



AA3528SF4S-R
3.5 x 2.8 mm Infrared Emitting Diode

DESCRIPTION

- SF4 Made with Gallium Aluminum Arsenide Infrared Emitting diodes

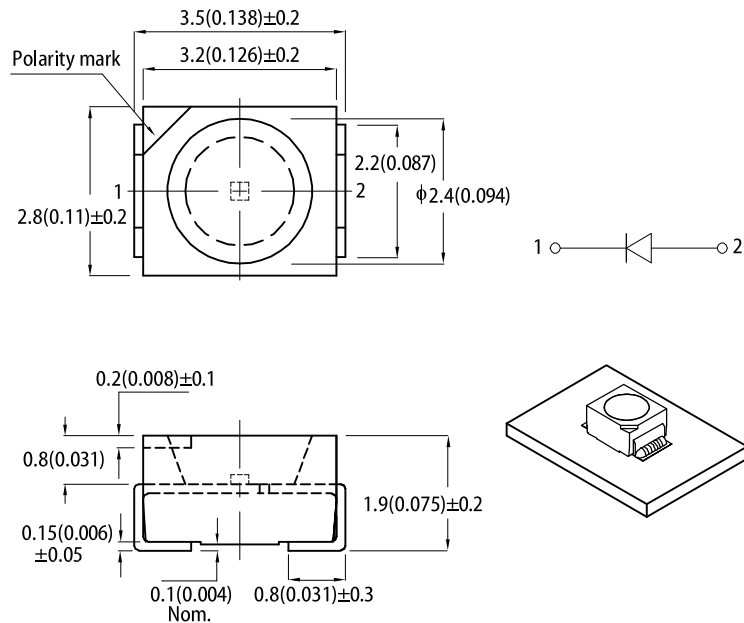
FEATURES

- Mechanically and spectrally matched to the phototransistor
- Package: 2000 pcs / reel
- Package matches with photodetector AA3528P3S
- Moisture sensitivity level: 3
- Halogen-free
- RoHS compliant

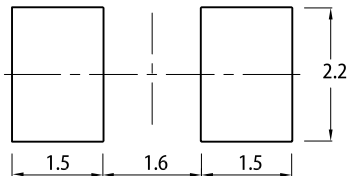
APPLICATIONS

- 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. θ1/2 is the angle from optical centerline where the luminous intensity is 1/2 of the optical peak value.
 2. Tolerance is ±0.25(0.01") 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) @ 20mA ^[2]		Viewing Angle ^[1]
			Min.	Typ.	2θ1/2
AA3528SF4S-R	Infrared (GaAlAs)	Water Clear	1.2	2	120°

Notes:

1. θ1/2 is the angle from optical centerline where the luminous intensity is 1/2 of the optical peak value.
2. Radiant Intensity / luminous flux: +/-15%.
3. 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 = 20mA	λ _{peak}	Infrared	880	-	nm
Spectral Bandwidth at 50% Φ REL MAX I _F = 20mA	Δλ	Infrared	50	-	nm
Forward Voltage I _F = 20mA	V _F ^[1]	Infrared	1.3	1.6	V
Reverse Current (V _R = 5V)	I _R	Infrared	-	10	μA
Temperature Coefficient of Wavelength I _F = 20mA, -10°C ≤ T ≤ 85°C	TC _λ	Infrared	0.3	-	nm/°C
Temperature Coefficient of V _F I _F = 20mA, -10°C ≤ T ≤ 85°C	TC _V	Infrared	-1.3	-	mV/°C

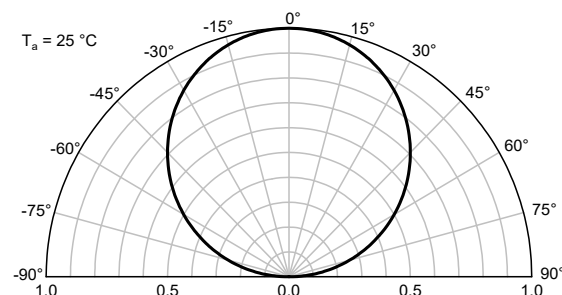
Notes:
1. Forward voltage: ±0.1V.
2. Wavelength value is traceable to CIE127-2007 standards.
3. Excess driving current and / or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.

ABSOLUTE MAXIMUM RATINGS at T_A=25°C

Parameter	Symbol	Value	Unit
Power Dissipation	P _D	85	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	50	mA
Peak Forward Current	I _{FP} ^[1]	1200	mA
Electrostatic Discharge Threshold (HBM)	-	8000	V
Thermal Resistance (Junction / Ambient)	R _{th JA} ^[2]	310	°C/W
Thermal Resistance (Junction / Solder point)	R _{th JS} ^[2]	200	°C/W

Notes:
1. 1/100 Duty Cycle, 10μs Pulse Width.
2. R_{th JA}, R_{th JS} Results from mounting on PC board FR4 (pad size ≥ 16 mm² 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.

RELATIVE INTENSITY vs. WAVELENGTH



The figure contains four graphs:

- Forward Current vs. Forward Voltage:** A graph showing Forward current (mA) on the y-axis (0 to 50) versus Forward voltage (V) on the x-axis (0.8 to 1.8). The curve shows a sharp increase in current starting around 1.2V. A note indicates $T_a = 25^\circ\text{C}$.
- Radiant Intensity vs. Forward Current:** A graph showing Radiant intensity normalised at 20mA on the y-axis (0.0 to 2.5) versus Forward current (mA) on the x-axis (0 to 50). The curve is a straight line passing through (0,0) and (50, 2.5). A note indicates $T_a = 25^\circ\text{C}$.
- Forward Current Derating Curve:** A graph showing Permissible forward current (mA) on the y-axis (0 to 70) versus Ambient temperature ($^\circ\text{C}$) on the x-axis (-40 to 100). The current is constant at 50mA from -40°C to 25°C, then decreases linearly to 10mA at 85°C, and drops to 0mA at 90°C.
- Radiant Intensity vs. Ambient Temperature:** A graph showing Radiant intensity normalised at $T_a = 25^\circ\text{C}$ on the y-axis (0.0 to 2.5) versus Ambient temperature ($^\circ\text{C}$) on the x-axis (-40 to 100). The curve shows a decreasing trend in radiant intensity as temperature increases.

Technical drawing of a tape with dimensions and a cross-section A-A.

Top View Dimensions:

- Overall width: 12 ± 0.2
- Distance from top edge to first hole center: 1.75 ± 0.1
- Distance between hole centers: 2 ± 0.1
- Distance from last hole center to right edge: 4 ± 0.1
- Hole diameter: $\phi 1.5 \pm 0.1$
- Distance from bottom edge to hole center line: 5.5 ± 0.1
- Section line A-A

Side View Dimensions (A-A Section):

- Top thickness: 0.25 ± 0.1
- Inner cavity width: 2.15 ± 0.1
- Inner cavity depth: 3.8 ± 0.1
- Bottom thickness: 3.1 ± 0.1
- Bottom width: $\phi 1.5 \text{ Typ.}$

Labels:

- TAPE
- 1
- 2
- A
- A-A Section

Technical drawing of a circular mechanical part, showing a top view and a side view with dimensions in millimeters.

Top View Dimensions:

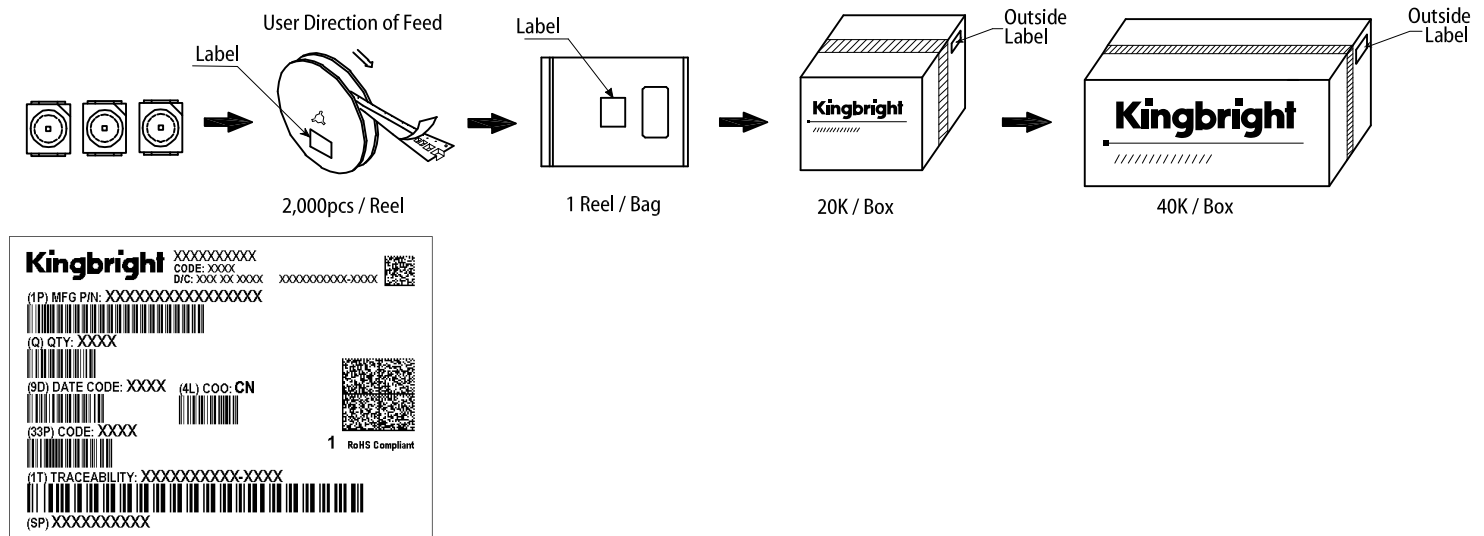
- Outer diameter: $\phi 178 \pm 2$
- Inner diameter (central hole): $\phi 13.5 \pm 0.5$
- Radius of the central hole: 13.7 ± 1

Side View Dimensions:

- Outer diameter: $\phi 178 \pm 2$
- Inner diameter (central hole): $\phi 60 \pm 2$
- Radius of the central hole: 13.7 ± 1

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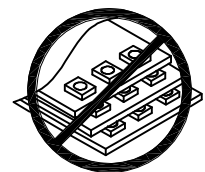
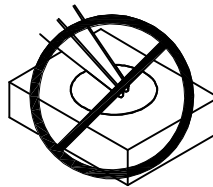
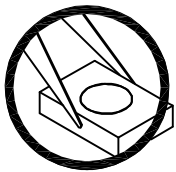
PACKING & LABEL SPECIFICATIONS



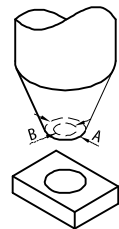
HANDLING PRECAUTIONS

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 H₂S 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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