

PRELIMINARY SPEC

Part Number: AT2520QW10ZS-350MA

White



ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
DISCHARGE
SENSITIVE
DEVICES

Features

- Dimension: 2.5mmx 2.0mm x 0.8mm.
- Low thermal resistance.
- Ceramic package with silicone resin.
- Higher brightness LED flash.
- Small package with high efficiency.
- Surface mount technology.
- ESD protection.
- Radiation patterns optimal for camera flash.
- Enables higher resolution pictures in darken environments.
- Package : 2000pcs / reel.
- Moisture sensitivity level : level 2a.
- Soldering methods: IR reflow soldering.
- RoHS compliant.

Application Note

Static electricity and surge damage the LEDs.

It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs.

All devices, equipment and machinery must be electrically

Typical Applications

Digital still cameras

Camera-phones

PDA's

Room lighting

Architectural lighting

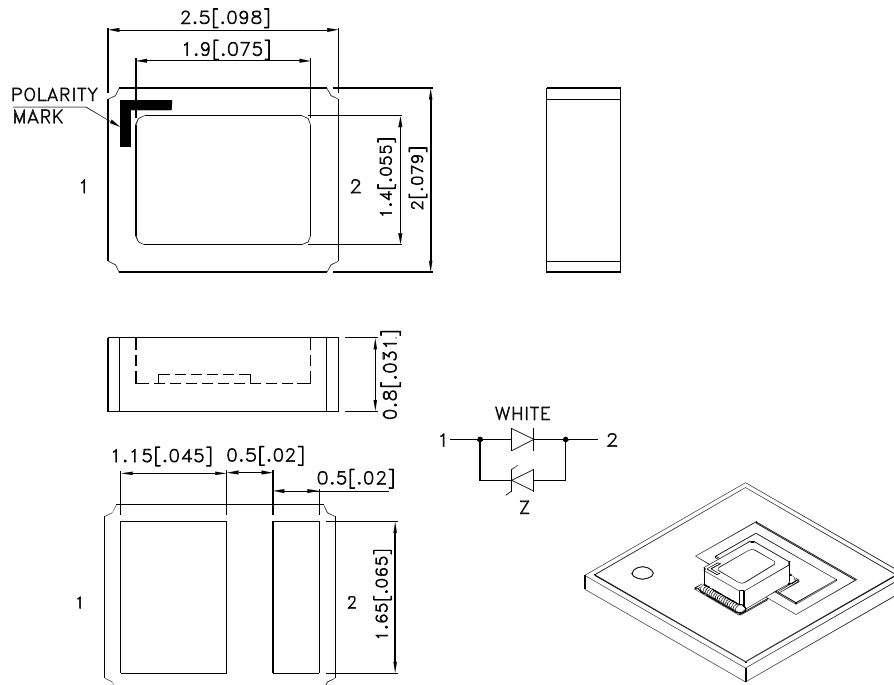
Decorative/pathway lighting

Front panel backlight

Exterior automotive lighting:

(brake lights, turn lights, backlighting)

Package Dimensions



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.25(0.01")$ unless otherwise noted.
3. Specifications are subject to change without notice.
4. The device has a single mounting surface. The device must be mounted according to the specifications.

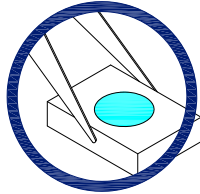


Handling Precautions

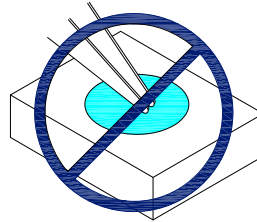
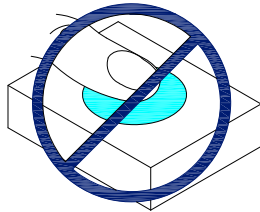
Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force.

As a result, special handling precautions need to be observed during assembly using silicone encapsulated LED products. Failure to comply might leads to damage and premature failure of the LED.

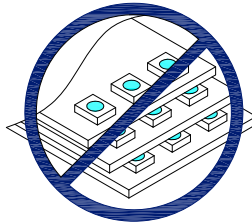
1. Handle the component along the side surfaces by using forceps or appropriate tools.



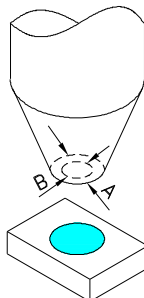
2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.



3. Do not stack together assembled PCBs containing exposed LEDs. Impact may scratch the silicone lens or damage the internal circuitry.



4. The outer diameter of the SMD pickup nozzle should not exceed the size of the LED to prevent air leaks. The inner diameter of the nozzle should be as large as possible.
5. A pliable material is suggested for the nozzle tip to avoid scratching or damaging the LED surface during pickup.
6. The dimensions of the component must be accurately programmed in the pick-and-place machine to insure precise pickup and avoid damage during production.



Selection Guide

| Part No. | Dice | luminous Intensity [2] Iv(mcd)@ 350mA | | Φv (lm) [2] @ 350mA | Viewing Angle [1] |
|--------------------|-----------------|--|-------|------------------------|----------------------|
| | | Min. | Typ. | Typ. | 2 θ 1/2 |
| AT2520QW10ZS-350MA | WHITE (InGaAlN) | 10000 | 14000 | 55 | 120 ° |

Notes:

1. θ 1/2 is the angle from optical centerline where the luminous intensity is 1/2 the optical centerline value.
2. Luminous intensity / luminous flux: +/-15%.

Absolute Maximum Ratings at TA=25°C

| Parameter | Symbol | Value | Unit |
|--|---------|-------------|------|
| Power dissipation | Pt | 1.25 | W |
| Junction temperature[1] | TJ | 120 | °C |
| Operating Temperature | Top | -40 To +100 | °C |
| Storage Temperature | Tstg | -40 To +120 | °C |
| DC Forward Current [1] | IF | 350 | mA |
| Peak Forward Current [2] | IFM | 500 | mA |
| Thermal resistance [1] (Junction/ambient) | Rth j-a | 70 | °C/W |
| Thermal resistance [1] (Junction/solder point) | Rth j-s | 26 | °C/W |
| Electrostatic Discharge Threshold (HBM) | | 8000 | V |

Notes:

1. Results from mounting on metal core PCB, mounted on pc board-metal core PCB is recommend for lowest thermal resistance.
2. 1/10 Duty Cycle, 0.1ms Pulse Width.

Electrical / Optical Characteristics at TA=25°C

| Parameter | Symbol | Value | Unit |
|---|--------|-------|-----------------------|
| Chromaticity coordinate x acc.to CIE1931 IF=350mA [Typ.] | X [1] | 0.31 | - |
| Chromaticity coordinate y acc.to CIE1931 IF=350mA [Typ.] | y [1] | 0.31 | - |
| Forward Voltage IF=350mA [Min.] | VF [2] | 2.8 | V |
| Forward Voltage IF=350mA [Typ.] | | 3.2 | |
| Forward Voltage IF=350mA [Max.] | | 3.6 | |
| Temperature coefficient of x IF=350mA, -10 ° C ≤ T ≤ 100 ° C [Typ.] | TCx | -0.15 | 10 ⁻³ /° C |
| Temperature coefficient of y IF=350mA, -10 ° C ≤ T ≤ 100 ° C [Typ.] | TCy | -0.13 | 10 ⁻³ /° C |
| Temperature coefficient of VF IF=350mA, -10 ° C ≤ T ≤ 100 ° C [Typ.] | TCv | -3.2 | mV/° C |

Notes:

- 1.Measurement tolerance of the chromaticity coordinates is ±0.01.
- 2.Forward Voltage: +/-0.1V.

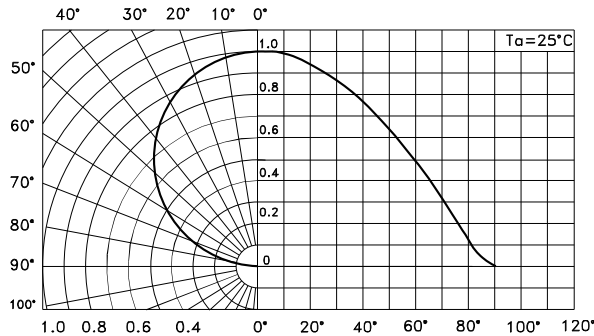
Summary of Practical Pulsing Configurations with Typical Thermal Management.

| Flash Pulse Duration | Flash Pulse Current | | | |
|----------------------|---------------------|------|----|----|
| | 0.35A | 0.6A | 1A | 2A |
| 50 ms | OK | OK | OK | OK |
| 100 ms | OK | OK | OK | - |
| 200 ms | OK | OK | - | - |
| 300 ms | OK | - | - | - |

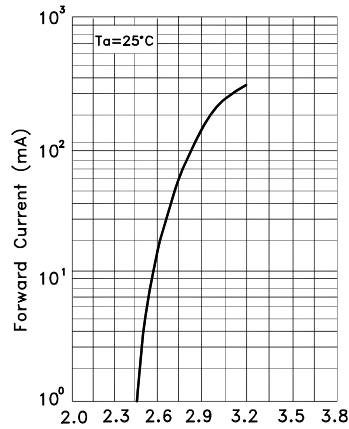
- OK Signifies a transient temperature change of less than 40°C.
 - Temperature change > 40°C, may require additional thermal management.

Kingbright

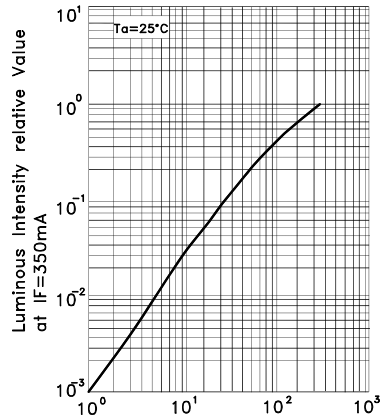
AT2520QW10ZS-350MA



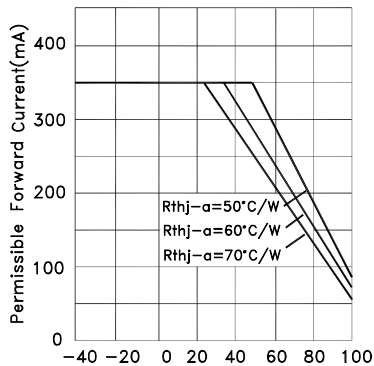
SPATIAL DISTRIBUTION



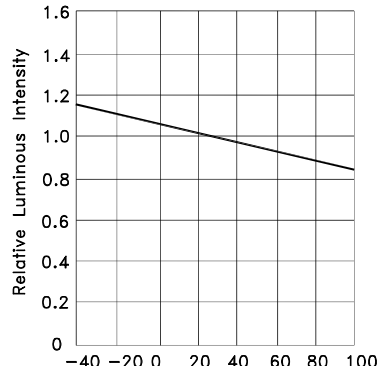
FORWARD CURRENT Vs. FORWARD VOLTAGE



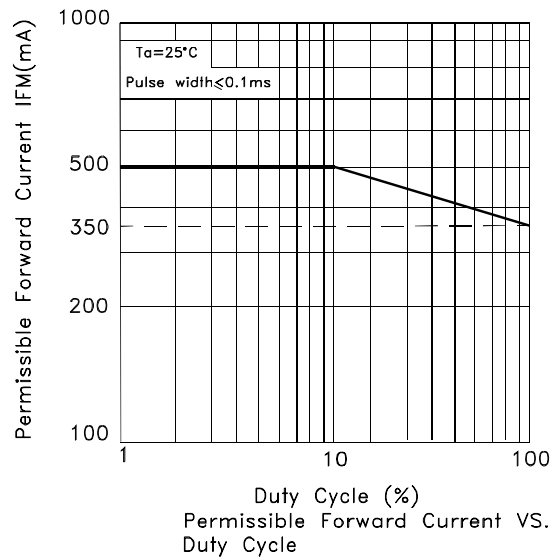
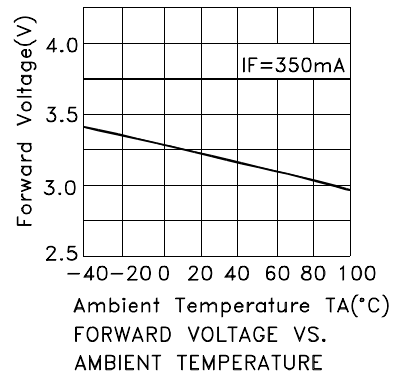
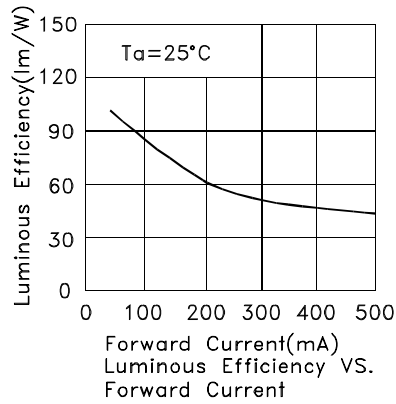
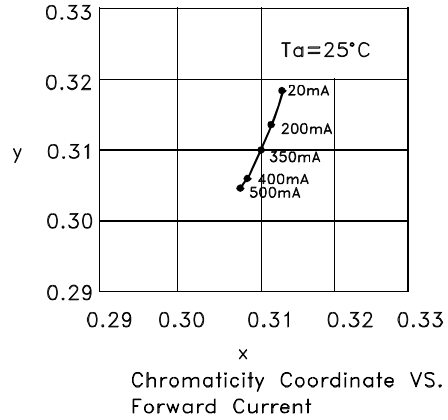
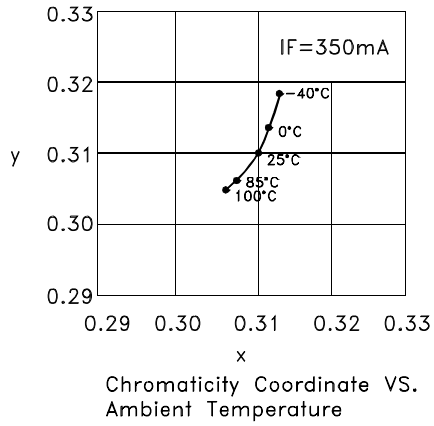
LUMINOUS INTENSITY Vs. FORWARD CURRENT



FORWARD CURRENT DERATING CURVE

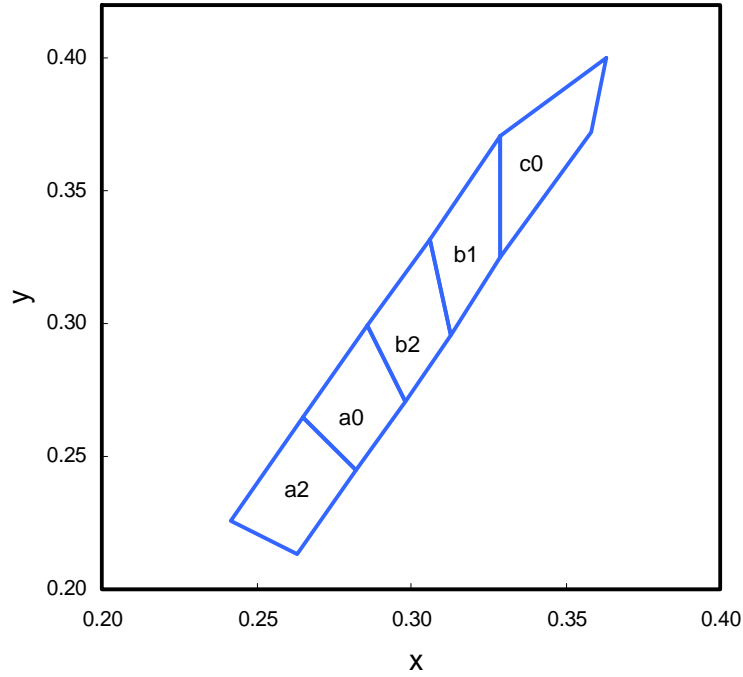


LUMINOUS INTENSITY Vs. AMBIENT TEMPERATURE



AT2520QW10ZS-350MA

White CIE



| Rank a2 | | | | |
|---------|-------|-------|-------|-------|
| x | 0.263 | 0.282 | 0.265 | 0.242 |
| y | 0.213 | 0.245 | 0.265 | 0.226 |

| Rank a0 | | | | |
|---------|-------|-------|-------|-------|
| x | 0.282 | 0.298 | 0.286 | 0.265 |
| y | 0.245 | 0.271 | 0.299 | 0.265 |

| Rank b2 | | | | |
|---------|-------|-------|-------|-------|
| x | 0.298 | 0.313 | 0.306 | 0.286 |
| y | 0.271 | 0.296 | 0.332 | 0.299 |

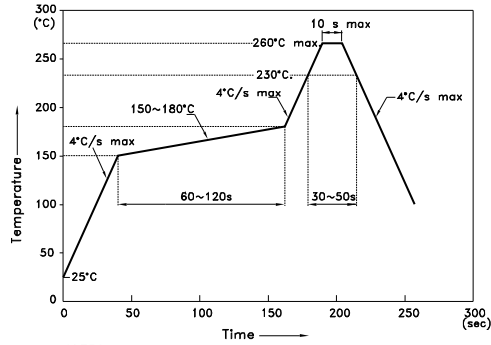
| Rank b1 | | | | |
|---------|-------|-------|-------|-------|
| x | 0.313 | 0.329 | 0.329 | 0.306 |
| y | 0.296 | 0.325 | 0.371 | 0.332 |

| Rank c0 | | | | |
|---------|-------|-------|-------|-------|
| x | 0.329 | 0.358 | 0.363 | 0.329 |
| y | 0.325 | 0.372 | 0.400 | 0.371 |

AT2520QW10ZS-350MA

Reflow soldering is recommended and the soldering profile is shown below.
Other soldering methods are not recommended as they might cause damage to the product.

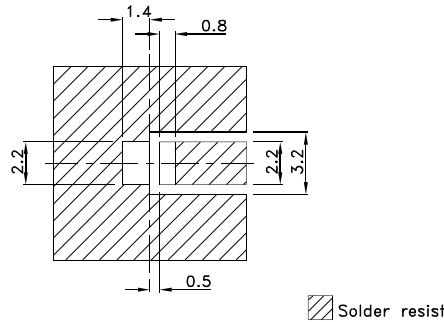
Reflow Soldering Profile For Lead-free SMT Process.



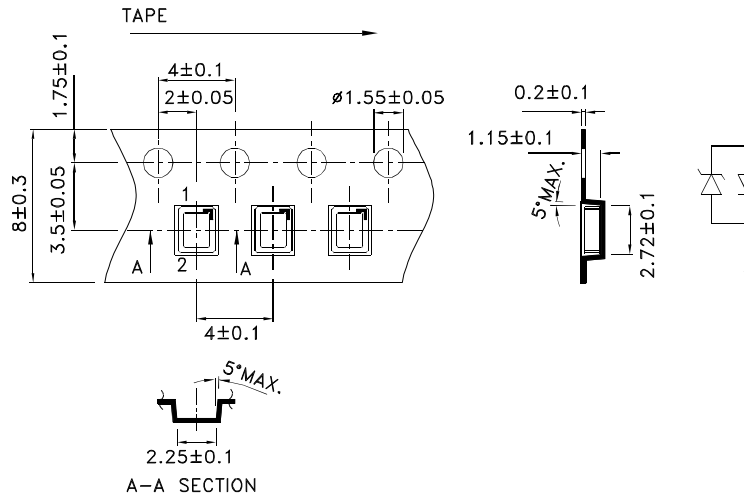
NOTES:

1. We recommend the reflow temperature 245°C(+/-5°C). The maximum soldering temperature should be limited to 260°C.
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

Recommended Soldering Pattern (Units : mm; Tolerance: ± 0.1)

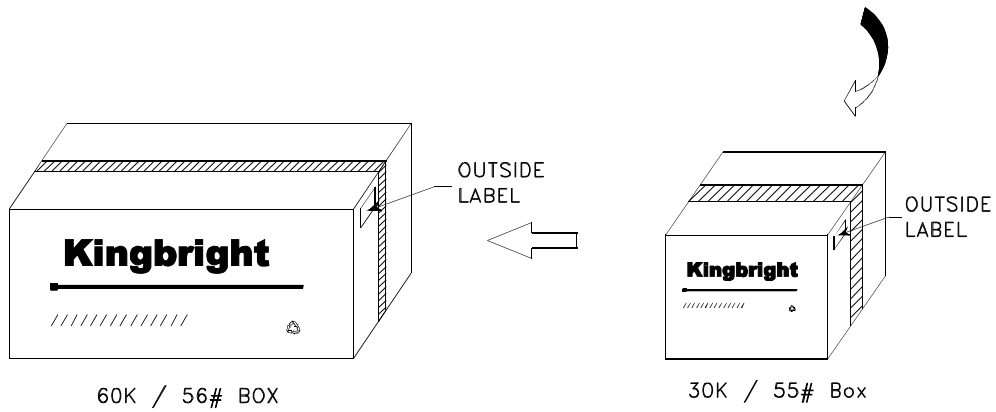
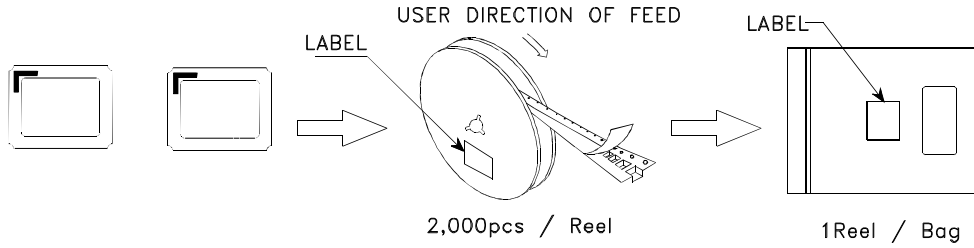



Tape Specifications (Units : mm)



PACKING & LABEL SPECIFICATIONS

AT2520QW10ZS-350MA



| | |
|--|--|
| <h1>Kingbright</h1> | |
| P/NO: AT2520xxx | |
| QTY: 2,000 pcs | Q.C. Q C XX XX XXXX PASSED |
| S/N: XXXX | |
| CODE: XXX | |
| LOT NO: | |
|  xxxxxxxxxxxxxxxxxxxxxxxxxxxx | |
| RoHS Compliant | |