MOLICIL High Power LED

KAWA-E-W-B-01-E-K14 Data Sheet

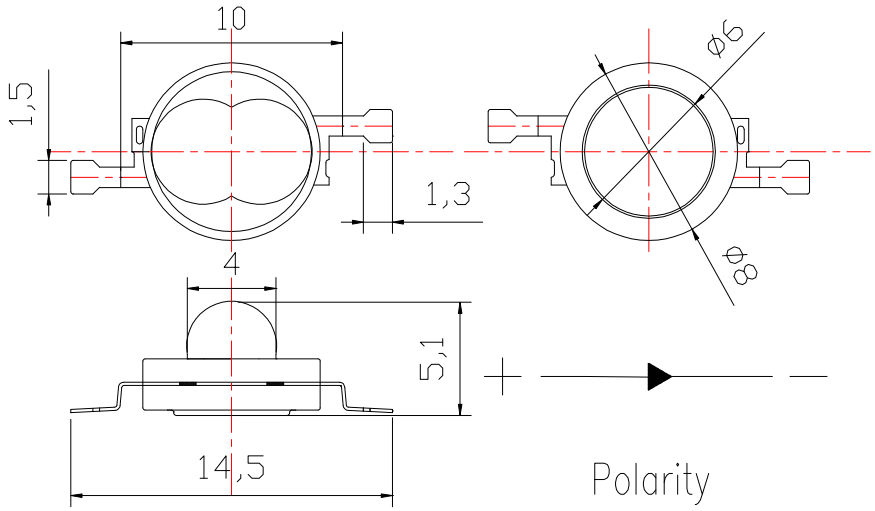
Features

- Hight Luminous Efficacy 1W White LED
- Dimension: 14.5mm×8mm×5.1mm
- Viewing angle: X:60 Y:130 deg
- The InGaAIN chip inside
- Low thermal resistance
- Lead(Pb) free and RoHS compliant
- Driver currents: 350mA
- Available in white (4,500 K to 10,000 K CCT)
- Lumen maintenance of great than 70% after 50,000 hours

Applications

- Street lighting
- Automotive lighting
- Gerenal lighting
- Indoor and outdoor architectural lighting
- Signage and channel letter

Package outline



Notes:

1. All dimensions are in millimeters.
2. All tolerance is ±0.20mm unless otherwise noted.

Absolute Maximum Rating

Parameter	Symbol	Value	Units
DC Forward current	I_F	350	mA
Peak Plused Current (@1kHz ,10% duty cycle)	I_{FP}	700	mA
Reverse Voltage	V_R	5	V
Junction Temperature	T_J	125	℃
ESD Classification (HBM)	---	Class 2	---
Storage Temperature	Tstg	-40～+ 110	℃
Operating Case Temperature	Topr	-40～+ 85	℃
Soldering Temperature	Tsol	260	℃

Notes:

1. Proper current derating must be observed to maintain junction temperature below the maxium.
2. LEDs are not desinged to be driven in reverse bias.

Characteristics @ Tc=25℃

Parameter	Symbol	Min.	Typ.	Max.	Units
Viewing Angle	θ_{Peak}	---	X:60	---	Degree
	$2\theta_{1/2}$	---	Y:130	---	Degree
Luminous Flux(@350mA)	Φ	110	---	---	lm
Forward Voltage(@350 mA)	V_F	---	3.3	3.6	V
Correlated Color Temperature	CCT	4500	---	7000	K
Chromaticity Coordinates	x,y	---	0.32,0.33	---	---
Thermal Resistance Junction-case	$R\theta_{J-C}$	---	10	---	℃/W

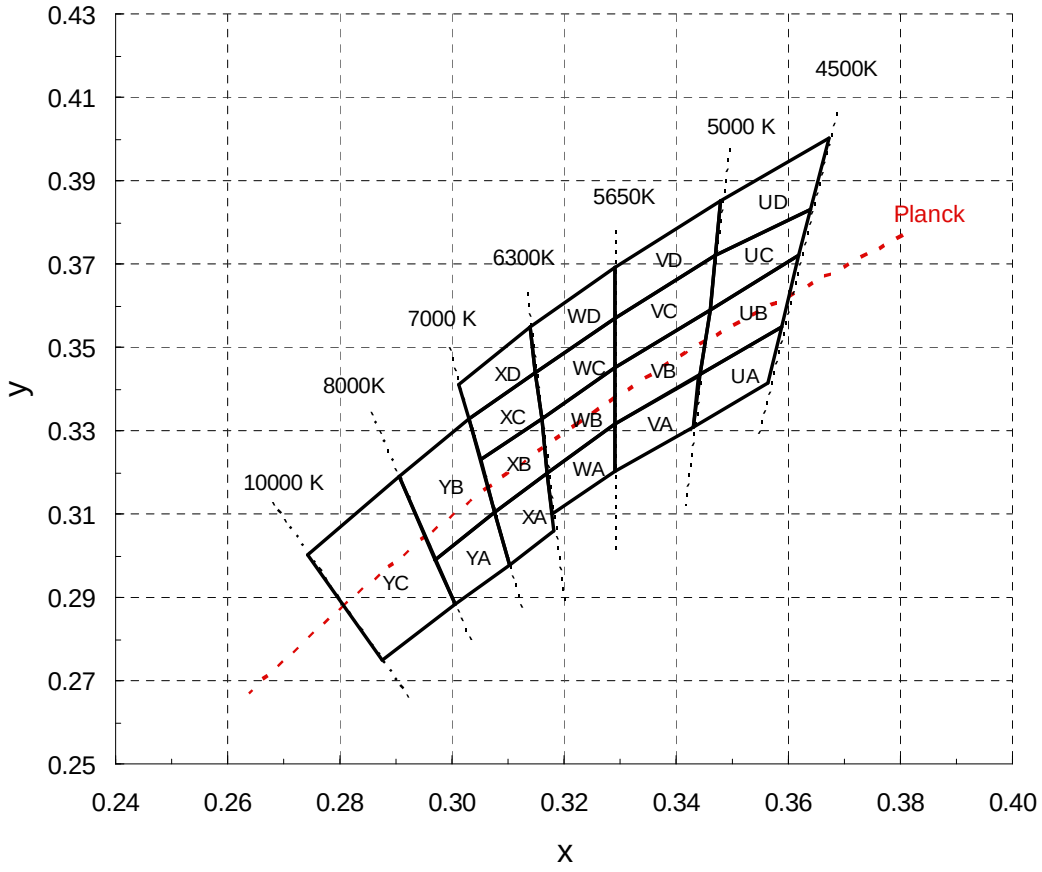
Notes:

1. Proper current derating must be observed to maintain junctiontemperature below the maxium.
2. LEDs are not desinged to be driven in reverse bias.
3. Light maintains a tolerance of ±10% on flux measurements.
4. Light maintains a tolerance of ±0.1V on forward voltage measurements.
5. CCT ±5% tester tolerance.

Luminous Flux Bins @350mA

Bin Code	Min.	Typ.	Max.	Units
K14	110	----	120	lm

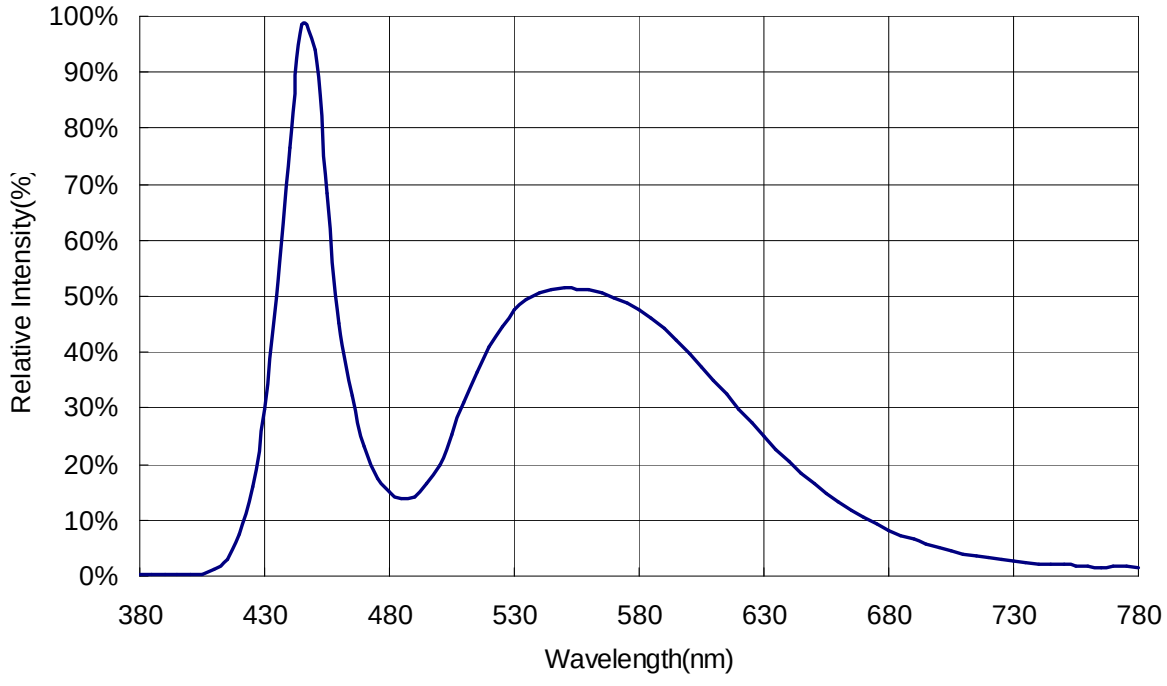
Cool White Bin



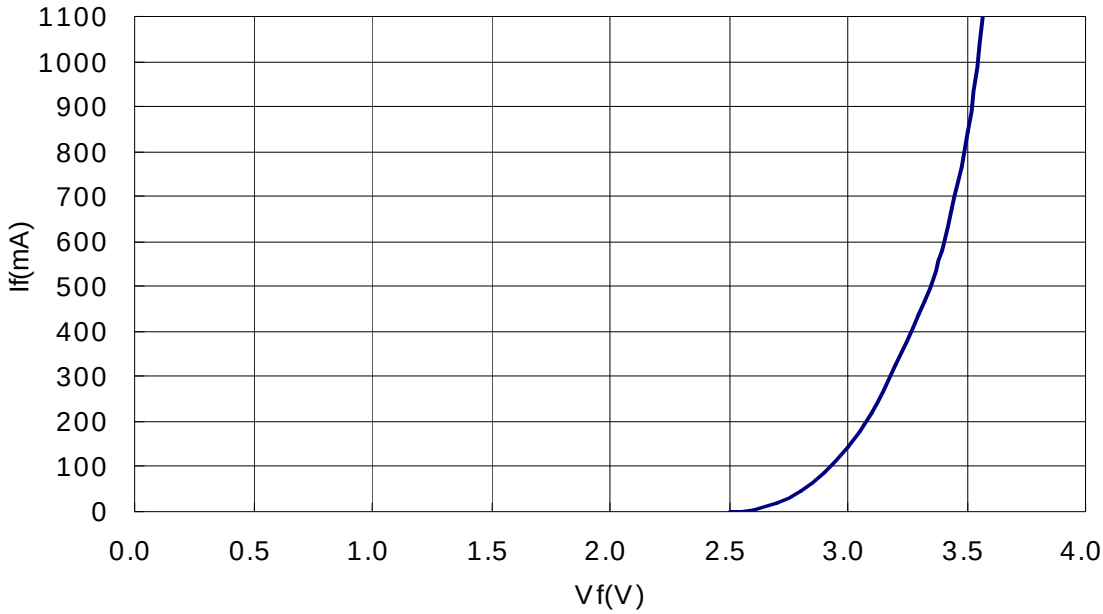
Forward Voltage Bins @350mA

Bin Code	Min.	Typ.	Max.	Units
J	3.0	----	3.2	V
K	3.2	----	3.4	V
L	3.4	----	3.6	V

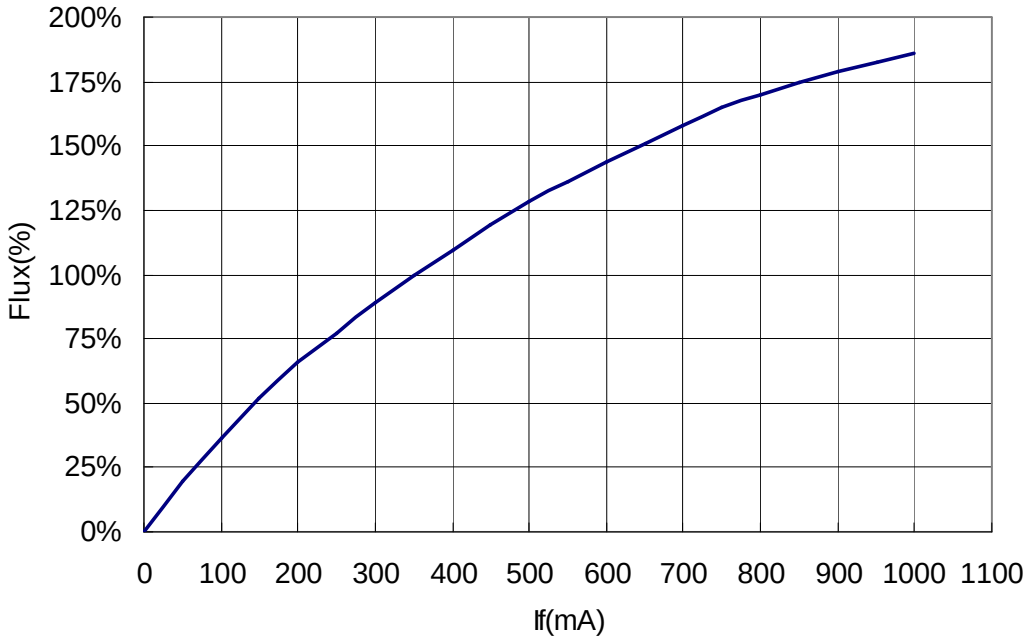
Relative Spectral Power Distribution @ Tc=25℃



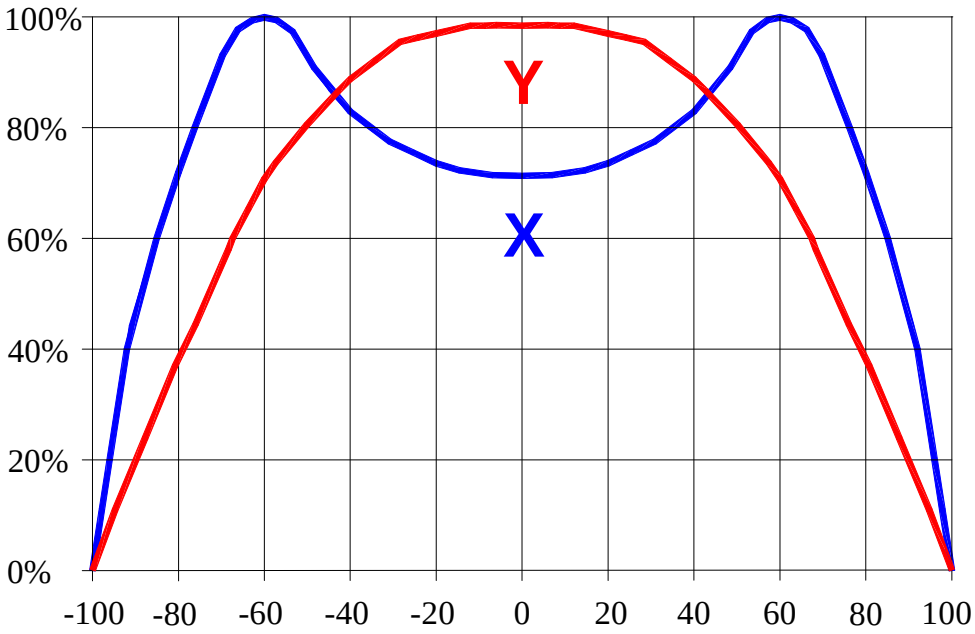
Electrical Characteristics @ Tc=25℃



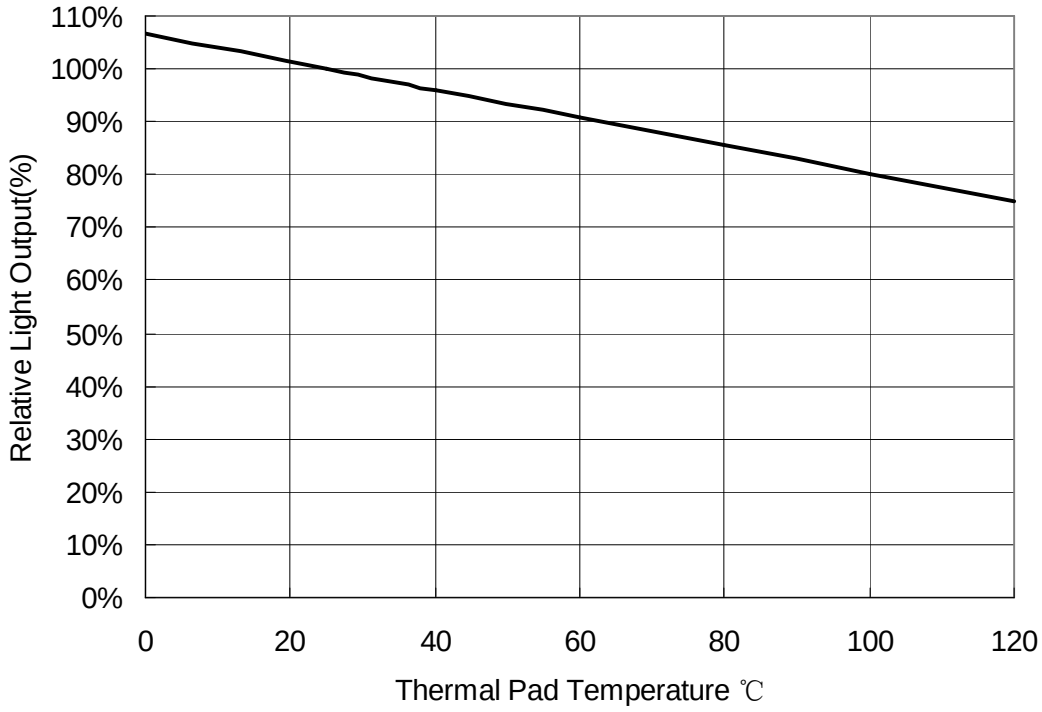
Relative Intensity vs. Current @ Tc=25℃



Typical Spatial Radiation Pattern @ Tc=25℃



Typical Light Output over Temperature



Precautions In Use

A.Overcurrent or Excessive Voltage proof

Circuit should be designed to prevent any overcurrent or excessive voltage which can damage LEDs.

B.Storage

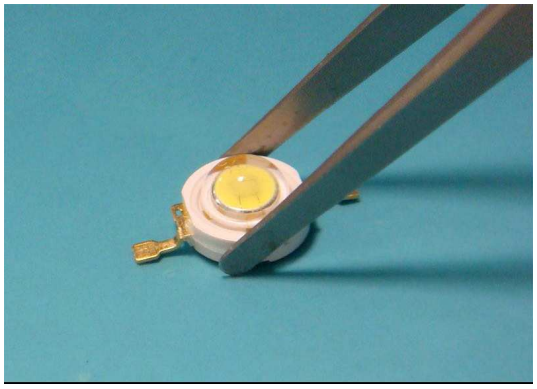
1.Do not open packaging before the products are ready to use.

2.The recommended storage conditions are temperature 5 to 30℃ and humidity less than 40%RH.

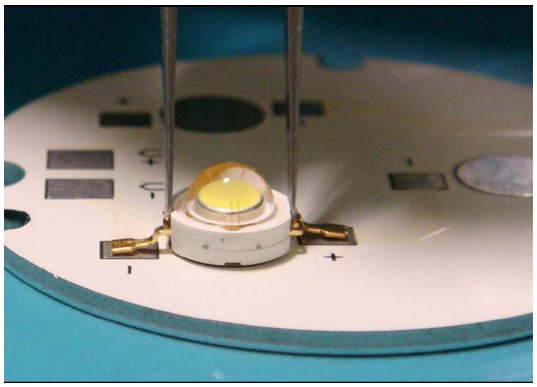
C. Handling and Soldering Conditions

1、The high Power LED is encapsulated using optical silicone. The bottom metal (slug/heat-sink) is anode. Please avoid connecting slug to cathode as this will cause short-circuit.

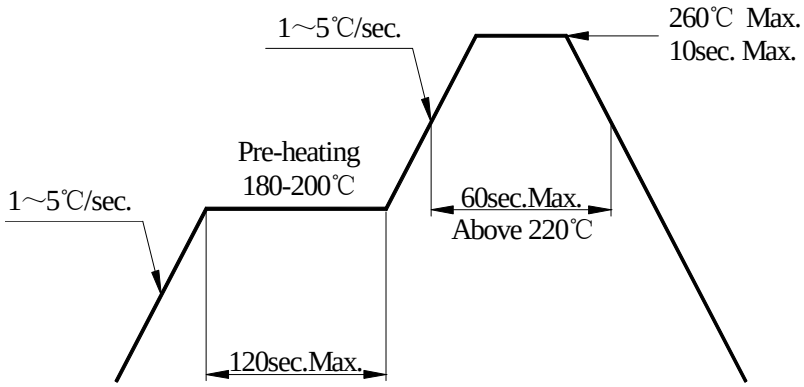
2、Only picked up LED by gripping at the white plastic body.Avoid putting pressure or puncturing onto the silicone lens. When stress is applied on silicone lens, it may damage optical properties and damage the internal wirebond.



3、Manual mounting of LED onto MCPCB,Gently press the white plastic body or the lead



4、Lead reflow soldering temperature profile（Only reflowable lambertian lens(silicone) types are suitable for SMT process.）



5、Reflow soldering should not be done more than two times.

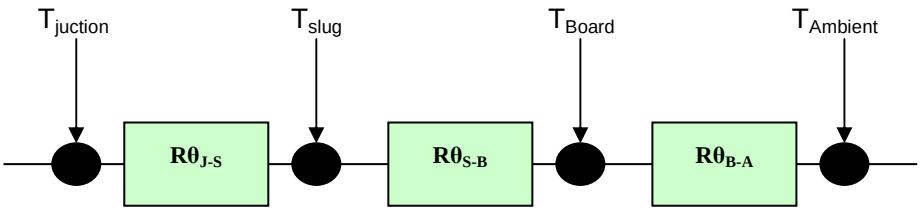
6、After soldering,do not warp the circuit board.

D、Thermal Management

1、For maintaining the high flux output and achieving reliability, KAWA series LEDs package shoule be mounted on a metal core printed circuit board with proper thermal connection to disspate approximately 1W Of thermal energy under 350mA operation.

2、Special thermal designs are also recommended to take in outer heat sink design .

3、Sufficient thermal management must be conducted, or the die junction temperature will be over the limit large electronic driving and LEDs lifetime will decrease critically.



The Equation to get the value of thermal resistance of KAWA LED will be as follow

$R\theta_{junction\text{-}Ambient} = R\theta_{junction\text{-}Slug} + R\theta_{Slug\text{-}Board} + R\theta_{Board\text{-}Ambient}$

$R\theta_{junction\text{-}Board} = R\theta_{junction\text{-}Slug} + R\theta_{Slug\text{-}Board}$

$T_J = R\theta_{junction\text{-}Board} \cdot P_D + T_{Board}$

Where: P_D-Power dissipation，T_{Board}-Temperature of metal PCB bottom

Notes: It's strongly recommended to keep the junction temperature(T_J) under 85℃.