

Specification for 3030EH Series

AB-3030EC-kkF80

High efficacy 3030 EMC white LED



Features:

- Top view white LED
- Thermally enhanced package design
- High luminous flux output
- High current capability
- Compact Package Size
- Wide viewing angle
- Pb-free Reflow Soldering Application
- RoHS and REACH compliant

Applications:

- Retrofits (replacement)
- General lighting
- Indoor & Outdoor sign board back light
- Architectural / Decorative lighting
- Interior Lighting



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Product Selection Table (I_F= 350mA)

| Model No. | Color | CCT (K) | | |
|-----------------|---------------|---------|------|------|
| | | Min. | Typ. | Max. |
| AB-3030EC-65F80 | Cool White | 6020 | 6530 | 7040 |
| AB-3030EC-57F80 | Cool White | 5310 | 5665 | 6020 |
| AB-3030EC-50F80 | Neutral White | 4745 | 5028 | 5311 |
| AB-3030EC-40F80 | Neutral White | 3710 | 3985 | 4260 |
| AB-3030EC-30F80 | Warm White | 2870 | 3045 | 3220 |
| AB-3030EC-27F80 | Warm White | 2580 | 2725 | 2870 |

* The correlated color temperature is based on T_s at 85°C

Electro Optical Characteristics (I_F= 350 mA, T_J=25°C)

| CCT | CRI | Luminous Flux (lm) | |
|-------|------|--------------------|------|
| | min. | Min. | Typ. |
| 2700K | 80 | 122 | 136 |
| 3000K | 80 | 130 | 140 |
| 4000K | 80 | 139 | 148 |
| 5000K | 80 | 139 | 148 |
| 5700K | 80 | 139 | 148 |
| 6500K | 80 | 139 | 148 |

* Tolerance of measurements of the Luminous Flux is ±7%

* Ra measurement tolerance is ±2

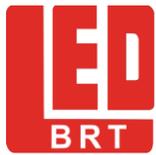
Absolute Maximum Ratings (T_J=25°C)

| Item | Symbol | Absolute Max. Rating | Unit |
|-----------------------|------------------|---|------|
| Forward Current | I _F | 400 | mA |
| Pulse Forward Current | I _{FP} | 600 | mA |
| Power Dissipation | PD | 1360 | mW |
| Reverse Voltage | V _R | 5 | V |
| Operating Temperature | T _{opr} | -40~ +105 | °C |
| Storage Temperature | T _{stg} | -40~ +85 | °C |
| Junction Temperature | T _J | 120 | °C |
| Soldering Temperature | T _{sld} | Reflow soldering: 230°C or 260°C for 10 sec | |

* IFP condition with Pulse: Width≤100μs, Duty cycle≤1/10

* LED's properties might be different from suggested values like above and below tables if operation condition will be exceeded our parameter range. Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product

* All measurements were made under the standardized environment of American Bright LED



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Electrical/Optical Characteristics (T_j=25°C)

| Item | Symbol | Min. | Typ. | Max. | Unit | Condition |
|-------------------------|----------------------|------|------|------|------|------------------------|
| Forward Voltage | V _F | - | 3.2 | 3.4 | V | I _f = 350mA |
| Reverse Current | I _R | - | - | 10 | μA | V _R = 7V |
| Viewing Angle | 2θ _{1/2} | - | 120 | - | ° | I _f = 350mA |
| Thermal Resistance | R _{th j-sp} | - | 18 | - | °C/W | I _f = 350mA |
| Electrostatic Discharge | ESD | 1000 | - | - | V | HBM |

* Tolerance of measurements of the Forward Voltage is ±0.1V

* 2θ_{1/2} is the off-axis where the luminous intensity is 1/2 of the peak intensity

* R_{th j-sp} is the thermal resistance from LED junction to solder point on MCPCB with electrical power

BIN Structure

Luminous Flux Ranks (I_f = 65mA, T_j = 25°C)

| CCT | CRI | | Luminous Flux | | |
|-------|------|------|---------------|------|-----|
| | Min. | Typ. | Code | Min. | Max |
| 2700K | 80 | 82 | 2E | 122 | 130 |
| | | | 2F | 130 | 139 |
| | | | 2G | 139 | 148 |
| 3000K | 80 | 82 | 2F | 130 | 139 |
| | | | 2G | 139 | 148 |
| | | | 2H | 148 | 156 |
| 4000K | 80 | 82 | 2G | 139 | 148 |
| | | | 2H | 148 | 156 |
| | | | 2J | 156 | 164 |
| 5000K | 80 | 82 | 2G | 139 | 148 |
| | | | 2H | 148 | 156 |
| | | | 2J | 156 | 164 |
| 5700K | 80 | 82 | 2G | 139 | 148 |
| | | | 2H | 148 | 156 |
| | | | 2J | 156 | 164 |
| 6500K | 80 | 82 | 2G | 139 | 148 |
| | | | 2H | 148 | 156 |
| | | | 2J | 156 | 164 |

* Tolerance of measurements of the Luminous Flux is ±7%

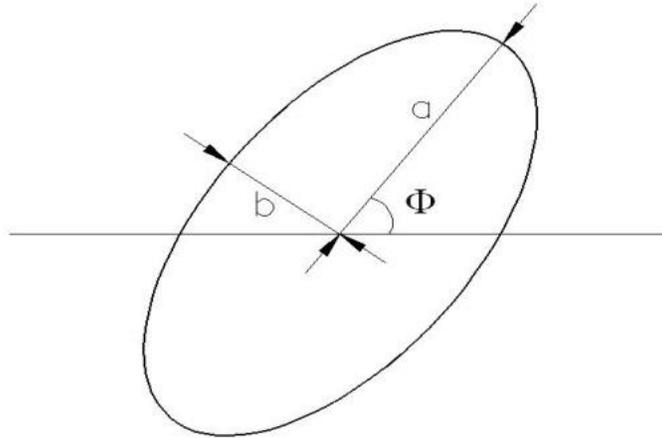
* Ra measurement has a tolerance of ±2%

Forward Voltage Ranks (I_f = 65mA, T_j = 25°C)

| Code | Min. | Max. | Unit |
|------|------|------|------|
| H3 | 2.8 | 3.0 | V |
| J3 | 3.0 | 3.2 | V |
| K3 | 3.2 | 3.4 | V |

* Tolerance of measurements of the Forward Voltage is ±0.1V

CIE Chromaticity Diagram ($I_f = 65\text{mA}$, $T_j = 25^\circ\text{C}$)



The color ranks have chromaticity ranges within 5-step MacAdam ellipse

| Color Code | Center | | Radius | | Angle |
|------------|--------|--------|----------|---------|--------|
| | x | y | a | b | Φ |
| 27R5 | 0.4620 | 0.4145 | 0.013500 | 0.00700 | 53.42 |
| 30R5 | 0.4383 | 0.4081 | 0.013900 | 0.00680 | 53.13 |
| 40R5 | 0.3875 | 0.3868 | 0.015650 | 0.00670 | 53.43 |
| 50R5 | 0.3507 | 0.3635 | 0.013700 | 0.00590 | 59.37 |
| 57R5 | 0.3348 | 0.3491 | 0.011175 | 0.00550 | 58.35 |
| 65R5 | 0.3187 | 0.3363 | 0.011150 | 0.00475 | 58.34 |

* Tolerance of measurements of the chromaticity Coordinate is ± 0.005

* Energy Star binning applied to all 2600-7000K.

Naming System:

AB-3030EC-kkF80-yy

kk: Color temperature

yy: bin code



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Fig 1. Color Spectrum, T_J = 25°C

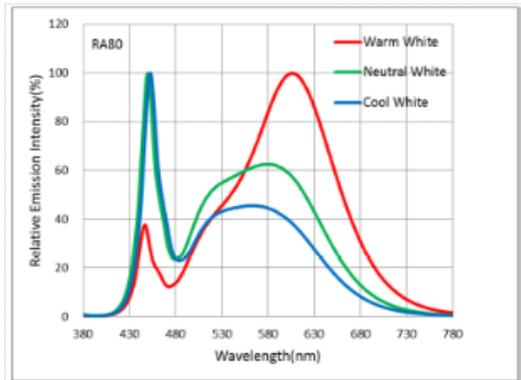


Fig 2. Viewing Angle Distribution, T_J = 25°C

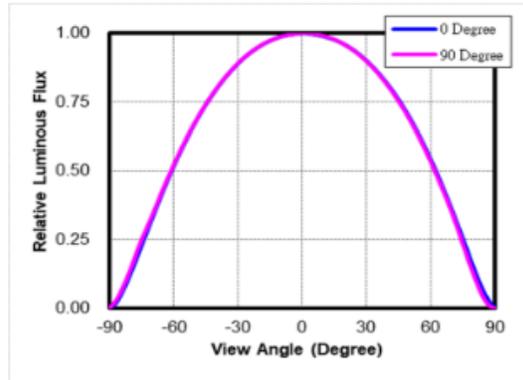


Fig 3. Forward Current vs. Relative Intensity, T_J = 25°C

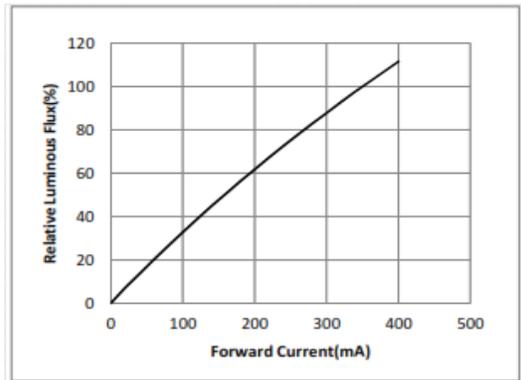


Fig 4. Forward Current vs. Forward Voltage, T_J = 25°C

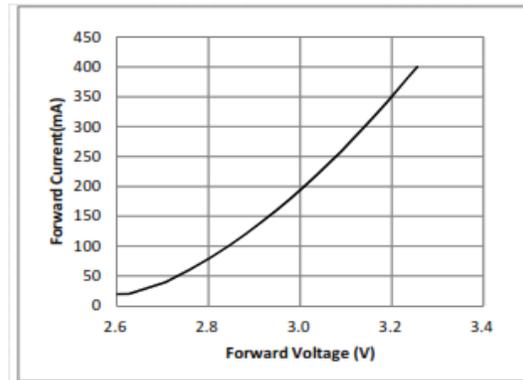


Fig 5. Soldering Temperature vs. Relative Luminous flux (I_F=350mA)

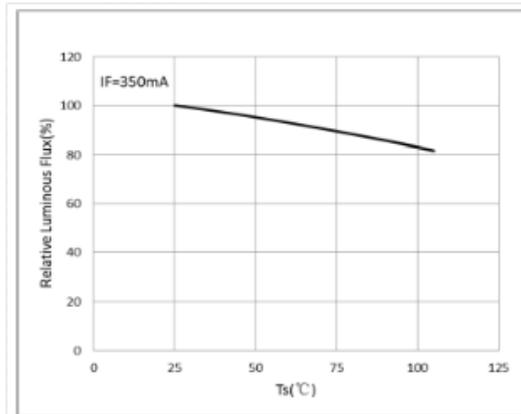


Fig 6. Soldering Temperature vs. Relative Forward Voltage (I_F=350mA)

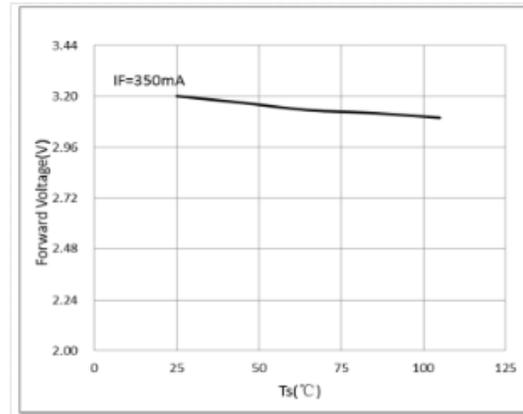


Fig 7 . Soldering Temperature vs. CIE x, y

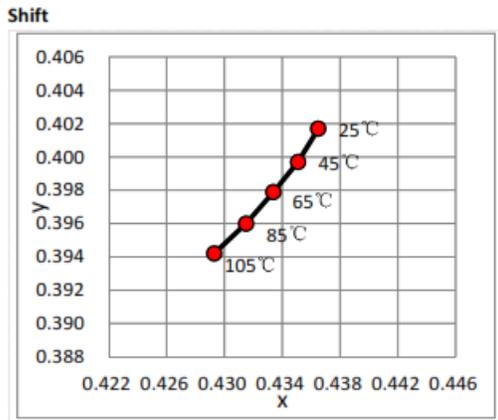
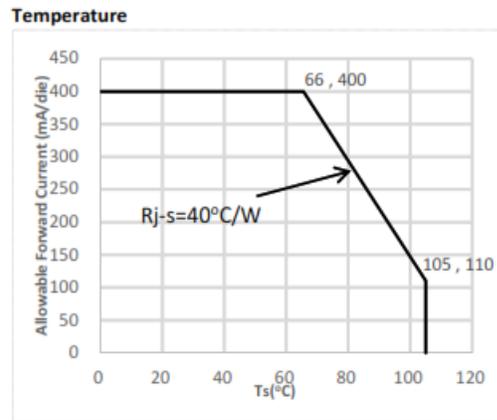
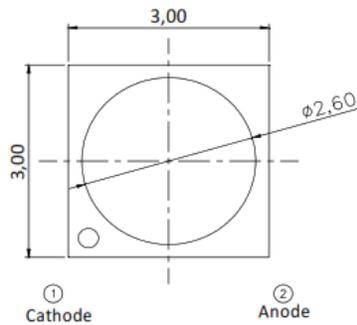


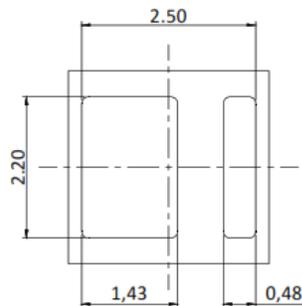
Fig 8. Maximum Forward Current vs. Soldering Temperature



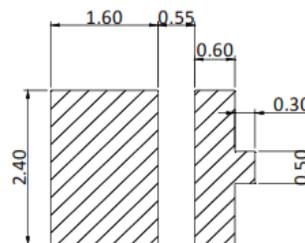
Package Dimensions



Polarity



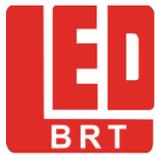
Bot. view



Soldering Patterns

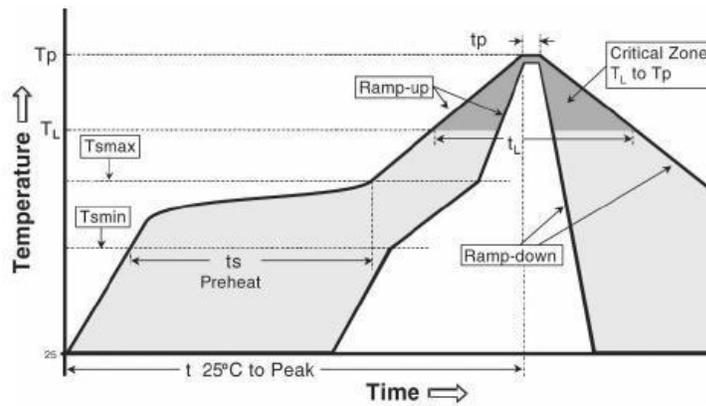
* The tolerance unless mentioned is $\pm 0.2\text{mm}$, unit = mm

* The soldering pad pattern is only for reference and can be modified according to actual Requirement



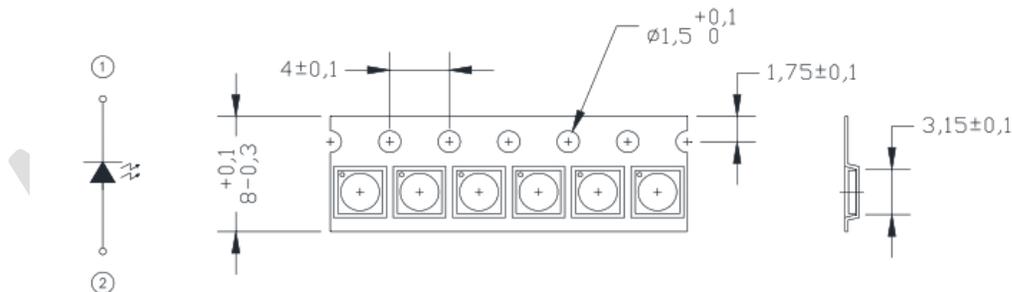
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Reflow Soldering Characteristics



| Reflow Soldering | |
|---|------------|
| Temperature min ($T_{s, \min}$) | 150°C |
| Temperature Max ($T_{s, \max}$) | 200°C |
| Time (t_s) from ($T_{s, \min}$ to $T_{s, \max}$) | 60-120 s |
| Ramp-up rate (T_L to T_p) | 3°C/s Max |
| Liquidous temperature (T_L) | 217°C |
| Time (T_L) maintained above T_L | 60-150 s |
| Peak package body temperature | 260°C Max |
| Time (T_p) within 5°C of the specified classification temperature (T_c) | 30 s Max |
| Ramp-down rate (T_p to T_L) | 6°C/s Max |
| Time 25°C to peak temperature | 8 min. Max |

Package Dimensions of Tape



*Quantity: Max 5000pcs/Reel

* Cumulative Tolerance: Cumulative Tolerance/10 pitches to be ± 0.2 mm

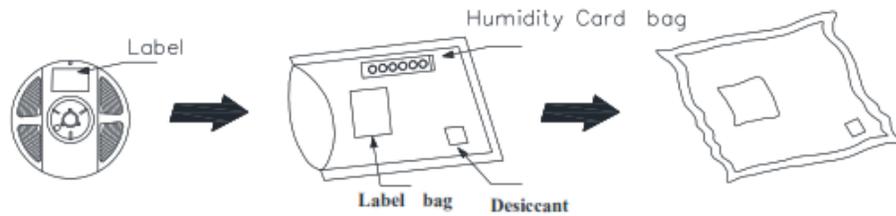
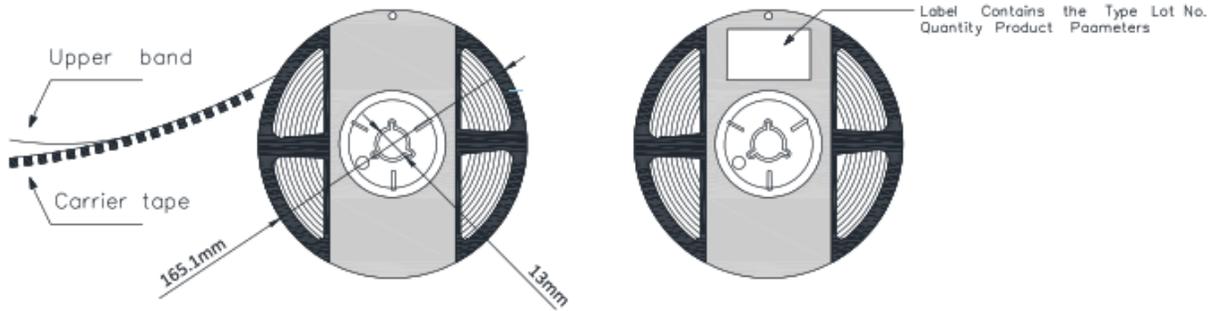
* Package: P/N, Manufacturing data Code No. and Quantity to be indicated on a waterproof Package.

* Adhesion strength of Cover Tape strength to be 0.1-0.7N when the cover tape is turned off from the carrier tape at the angle of 10° to the carrier tape.

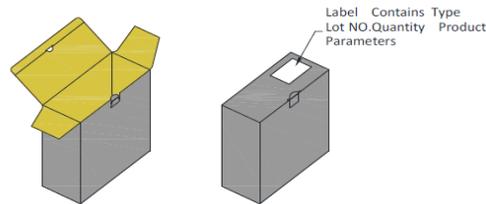


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Package Dimensions of Reel

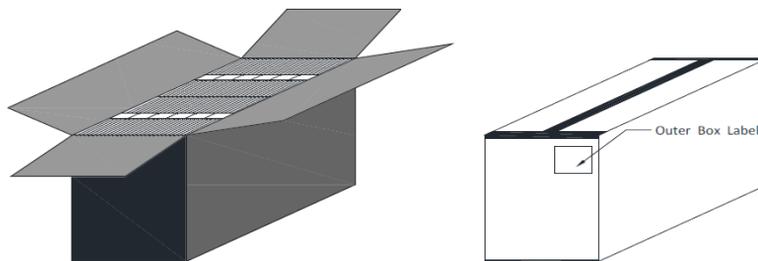


Packaging



* Capacity 10 reels per box.

Outer Box



* Capacity 30 or 60 reels per box.



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Caution

1. Reflow soldering is recommended not to be done more than two times. In the case of more than 24 hours passed soldering after first, LEDs will be damaged.
2. Repairs should not be done after the LEDs have been soldered. When repair is unavoidable, suitable tools must be used.
3. Die slug is to be soldered.
4. When soldering, do not put stress on the LEDs during heating.
5. After soldering, do not warp the circuit board.

Notes on American Bright EMC Series soldering:

1. Recommend to use reflow machine.
2. Recommend to use heating plate soldering.
3. Manual soldering is not recommended.

Notes on reflow process:

1. To confirm whether the actual temperature curve in the reflow soldering conditions comply with recommended conditions. LEDs are guaranteed for one time reflow.
2. During reflow process do not apply force on LED active area.
3. After reflow process, PCB board should be cooled down before packing or storage.

Precaution for use

Storage

1. Before opening the package: The LED should be kept at 5°C~30°C and 60%RH or less.
2. After opening the package: The LED's lifetime is 168Hrs @30°C or 60%RH. If unused LED remain, it should be stored in moisture proof packages JEDEC (MSL 3).
3. If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions: baking treatment: 60±5°C for 24 hours.