

# **B030F**

## **1W Power LED**

### **Technical Datasheet**

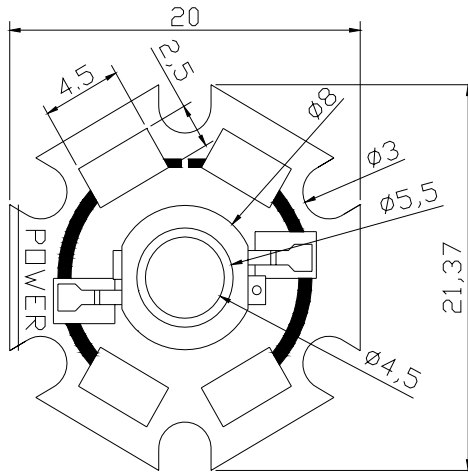
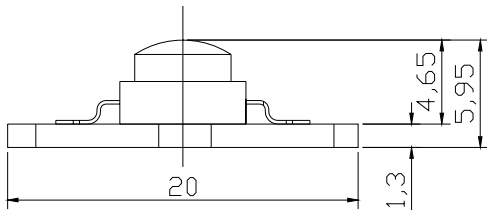
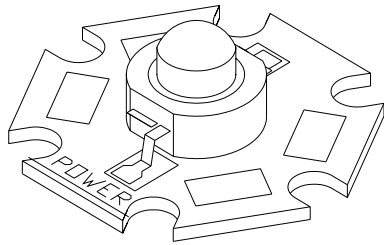
#### **Features**

- ☆ High Flux per LED
- ☆ Very long operating life(up to 100k hours)
- ☆ Available in White, Warm White, Green, Blue, Amber, Red-Orange and Red
- ☆ Lambertian or Collimated Radiation Pattern
- ☆ More Energy Efficient than Incandescent and most Halogen lamps
- ☆ Low Voltage DC operated
- ☆ Cool beam, safe to the touch
- ☆ Instant light (less than 100ns)
- ☆ No UV
- ☆ Superior ESD protection
- ☆ Soldering methods: IR reflow soldering and Hand soldering

#### **Typical Applications**

- ☆ Reading lights (car, bus, aircraft)
- ☆ Portable (flashlight, bicycle)
- ☆ Decorative
- ☆ Appliance
- ☆ Sign and Channel Letter
- ☆ Architectural Detail
- ☆ Cove Lighting
- ☆ Automotive Exterior (Stop-Tail-Turn, CHMSL, Mirror Side Repeat)
- ☆ LCD backlight

## Mechanical Dimensions



### Notes:

1. Slots in aluminum-core PCB for M3 or #4 mounting screw.
2. Electrical interconnection pads labeled on the aluminum-core PCB with "+" and "-" to denote positive and negative, respectively. All positive pads are interconnected, as are all negative pads, allowing for flexibility in array interconnection.
3. Drawing not to scale.
4. All dimensions are in millimeters.

## Flux Characteristics at 350mA, Junction Temperature, T<sub>j</sub>=25°C

| Color | Minimum Luminous Flux (lm) | Typical Luminous Flux (lm) | Beam Pattern |
|-------|----------------------------|----------------------------|--------------|
| Blue  | 8.0                        | 13                         | Bat Wing     |

## Optical Characteristics at 350mA, Junction Temperature, T<sub>j</sub>=25°C

| Color | Dominant Wavelength $\lambda_D$ |                        |       | Spectral Half-width (nm) $\Delta\lambda_{1/2}$ | Temperature Coefficient or Dominant Wavelength $\Delta\lambda_D/\Delta T_j$ (nm/°C) |
|-------|---------------------------------|------------------------|-------|--|---|
|       | Peak Wavelength $\lambda_p$     | Color Temperature(CCT) |       |  |   |
|       | Min.                            | Typ.                   | Max.  |  |   |
| Blue  | 460nm                           | 470nm                  | 490nm | 25   | 0.04  |

## Optical Characteristics at 350Ma, Junction Temperature, Tj=25°C

( Continued)

| Color | Beam Pattern | Total Included Angle<br>$\theta_{0.9v}$ (degree) | Viewing Angle<br>$2\theta_{1/2}$ (degree) | Typical Candela<br>on Axis (cd) |
|-------|--------------|--|---|---------------------------------|
| Blue  | Bat Wing     | 130  | 120                                       |                                 |

## Electrical Characteristics at 350mA, Junction Temperature, Tj=25°C

| Color | Forward Voltage Vf(V) |      |      | Dynamic<br>Resistance(Ω) | Temperature<br>Coefficient of<br>Vf(mV/°C)<br>$\Delta Vf/\Delta Tj$ | Thermal<br>Resistance<br>Junction to<br>Board(°C/W) |
|-------|-----------------------|------|------|--------------------------|---|---|
|       | Min.                  | Typ. | Max. |                          |   |   |
| Blue  | 2.79                  | 3.55 | 3.99 | 1.0                      | -2  | 15  |

## Absolute Maximum Ratings

| Parameter                           | White/Warm White/Green/Blue | Amber/Red-Orange/Red |
|-------------------------------------|-----------------------------|----------------------|
| DC Forward Current (mA)             | 350                         | 385                  |
| Peak Pulsed Forward Current (mA)    | 500                         | 550                  |
| Average Forward Current (mA)        | 350                         | 350                  |
| ESD Sensitivity                     | ±16000V HBM                 |                      |
| LED Junction Temperature (°C)       | 135                         | 120                  |
| Aluminum-core PCB Temperature(°C)   | 105                         | 105                  |
| Storage & Operating Temperature(°C) | -40 to +105                 | -40 to +105          |
| Soldering Temperature(°C)           | 260 for 5 seconds Max.      |                      |

## Photometric Luminous Flux Bin Structure

| Bin Code | Minimum Photometric Flux (lm) | Maximum Photometric Flux (lm) |
|----------|-------------------------------|-------------------------------|
| F        | 2.9                           | 3.8                           |
| G        | 3.8                           | 4.9                           |
| H        | 4.9                           | 5.3                           |
| J        | 5.3                           | 8.2                           |
| K        | 8.2                           | 10.7                          |
| L        | 10.7                          | 13.9                          |
| M        | 13.9                          | 18.1                          |
| N        | 18.1                          | 23.5                          |
| P        | 23.5                          | 30.6                          |
| Q        | 30.6                          | 39.8                          |
| R        | 39.8                          | 51.7                          |
| S        | 51.7                          | 67.2                          |
| T        | 67.2                          | 87.4                          |
| U        | 87.4                          | 113.6                         |
| V        | 113.6                         | 147.7                         |

## Color Bins for Blue

| Bin Code | Minimum Dominant Wavelength (nm) | Maximum Dominant Wavelength (nm) |
|----------|----------------------------------|----------------------------------|
| 1        | 460                              | 465                              |
| 2        | 465                              | 470                              |
| 3        | 470                              | 475                              |
| 4        | 475                              | 480                              |
| 5        | 480                              | 485                              |
| 6        | 485                              | 490                              |

## Forward Voltage Bins

| Bin Code | Minimum Forward Voltage (V) | Maximum Forward Voltage (V) |
|----------|-----------------------------|-----------------------------|
| C        | 1.83                        | 2.07                        |
| D        | 2.07                        | 2.31                        |
| E        | 2.31                        | 2.55                        |
| F        | 2.55                        | 2.79                        |
| G        | 2.79                        | 3.03                        |
| H        | 3.03                        | 3.27                        |
| J        | 3.27                        | 3.51                        |
| K        | 3.51                        | 3.75                        |
| L        | 3.75                        | 3.99                        |
| M        | 3.99                        | 4.23                        |
| N        | 4.23                        | 4.47                        |
| R        | 5.43                        | 5.91                        |
| S        | 5.91                        | 6.39                        |
| T        | 6.39                        | 6.87                        |
| U        | 6.87                        | 7.35                        |
| V        | 7.35                        | 7.83                        |
| W        | 7.83                        | 8.31                        |

## Wavelength Characteristics, $T_j=25^\circ\text{C}$

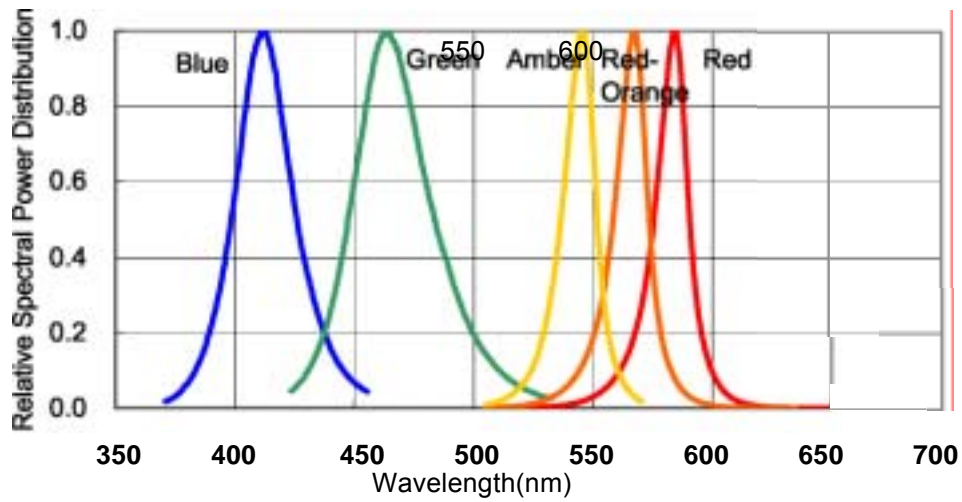


Figure 1a. Relative Intensity vs. Wavelength

## White Color Spectrum

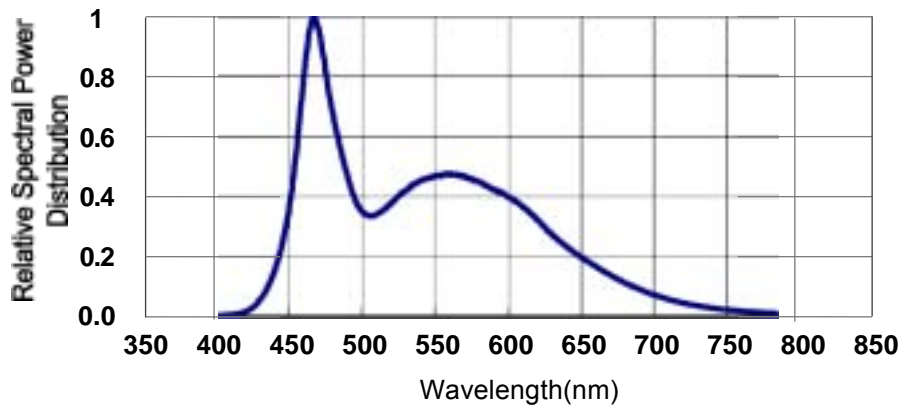


Figure 1 b. White Color Spectrum of Typical 5500K Part.

## Light Output Characteristics

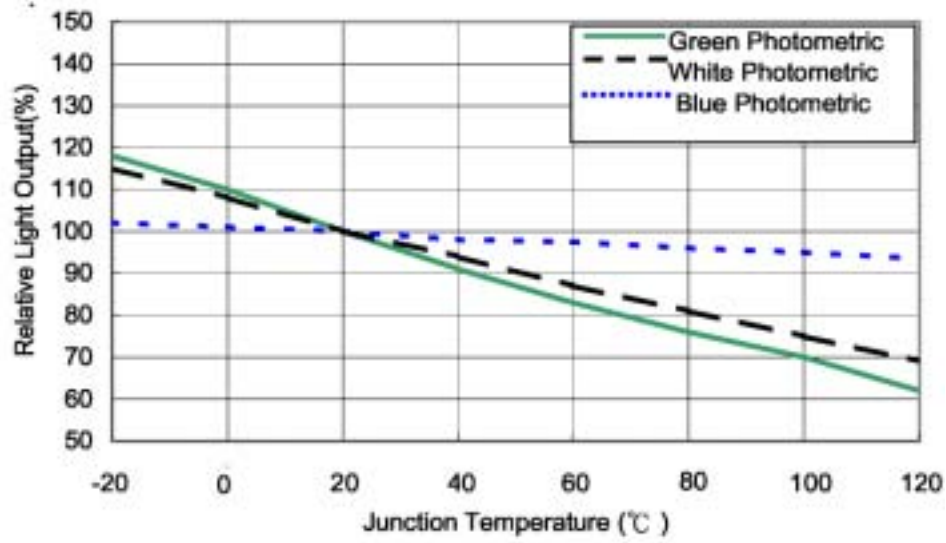


Figure 2a. Relative Light Output vs. Junction Temperature

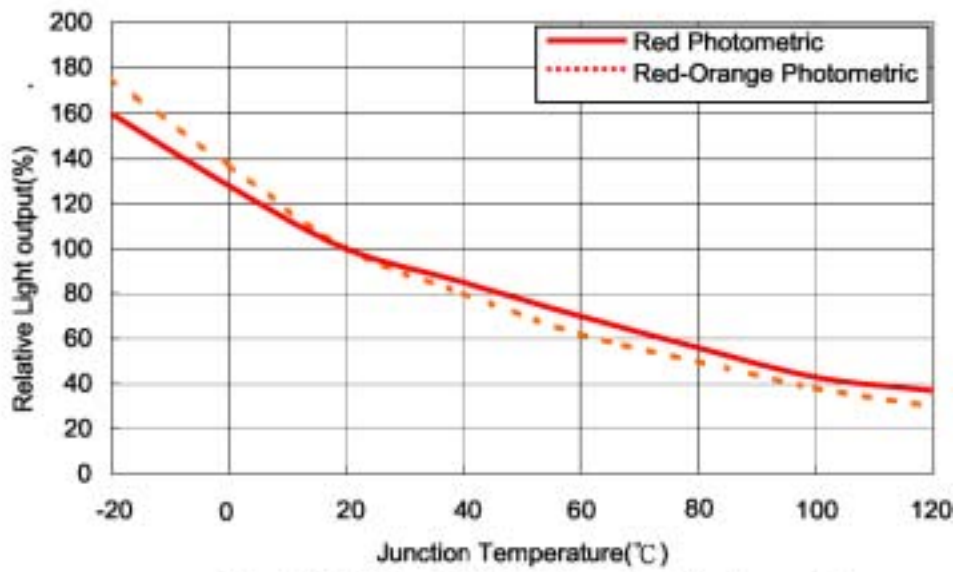


Figure 2b. Relative Light Output vs. Junction Temperature



**Forward Current Characteristics.  $T_i=25^\circ\text{C}$**

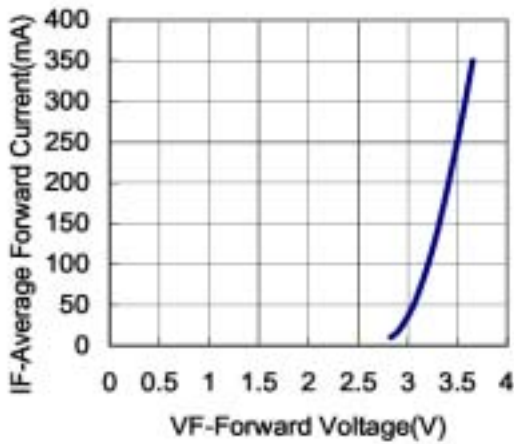


Fig 3a. Forward Voltage(V) Forward Voltage for White, Blue and Green.

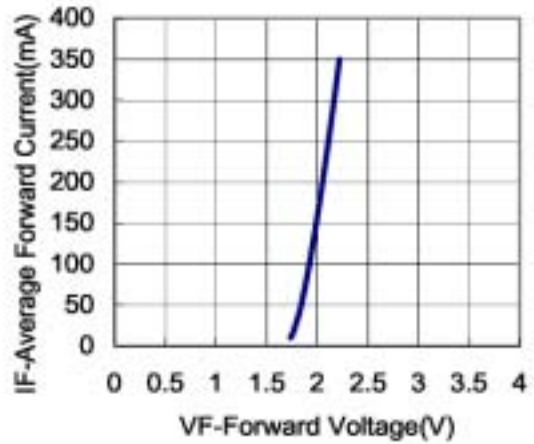


Fig 3b. Forward Current vs. Forward Voltage for Yellow and Red.

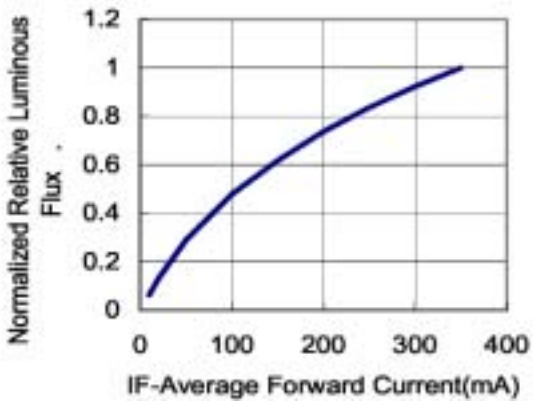


Fig 4a. Relative Luminous Flux vs. Forward Current for White, Blue and Green at  $T_j=25^\circ\text{C}$  maintained.

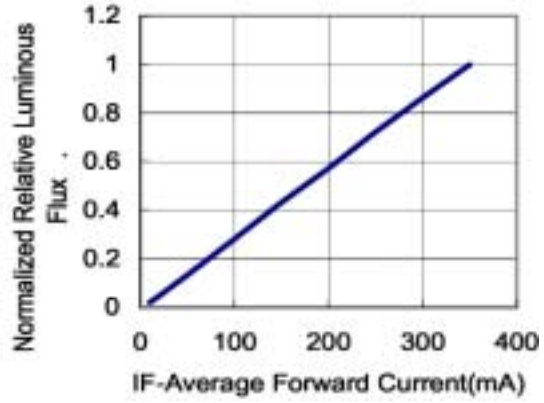


Fig 4b. Relative Luminous Flux vs. Forward Current for Yellow and Red at  $T_j=25^\circ\text{C}$  maintained.

## Current Derating Curves

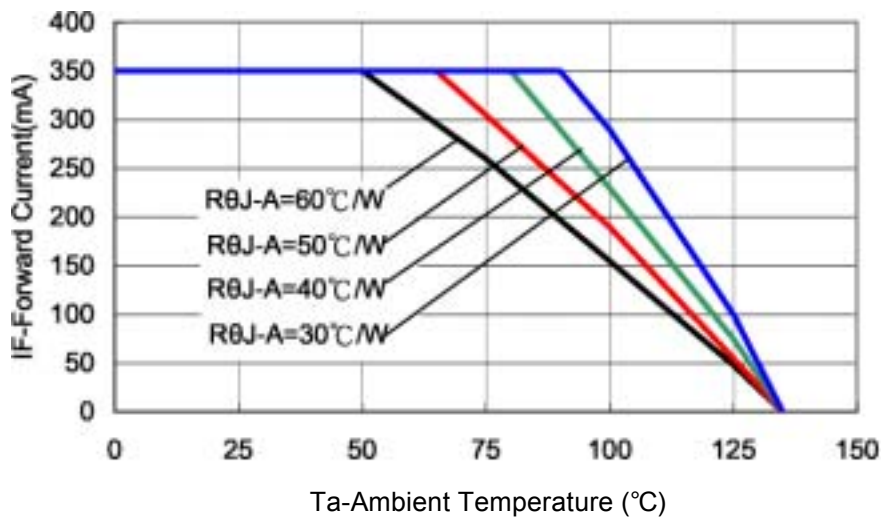


Fig 5a. Maximum Forward Current vs. Ambient Temperature. Derating based on  $T_{jMAX}=135$  for White, Blue and Green.

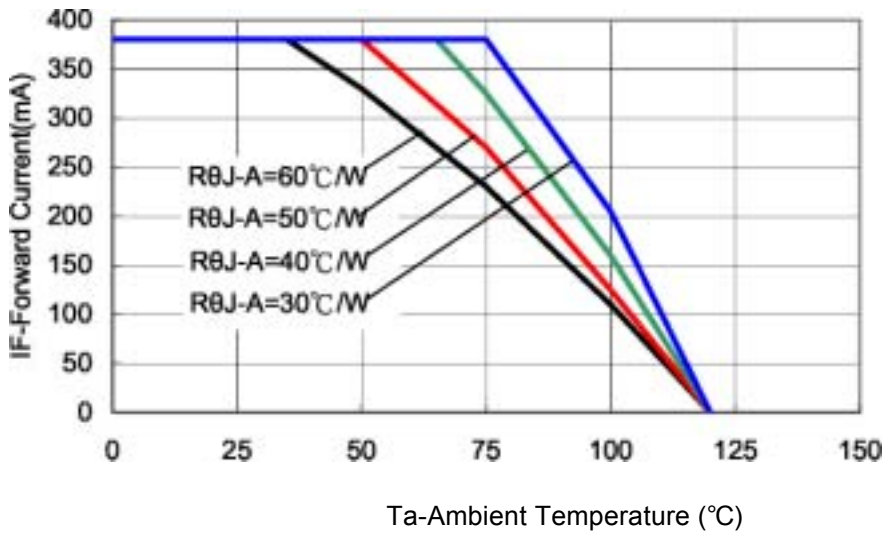


Fig 5b. Maximum Forward Current vs. Ambient Temperature. Derating based on  $T_{jMAX}=120$  for Yellow and Red.

# Typical Representative Spatial Radiation Pattern

Lambertian Radiation Pattern

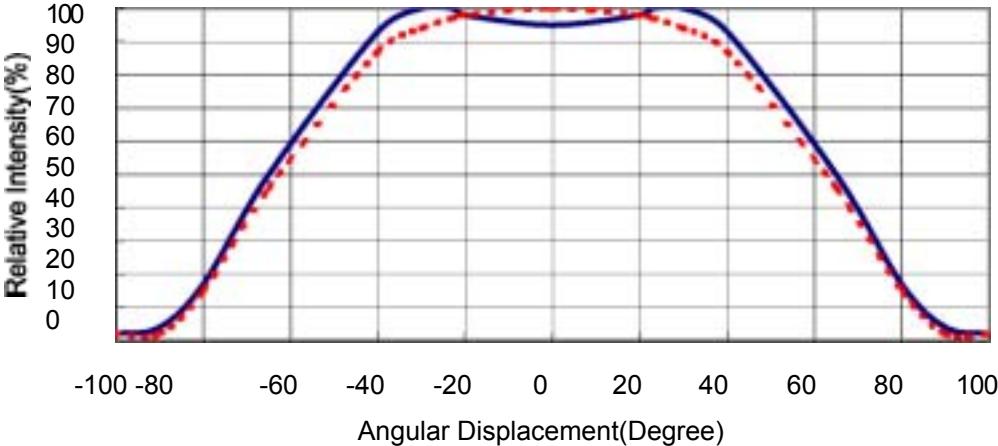


Fig 6. Typical Representative Spatial Radiation Pattern for White, Blue, Green, Yellow and Red.