

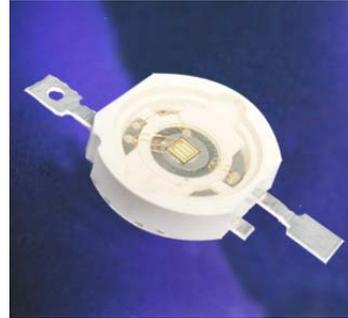
## KA-8070 SERIES



**ATTENTION**  
OBSERVE PRECAUTIONS  
FOR HANDLING  
ELECTROSTATIC  
DISCHARGE  
SENSITIVE  
DEVICES

### Features

- High efficient lightsource.
- Designed for high current operation.
- Low thermal resistance.
- Encapsulation : Silicone resin.
- Compatible with IR-reflow processes.
- ESD protection .
- Package : 500pcs / reel.
- RoHS compliant.



### Applications

- Substitution of micro incandescent lamps.
- Portable light source.
- Signal and symbol luminaire for orientation.
- Marker lights (e.g. steps, exit ways, etc).
- Decorative and entertainment lighting.
- Commercial and residential lighting.
- Emergency-vehicle lighting.

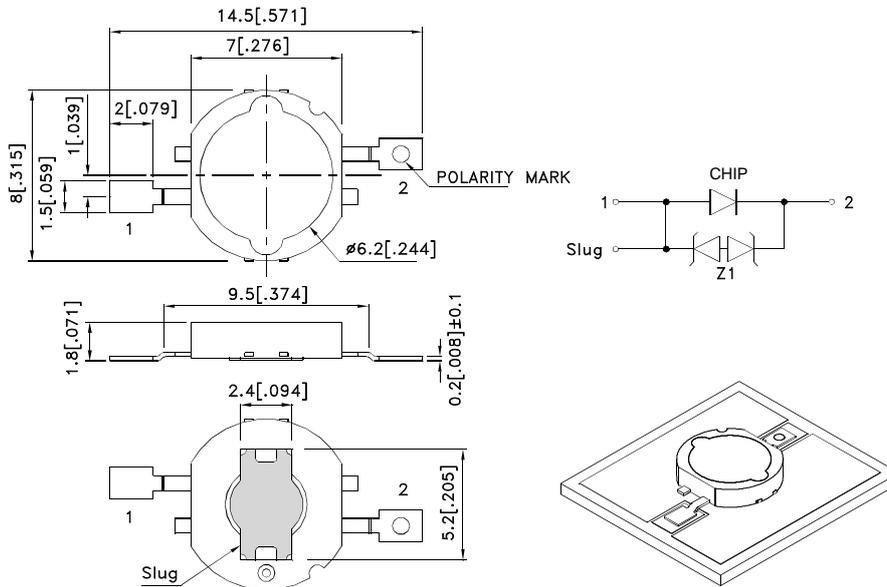
### Application Note

Static electricity and surge damage the LEDs.

It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs.

All devices, equipment and machinery must be electrically grounded.

### Package Dimensions



#### Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.25(0.01)$  unless otherwise noted.
3. The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.
4. The device has a single mounting surface. The device must be mounted according to the specifications.

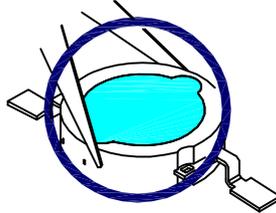


## Handling Precautions

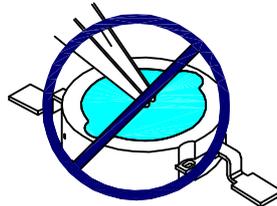
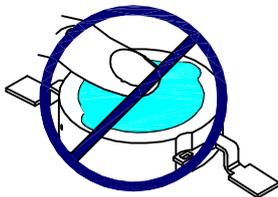
Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force.

As a result, special handling precautions need to be observed during assembly using silicone encapsulated LED products. Failure to comply might lead to damage and premature failure of the LED.

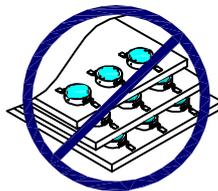
1. Handle the component along the side surfaces by using forceps or appropriate tools.



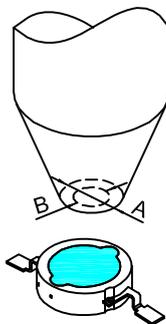
2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.



3. Do not stack together assembled PCBs containing exposed LEDs. Impact may scratch the silicone lens or damage the internal circuitry.



- 4.1. The outer diameter of the SMD pickup nozzle should not exceed the size of the LED to prevent air leaks. The inner diameter of the nozzle should be as large as possible.
- 4.2. A pliable material is suggested for the nozzle tip to avoid scratching or damaging the LED surface during pickup.
- 4.3. The dimensions of the component must be accurately programmed in the pick-and-place machine to insure precise pickup and avoid damage during production.



5. As silicone encapsulation is permeable to gases, some corrosive substances such as  $H_2S$  might corrode silver plating of leadframe. Special care should be taken if an LED with silicone encapsulation is to be used near such substances.

## Flux Characteristics at 350mA Ambient Temperature, $T_a = 25^\circ\text{C}$

Color	Part No.	Luminous Flux (lm) @ 350mA [1]			Typical Luminous Flux (lm) [1]
		Code.	Min.	Max.	Typ.
Reddish-Orange(AlGaInP)	KA-8070SE28Z1S	B5	20	24	27
		B6	24	29	
		B7	29	35	
Super Bright Yellow (AlGaInP)	KA-8070SY28Z1S	B5	20	24	29
		B6	24	29	
		B7	29	35	
Green(AlGaInN)	KA-8070ZG10Z1S	B9	42	50	55
		B10	50	60	
		B11	60	70	
Blue(InGaN)	KA-8070QB12Z1S	B2	12	14	15
		B3	14	17	
		B4	17	20	
Blue(InGaN)	KA-8070QB38Z1S	A17	8.6	10	11
		B1	10	12	
		B2	12	14	
Blue(AlGaInN)	KA-8070QB10Z1S	B2	12	14	16
		B3	14	17	
		B4	17	20	

Note:

1. Minimum luminous flux performance guaranteed within published operating conditions. Kingbright maintains tolerance of +/-15% on flux.

## Optical Characteristics at 350mA Ambient Temperature, $T_a = 25^\circ\text{C}$

Part No.	Dominant Wavelength [1] $\lambda_D$			Typical Spectral Halfwidth [2] (nm) $\Delta\lambda_{1/2}$	Typical Temperature Coefficient of Dominant Wavelength (nm/ $^\circ\text{C}$ ) $\Delta\lambda_D/\Delta T$	Typical Viewing Angle [3] (degrees) $2\theta_{1/2}$
	Min.	Typ.	Max.			
KA-8070SE28Z1S	619nm	625nm	629nm	30	0.05	120°
KA-8070SY28Z1S	586nm	588nm	594nm	20	0.06	120°
KA-8070ZG10Z1S	520nm	530nm	535nm	35	0.14	120°
KA-8070QB12Z1S	450nm	454nm	457.5nm	25	0.04	120°
KA-8070QB38Z1S	445nm	450nm	455nm	24	0.03	120°
KA-8070QB10Z1S	-	452nm	458nm	20	0.1	120°

Notes:

1. Dominant wavelength is derived from the CIE 1931 Chromaticity diagram and represents the perceived color.

2. Spectral width at 1/2 of the peak intensity.

3. Viewing angle is the off axis angle from lamp centerline where the luminous intensity is 1/2 of the peak value.

## Electrical Characteristics at 350mA Ambient Temperature, $T_a = 25^\circ\text{C}$

Part No.	Forward Voltage $V_f$ [1] (V)			Typical Temperature Coefficient of Forward Voltage [2] (mV/ $^\circ\text{C}$ ) $\Delta V_f / \Delta T$	Typical Thermal Resistance ( $^\circ\text{C}/\text{W}$ ) $R_{th\ j\text{-slug}}$
	Min.	Typ.	Max.		
KA-8070SE28Z1S	2.0	2.5	3.0	-3.2	16
KA-8070SY28Z1S	2.0	2.5	3.0	-3.2	9
KA-8070ZG10Z1S	2.8	3.3	3.8	-2.3	12
KA-8070QB12Z1S	-	3.5	4.1	-2.2	11
KA-8070QB38Z1S	-	3.5	4.1	-2.2	11
KA-8070QB10Z1S	2.7	3.2	3.6	-3.2	9

Notes:

- Kingbright maintains a tolerance of +/- 0.1V on forward voltage measurements.
- Measured between  $25^\circ\text{C} < T_J < 110^\circ\text{C}$  at  $I_F = 350\text{ mA}$ .

## Absolute Maximum Ratings

Parameter	Reddish-Orange /Super Bright Yellow/Green/Blue
DC Forward Current (mA) [1]	350
Peak Pulsed Forward Current (mA)	500
Average Forward Current (mA)	350
Reverse Voltage (V)	5
ESD Sensitivity	8000V HBM
LED Junction Temperature ( $^\circ\text{C}$ )	110
Operation Temperature ( $^\circ\text{C}$ )	-40 to+ 100
Storage Temperature ( $^\circ\text{C}$ )	-40 to+ 110
Soldering Temperature ( $^\circ\text{C}$ )	260 For 5 Seconds

Note:

- Proper current derating must be observed to maintain junction temperature below the maximum.

## Moisture Sensitivity

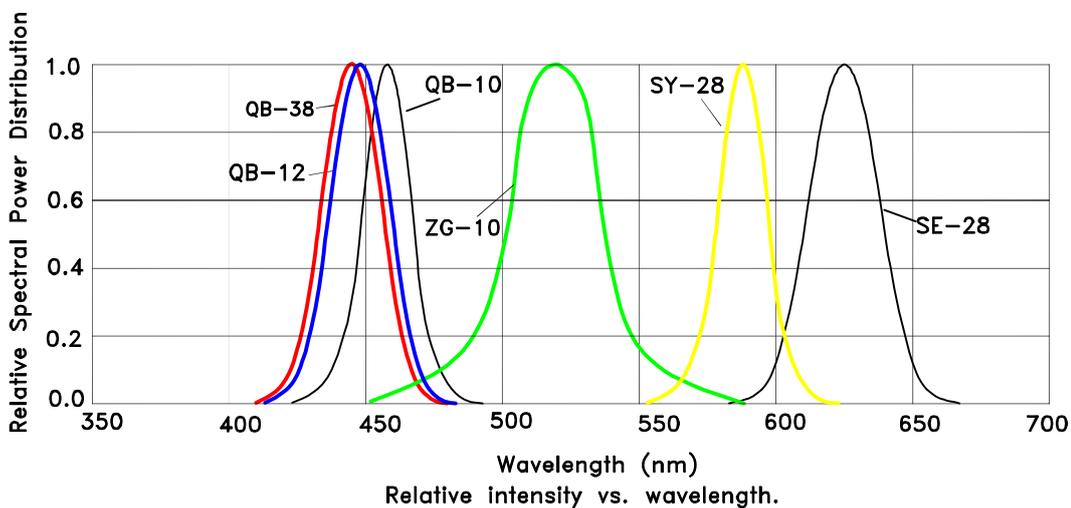
KA-8070 LEDs are packaged in airtight and moisture-resistant bags to prevent moisture absorption which may lead to catastrophic failure in reflow soldering process. Kingbright recommends that the devices must be baked before soldering if they are removed from the original package, and are exposed to environmental conditions for longer than the durations (unit: days) defined in the table below. Recommended baking conditions are 24 hours at  $80^\circ\text{C}$ .

Temperature	Maximum Percent Relative Humidity						
	30%	40%	50%	60%	70%	80%	90%
$30^\circ\text{C}$	9	5	4	3	1	1	1
$25^\circ\text{C}$	12	7	5	4	2	1	1
$20^\circ\text{C}$	17	9	7	6	2	2	1

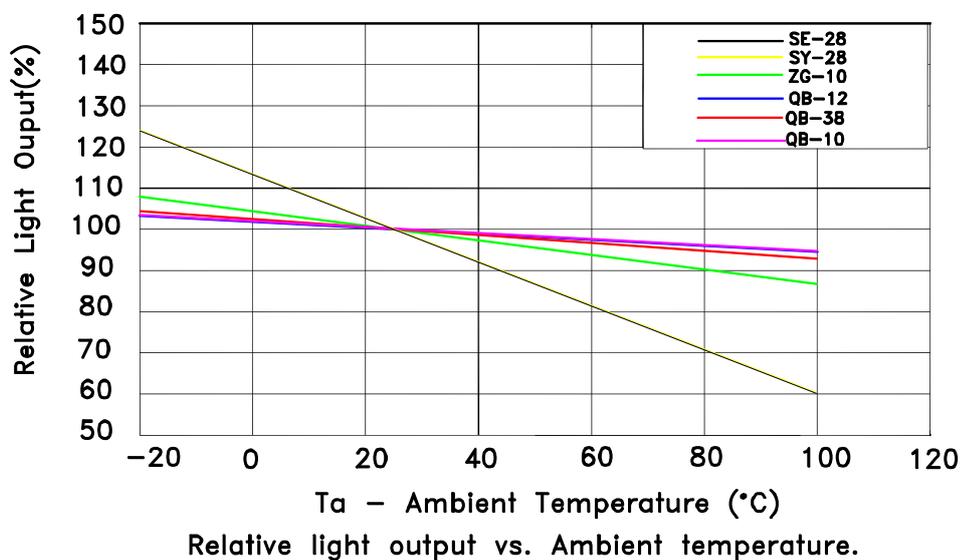
## Storage Conditions

After being removed from the original sealed package, KA-8070 LEDs should be stored at a temperature of  $25^\circ\text{C}$  with a relative humidity lower than 10%. Under such conditions, storage duration is excluded from the exposure duration as defined in the Moisture Sensitivity section.

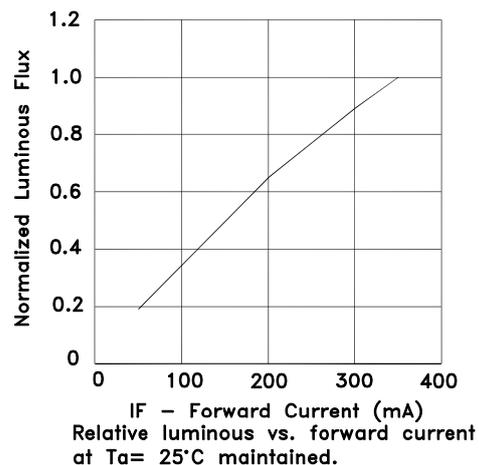
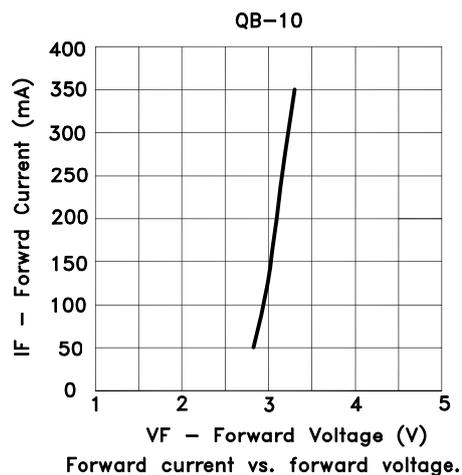
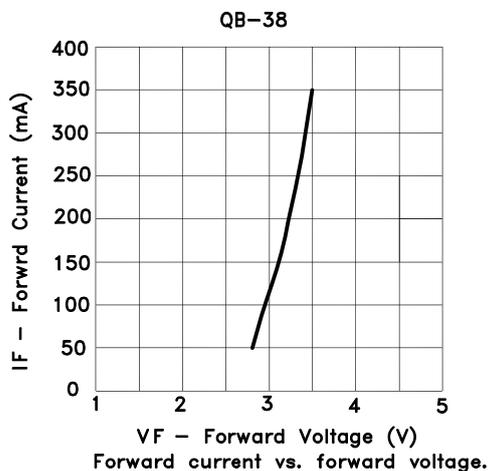
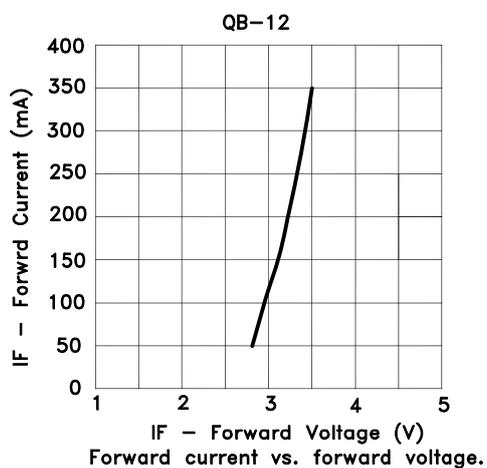
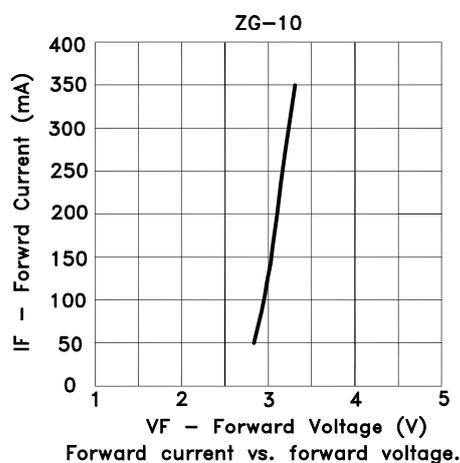
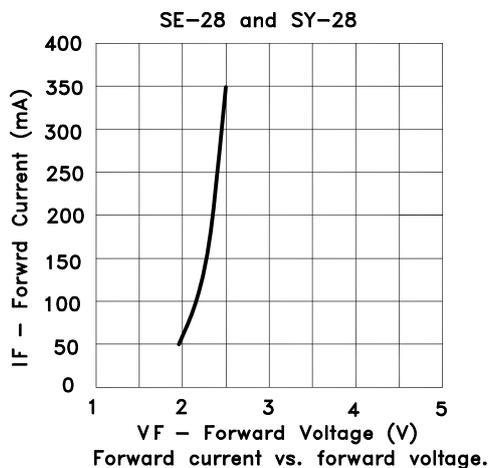
Wavelength Characteristics  $T_a = 25^\circ\text{C}$



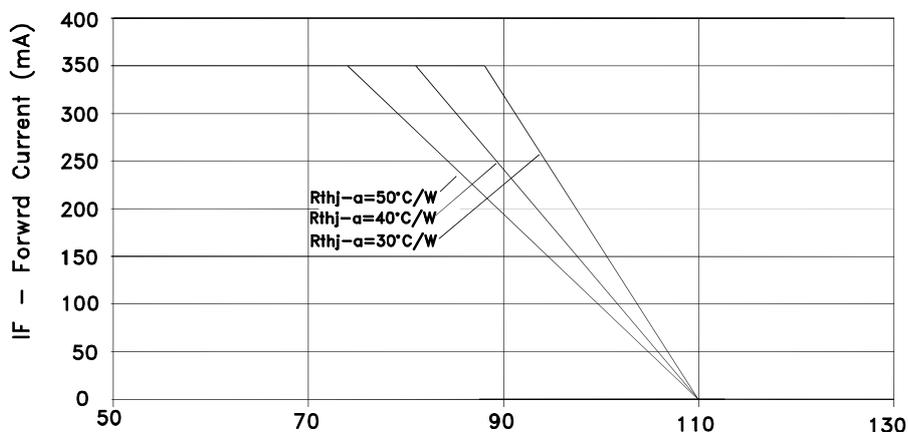
Light Output Characteristics



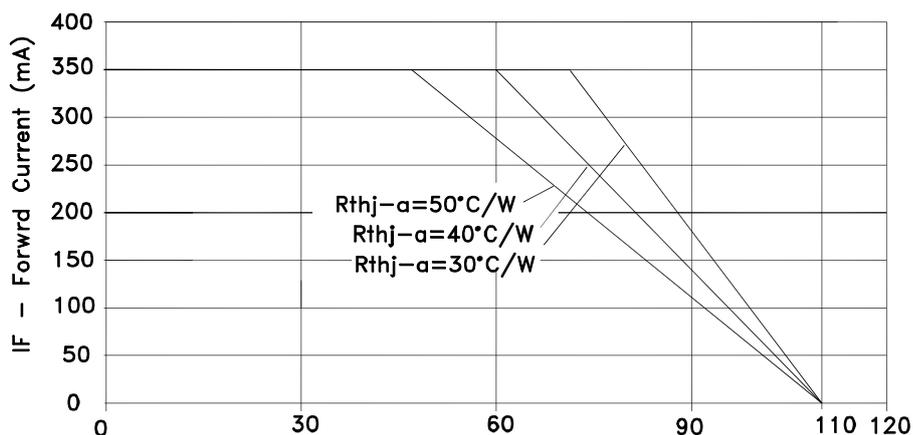
## Forward Current Characteristics, $T_a = 25^\circ\text{C}$



## Current Derating Curves

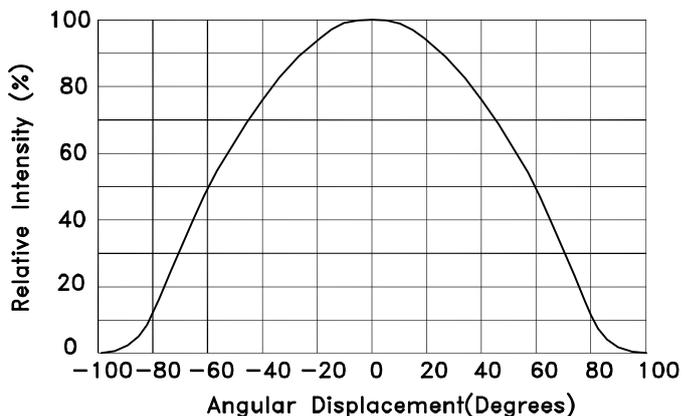


Ta - Ambient Temperature (°C)  
 Maximum forward current vs. ambient temperature,  
 based on Tjmax.=110°C for SE-28,SY-28



Ta - Ambient Temperature (°C)  
 Maximum forward current vs. ambient temperature,  
 based on Tjmax.=110°C for QB-38, QB-12, ZG-10, QB-10.

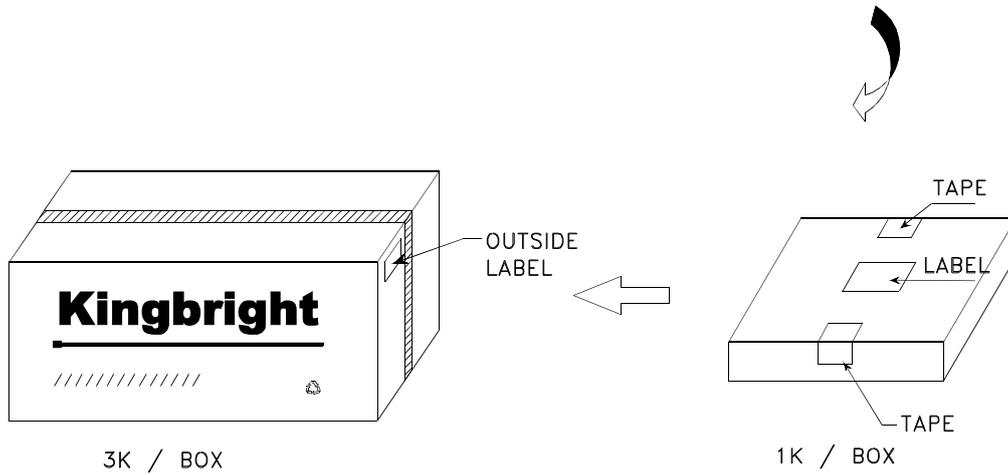
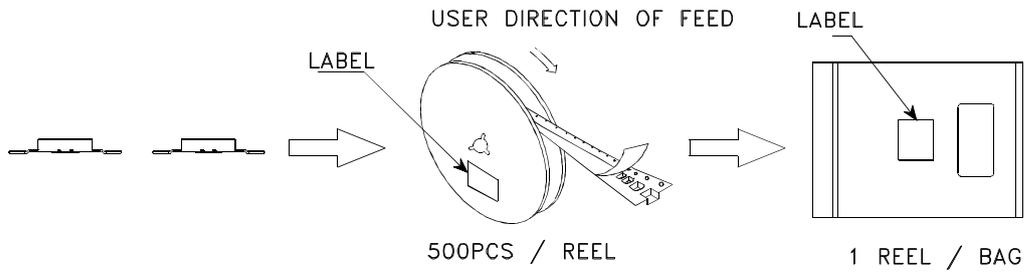
## Representative Typical Spatial Radiation Pattern





PACKING & LABEL SPECIFICATIONS

KA-8070 SERIES



<h1>Kingbright</h1>				
P/NO: KA-8070xxx				
QTY: 500 pcs	Q.C.			
S/N: XXXX	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Q C</td> </tr> <tr> <td style="text-align: center;">XX XX XXXX</td> </tr> <tr> <td style="text-align: center;">PASSED</td> </tr> </table>	Q C	XX XX XXXX	PASSED
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