

### Features

- 2.0mmx1.2mm SMT LED, 1.1mm THICKNESS.
- LOW POWER CONSUMPTION.
- WIDE VIEWING ANGLE.
- IDEAL FOR BACKLIGHT AND INDICATOR.
- VARIOUS COLORS AND LENS TYPES AVAILABLE.

AP2012 SERIES

### Package Dimensions

### Description

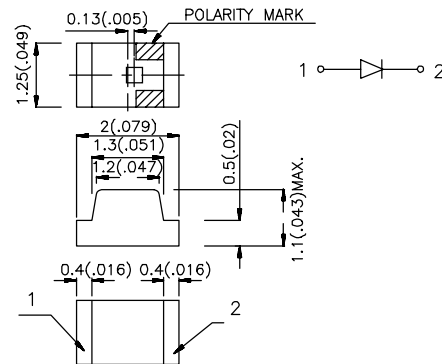
The Bright Red source color devices are made with Gallium Phosphide Red Light Emitting Diode.

The High Efficiency Red source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Orange Light Emitting Diode.

The Super Bright Green source color devices are made with Gallium Phosphide Green Light Emitting Diode.

The Yellow source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Yellow Light Emitting Diode.

The Super Bright Red source color devices are made with Gallium Aluminum Arsenide Red Light Emitting Diode.



#### Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.1$  (0.004") unless otherwise noted.
3. Lead spacing is measured where the lead emerge package.
4. Specifications are subjected to change without notice.

### Selection Guide

Part No.	Dice	Lens Type	Iv (mcd) @ 20 mA		Viewing Angle
			Min.	Typ.	
AP2012HD	BRIGHT RED (GaP)	RED DIFFUSED	0.8	1.2	120°
AP2012HC	BRIGHT RED (GaP)	WATER CLEAR	0.8	1.2	120°
AP2012ID	HIGH EFFICIENCY RED (GaAsP/GaP)	RED DIFFUSED	5	12	120°
AP2012EC	HIGH EFFICIENCY RED (GaAsP/GaP)	WATER CLEAR	5	12	120°
AP2012SGD	SUPER BRIGHT GREEN (GaP)	GREEN DIFFUSED	3	12	120°
AP2012SGC	SUPER BRIGHT GREEN (GaP)	WATER CLEAR	3	12	120°
AP2012YD	YELLOW (GaAsP/GaP)	YELLOW DIFFUSED	3	8	120°
AP2012YC	YELLOW (GaAsP/GaP)	WATER CLEAR	3	8	120°
AP2012SRDPRV	SUPER BRIGHT RED (GaAlAs)	RED DIFFUSED	40	70	120°
AP2012SRCPRV	SUPER BRIGHT RED (GaAlAs)	WATER CLEAR	40	70	120°

#### Note:

1.  $\theta 1/2$  is the angle from optical centerline where the luminous intensity is 1/2 the optical centerline value.

## Electrical / Optical Characteristics at T<sub>A</sub>=25°C

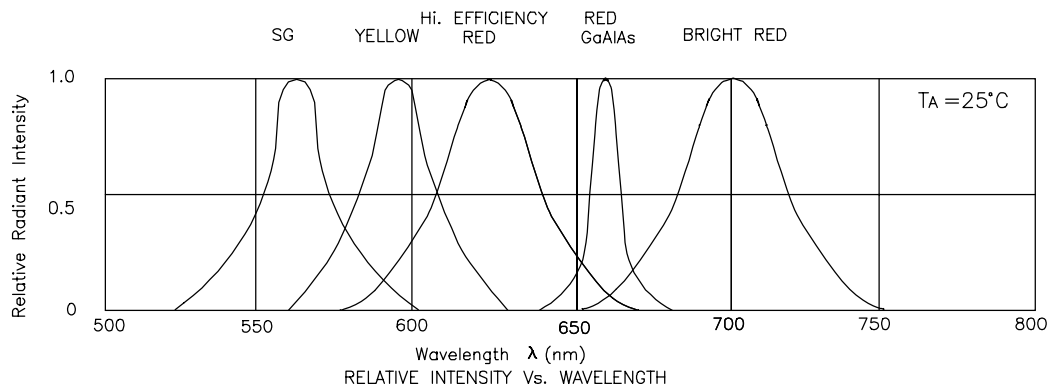
Symbol	Parameter	Device	Typ.	Max.	Units	Test Conditions
$\lambda_{peak}$	Peak Wavelength	Bright Red High Efficiency Red Super Bright Green Yellow Super Bright Red	700 625 565 590 660		nm	IF=20mA
$\Delta\lambda_{1/2}$	Spectral Line Halfwidth	Bright Red High Efficiency Red Super Bright Green Yellow Super Bright Red	45 45 30 35 20		nm	IF=20mA
C	Capacitance	Bright Red High Efficiency Red Super Bright Green Yellow Super Bright Red	40 12 45 10 95		pF	VF=0V;f=1MHz
V <sub>F</sub>	Forward Voltage	Bright Red High Efficiency Red Super Bright Green Yellow Super Bright Red	2.0 2.0 2.2 2.1 1.85	2.5 2.5 2.5 2.5 2.5	V	IF=20mA
I <sub>R</sub>	Reverse Current	All		10	uA	VR = 5V

## Absolute Maximum Ratings at T<sub>A</sub>=25°C

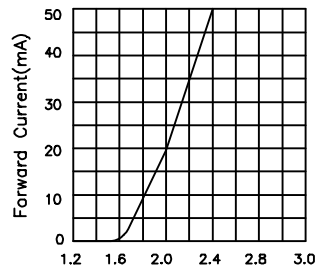
Parameter	Bright Red	High Efficiency Red	Super Bright Green	Yellow	Super Bright Red	Units
Power dissipation	120	105	105	105	100	mW
DC Forward Current	25	30	25	30	30	mA
Peak Forward Current [1]	150	150	150	150	150	mA
Reverse Voltage	5	5	5	5	5	V
Operating/Storage Temperature	-40°C To +85°C					

Note:

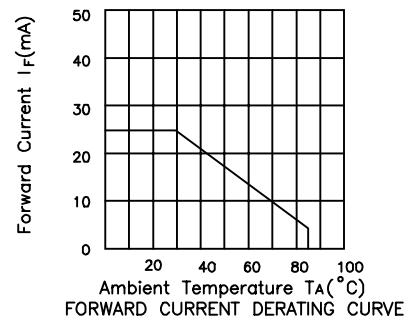
1. 1/10 Duty Cycle, 0.1ms Pulse Width.



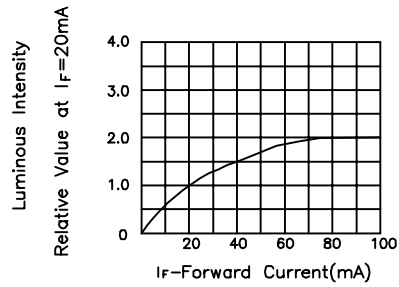
## Bright Red AP2012HD,AP2012HC



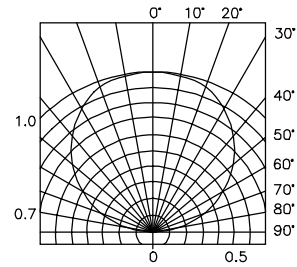
Forward Voltage(V)  
FORWARD CURRENT Vs. FORWARD VOLTAGE



Ambient Temperature  $T_A$ (°C)  
FORWARD CURRENT DERATING CURVE

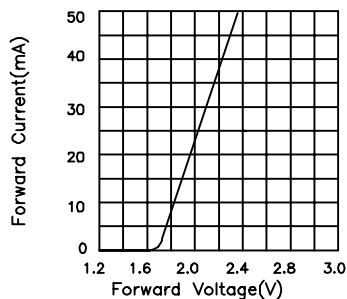


$I_F$ -Forward Current(mA)  
LUMINOUS INTENSITY Vs. FORWARD CURRENT

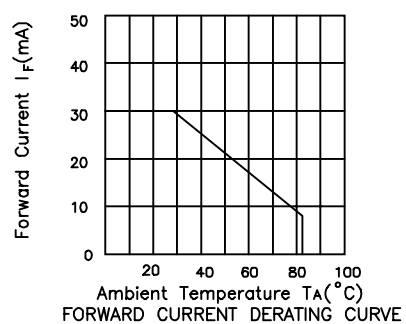


SPATIAL DISTRIBUTION

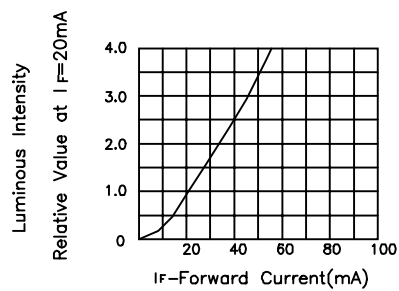
## High Efficiency Red AP2012ID,AP2012EC



Forward Voltage(V)  
FORWARD CURRENT Vs. FORWARD VOLTAGE

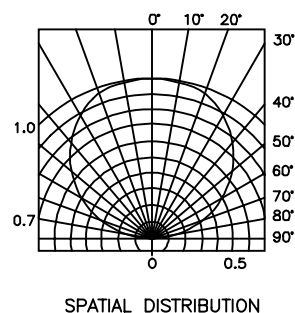
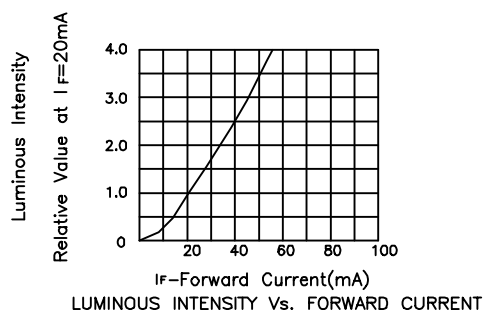
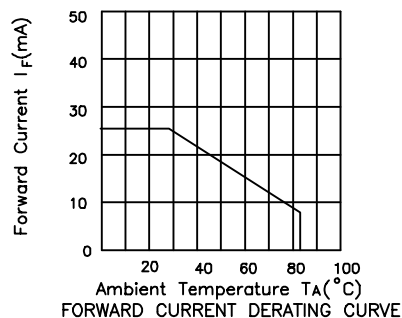
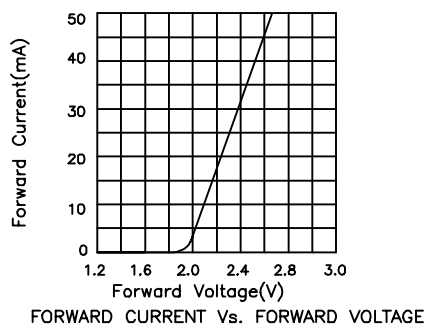


Ambient Temperature  $T_A$ (°C)  
FORWARD CURRENT DERATING CURVE

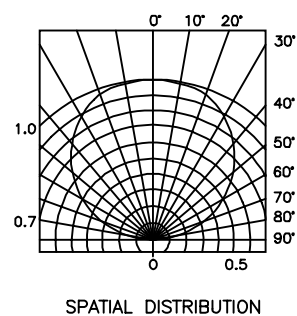
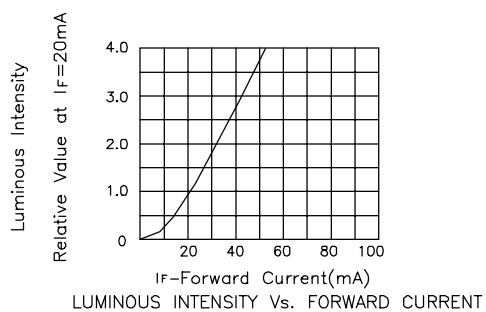
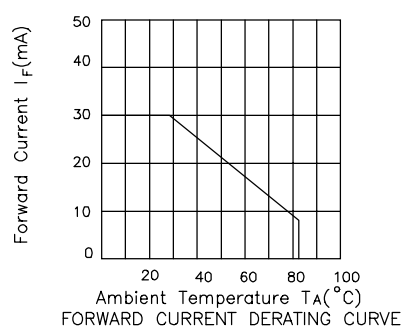
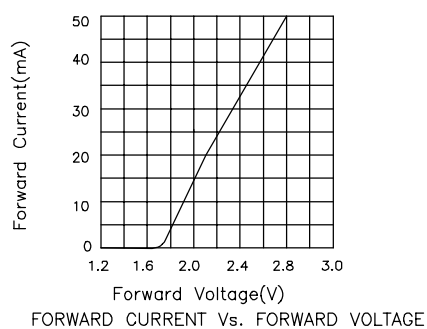


SPATIAL DISTRIBUTION

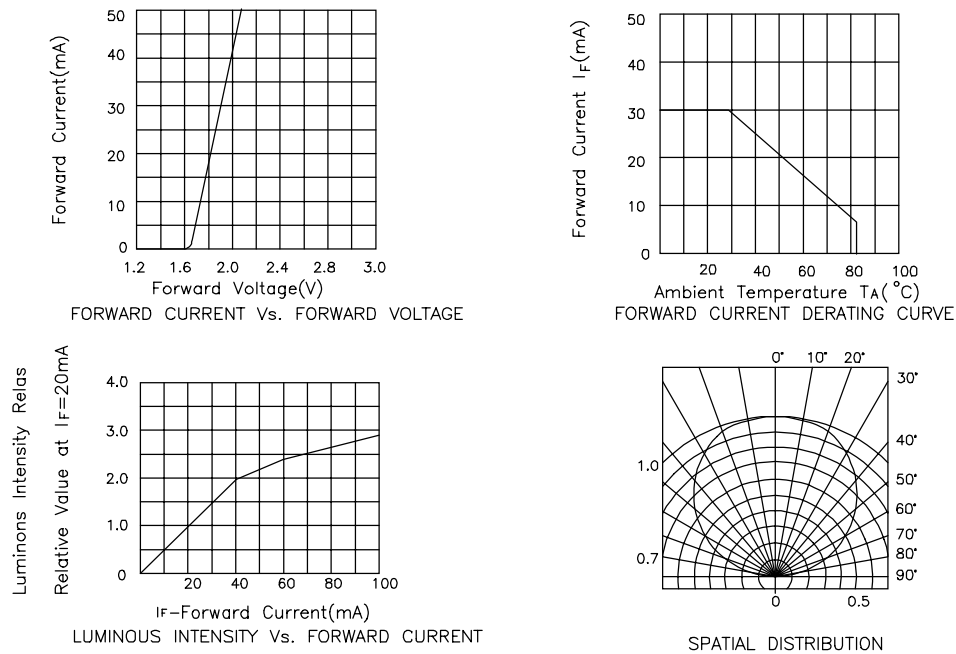
## Super Bright Green AP2012SGD,AP2012SGC



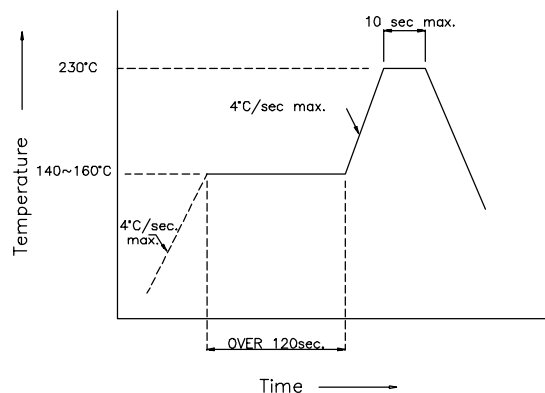
## Yellow AP2012YD,AP2012YC



## Super Bright Red AP2012SRDPRV,AP2012SRCPRV

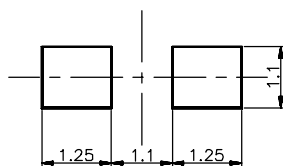


## AP2012 SERIES SMT Reflow Soldering Instructions



## AP2012 SERIES Recommended Soldering Pattern (Units : mm)

FOR REFLOW SOLDERING



## AP2012 SERIES Tape Specifications (Units : mm)

