

PRELIMINARY SPEC



ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
DISCHARGE
SENSITIVE
DEVICES

Features

- 2.0mmx1.25mm SMT LED, 0.75mm THICKNESS.
- LOW POWER CONSUMPTION.
- WIDE VIEWING ANGLE.
- IDEAL FOR BACK LIGHT AND INDICATOR.
- VARIOUS COLORS AND LENS TYPES AVAILABLE.
- PACKAGE : 2000PCS / REEL.
- MOISTURE SENSITIVITY LEVEL : LEVEL 4.
- ELECTROSTATIC DISCHARGE THRESHOLD (HBM):1000V.
- TYP. COLOR TEMPERATURE:6500K
- COLOR COORDINATES:X=0.33,Y=0.34 ACC. TO CIE1931(WHITE).
- OPTICAL EFFICIENCY:26 lm/W(TYP.)
- COLOR REPRODUCTION INDEX:80
- RoHS COMPLIANT.

Part Number: APTK2012RWC/J

WHITE

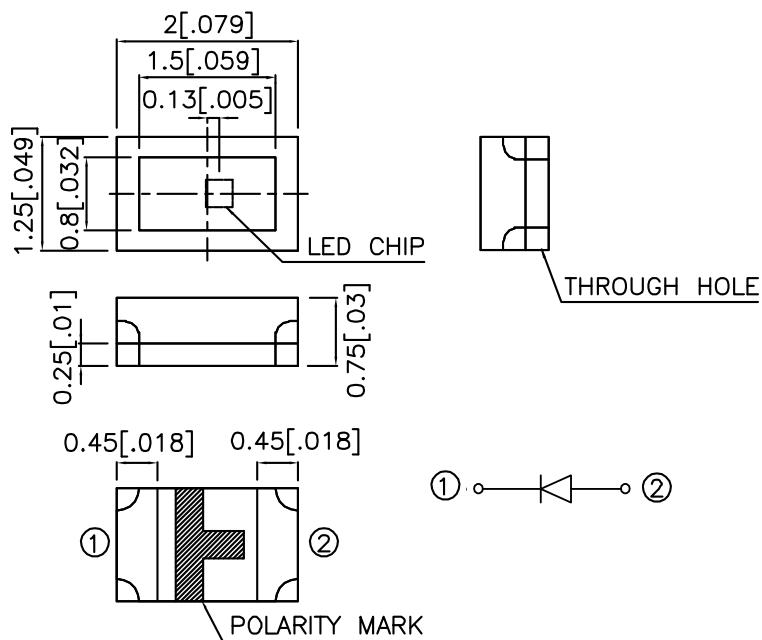
Description

The source color devices are made with InGaN on SiC Light Emitting Diode. 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 grounded.

Applications

- traffic signaling.
- backlighting (illuminated advertising , general lighting).
- interior and exterior automotive lighting.
- substitution of micro incandescent lamps.
- reading lamps.
- signal and symbol luminaire for orientation.
- marker lights (e.g. steps, exit ways, etc).
- decorative and entertainment lighting.
- indoor and outdoor commercial and residential architectural lighting.

Package Dimensions



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is ± 0.1 (0.004") unless otherwise noted.
3. Specifications are subject to change without notice.

Kingbright

Selection Guide

| Part No. | Dice | Lens Type | Luminous Intensity ^{Note2} I _v (mcd) @ 20 mA | | Φ _v (mlm) ^{Note3} @ 20 mA | Viewing ^{Note1} Angle |
|---------------|---------------|-------------|---|------|--|-----------------------------------|
| | | | Min. | Typ. | | |
| APTK2012RWC/J | WHITE (InGaN) | WATER CLEAR | 380 | 700 | 1700 | 100° |

Absolute Maximum Ratings at T_A=25°C

| Parameter | Symbol | Value | Unit |
|--|--|-------------|--------------|
| Power dissipation | P _t | 120 | mW |
| Reverse Voltage | V _R | 5 | V |
| Junction temperature | T _J | 110 | °C |
| Operating Temperature | Top | -40 To +85 | °C |
| Storage Temperature | T _{stg} | -40 To +100 | °C |
| DC Forward Current | I _F | 30 | mA |
| Peak Forward Current ^{Note4} | I _{FM} | 100 | mA |
| Thermal resistance ^{Note5} Junction/ambient Junction/solder point | R _{th JA} R _{th JS} | 350 130 | °C/W °C/W |

Notes:

- 1.01/2 is the angle from optical centerline where the luminous intensity is 1/2 the optical centerline value.
2. Luminous intensity is measured by a current pulse of 10ms at a tolerance of ±15%.
3. The typical data of Luminous Flux can only reflect statistical figures, actual parameters of individual product could differ from the typical data. For the purpose of product enhancement, the typical data is subject to change without prior notice.
- 4.1/10 Duty Cycle, 0.1ms Pulse Width.
- 5.Rth(J-A) Results from mounting on PC board FR4 (pad size ≥16 mm² per pad),

Electrical / Optical Characteristics at T_A=25°C

| Parameter | Symbol | Value | Unit |
|---|---------------------------------|-------|----------------------|
| Chromaticity coordinate x acc.to CIE1931 I _F =20mA [Typ.] | X ^{Note1} | 0.33 | - |
| Chromaticity coordinate y acc.to CIE1931 I _F =20mA [Typ.] | Y ^{Note1} | 0.34 | - |
| Forward Voltage I _F =20mA [Min.] | V _F ^{Note2} | 2.6 | V |
| Forward Voltage I _F =20mA [Typ.] | | 3.2 | |
| Forward Voltage I _F =20mA [Max.] | | 4.0 | |
| Reverse Current (V _R =5V) [Typ.] | I _R | 0.01 | μA |
| Reverse Current (V _R =5V) [Max.] | | 10 | |
| Temperature coefficient of x I _F =20mA, -10°C≤T≤100°C [Typ.] | TC x | -0.1 | 10 ⁻³ /°C |
| Temperature coefficient of y I _F =20mA, -10°C≤T≤100°C [Typ.] | TCy | -0.2 | 10 ⁻³ /°C |
| Temperature coefficient of V _F I _F =20mA, -10°C≤T≤100°C [Typ.] | TCv | -2.5 | mV/°C |

Notes:

1. Chromaticity coordinates are measured by a current pulse of 20ms with a tolerance of ±0.01 in X and Y color coordinates.
2. Forward voltage is measured with a current pulse of 10ms at a tolerance of ± 0.1V.

Brightness codes

| luminous Intensity Note1 I _v (mcd) @ 20 mA | | | Φ _v (mlm) Note2 @ 20 mA |
|--|------|------|---------------------------------------|
| Code. | Min. | Max. | Typ. |
| R | 380 | 550 | 1270 |
| S | 480 | 750 | 1720 |
| T | 650 | 1100 | 2380 |

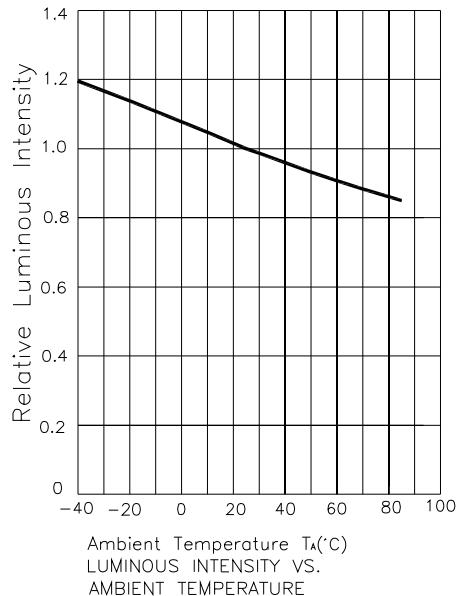
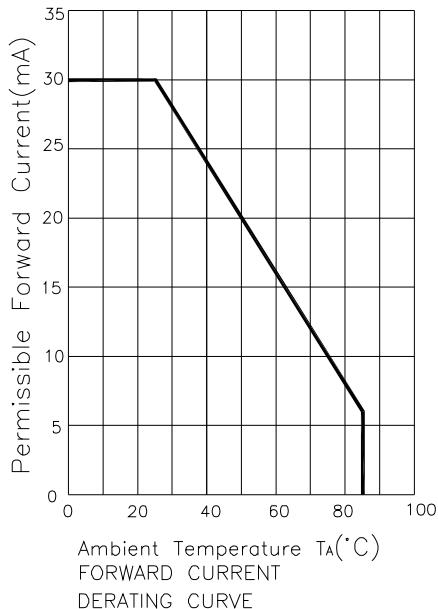
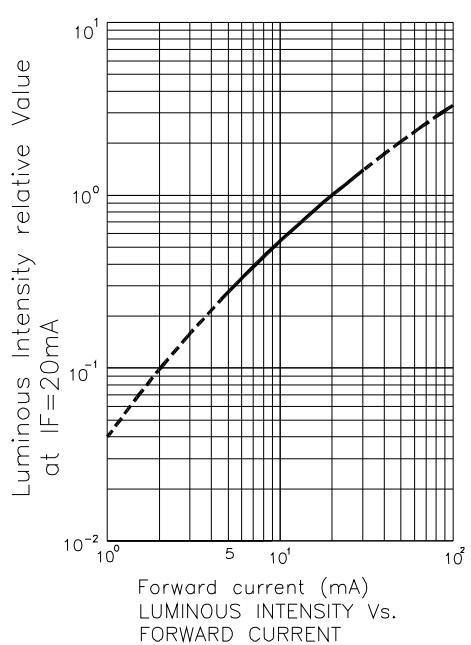
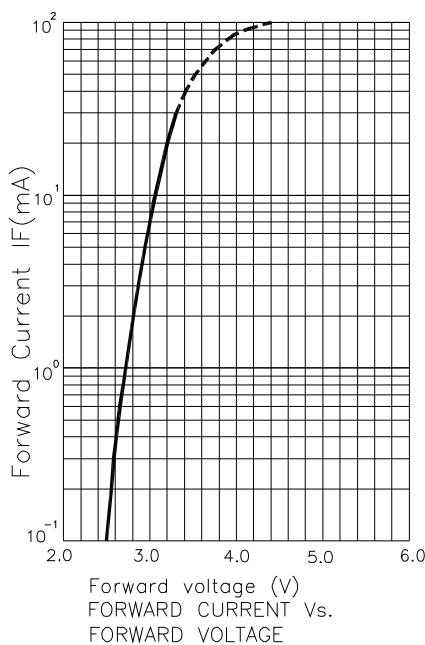
Notes:

1. Luminous intensity is measured by a current pulse of 10ms at a tolerance of $\pm 15\%$.

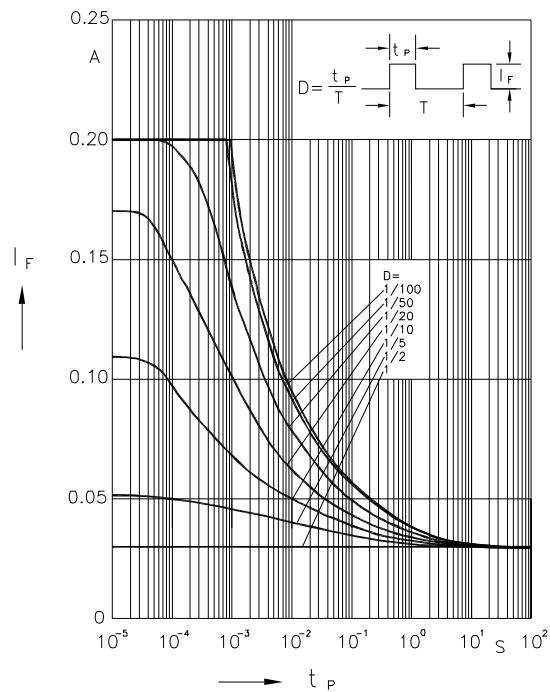
2. The typical data of Luminous Flux can only reflect statistical figures, actual parameters of individual product could differ from the typical data. For the purpose of product enhancement, the typical data is subject to change without prior notice.

White

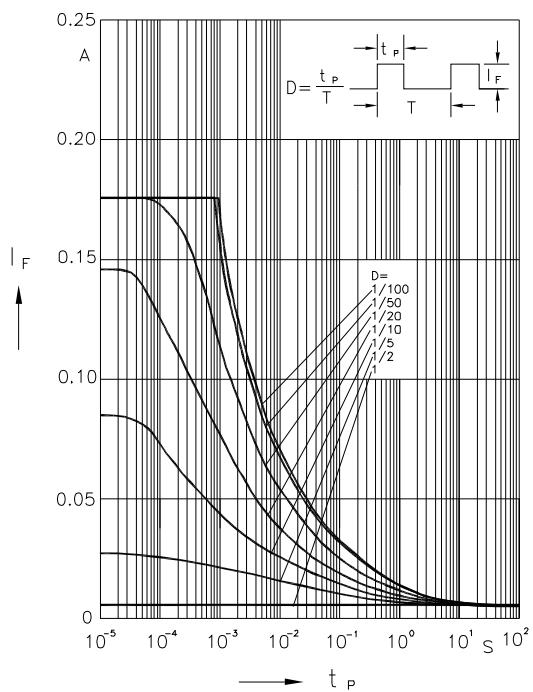
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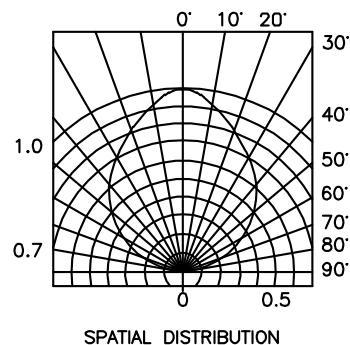
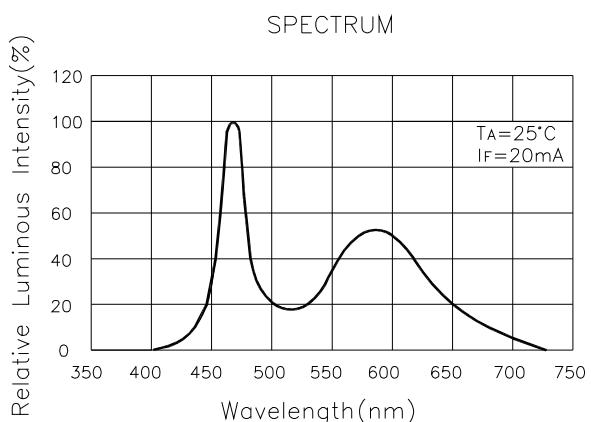
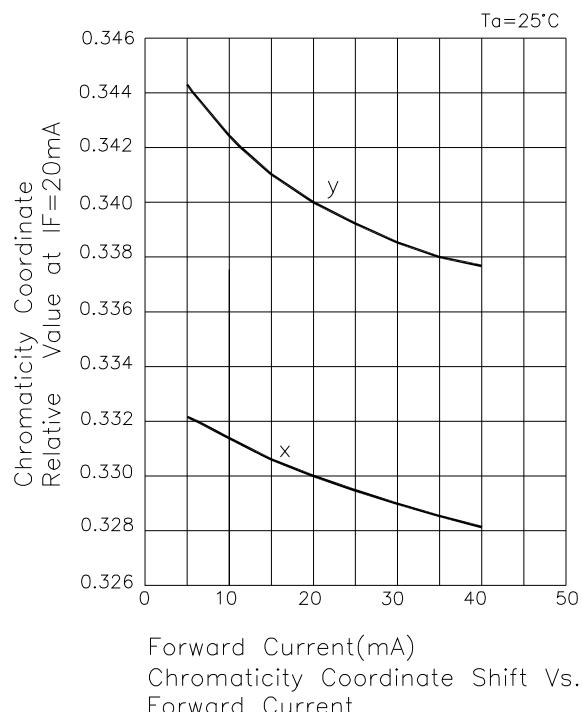
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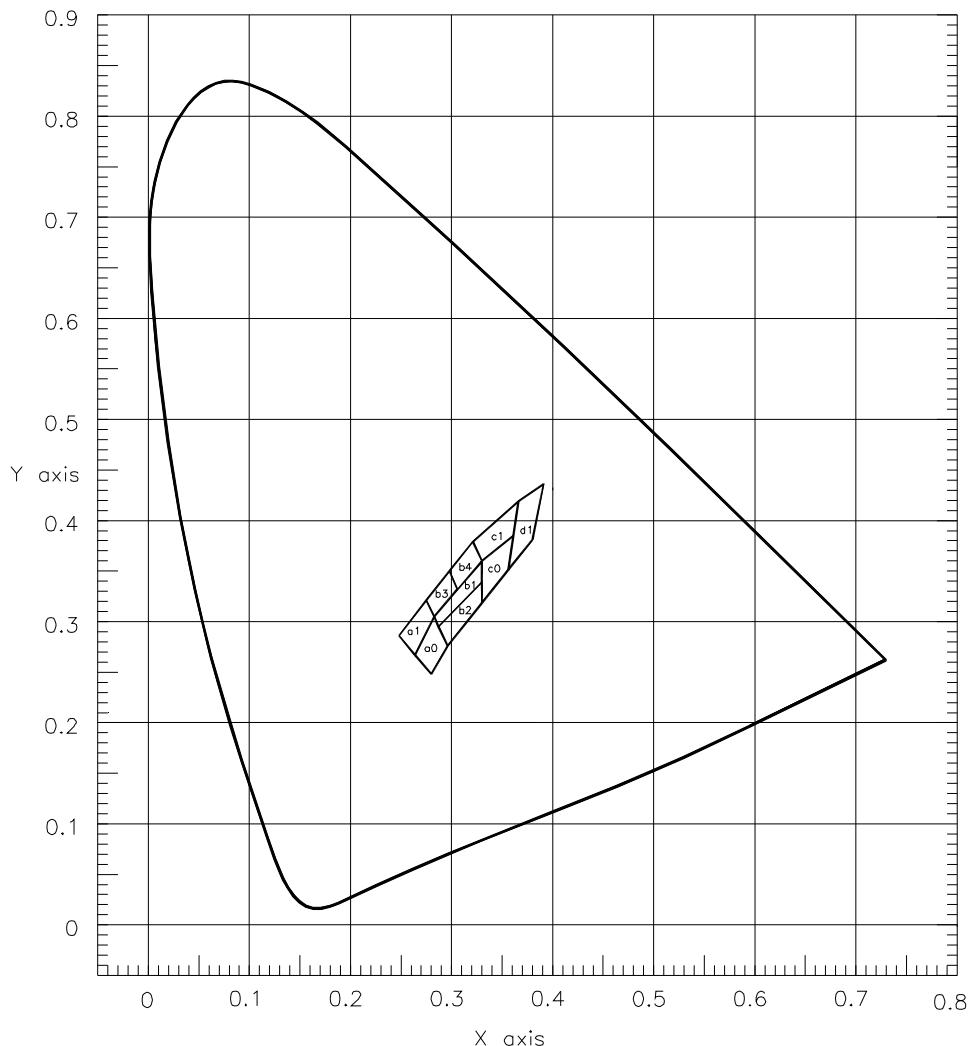
Permissible Pulse Handling Capability
Duty cycle D=parameter, TA=25°C



Permissible Pulse Handling Capability
Duty cycle D=parameter, TA=85°C



Color Codes



| a1 | | | |
|----|-------|-------|-------|
| X | 0.248 | 0.275 | 0.283 |
| Y | 0.286 | 0.321 | 0.305 |

| b1 | | | |
|----|-------|-------|-------|
| X | 0.283 | 0.330 | 0.330 |
| Y | 0.305 | 0.360 | 0.339 |

| c1 | | | |
|----|-------|-------|-------|
| X | 0.321 | 0.366 | 0.361 |
| Y | 0.379 | 0.419 | 0.385 |

| a0 | | | |
|----|-------|-------|-------|
| X | 0.264 | 0.283 | 0.296 |
| Y | 0.267 | 0.305 | 0.276 |

| b2 | | | |
|----|-------|-------|-------|
| X | 0.287 | 0.330 | 0.330 |
| Y | 0.295 | 0.339 | 0.318 |

| c0 | | | |
|----|-------|-------|-------|
| X | 0.330 | 0.361 | 0.356 |
| Y | 0.360 | 0.385 | 0.351 |

| b3 | | | |
|----|-------|-------|-------|
| X | 0.275 | 0.298 | 0.306 |
| Y | 0.321 | 0.350 | 0.332 |

| b4 | | | |
|----|-------|-------|-------|
| X | 0.298 | 0.321 | 0.330 |
| Y | 0.350 | 0.379 | 0.360 |

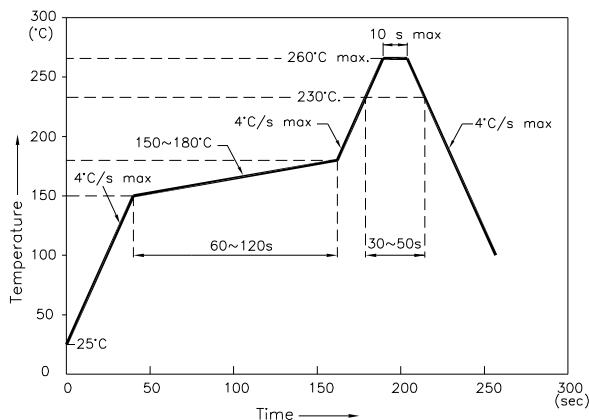
| d1 | | | |
|----|-------|-------|-------|
| X | 0.366 | 0.391 | 0.380 |
| Y | 0.419 | 0.436 | 0.381 |

Ta=25°, IF=20mA

Measurement Uncertainty of the Color Coordinates: +/- 0.01

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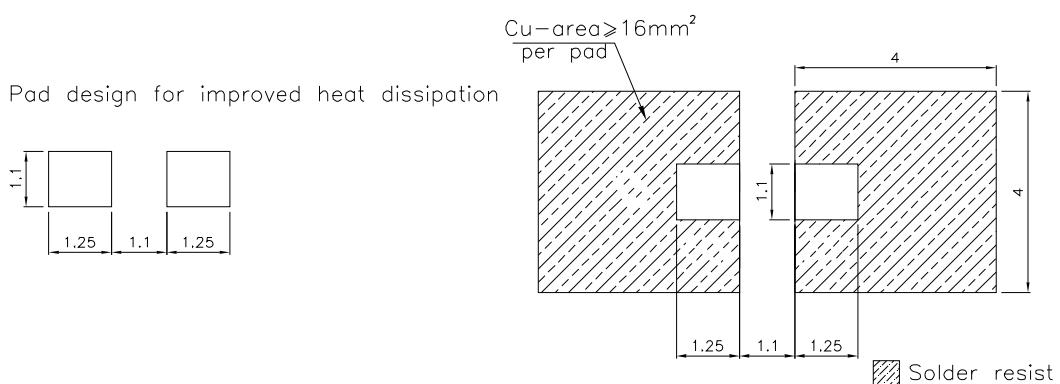
Reflow Soldering Profile For Lead-free SMT Process.



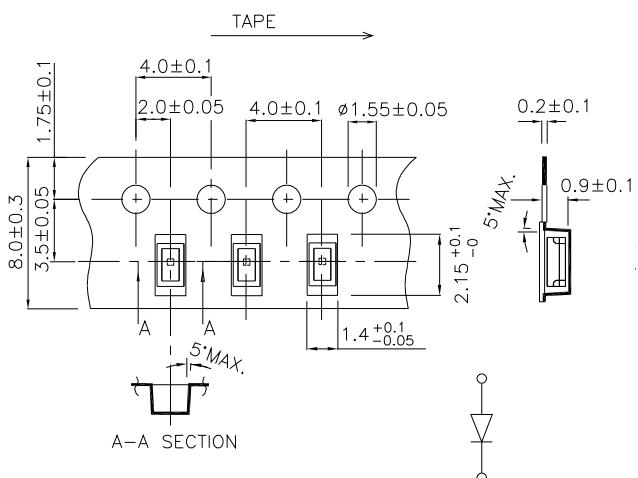
NOTES:

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.

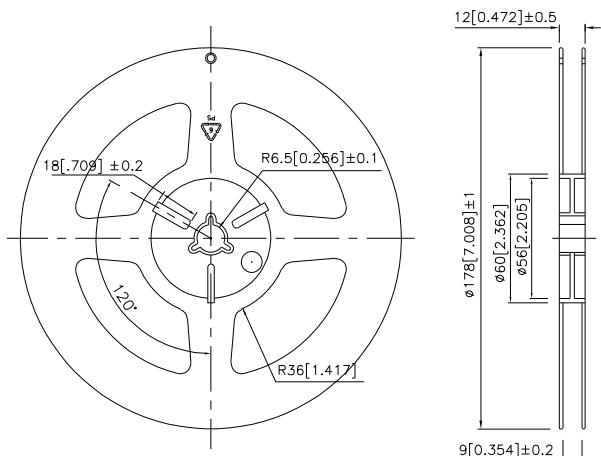
Recommended Soldering Pattern (Units : mm; Tolerance: ± 0.1)



Tape Specifications (Units : mm)



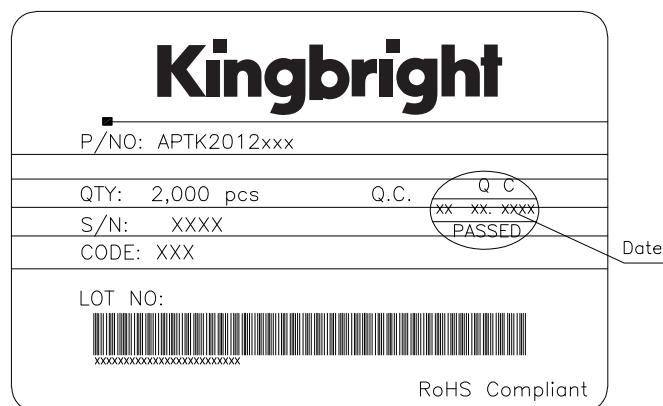
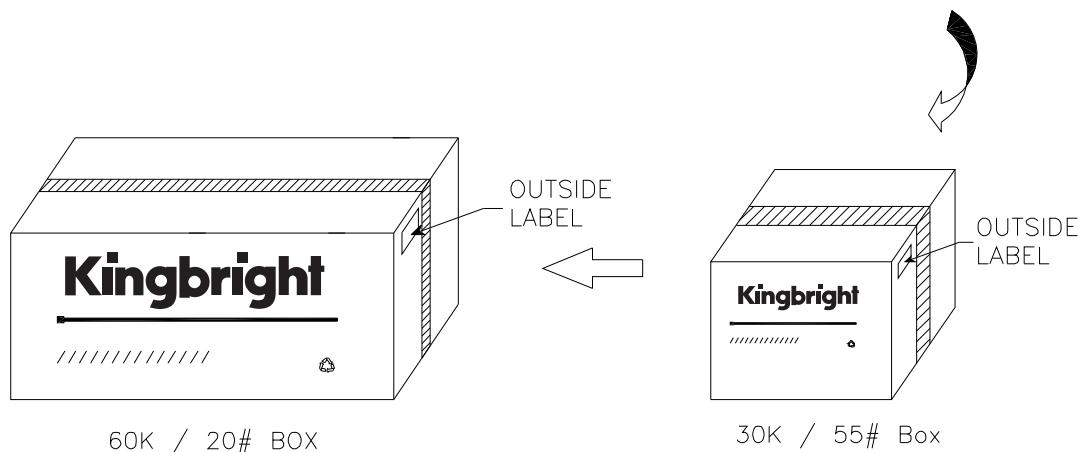
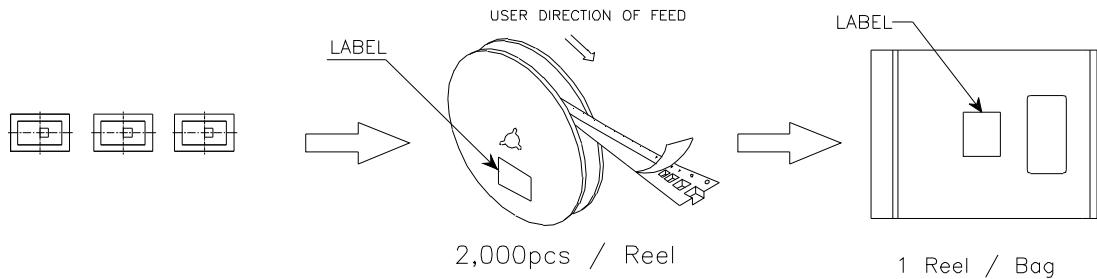
Reel Dimension



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PACKING & LABEL SPECIFICATIONS

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