board FR4 (pad size ≥ 16 mm^2 per pad).
3. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity – Ref JEDEC/JESD625-A and JEDEC/J-STD-033.

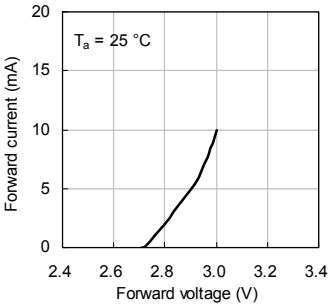
TECHNICAL DATA

SPATIAL DISTRIBUTION

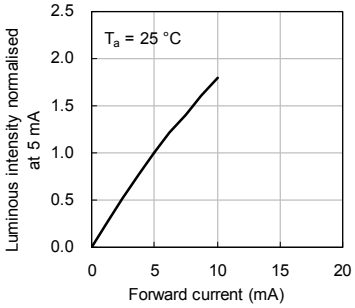


WHITE

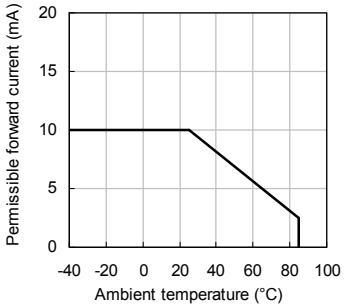
Forward Current vs. Forward Voltage



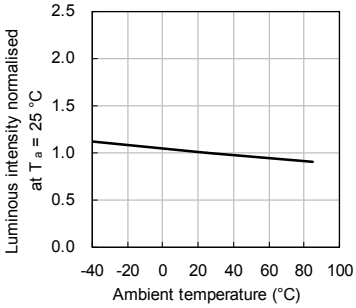
Luminous Intensity vs. Forward Current



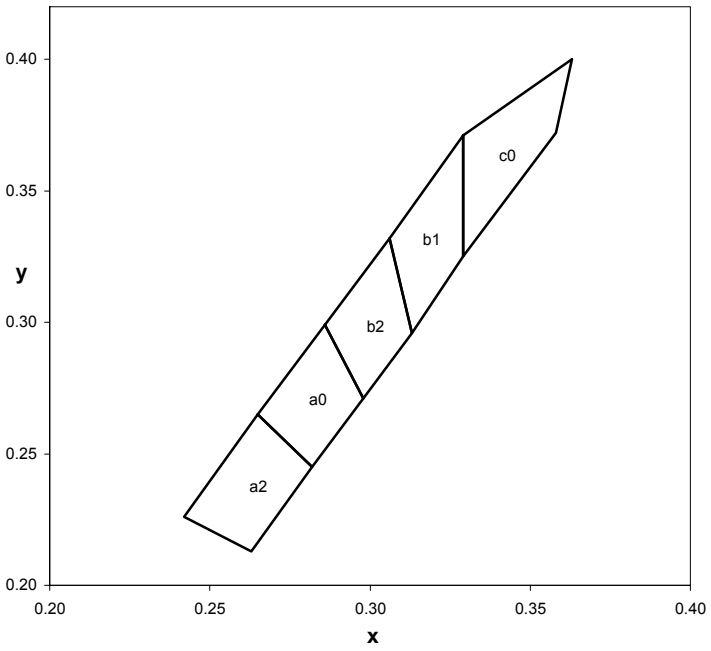
Forward Current Derating Curve



Luminous Intensity vs. Ambient Temperature



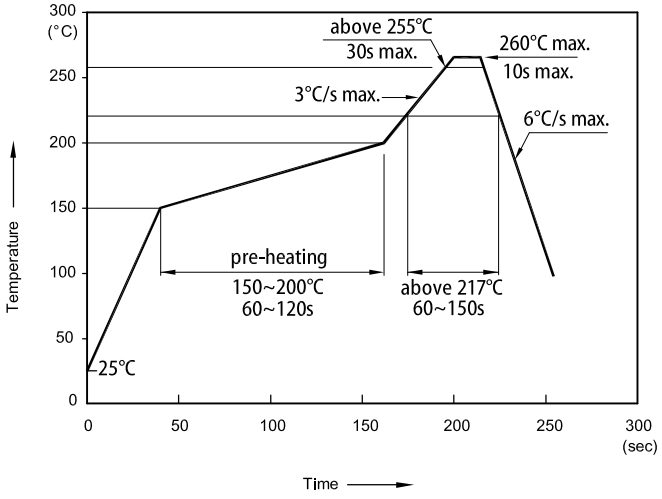
CIE CHROMATICITY DIAGRAM



	x	y		x	y
a2	0.263	0.213	a0	0.282	0.245
	0.282	0.245		0.298	0.271
	0.265	0.265		0.286	0.299
	0.242	0.226		0.265	0.265
b2	0.298	0.271	b1	0.313	0.296
	0.313	0.296		0.329	0.325
	0.306	0.332		0.329	0.371
	0.286	0.299		0.306	0.332
c0	0.329	0.325			
	0.358	0.372			
	0.363	0.400			
	0.329	0.371			

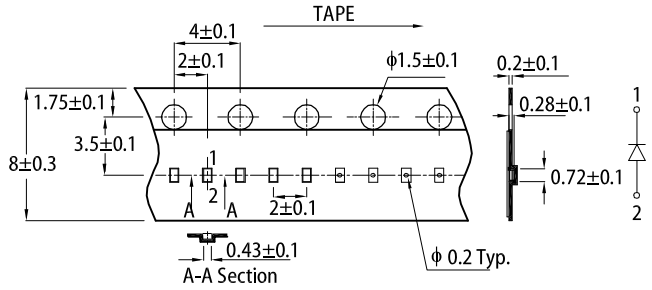
Notes:
Shipment may contain more than one chromaticity regions.
Orders for single chromaticity region are generally not accepted.
Measurement tolerance of the chromaticity coordinates is ±0.01.

REFLOW SOLDERING PROFILE for LEAD-FREE SMD PROCESS

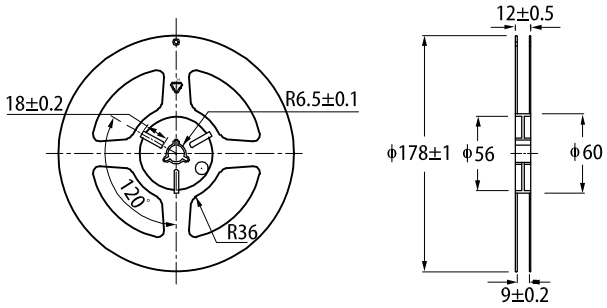


Notes:
1. Don't cause stress to the LEDs while it is exposed to high temperature.
2. The maximum number of reflow soldering passes is 2 times.
3. Reflow soldering is recommended. Other soldering methods are not recommended as they might cause damage to the product.

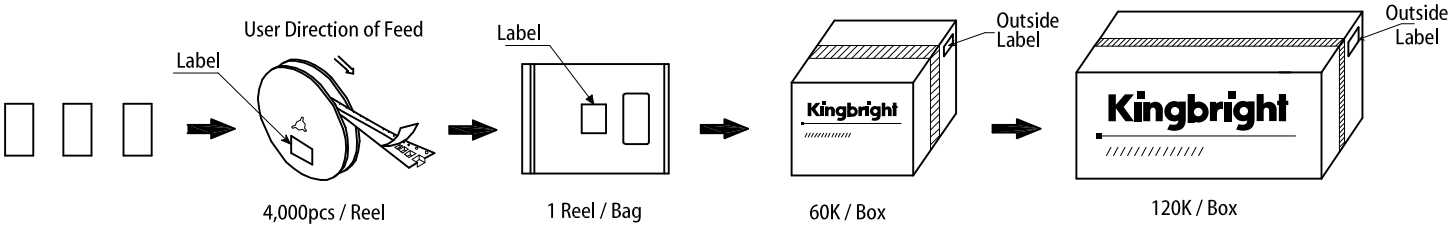
TAPE SPECIFICATIONS (units : mm)



REEL DIMENSION (units : mm)



PACKING & LABEL SPECIFICATIONS



PRECAUTIONARY NOTES

1. The information included in this document reflects representative usage scenarios and is intended for technical reference only.
2. The part number, type, and specifications mentioned in this document are subject to future change and improvement without notice. Before production usage customer should refer to the latest datasheet for the updated specifications.
3. When using the products referenced in this document, please make sure the product is being operated within the environmental and electrical limits specified in the datasheet. If customer usage exceeds the specified limits, Kingbright will not be responsible for any subsequent issues.
4. The information in this document applies to typical usage in consumer electronics applications. If customer's application has special reliability requirements or have life-threatening liabilities, such as automotive or medical usage, please consult with Kingbright representative for further assistance.
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