

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

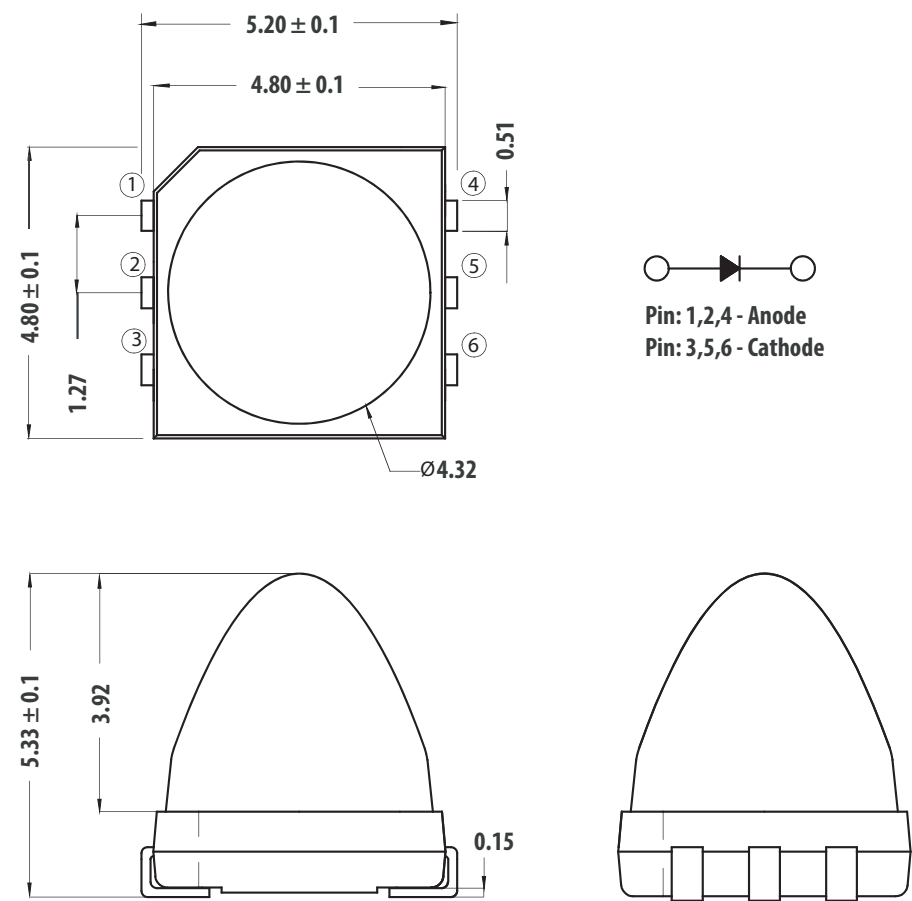
- Camera

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



- 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 $\pm 0.1\text{V}$.

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 = ± 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

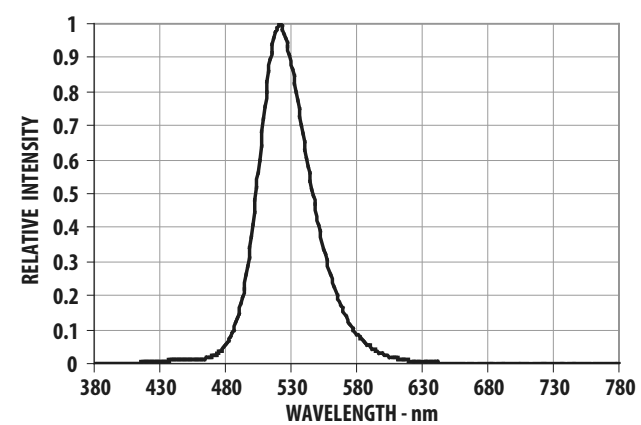


Figure 2: Forward Current vs. Forward Voltage

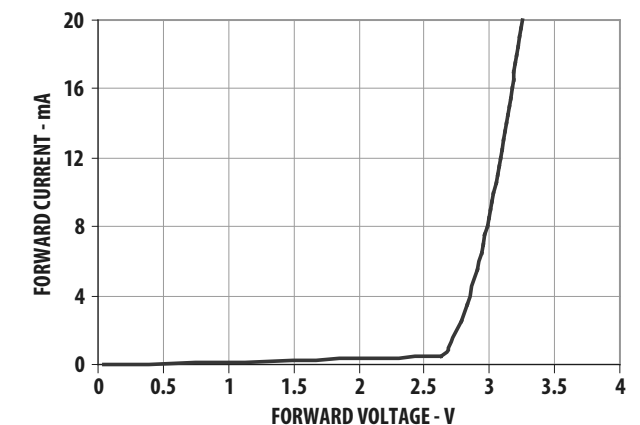


Figure 3: Vf Stabilization vs. Time

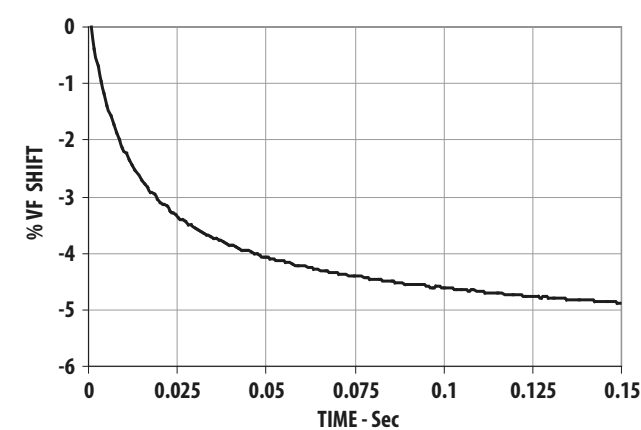


Figure 4: Relative Intensity vs. Forward Current

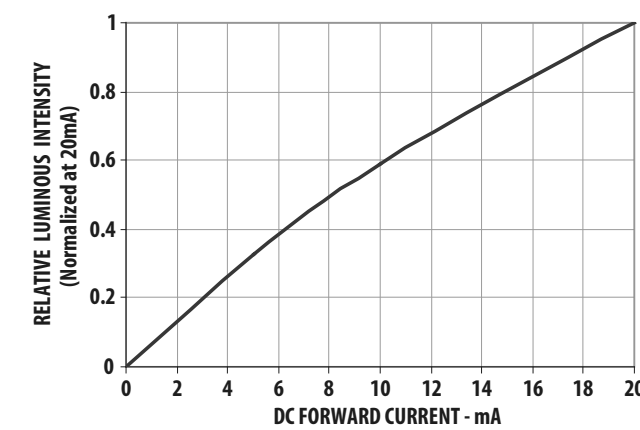


Figure 5: Radiation Pattern

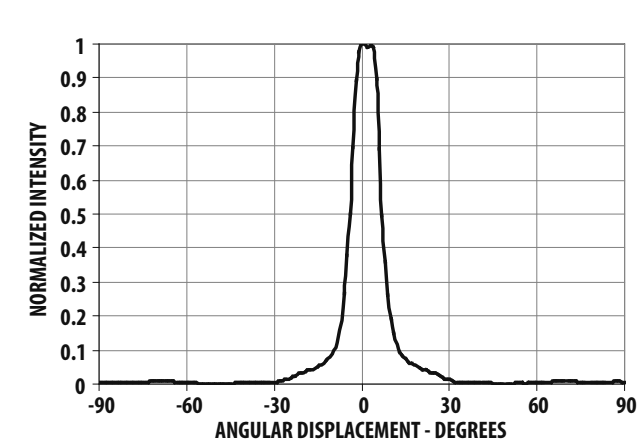


Figure 6: Maximum Forward Current vs. Ambient Temperature

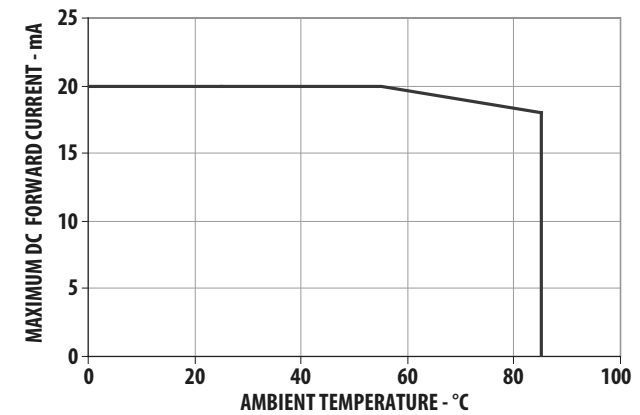


Figure 7: Recommended Reflow Soldering

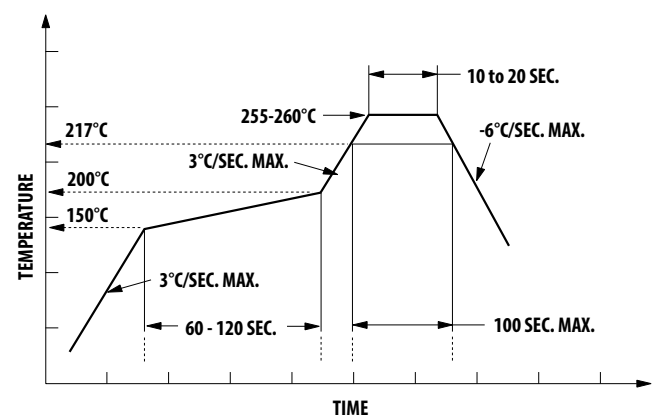


Figure 8: Recommended Soldering Land Pattern

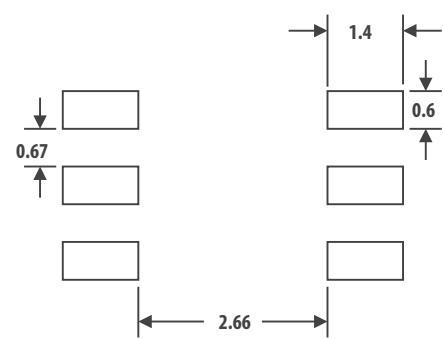
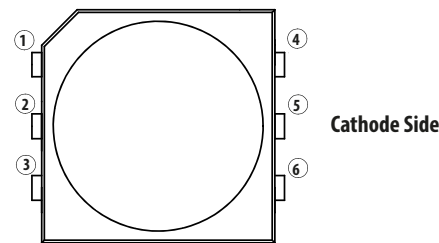
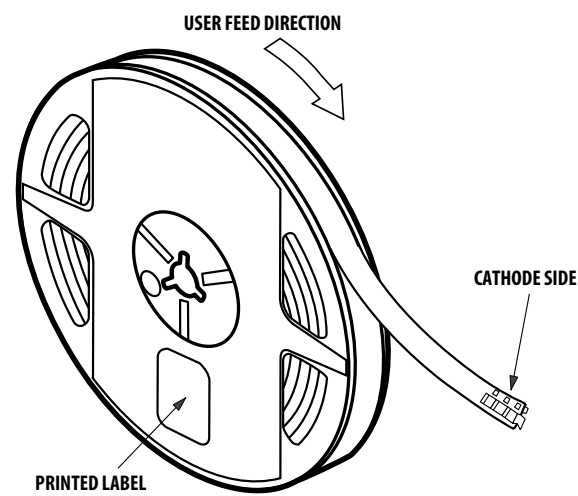


Figure 9: Reeling Orientations



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

Figure 10: Reel Dimensions

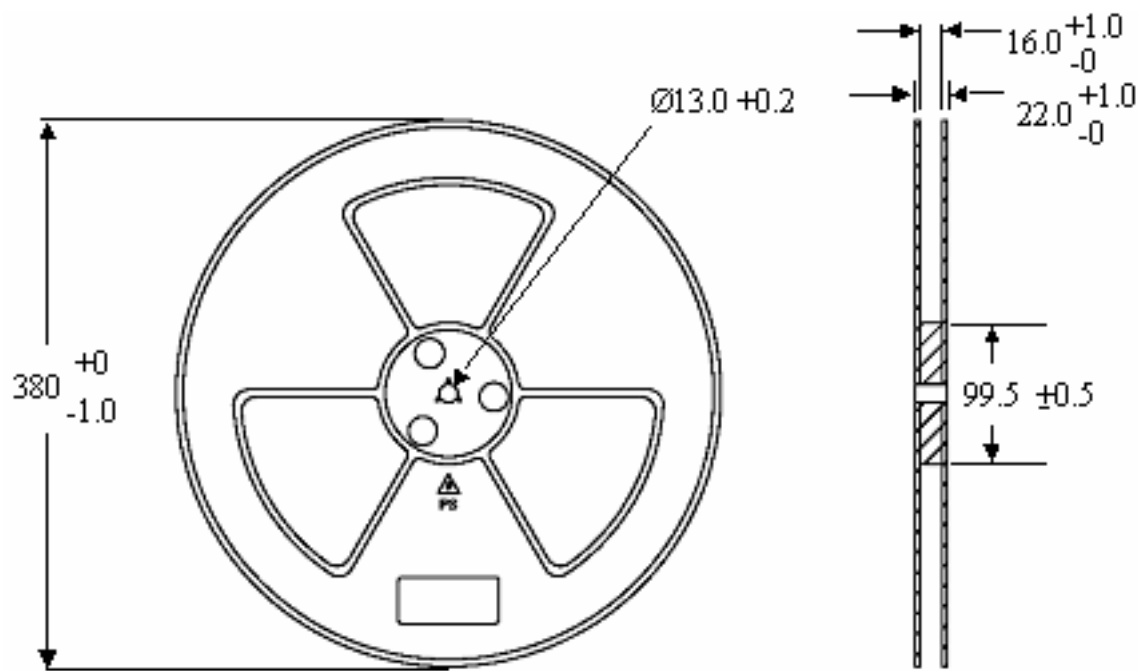


Figure 11: Tape Dimensions

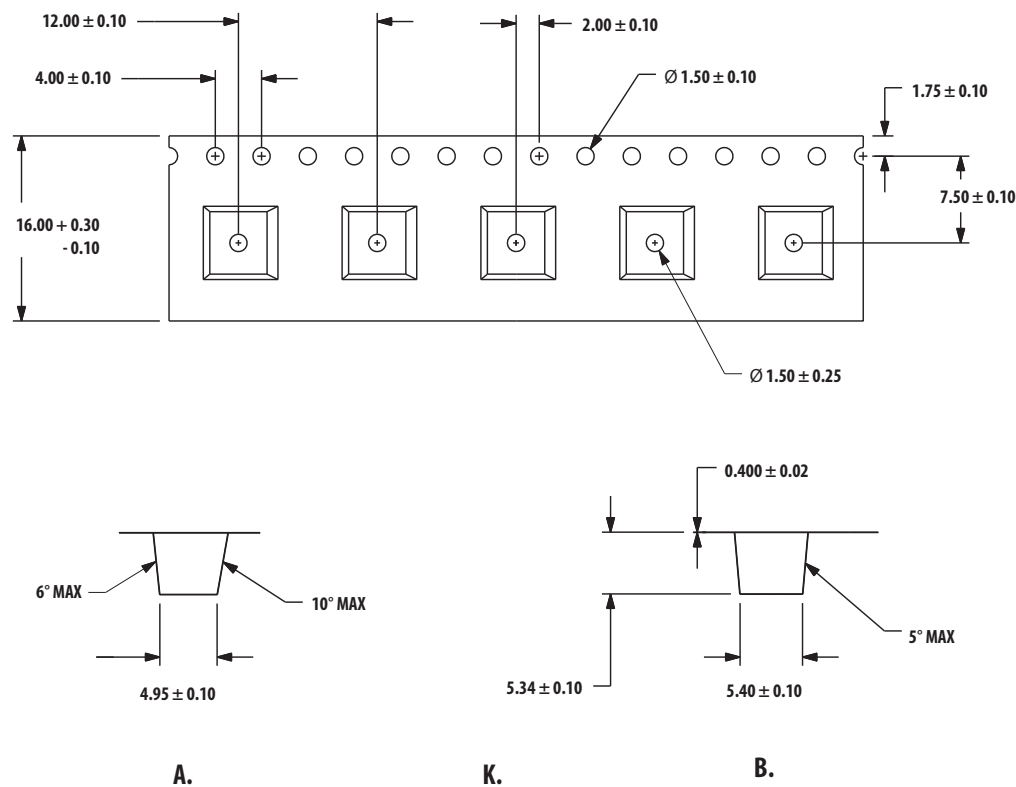
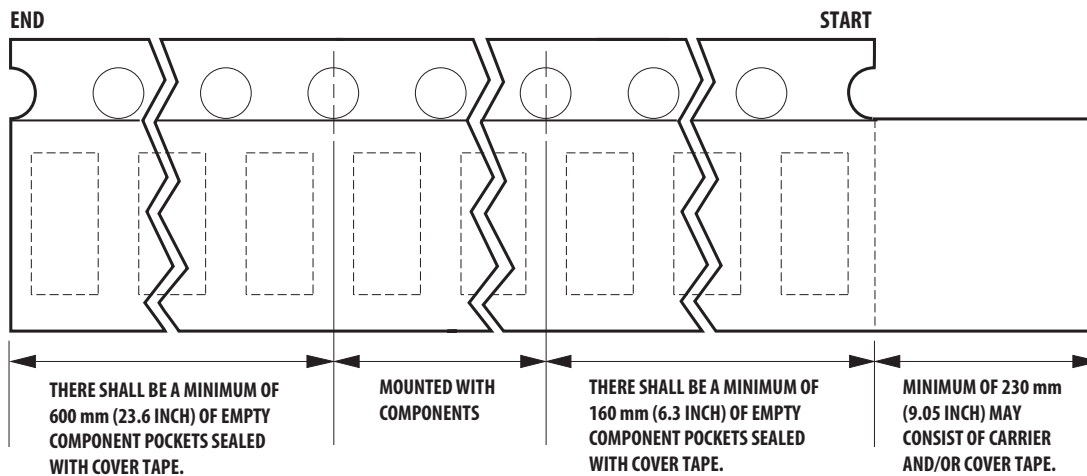


Figure 12: Tape Leader and Trailer Dimensions

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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