

ASMT-FG10-NFJ00

Surface Mount AF Lamp



Description

The Broadcom[®] ASMT-FG10-NFJ00 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 an axial lead frame to form a molded epoxy lamp package with six bended leads for surfacing mounting.

This lamp type LED uses Indium Gallium Nitrate (InGaN) material technology. The InGaN 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 530-nm Green.

This narrow-angle SMT lamp package is designed for applications that require long distance illumination and narrow beam pattern, such as the auxiliary flash for an auto-focus function in a digital still camera. 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 2x reflow soldering process.

Features

- Smooth, consistent narrow radiation pattern
- 11° viewing angle
- 4.8 mm L × 4.8 mm D × 5.33 mm H package dimensions
- Good intensity output
- Compatible with 2x solder reflow
- Available in 16-mm tape on 15-in. (380-mm) diameter reels
- Clear, nondiffused epoxy
- RoHS compliance

Applications

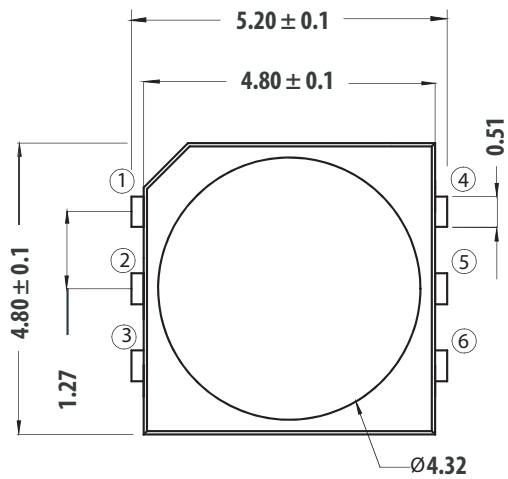
- Camera

Eye Safety

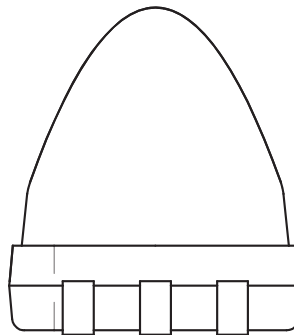
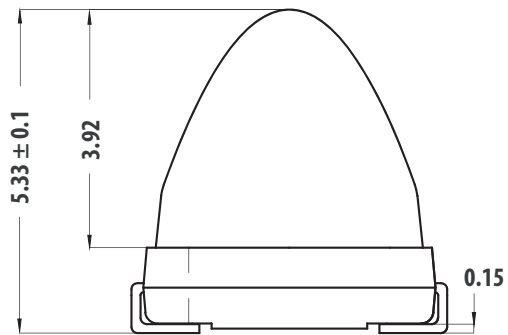
This LED is tested Class 1 to IEC/EN 60825-1 (2001) under operation at 20 mA. This LED is not recommended to drive beyond 20 mA because it might fall in the classification of Class 2M to IEC/EN 60825-1 (2001).

CAUTION! ASMT-FG10 LEDs are class 1 ESD sensitive. Observe appropriate precautions during handling and processing. Refer to Broadcom Application Note AN-1142 for additional details.

Package Dimensions



Pin: 1,2,4 - Anode
Pin: 3,5,6 - Cathode



NOTE:

1. All dimensions are in millimeters.
2. Tolerance is ± 0.1 mm unless otherwise specified.

Device Selection Guide

Color	Part Number	Min. IV (cd)	Typ. IV (cd)	Max. IV (cd)	Test Current (mA)	Dice Technology
Green	ASMT-FG10-NFJ00	18	—	96	20	InGaN

NOTE:

1. The luminous intensity IV, 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. IV tolerance = $\pm 15\%$.

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

Parameter	ASMT-FG10-NFJ00	Units
DC Forward Current	20	mA
Power Dissipation	80	mW
LED Junction Temperature	110	$^\circ\text{C}$
Operating Temperature Range	-40 to +85	$^\circ\text{C}$
Storage Temperature Range	-0 to +100	$^\circ\text{C}$
Soldering Temperature	See Figure 7	

Electrical Characteristic ($T_A = 25^\circ\text{C}$)

Part Number	Forward Voltage $V_F^{a, b}$ (Volts) at $I_F = 20\text{ mA}$		Reverse Voltage V_R at 10 mA	Capacitance C (pF), $V_F = 0, f = 1\text{ MHz}$
	Min.	Max.	Min.	Typ.
ASMT-FG10-NFJ00	3.3	3.9	5	65

a. V_F will reach stabilization stage after switch on > 50 ms.

b. V_F tolerance is $\pm 0.1V$.

Optical Characteristics ($T_A = 25^\circ\text{C}$)

Part Number	Color	Peak Wavelength λ_{PEAK} (nm)	Dominant Wavelength λ_D^a (nm)	Viewing Angle $2\theta_{1/2}^b$ (Degrees)	Luminous Efficacy, η_v^c (lm/W)	Luminous Efficiency (lm/W)
		Typ.	Typ.	Typ.	Typ.	Typ.
ASMT-FG10-NFJ00	Green	525	530	11	535	32

a. The dominant wavelength, λ_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, may be calculated from the equation $I_e = I_v/\eta_v$, where I_v is the luminous intensity in candelas and η_v is the luminous efficacy in lumens/watt.

Iv Bin Category

Bin ID	Min.	Max.
F	18	19.5
G	19.5	25.5
H	25.5	33
I	33.0	43.0
J	43.0	56.0
K	56.0	73.0
L	73.0	96.0
M	96.0	125.0
N	125.0	163.0
O	163.0	212.0

Iv tolerance = $\pm 15\%$.

Color Bin Category

Green	Min. (nm)	Max. (nm)
A	515.0	520.0
B	520.0	525.0
C	525.0	530.0
D	530.0	535.0

Tolerance = ± 1 nm.

Figure 1: Relative Intensity vs. Wavelength

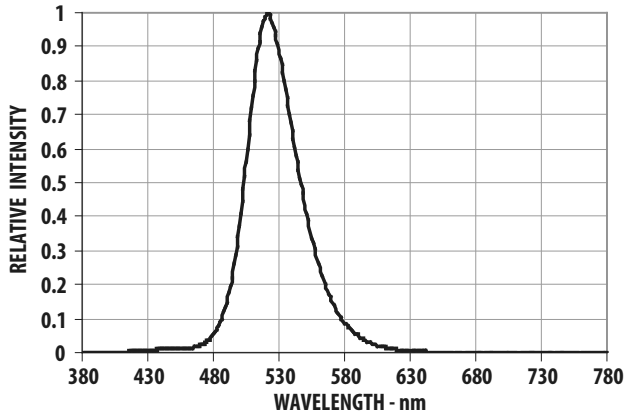


Figure 2: Forward Current vs. Forward Voltage

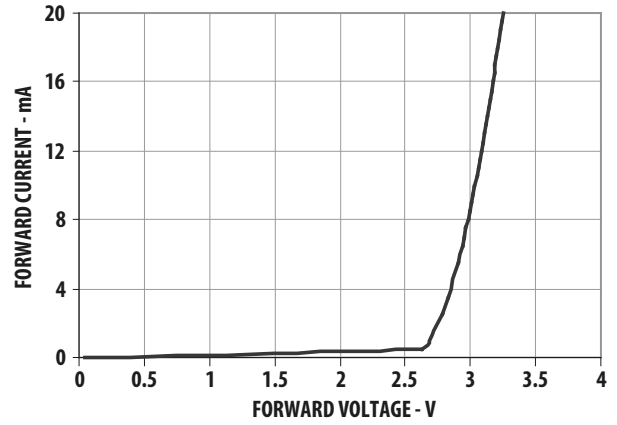


Figure 3: Vf Stabilization vs. Time

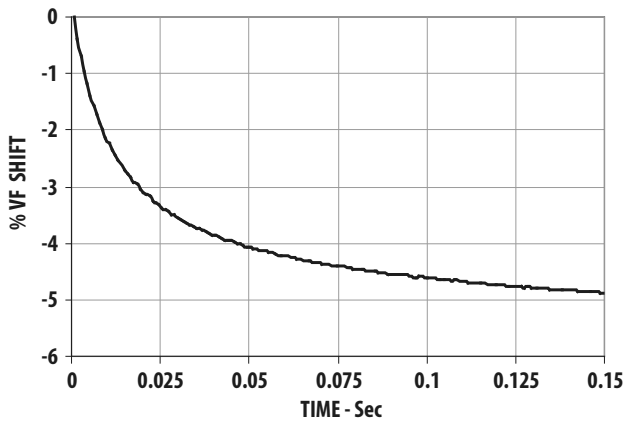


Figure 4: Relative Intensity vs. Forward Current

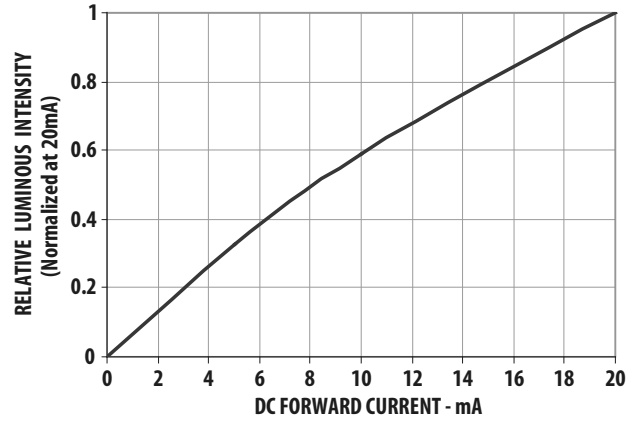


Figure 5: Radiation Pattern

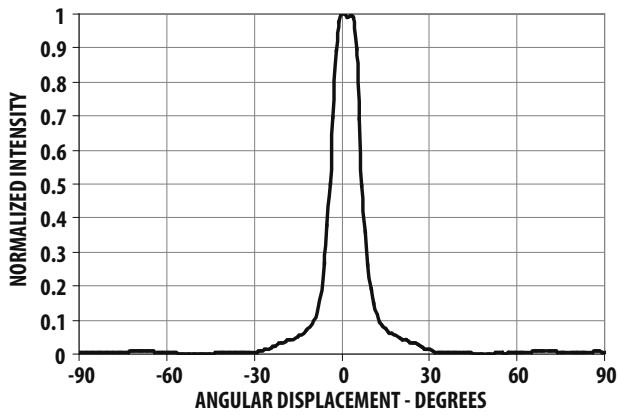


Figure 6: Maximum Forward Current vs. Ambient Temperature

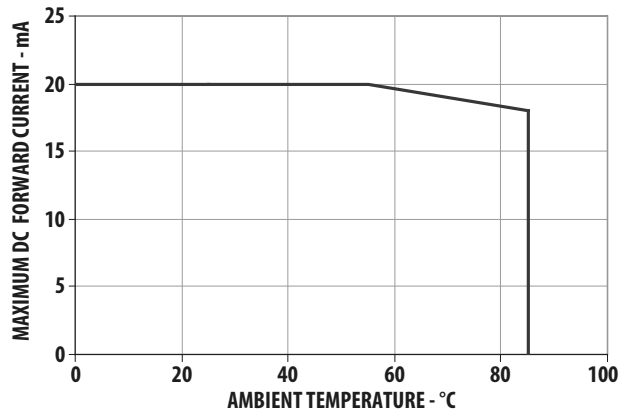


Figure 7: Recommended Reflow Soldering

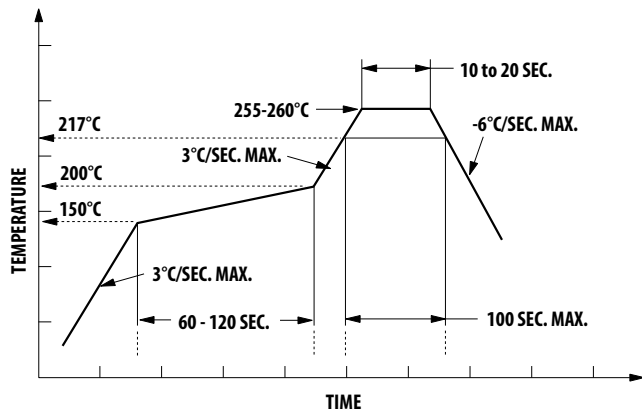


Figure 8: Recommended Soldering Land Pattern

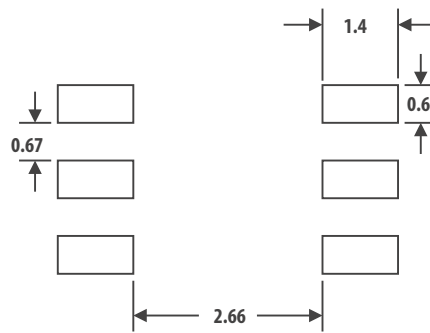
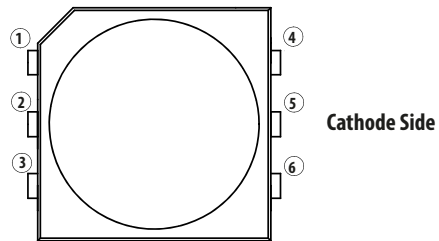
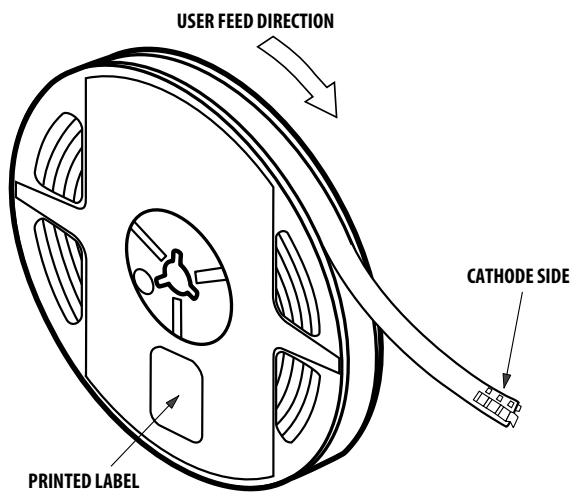


Figure 9: Reeling Orientations



NOTE: The cathode side is base on the center leads.

Figure 10: Reel Dimensions

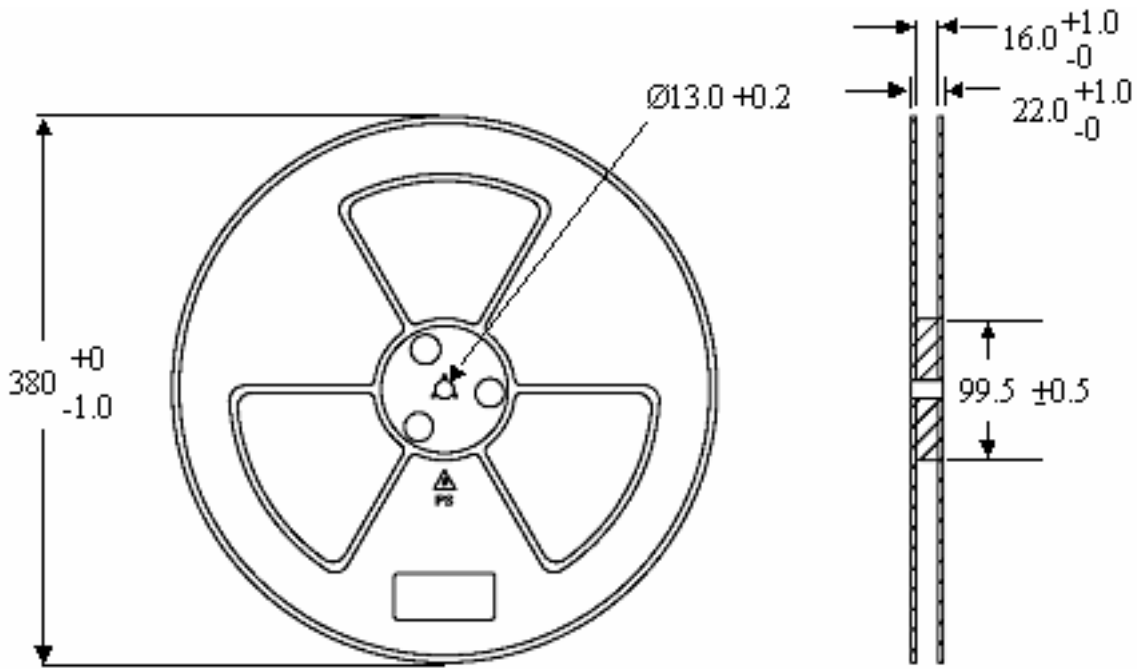


Figure 11: Tape Dimensions

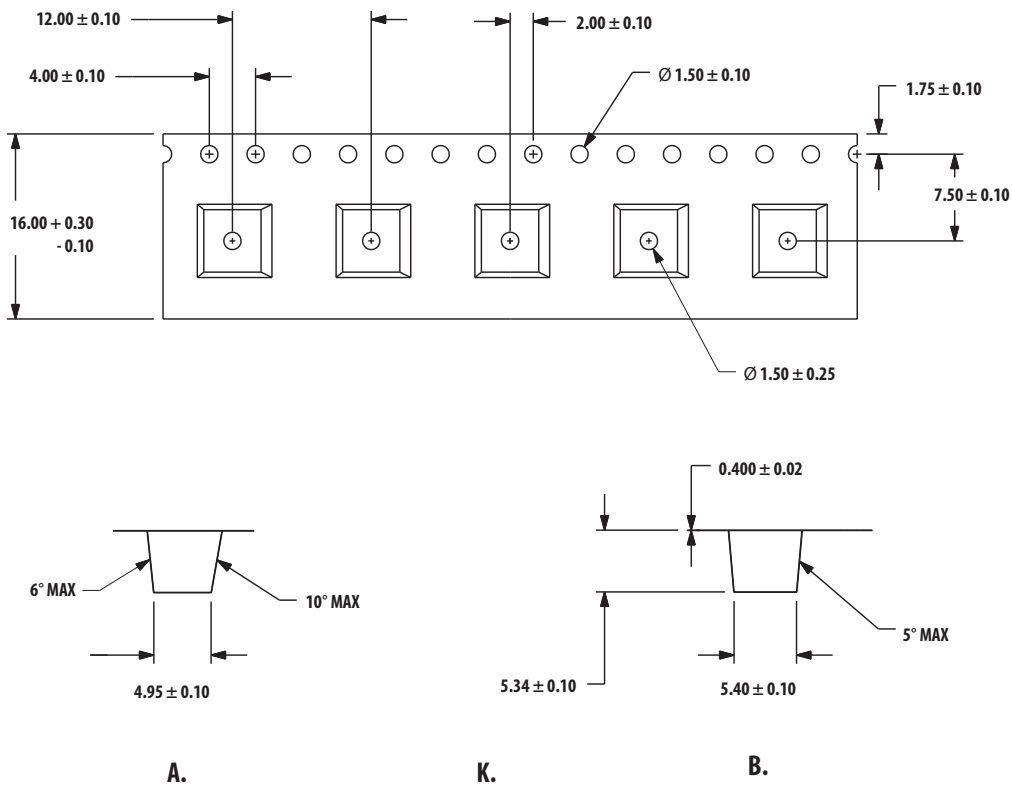
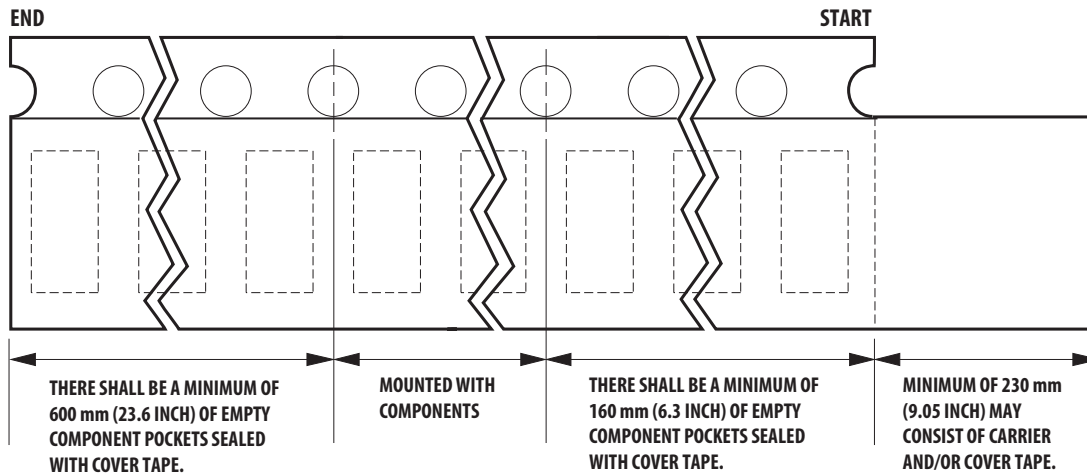


Figure 12: Tape Leader and Trailer Dimensions



A minimum of 600 mm (23.6 in.) of empty component pockets are sealed with cover tape.

NOTE:

1. All dimensions are in millimeters.
2. Tolerance is ± 0.1 mm unless otherwise specified.

Handling Precautions

This products is classified as moisture sensitive level 3.

When the bag is opened, parts are required to mount within 168 hours of factory conditions $\leq 30^{\circ}\text{C}/60\%$, and stored at $<10\%$ RH.

Devices required baking before mounting if the following conditions exist:

- The humidity indicator card is $> 10\%$ when read at $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$.
- The package has been opened for more than 168 hours.

The recommended backing condition is $60^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 20 hours.

NOTE:

1. Do not stack the units after reflow.
2. This part is Class 1 ESD sensitive. Observe appropriate precautions during handling and processing. Refer to Application Note AN-1142 for additional details.

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