

### SMD ■ Mini Top View LEDs EAPL2214RA1-AM

PRELIMINARY



#### Features

- P-LCC-2 package.
- Colorless clear resin.
- Wide viewing angle 120 °.
- Inner reflector and white package.
- Brightness: 90 to 224mcd at 20mA
- Precondition: Bases on JEDEC J-STD 020D Level 2
- Qualification according to AEC-Q101 rev C.
- Automotive reflow profile (IR reflow or wave soldering)

#### Applications

- Automotive backlighting or indicator: Dashboard, switch, audio and video equipments...etc.
- Backlight: LCD, switches, symbol, mobile phone and illuminated advertising.
- Display for indoor and outdoor application.
- Ideal for coupling into light guides.
- Substitution of traditional light.
- Optical indicator.

## Device Selection Guide

Chip Materials	Emitted Color	Resin Color
AlGaInP	Dark - Red	Water Clear

## Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Reverse Voltage	$V_R$	12	V
Forward Current	$I_F$	30	mA
Peak Forward Current (Duty 1/10 @1KHz)	$I_{FP}$	60	mA
Power Dissipation	$P_d$	60	mW
Junction Temperature	$T_j$	125	°C
Operating Temperature	$T_{opr}$	-40 ~ +100	°C
Storage Temperature	$T_{stg}$	-40 ~ +110	°C
Thermal Resistance	$R_{th\ J-A}$	500	K/W
	$R_{th\ J-S}$	300	K/W
ESD (Classification acc. AEC Q101)	$ESD_{HBM}$	2000	V
	$ESD_{MM}$	200	V
Soldering Temperature	$T_{sol}$	Reflow Soldering : 260 °C for 30 sec. Hand Soldering : 350 °C for 3 sec.	

### Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	Iv	90	-----	224	mcd	I <sub>F</sub> =20mA
Viewing Angle	2θ <sub>1/2</sub>	-----	120	-----	deg	I <sub>F</sub> =20mA
Peak Wavelength	λ <sub>p</sub>	-----	639	-----	nm	I <sub>F</sub> =20mA
Dominant Wavelength	λ <sub>d</sub>	627	----	639	nm	I <sub>F</sub> =20mA
Spectrum Radiation Bandwidth	Δλ	-----	20	-----	nm	I <sub>F</sub> =20mA
Forward Voltage	V <sub>F</sub>	1.75	----	2.35	V	I <sub>F</sub> =20mA
Reverse Current	I <sub>R</sub>	-----	-----	10	μA	V <sub>R</sub> =12V

Note:

1. Tolerance of Luminous Intensity: ±11%
2. Tolerance of Dominant Wavelength: ±1nm
3. Tolerance of Forward Voltage: ±0.1V

### Bin Range of Luminous Intensity

Bin Code	Min.	Max.	Unit	Condition
Q2	90	112	mcd	I <sub>F</sub> =20mA
R1	112	140		
R2	140	180		
S1	180	224		

Note:

Tolerance of Luminous Intensity: ±11%

### Bin Range of Dominant Wavelength

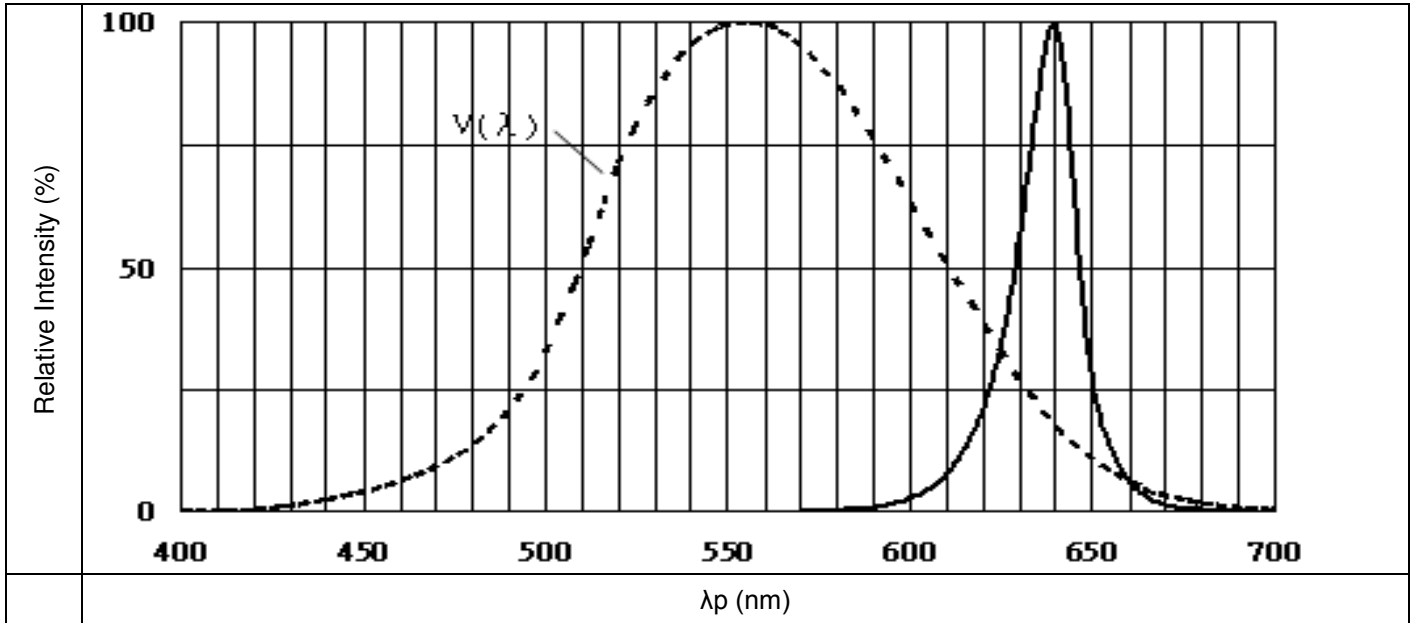
Bin Code	Min.	Max.	Unit	Condition
1	627	630	nm	I <sub>F</sub> =20mA
2	630	633		
3	633	636		
4	636	639		

Note:

Tolerance of Dominant Wavelength: ±1nm

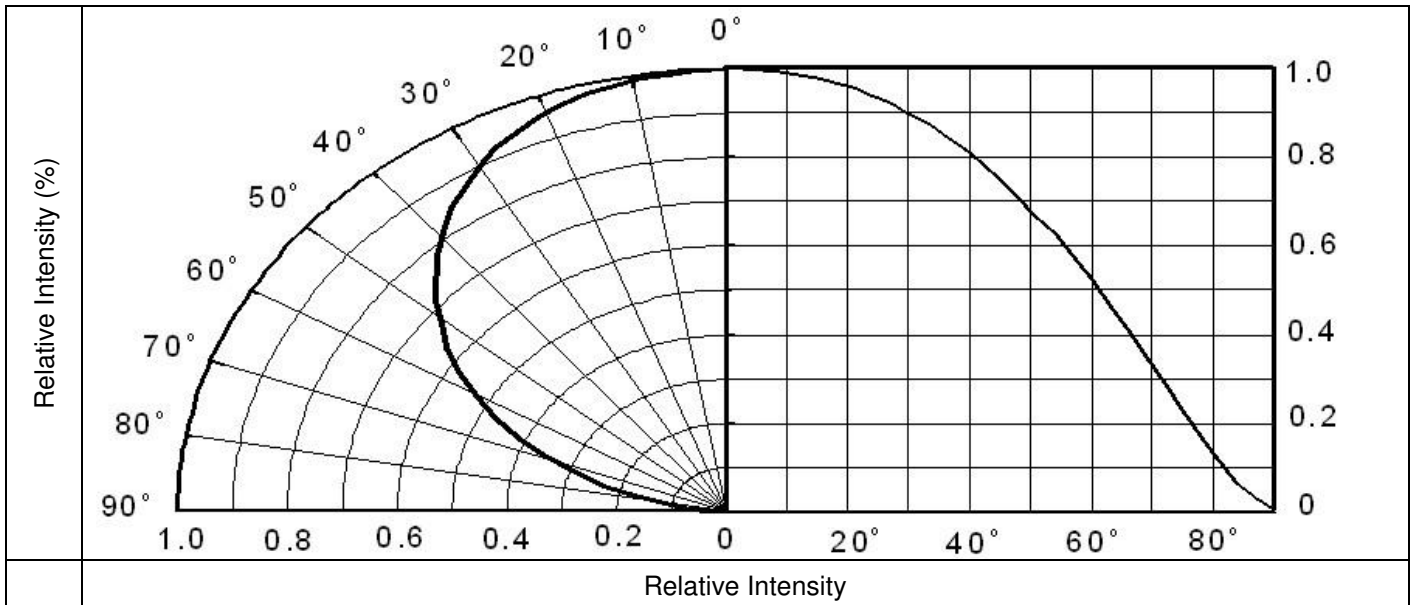
## Typical Electro-Optical Characteristics Curves

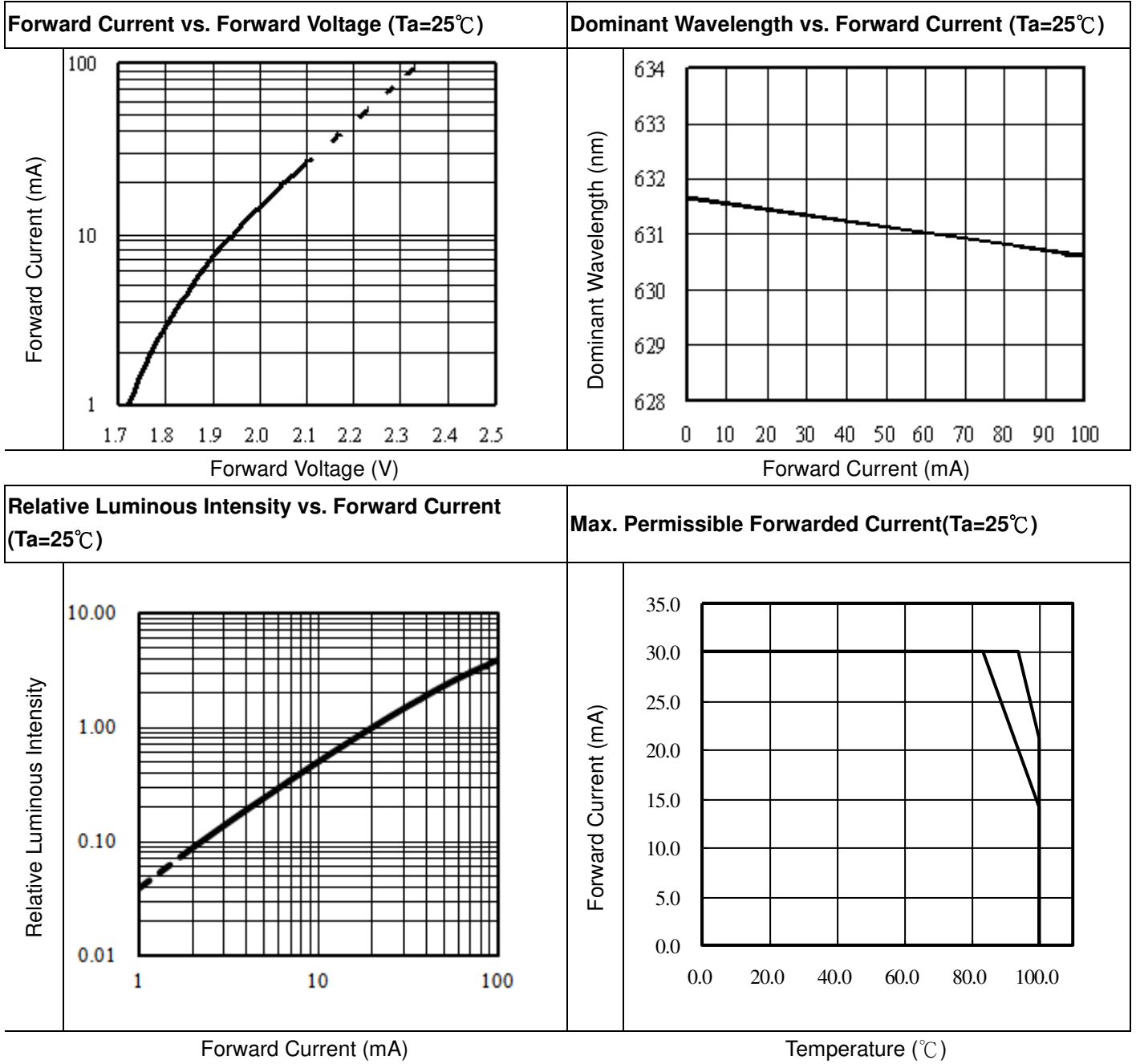
### Typical Curve of Spectral Distribution



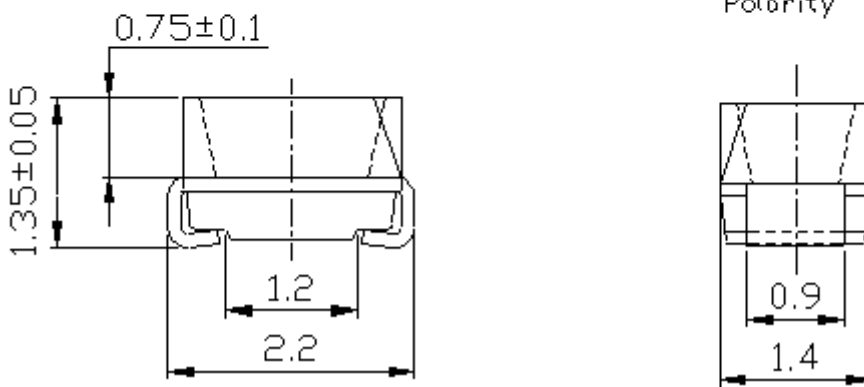
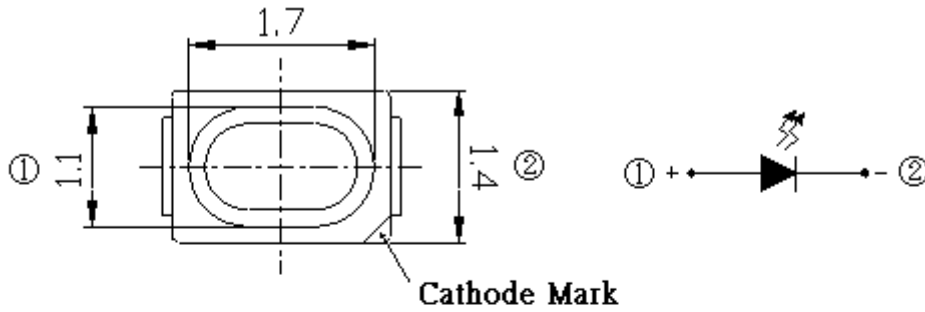
Note:  $V(\lambda)$ =Standard eye response curve;  $I_F = 20\text{mA}$

### Diagram Characteristics of Radiation





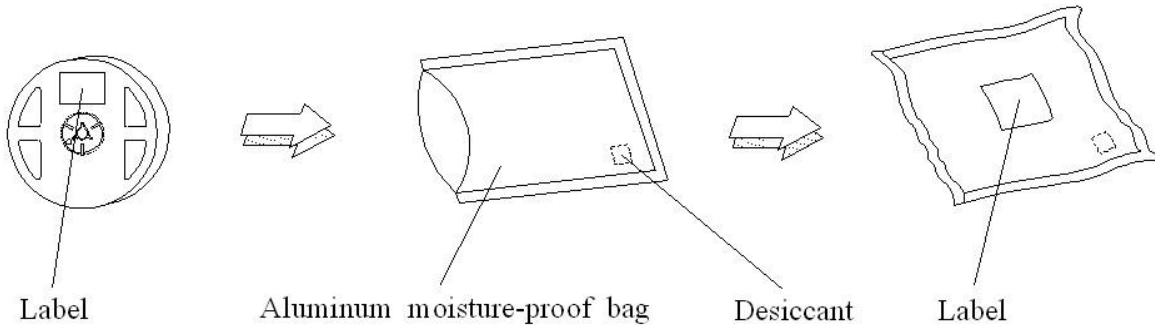
### Package Dimension



Note: Tolerances unless mentioned  $\pm 0.1$ mm. Unit = mm



**Moisture Resistant Packing Process**

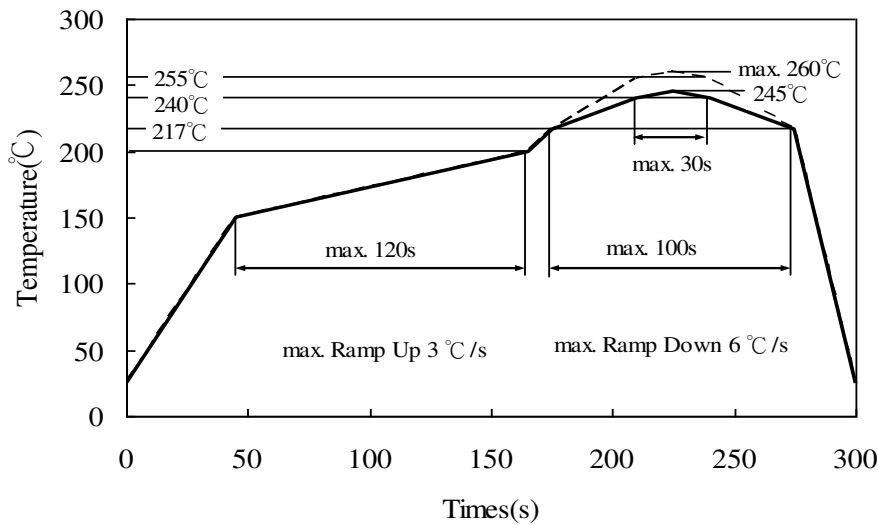


Note: Tolerances unless mentioned  $\pm 0.1\text{mm}$ . Unit = mm

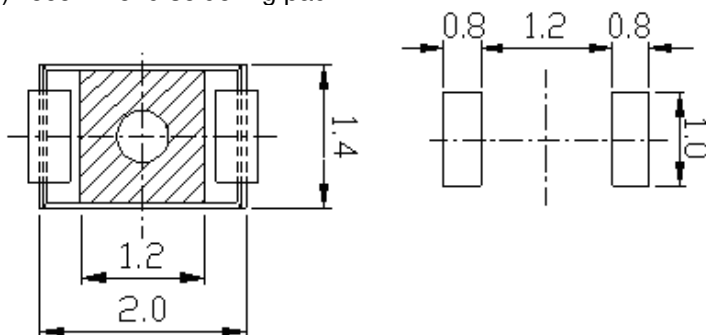
**Precautions for Use**

1. Soldering Condition (Reference: IPC/JEDEC J-STD-020D)

1.1 (A) Maximum Body Case Temperature Profile for evaluation of Reflow Profile



(B) Recommend soldering pad



Note: Tolerances unless mentioned  $\pm 0.1\text{mm}$ . Unit = mm



2. Current limiting

A resistor should be used to limit current spikes that can be caused by voltage fluctuations. Otherwise damage could occur.

3. Storage

3.1 Moisture proof bag should only be opened immediately prior to usage.

3.2 Environment should be less than 30°C and 60% RH when moisture proof bag is opened.

3.3 After opening the package MSL Conditions stated on page 1 of this spec should not be exceeded.

3.4 If the moisture sensitivity card indicates higher than acceptable moisture, the component should be baked at min. 60deg +/-5deg for 24 hours.

4. Iron Soldering

Hand soldering is not recommended for regular production. These guidelines are for rework only. Soldering iron tip should contact each terminal no more than 3 sec at 350°C, using soldering iron with nominal power less than 25W. Allow min. 2 sec. between soldering intervals.

5. Usage

Do not exceed the values given in this specification.