

### SMD ■ Mini Top View LEDs EAPL2214RA0-AM

PRELIMINARY



#### Features

- RoHS compliant.
- P-LCC-2 package.
- Colorless clear resin.
- Wide viewing angle 120°.
- Inner reflector and white package.
- Brightness: 71 to 140 mcd at 20mA.
- Qualification according to AEC-Q101.
- Precondition: Bases on JEDEC J-STD 020 Level 3.
- Useable in severe lead free processes with 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.
- General applications.

## Device Selection Guide

Chip Materials	Emitted Color	Resin Color
AlGaInP	Brilliant Red	Water Clear

## Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Reverse Voltage	$V_R$	10	V
Forward Current	$I_F$	25	mA
Peak Forward Current (Duty 1/10 @1KHz)	$I_{FP}$	60	mA
Power Dissipation	$P_d$	60	mW
Junction Temperature	$T_j$	115	°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	$I_v$	71	---	140	mcd	$I_F = 20\text{mA}$
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	$I_F = 20\text{mA}$
Peak Wavelength	$\lambda_p$	---	639	---	nm	$I_F = 20\text{mA}$
Dominant Wavelength	$\lambda_d$	627	---	639	nm	$I_F = 20\text{mA}$
Spectrum Radiation Bandwidth	$\Delta\lambda$	---	20	---	nm	$I_F = 20\text{mA}$
Forward Voltage	$V_F$	1.75	---	2.35	V	$I_F = 20\text{mA}$
Reverse Current	$I_R$	---	---	10	$\mu\text{A}$	$V_R = 10\text{V}$
Temperature coefficient of $\lambda_p$	$TC_{\lambda_p}$	---	0.11	---	nm/K	$I_F = 20\text{mA}$
Temperature coefficient of $\lambda_d$	$TC_{\lambda_d}$	---	0.04	---	nm/K	$I_F = 20\text{mA}$
Temperature coefficient of $V_F$	$TC_V$	---	-1.7	---	mV/K	$I_F = 20\text{mA}$

Note:

1. Tolerance of Luminous Intensity:  $\pm 11\%$
2. Tolerance of Dominant Wavelength:  $\pm 1\text{nm}$
3. Tolerance of Forward Voltage:  $\pm 0.1\text{V}$

### Bin Range of Luminous Intensity

Bin Code	Min.	Max.	Unit	Condition
Q1	71	90	mcd	I <sub>F</sub> =20mA
Q2	90	112		
R1	112	140		

Note:  
 Tolerance of Luminous Intensity: ±11%

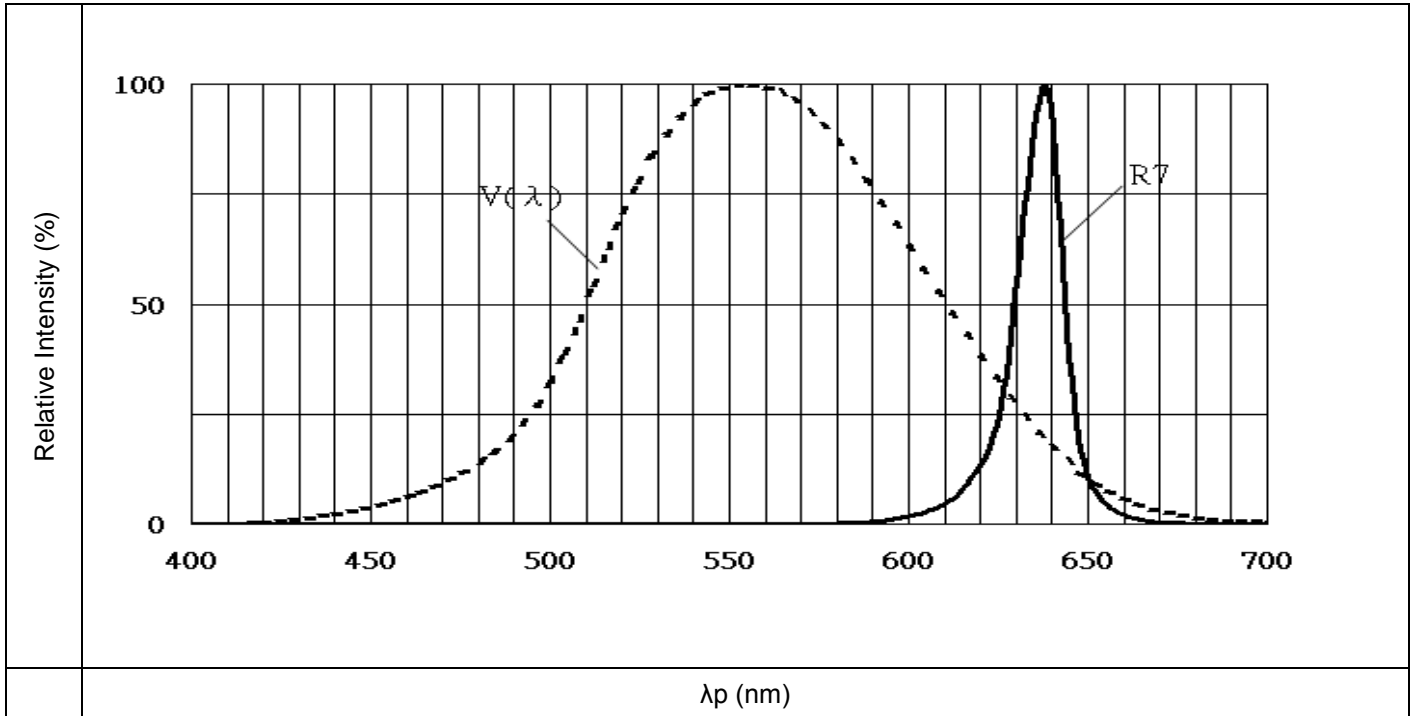
### Bin Range of Dominant Wavelength

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

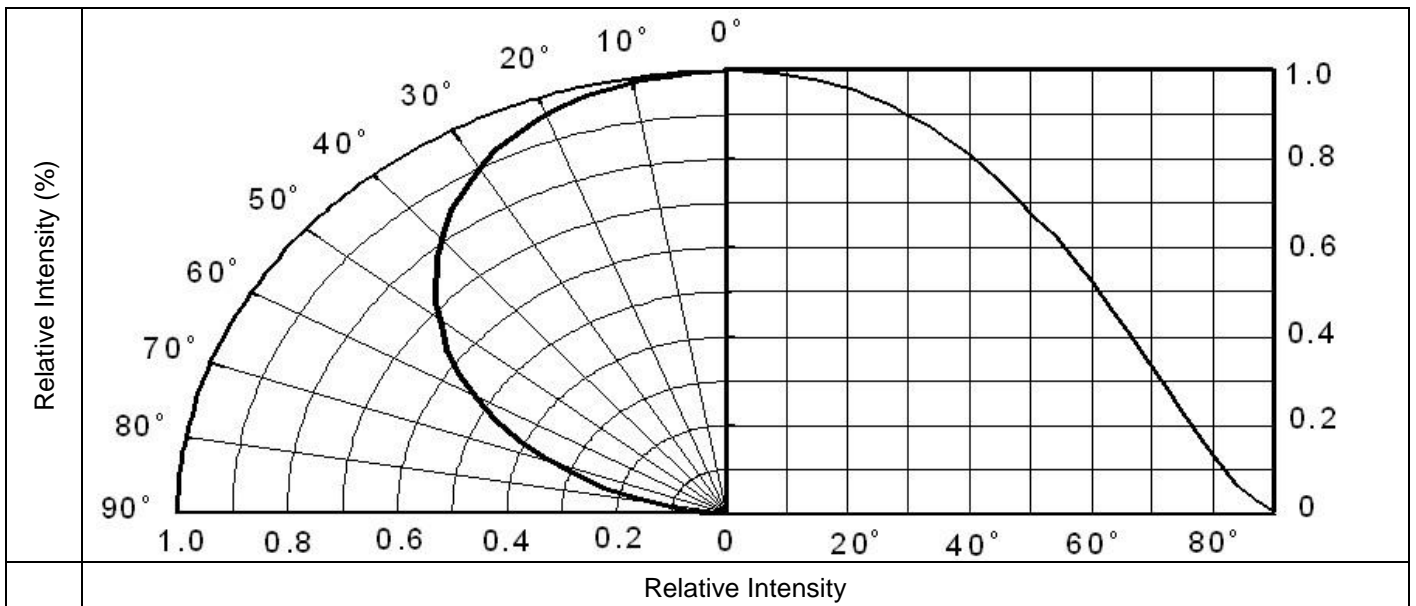
## Typical Electro-Optical Characteristics Curves

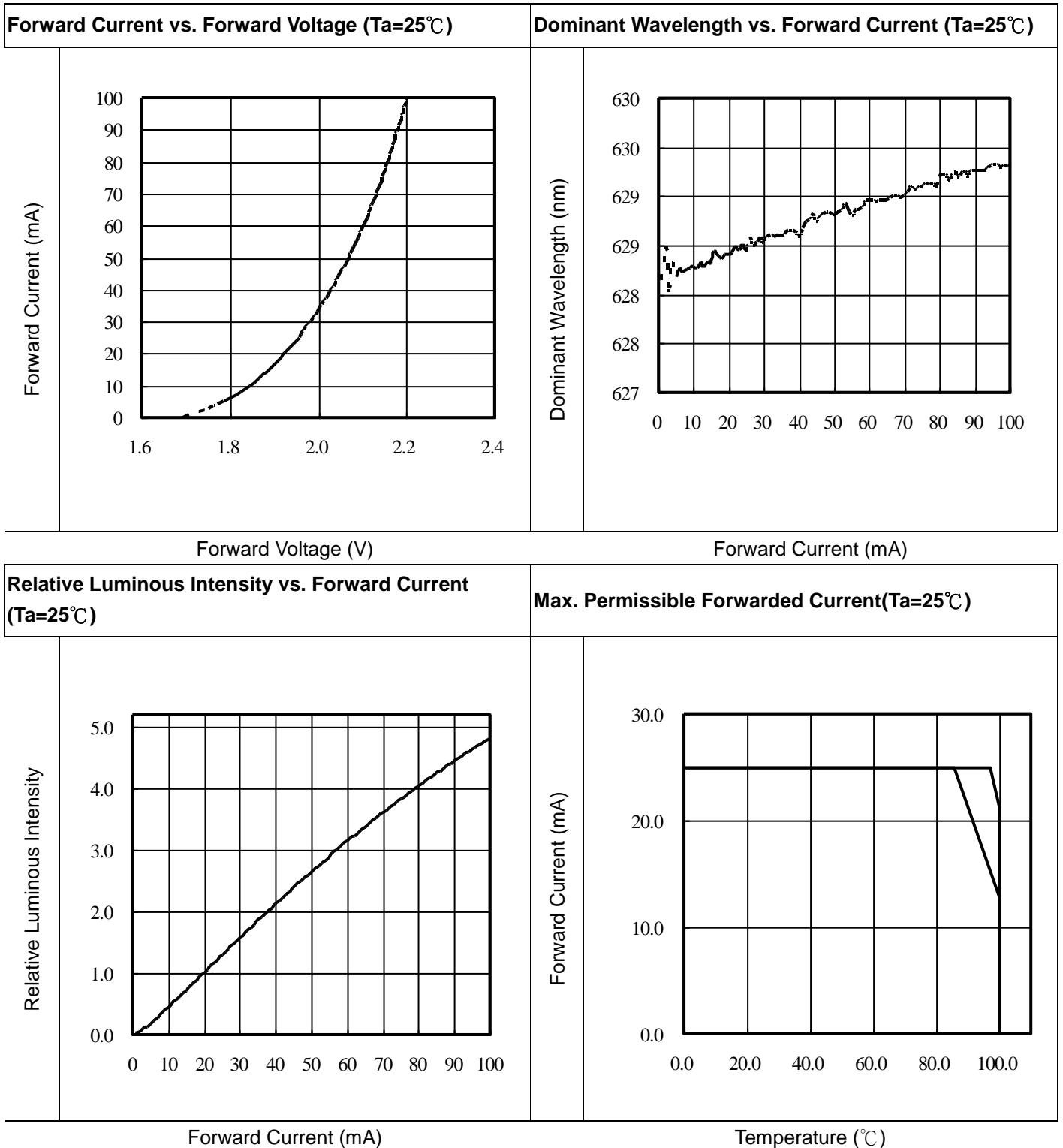
### Typical Curve of Spectral Distribution



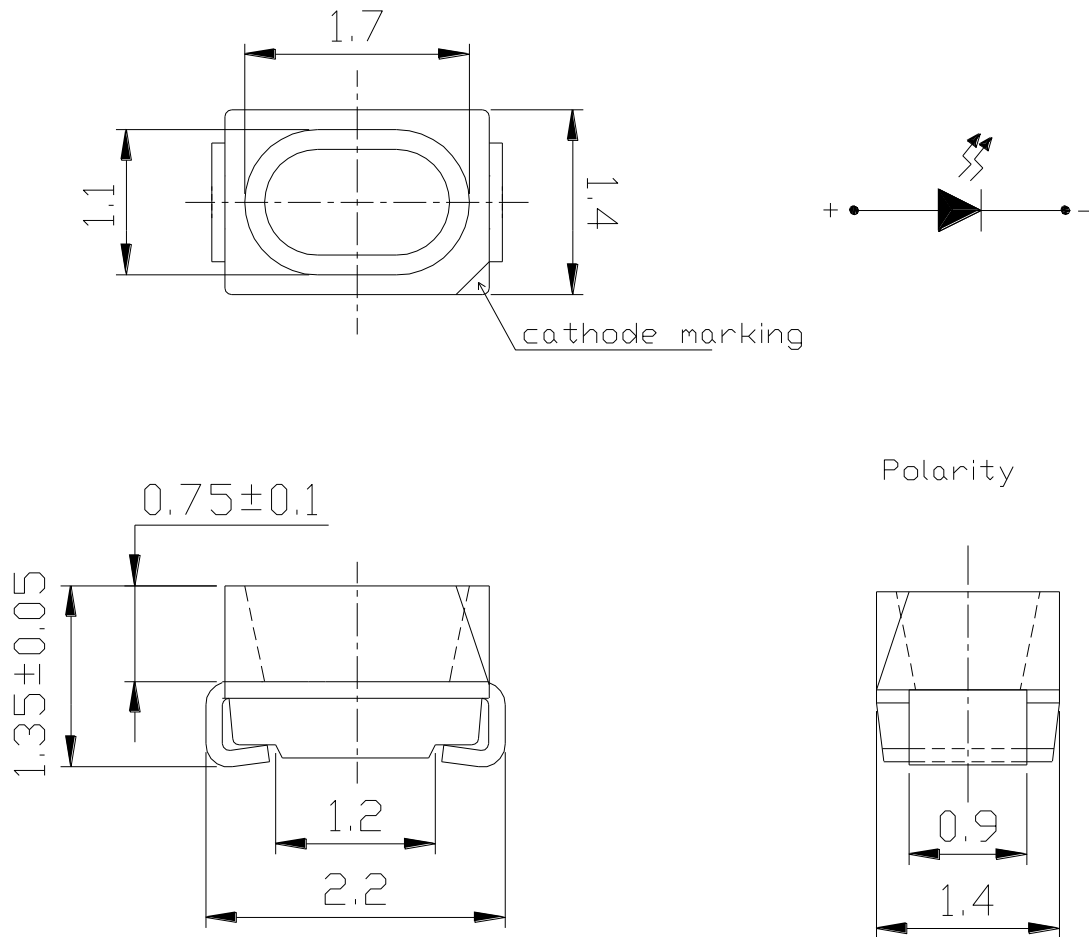
Note:  $V(\lambda)$ =Standard eye response curve;  $I_F = 20\text{mA}$

### Diagram Characteristics of Radiation





### Package Dimension

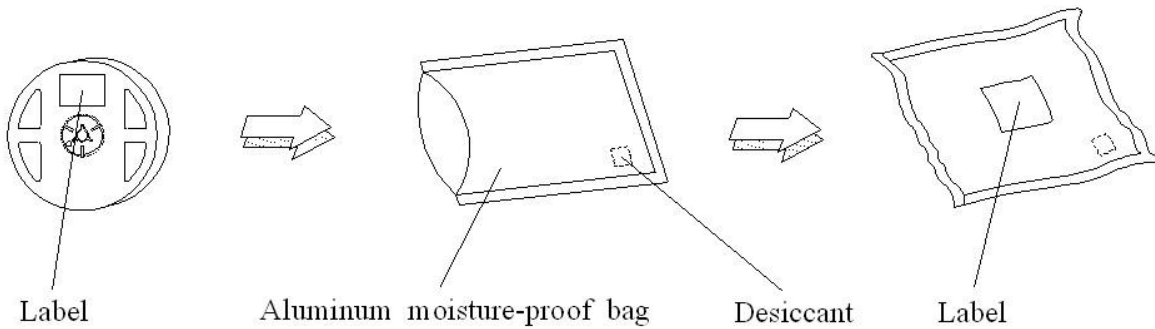


Note: Tolerances unless mentioned ±0.1mm. Unit = mm





**Moisture Resistant Packing Process**

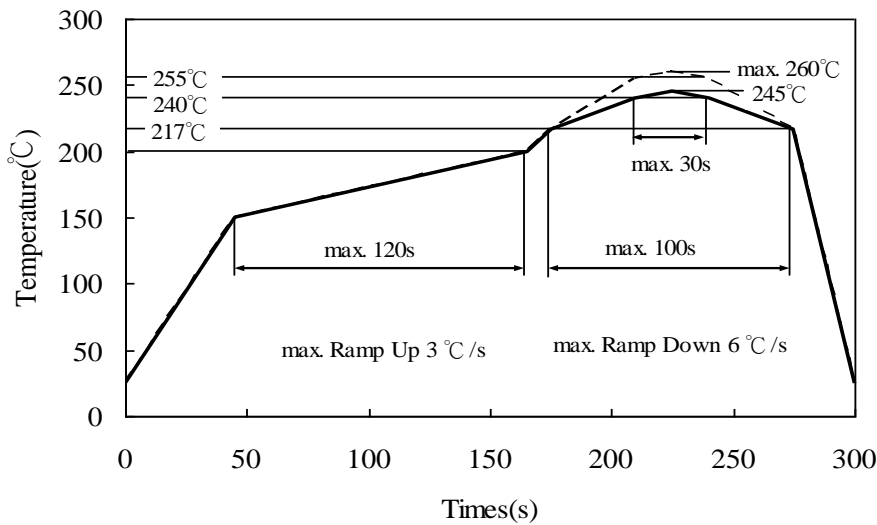


Note: Tolerances unless mentioned  $\pm 0.1\text{mm}$ . Unit = mm

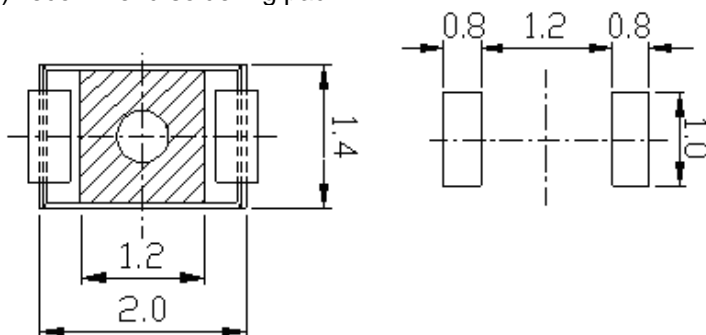
**Precautions for Use**

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.