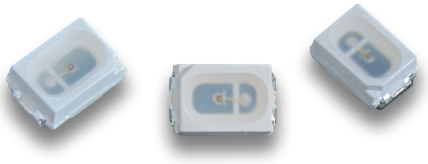
Kingbright

AA3021F3S-100MAV

3.0 x 2.0 mm Infrared Emitting Diode



DESCRIPTION

- F3 Made with Gallium Arsenide Infrared Emitting diodes

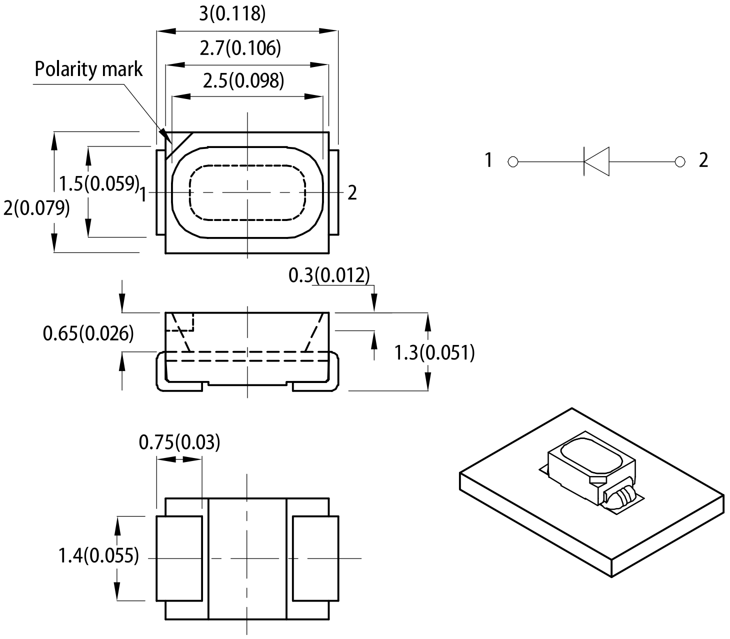
FEATURES

- 3.0 mm x 2.0 mm, 1.3 mm high, only minimum space required
- Suitable for compact optoelectronic applications
- Low power consumption
- Package: 2000 pcs / reel
- Moisture sensitivity level: 3
- Halogen-free
- RoHS compliant

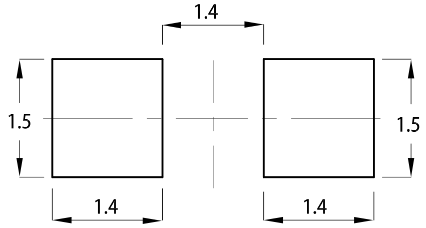
APPLICATIONS

- Infrared Illumination for cameras
- Machine vision systems
- Surveillance systems
- Industrial electronics
- IR data transmission
- Remote control

PACKAGE DIMENSIONS



RECOMMENDED SOLDERING PATTERN
(units : mm; tolerance : ± 0.1)



Notes:
1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.2(0.008") 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	Po (mW/sr) @ 100mA [2]		Viewing Angle [1]
			Min.	Typ.	$2\theta_{1/2}$
AA3021F3S-100MAV	Infrared (GaAs)	Water Clear	12	25	120°
			*4	*7	

Notes:
1. $\theta_{1/2}$ is the angle from optical centerline where the luminous intensity is 1/2 of the optical peak value.
2. Radiant Intensity / luminous flux: +/-15%.
** Radiant intensity value is traceable to CIE127-2007 standards.*

ELECTRICAL / OPTICAL CHARACTERISTICS at T_A=25°C

Parameter	Symbol	Emitting Color	Value		Unit
			Typ.	Max.	
Wavelength at Peak Emission I_F = 100mA	λ_{peak}	Infrared	940	-	nm
Spectral Bandwidth at 50% Φ REL MAX I_F = 100mA	Δλ	Infrared	50	-	nm
Capacitance	C	Infrared	90	-	pF
Forward Voltage I_F = 100mA	V_F [1]	Infrared	1.4	2	V
Reverse Current (V_R = 5V)	I_R	Infrared	-	10	μA

Notes:
1. Forward voltage: ±0.1V.
2. Wavelength value is traceable to CIE127-2007 standards.
3. Excess driving current and / or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.

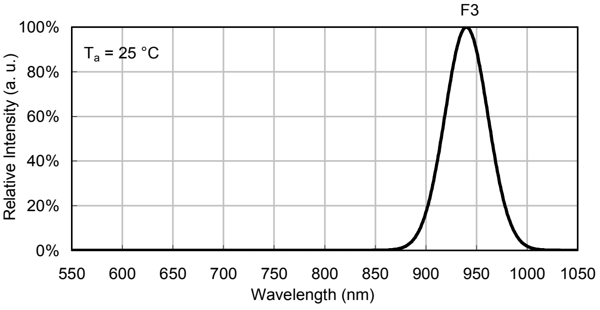
ABSOLUTE MAXIMUM RATINGS at T_A=25°C

Parameter	Symbol	Value	Unit
Power Dissipation	P_D	200	mW
Reverse Voltage	V_R	5	V
Junction Temperature	T_j	115	°C
Operating Temperature	T_{op}	-40 to +85	°C
Storage Temperature	T_{stg}	-40 to +85	°C
DC Forward Current	I_F	100	mA
Peak Forward Current	I_{FM} [1]	1200	mA
Electrostatic Discharge Threshold (HBM)	-	8000	V

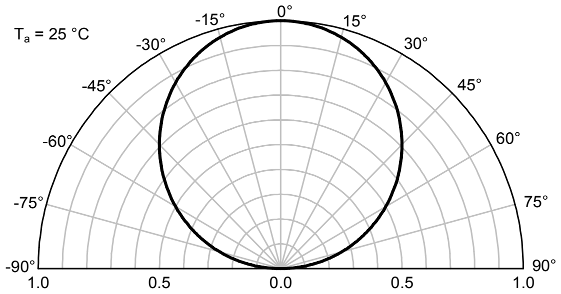
Notes:
1. 1/100 Duty Cycle, 10μs Pulse Width.
2. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity – Ref JEDEC/JESD625-A and JEDEC/J-STD-033.

TECHNICAL DATA

RELATIVE INTENSITY vs. WAVELENGTH

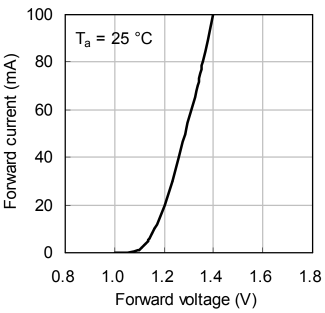


SPATIAL DISTRIBUTION

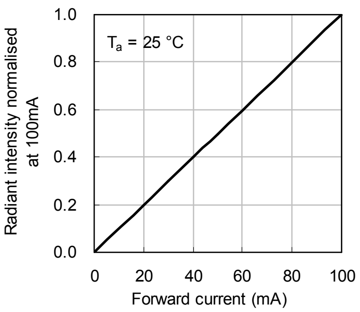


INFRARED

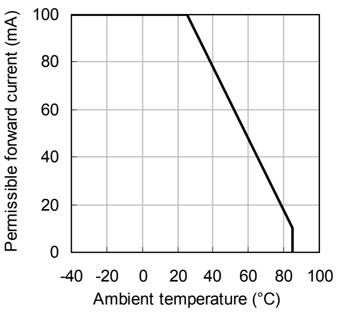
Forward Current vs. Forward Voltage



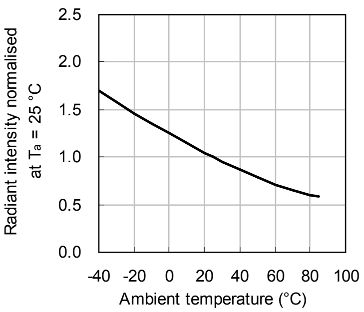
Radiant Intensity vs. Forward Current



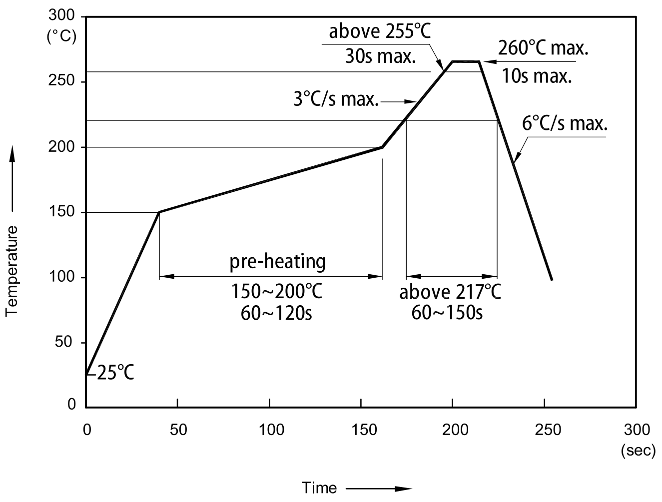
Forward Current Derating Curve



Radiant Intensity vs. Ambient Temperature

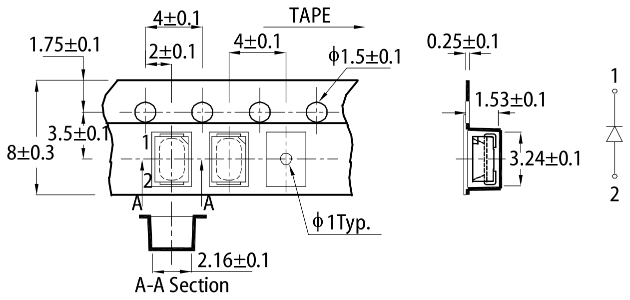


REFLOW SOLDERING PROFILE for LEAD-FREE SMD PROCESS

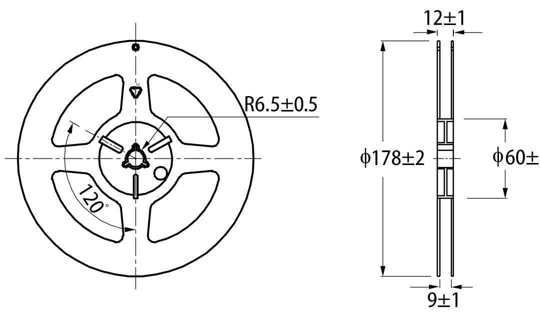


Notes:
1. Don't cause stress to the LEDs while it is exposed to high temperature.
2. The maximum number of reflow soldering passes is 2 times.
3. Reflow soldering is recommended. Other soldering methods are not recommended as they might cause damage to the product.

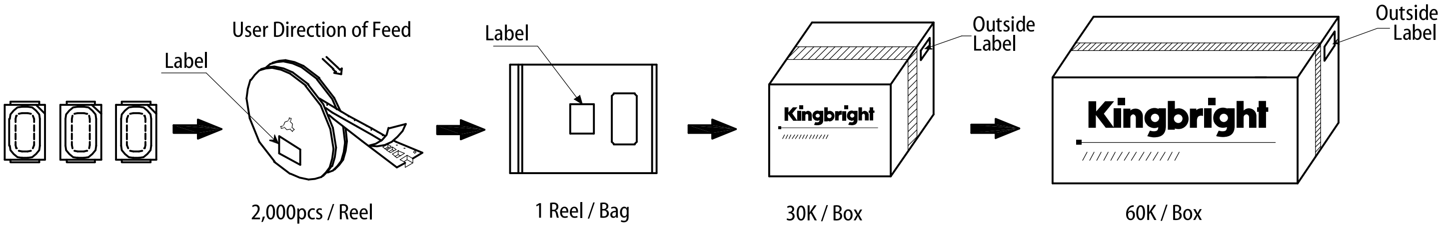
TAPE SPECIFICATIONS (units : mm)

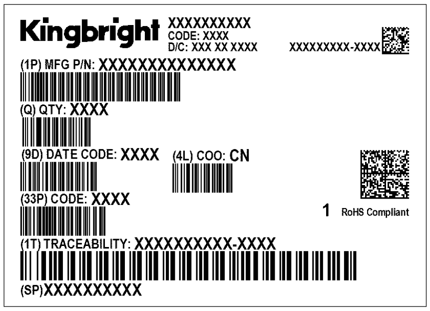


REEL DIMENSION (units : mm)



PACKING & LABEL SPECIFICATIONS



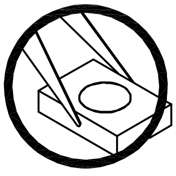


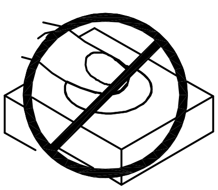
Kingbright XXXXXXXXXX
CODE: XXXX
D/C: XXX XX XXXX
XXXXXXXXX-XXXX
(1P) MFG P/N: XXXXXXXXXXXXXX
(Q) QTY: XXXX
(9D) DATE CODE: XXXX (4L) COO: CN
(33P) CODE: XXXX
1 RoHS Compliant
(1T) TRACEABILITY: XXXXXXXXXX-XXXX
(SP)XXXXXXXXXX

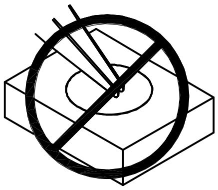
HANDLING PRECAUTIONS

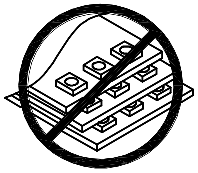
Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force. As a result, special handling precautions need to be observed during assembly using silicone encapsulated LED products. Failure to comply might lead to damage and premature failure of the LED.

1. Handle the component along the side surfaces by using forceps or appropriate tools.
2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.
3. Do not stack together assembled PCBs containing exposed LEDs. Impact may scratch the silicone lens or damage the internal circuitry.

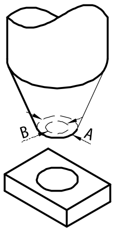








4-1. The inner diameter of the SMD pickup nozzle should not exceed the size of the LED to prevent air leaks.
4-2. A pliable material is suggested for the nozzle tip to avoid scratching or damaging the LED surface during pickup.
4-3. The dimensions of the component must be accurately programmed in the pick-and-place machine to insure precise pickup and avoid damage during production.
5. As silicone encapsulation is permeable to gases, some corrosive substances such as H_2S might corrode silver plating of lead frame. Special care should be taken if an LED with silicone encapsulation is to be used near such substances.



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.
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