

# ASMT-FJ10-AHJ00

## Surface Mount AF Lamp

### Description

The Broadcom<sup>®</sup> ASMT-FJ10-AHJ00 is a surface mount technology (SMT) dome lamp that uses an untinted, nondiffused lens to provide a high luminous intensity within a narrow radiation pattern. The device is made by encapsulating an LED chip on axial lead frame to form a molded epoxy lamp package with six bended leads for surfacing mounting.

This lamp type LED utilizes Aluminum Indium Gallium Phosphide (AlInGaP) material technology. The AlInGaP material has a very high luminous efficiency, capable of producing high light output over a wide range of drive currents. The color available for this SMT lamp package is 605-nm orange.

This narrow angle SMT lamp package is designed for applications that require long distance illumination and narrow beam pattern, such as an auxiliary flash for auto-focus function in a digital still camera. In order to facilitate pick-and-place operation, this SMT lamp is shipped in tape and reel, with 1000 units per reel. This package is compatible with Pb-free IR soldering process.

### Eye Safety

This orange Surface Mount AF Lamp is used for a camera application. The LEDs have lenses, which focus the beam at about 10 mm from the front of the lens, from where the beam diverges relatively slowly. If the LEDs are placed in a product, they create a Class 1 LED to IEC/EN 60825-1 (2001) under all conditions of operation and single fault failure, as long as no collimating optics are added to the optical path.

### Features

- Smooth, consistent narrow radiation pattern
- 8° view angle
- 4.8L × 4.8W × 5.33H mm package dimension
- Good intensity output
- Compatible with IR solder reflow
- Available in 16-mm tape on 15" (380mm) diameter reels
- Clear, non-diffused epoxy
- IEC/EN 60825-1 Eye Safety Class 1
- RoHS compliant

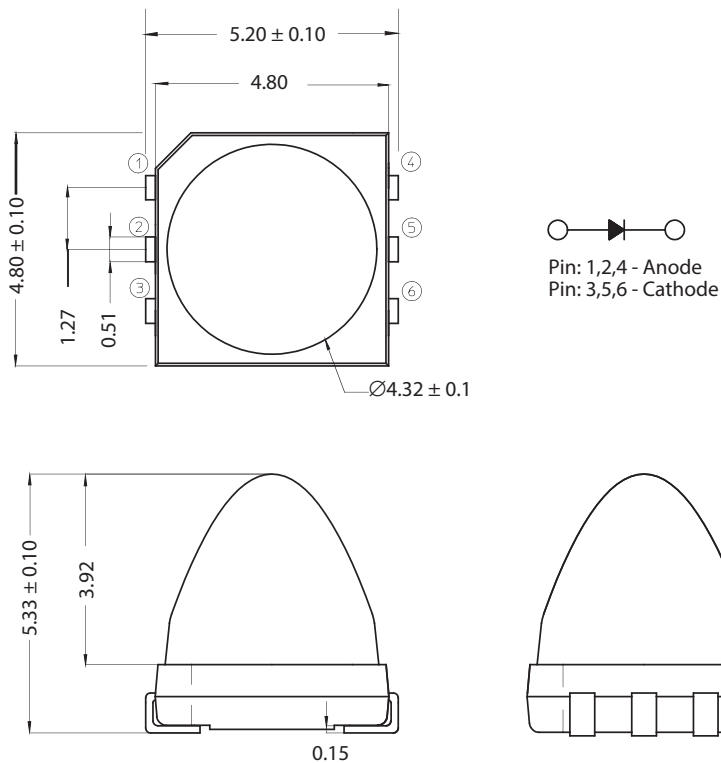
### Applications

- Camera

#### CAUTION!

This LED is ESD sensitive. Please observe appropriate precautions during handling and processing. Refer to application note AN-1142 for additional details.

Figure 1: Package Dimensions

**NOTE:**

1. All Dimensions in millimeters.
2. Tolerance is  $\pm 0.1$  mm unless otherwise specified.

**Device Selection Guide**

| Color  | Part Number     | Max. $I_V$ (cd) | Max. $I_V$ (cd) | Test Current (mA) | Dice Technology |
|--------|-----------------|-----------------|-----------------|-------------------|-----------------|
| Orange | ASMT-FJ10-AHJ00 | 25.5            | 56.0            | 20                | AlInGaP         |

**NOTE:**

1. The luminous intensity,  $I_V$ , is measured at the mechanical axis of the lamp package. The actual peak of the spatial radiation pattern may not be aligned with this axis.
2.  $I_V$  tolerance =  $\pm 15\%$ .

## Part Numbering System

A S M T - F x<sub>1</sub> x<sub>3</sub> x<sub>4</sub> - x<sub>5</sub> x<sub>6</sub> x<sub>7</sub> x<sub>8</sub> x<sub>9</sub>

| Code                          | Description                  | Option  |
|-------------------------------|------------------------------|---|
| X <sub>1</sub>                | LED Chip Color               | J Red Orange                                  |
|                               |                              | G Green                                       |
| X <sub>3</sub> X <sub>4</sub> | Package Type                 | 10 4.8L × 4.8W × 5.33H mm package, Lead Frame |
| X <sub>5</sub>                | LED Chip Technology          | A AllInGaP                                    |
|                               |                              | N InGaN                                       |
| X <sub>6</sub>                | Minimum Intensity Bin Limits | Refer I <sub>V</sub> Bin Category             |
| X <sub>7</sub>                | Maximum Intensity Bin Limits | Refer I <sub>V</sub> Bin Category             |
| X <sub>8</sub>                | Color Bin                    | 0 Full Distribution                           |
| X <sub>9</sub>                | Packaging Option             | 0 Not Applicable                              |

## I<sub>V</sub> Bin Category

| Bin ID | Min. (cd) | Max. (cd) |
|--------|-----------|-----------|
| H      | 25.5      | 33.0      |
| I      | 33.0      | 43.0      |
| J      | 43.0      | 56.0      |

I<sub>V</sub> tolerance = ±15%.

## Color Bin Category

| Orange | Min. (nm) | Max. (nm) |
|--------|-----------|-----------|
| 1      | 600       | 604       |
| 2      | 604       | 608       |
| 3      | 608       | 612       |

Tolerance = ±1 nm.

## Absolute Maximum Ratings at $T_A = 25^\circ\text{C}$

| Parameter                   | ASMT-FJ10-AHJ00                | Unit             |
|-----------------------------|--------------------------------|------------------|
| DC Forward Current          | 50                             | mA               |
| Power Dissipation           | 130                            | mW               |
| LED Junction Temperature    | 110                            | $^\circ\text{C}$ |
| Operating Temperature Range | -40 to +85                     | $^\circ\text{C}$ |
| Storage Temperature Range   | -40 to +100                    | $^\circ\text{C}$ |
| Soldering Temperature       | See <a href="#">Figure 7</a> . |                  |

## Optical Characteristics at $T_A = 25^\circ\text{C}$

| Part Number     | Color  | Peak Wavelength<br>$\lambda_{\text{PEAK}}$ (nm) | Dominant Wavelength <sup>a</sup><br>$\lambda_{\text{D}}$ (nm) | Viewing Angle $2\theta_{1/2}$ <sup>b</sup><br>(Degrees) | Luminous Efficacy,<br>$\eta_V$ <sup>c</sup> (lm/W) | Luminous Efficiency<br>(lm/W) |
|-----------------|--------|---|---|---|--|-------------------------------|
|                 |        | Typ.  | Typ.  | Typ.  | Typ.   | Typ.                          |
| ASMT-FJ10-AHJ00 | Orange | 612   | 605   | 8   | 355  | 27                            |

a. The dominant wavelength,  $\lambda_{\text{D}}$ , is derived from the CIE Chromaticity Diagram and represents the color of the device.

b.  $\theta_{1/2}$  is the off-axis angle where the luminous intensity is  $1/2$  the peak intensity.

c. Radiant intensity,  $I_e$  in watts/steradian, can be calculated from the equation  $I_e = I_V/\eta_V$ , where  $I_V$  is the luminous intensity in candelas and  $\eta_V$  is the luminous efficacy in lumens/watt

## Electrical Characteristics at $T_A = 25^\circ\text{C}$

| Part Number     | Forward Voltage, $V_F$ (Volts) at $I_F = 20$ mA |      |      | Reverse Voltage, $V_R$ at<br>10 mA | Capacitance, C (pF), $V_F = 0$<br>$f = 1$ MHz |
|-----------------|---|------|------|------------------------------------|---|
|                 | Min.  | Typ. | Max. | Min.                               | Typ.  |
| ASMT-FJ10-AHJ00 | 1.8   | 2.0  | 2.4  | 5                                  | 22  |

Note:  $V_F$  tolerance is  $\pm 0.1\text{V}$ .

Figure 2: Relative Intensity vs. Wavelength

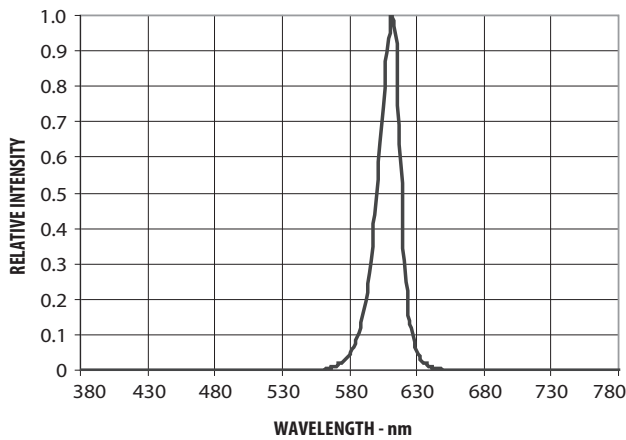


Figure 3: Forward Current vs Forward Voltage

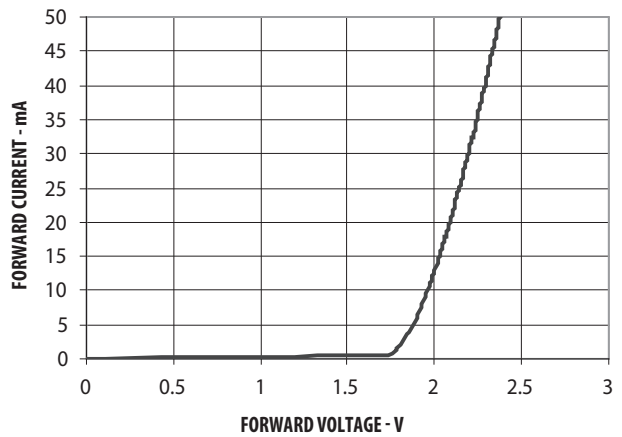


Figure 4: Relative Intensity vs. Forward Current

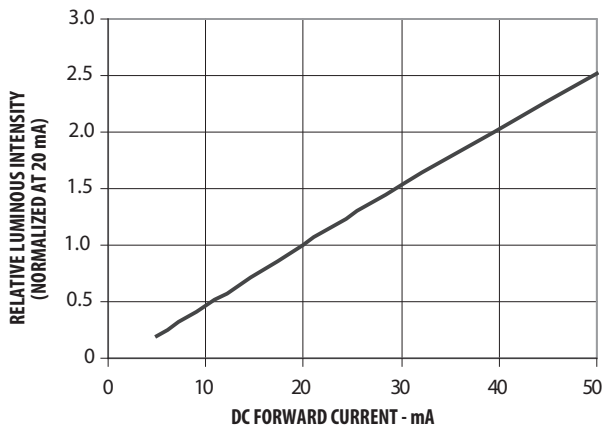


Figure 5: Radiation Pattern

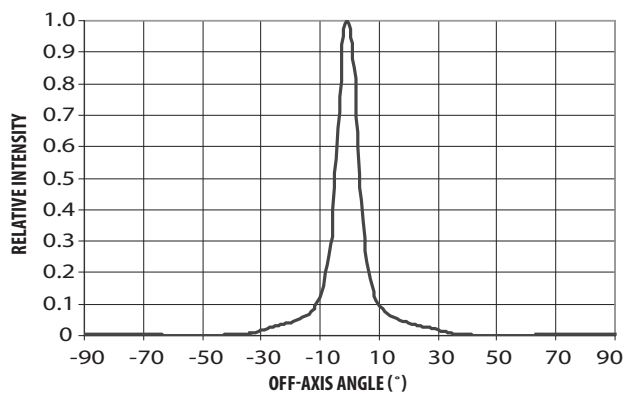


Figure 6: Maximum Forward Current vs Ambient Temperature

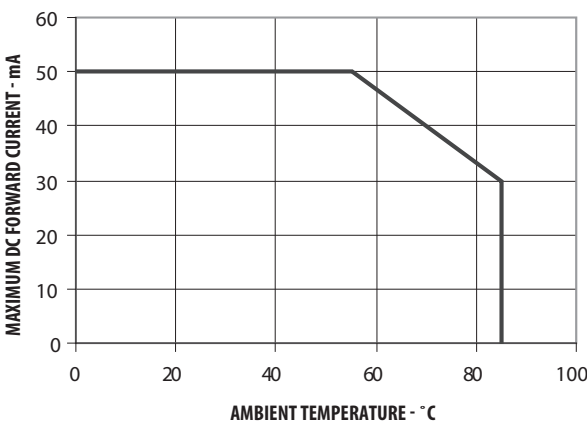


Figure 7: Recommended Reflow Soldering

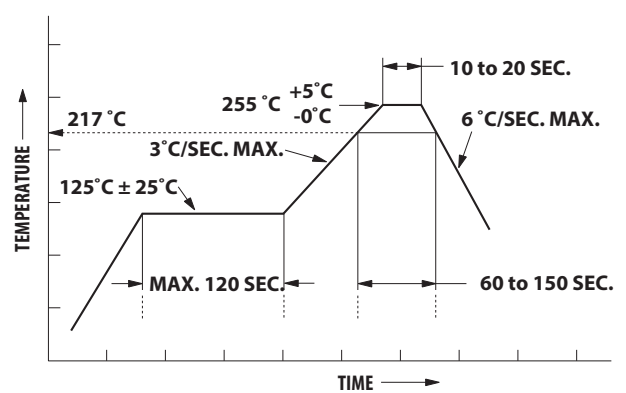


Figure 8: Recommended Soldering Land Pattern

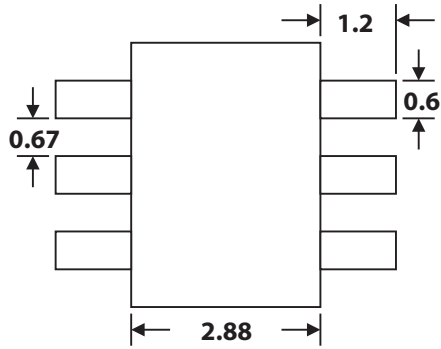


Figure 9: Reeling Orientations

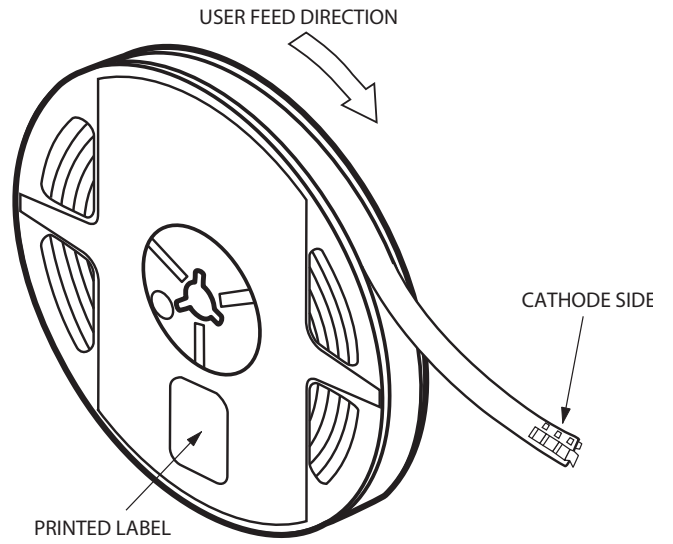


Figure 10: Reel Dimensions

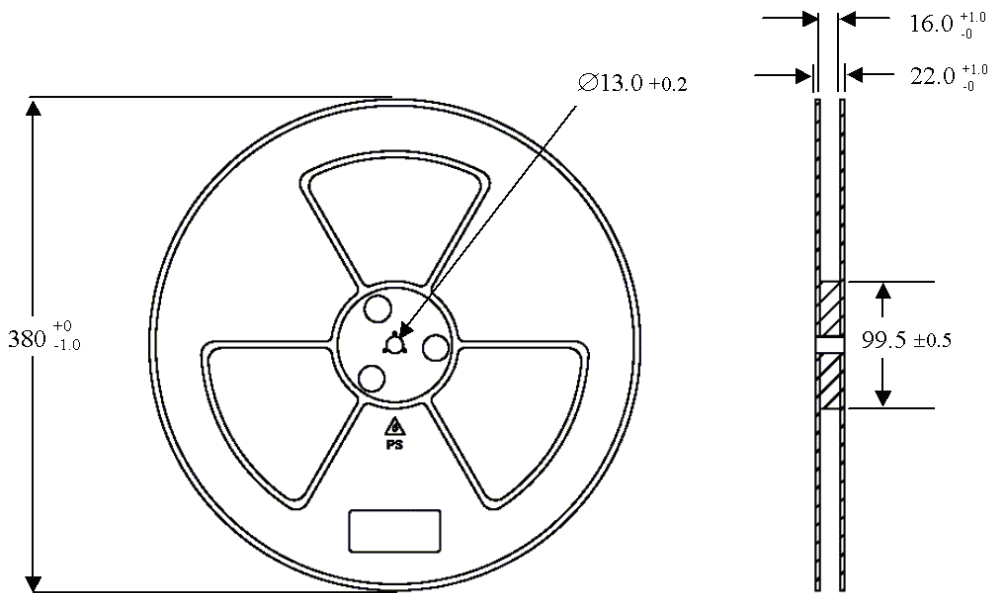


Figure 11: Tape Dimensions

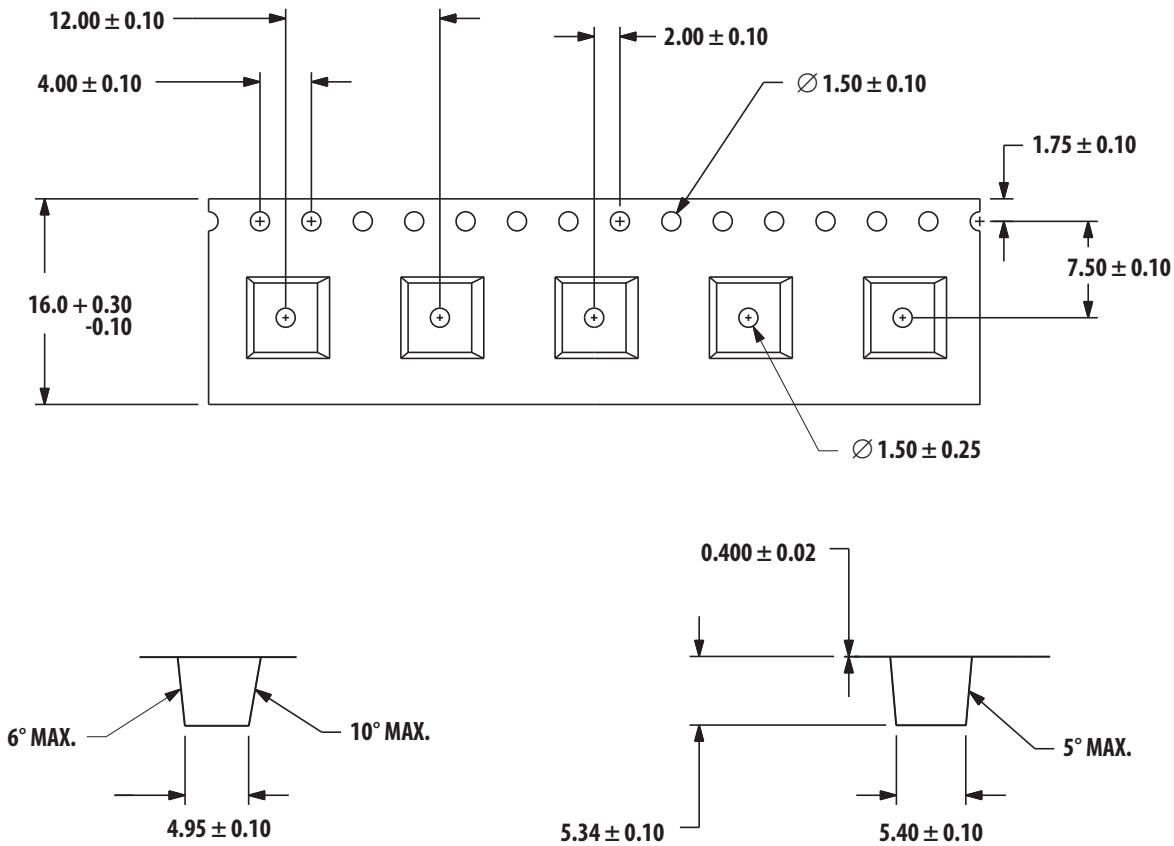
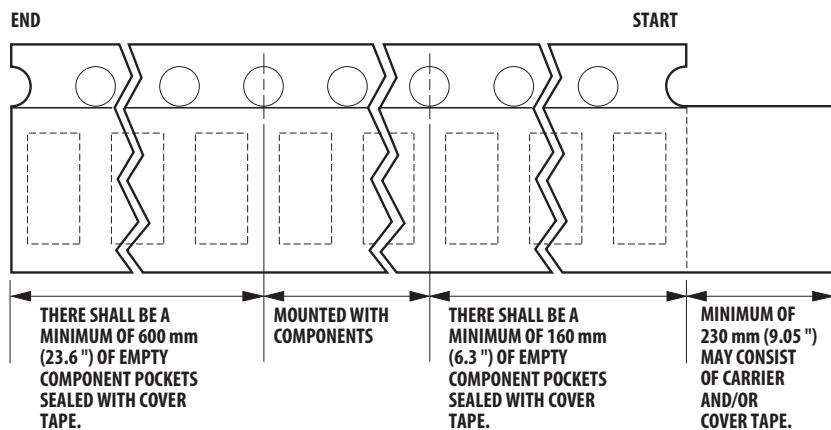


Figure 12: Tape Leader and Trailer Dimensions



Note: There will be a minimum of 600 mm (23.6") of empty component pockets sealed with cover tape.

**NOTE:**

1. All dimensions in millimeters.
2. Tolerance is  $\pm 0.1$  mm unless otherwise specified.

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Lead (Pb) Free  
RoHS 6 fully  
compliant