

MATCH LED



CA6T-9X

Product Code: KWNP-1860C7H

Table of Contents

REVISION HISTORY	1
ABSOLUTE MAXIMUM RATING.....	2
PRODUCT CHARACTERISTICS	2
FLUX CHARACTERISTICS	3
RELATIVE SPECTRAL POWER DISTRIBUTION	3
ELECTRICAL CHARACTERISTIC	4
RELATIVE LUMINOUS FLUX VS. CURRENT.....	4
TYPICAL SPATIAL DISTRIBUTION	5
PERFORMANCE GROUPS.....	6
GPI's STANDARD WHITE CHROMATICITY REGINS PLOTTED ON THE 1931 CIE CURVE.....	7
RELIABILITY.....	8
REFLOW SOLDERING CHARACTERISTICS.....	8
MECHANICAL DIMENSIONS.....	9
TAPE AND REEL.....	10
PACKING	11
CAUTIONS.....	12

REVISION HISTORY

Rev.	Date	Charged	Approved	Revision Summary
Beta-01	2017/03/10	Frank	Bruce	<i>Preliminary</i>
A	2017/04/17	Frank	Bruce	<i>Revised:</i> 1. MECHANICAL DIMENSIONS 2. TAPE AND REEL 3. PACKING
B	2017/05/03	Frank	Bruce	<i>Revised:</i> 1. MECHANICAL DIMENSIONS
C	2017/08/25	Frank	Bruce	<i>Revised:</i> 1. ABSOLUTE MAXIMUM RATING (Tj= 85 °C) 2. PRODUCT CHARACTERISTICS 3. FLUX CHARACTERISTICS (Tj = 85 °C) 4. RELIABILITY

ABSOLUTE MAXIMUM RATING (T_j= 85 °C)

Characteristics	Value	Unit
DC Forward Current	1000	mA
DC Reverse Voltage	12	V
Storage Temperature	-40 ~ 125	°C
Operating Temperature	-30 ~ 85	°C
LED Junction Temperature	150	°C

PRODUCT CHARACTERISTICS

Characteristics	Unit	minimum	Typ.	Maximum
Thermal resistance, junction to solder point	°C/W		2.5	
Viewing Angle (FWHM)	degrees		115	
Temperature coefficient of voltage	mV/°C		-2.5	
DC Forward Current	mA		1000	1000
Reverse Voltage	V			12
Forward Voltage	V		10.2	11
LED junction temperature	°C			150

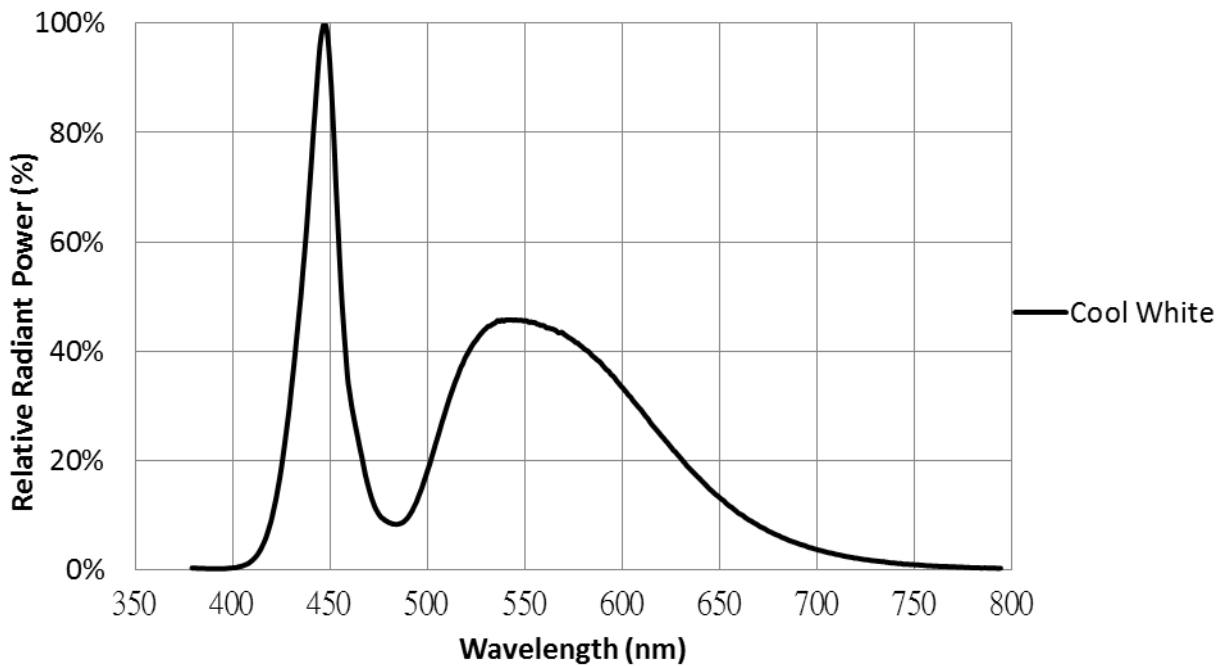
FLUX CHARACTERISTICS ($T_j = 85\text{ }^\circ\text{C}$)

Color	CCT		Base Order codes Minimum Luminous Flux (lm)		Order Code
	Min	Max	Group	1000mA @85°C	
70 CRI, Cool White	5400	7000	H09	900	KWNP-1860C7H
			H10	1000	
			H11	1100	

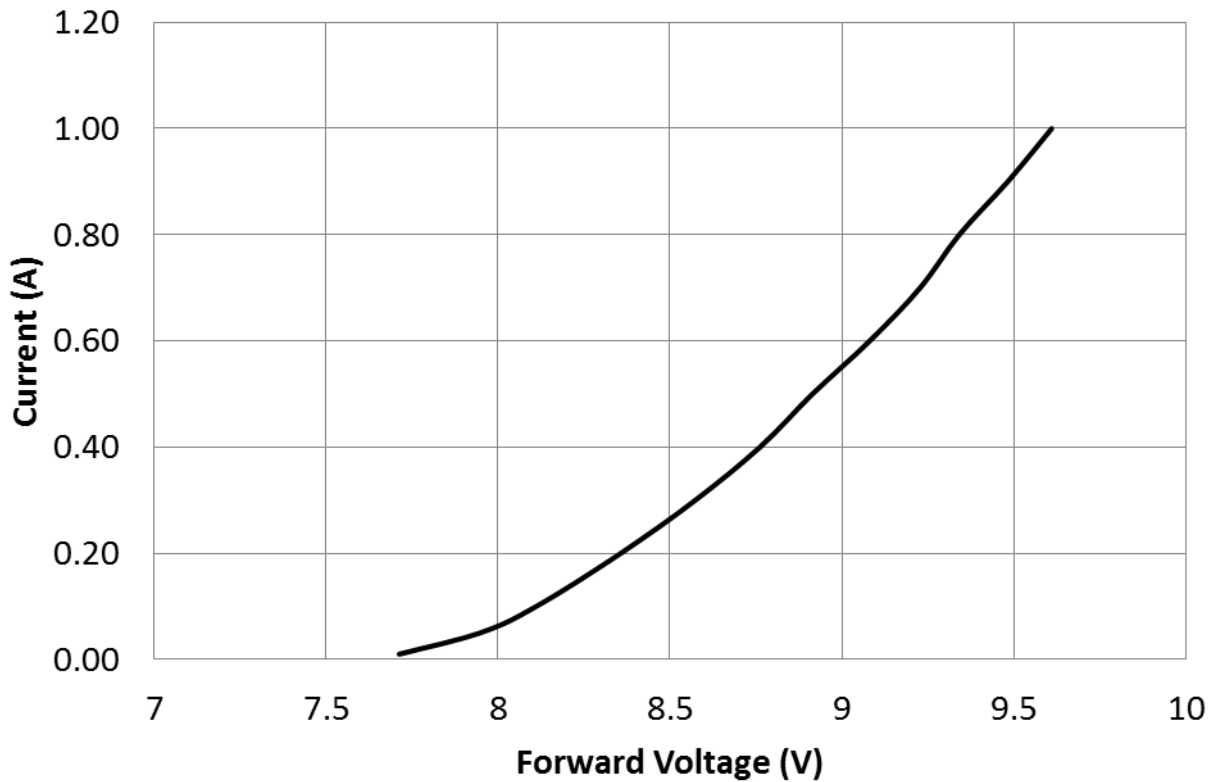
Notes:

- GPI maintains a tolerance of $\pm 5\%$ on flux and power measurements, ± 0.005 on chromaticity (CCx, CCy) measurements and ± 2 on CRI measurements.
- Calculated flux values are for reference only.

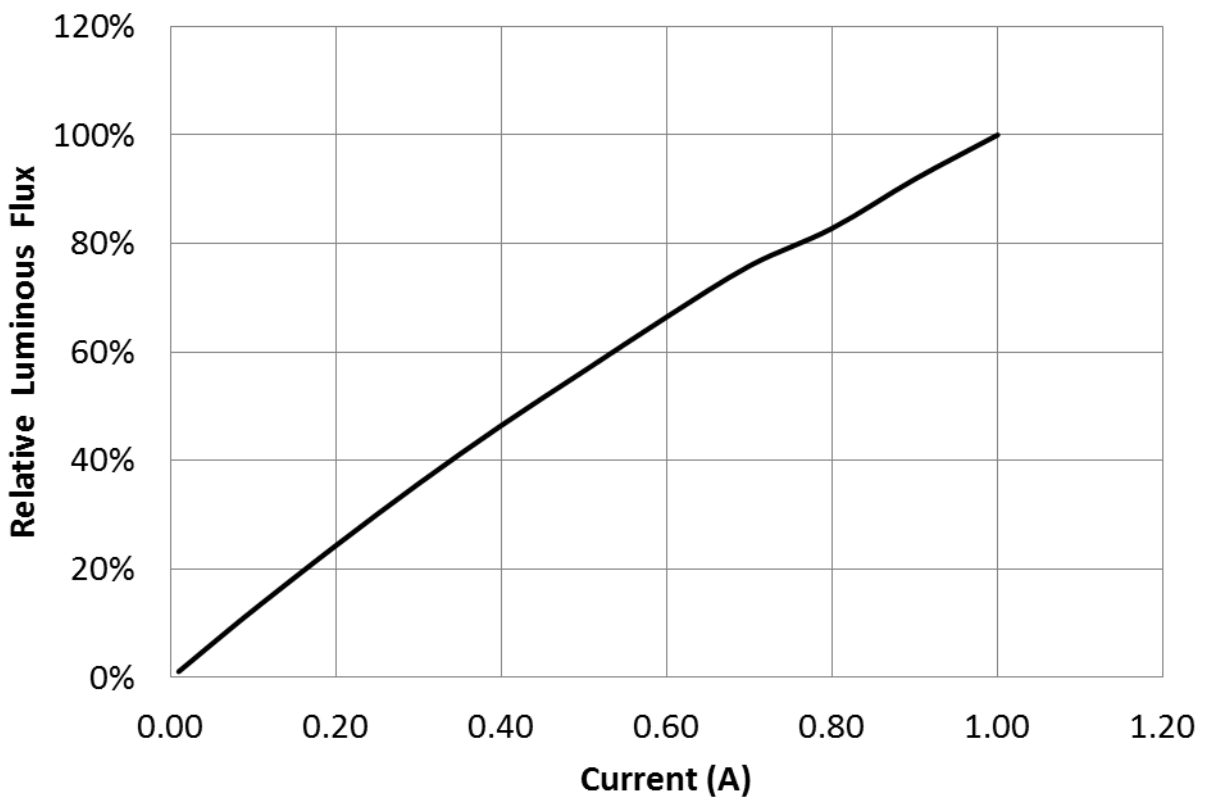
RELATIVE SPECTRAL POWER DISTRIBUTION



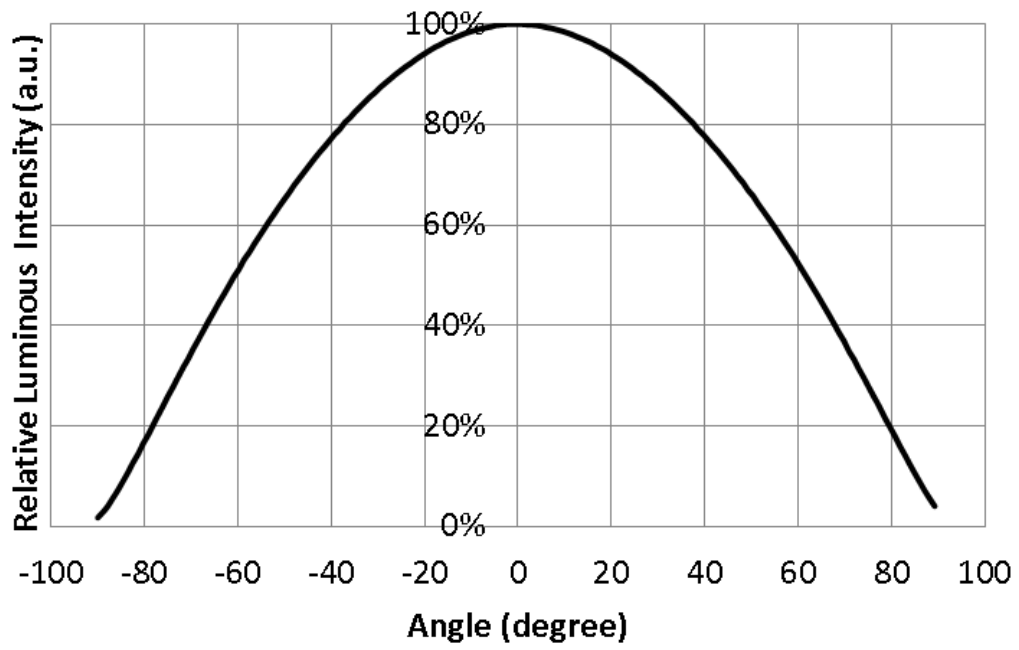
ELECTRICAL CHARACTERISTIC ($T_j = 85\text{ }^\circ\text{C}$)



RELATIVE LUMINOUS FLUX VS. CURRENT ($T_j = 85\text{ }^\circ\text{C}$)



TYPICAL SPATIAL DISTRIBUTION



PERFORMANCE GROUPS – BRIGHTNESS ($T_j = 85\text{ }^\circ\text{C}$)

Group code	Min. Luminous Flux (lm)	Max. Luminous Flux (lm)
H09	900	1000
H10	1000	1100
H11	1100	1200

PERFORMANCE GROUPS – FORWARD VOLTAGE ($T_j = 85\text{ }^\circ\text{C}$)

Group code	Minimum Forward Voltage (V)	Maximum Forward Voltage (V)
KF	9.0	9.6
KG	9.6	10.2

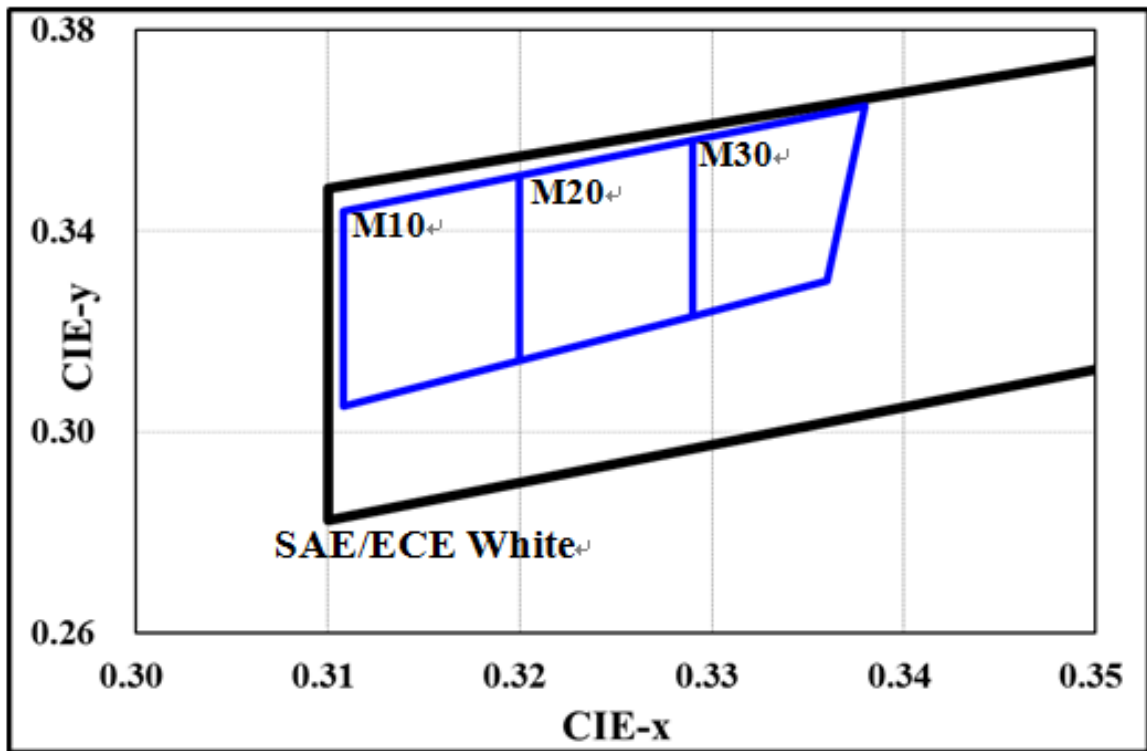
PERFORMANCE GROUPS – CHROMATICITY

Bin Code	x	y
M10	0.32	0.3511
	0.3108	0.344
	0.3108	0.305
	0.32	0.3141

Bin Code	x	y
M20	0.32	0.3511
	0.329	0.3581
	0.329	0.3231
	0.32	0.3141

Bin Code	x	y
M30	0.329	0.3581
	0.338	0.365
	0.336	0.33
	0.329	0.3231

GPI's STANDARD WHITE CHROMATICITY REGINS PLOTTED ON THE 1931 CIE CURVE



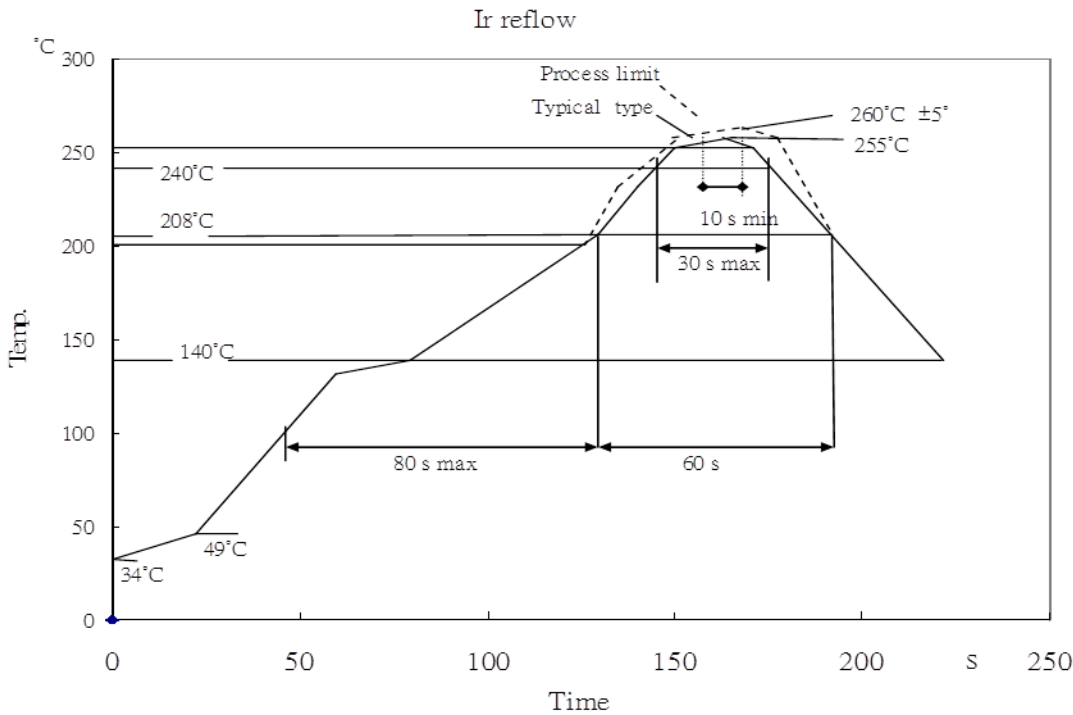
RELIABILITY

Test Item	Test Conditions	Test Period	Ac/Re
Room Temperature Operating Life (RTOL)	IF=1000mA DC	1000hrs	0/1
Wet High Temperature Operating Life (WHTOL)	TA=85°C ; 85% humidity IF=1000mA DC	1000hrs	0/1
High Temperature Operating Life (HTOL)	TA=85°C ; IF=1000mA DC	1000hrs	0/1
Thermal Cycle	-40°C 30min 125°C 30 min	1000 cycle	0/1
Reflow Soldering	Tmax.=260°C	3 times	0/1

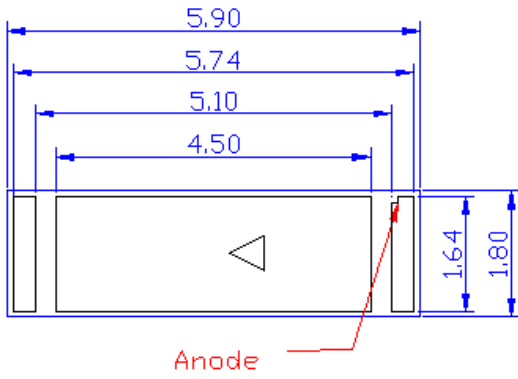
Notes:

- No catastrophic (LED Fail)
- Lumen maintenance > 90%
- Change in Vf < 10%
- Change in white color point $\Delta x \Delta y \pm 0.01$
- No corrosion
- Moisture Sensitivity Level 2 (IPC/JEDEC J-STD-020)

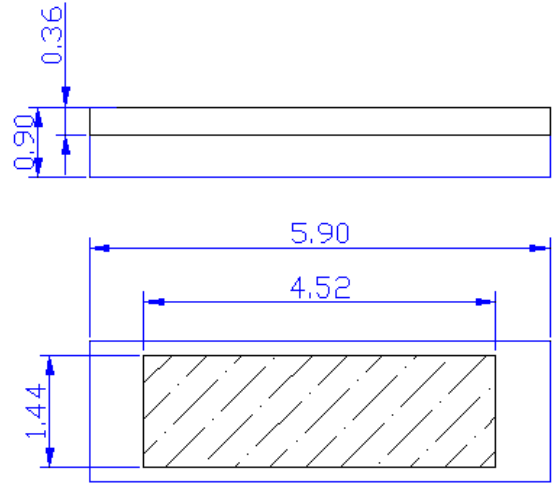
Reflow Soldering Characteristics



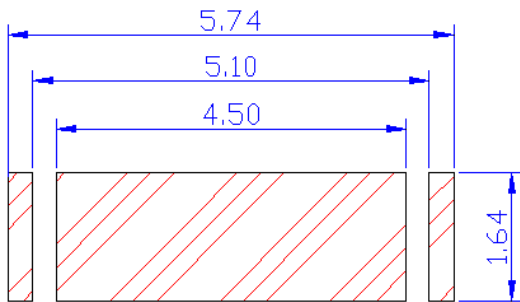
MECHANICAL DIMENSIONS



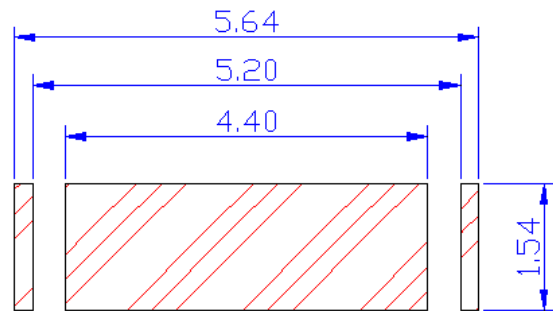
Bottom Layout



Dimension



Recommended Solder



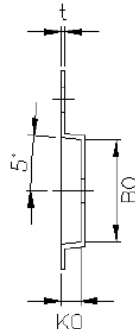
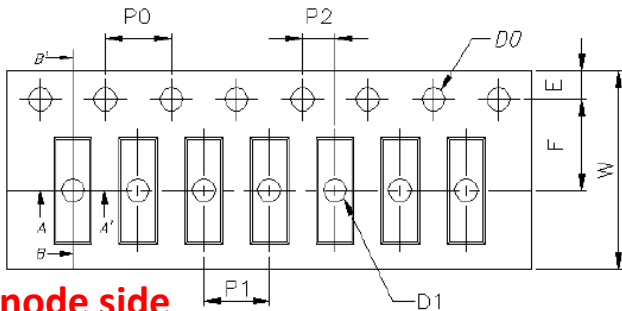
**Recommended Stencil Pattern
(Hatched Area is open)**

Note:

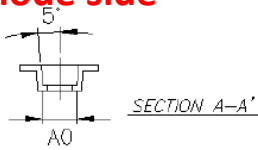
1. Dimensions are in millimeters. ± 0.13
2. Measurement tolerances : ± 0.1

TAPE AND REEL

Cathode side

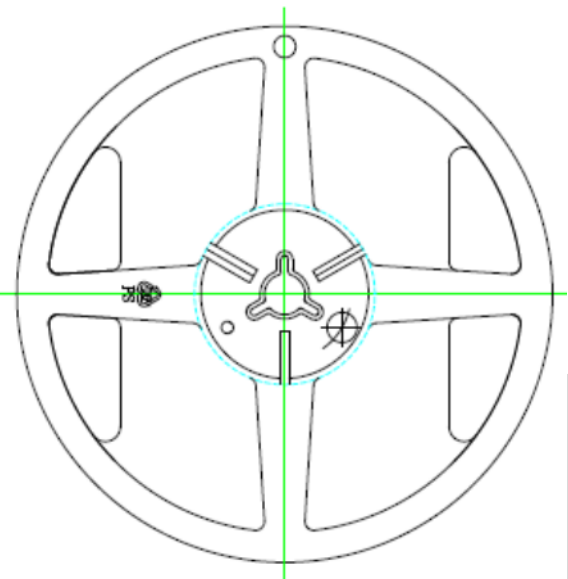
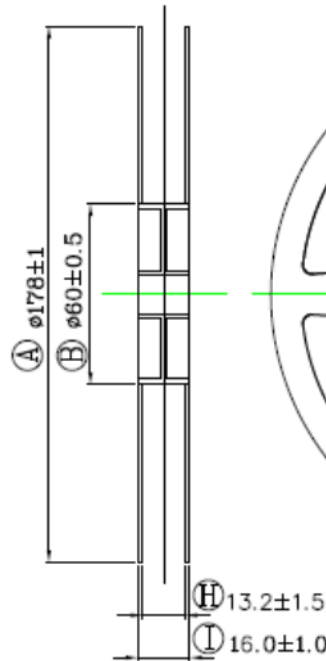
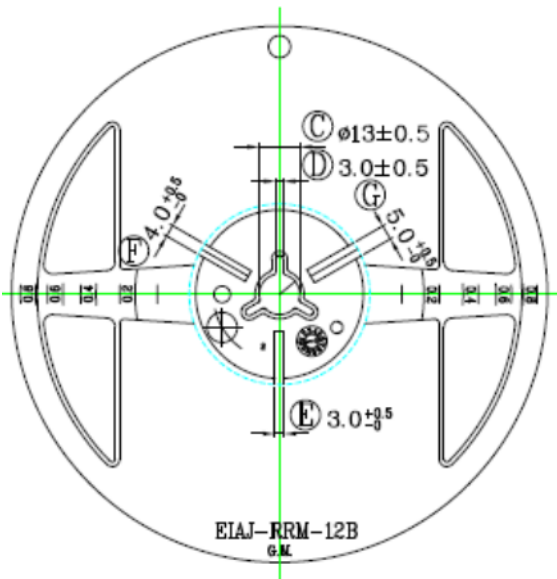


Anode side



Item	Specification	Tol. (+/-)
W	12.00	± 0.30
E	1.75	± 0.10
F	5.50	± 0.10
D0	1.50	+0.10, -0
D1	1.50	+0.10, -0
P0	4.00	± 0.10
P1	4.00	± 0.10
P2	2.00	± 0.10
P0 x 10	40.00	± 0.20

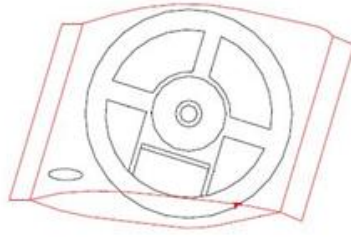
t	0.30	± 0.05
A0	2.10	± 0.10
B0	6.20	± 0.10
K0	1.20	± 0.10



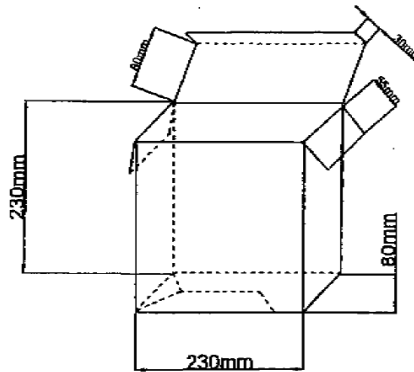
Note:

- Dimension unit: millimeter.

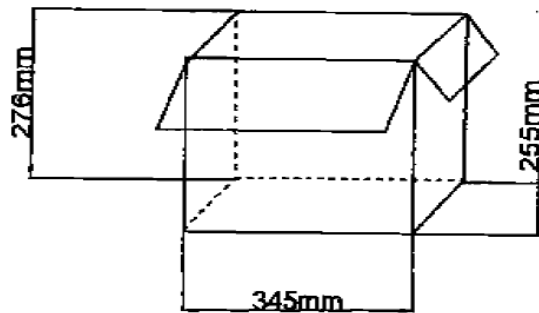
PACKING



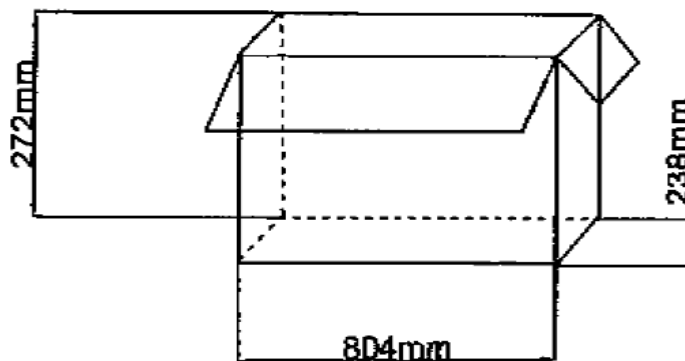
1 Anti-Static Reel in 1 Moistureproof Foil Bag.
(Within Moisture Absorbent Material)



4 Moistureproof Foil Bags in Box.



20 Moistureproof Foil Bags in Box.



50 Moistureproof Foil Bags in Box.

CAUTIONS

1. Moisture Sensitivity

In testing, GPI has found CA6T-9X LEDs to have 1 year floor life in condition $\leq 30\text{C}/60\%$ relative humidity (RH). Moisture testing included a 168-hr soak at 85C/60% RH followed by 3 times reflow cycles, with visual and electrical inspections at each stage.

GPI recommends keeping CA6T-9X LEDs in their sealed moisture-barrier packaging until immediately prior to use. GPI also recommends returning any unusual LEDs to the re-sealable moisture-barrier bag and closing the bag immediately after use.

2. Handling Precautions

Do not handle LEDs with bare hands, it may contaminate the LED surface and affect optical characteristics. In the worst case, catastrophic failure from excess pressure through wire-bond breaks and package damage may result.

Do not stack assembled PCBs together. Failure to comply can cause the resin portion of the product to be cut, chipped, delaminated and/or deformed. It may cause wire to break, leading to catastrophic failures.

3. Eye safety

Warning: do not look at exposed lamp in operation. Eye injury can result.

4. Static Electricity

Wristbands and anti-electrostatic gloves are strongly recommended and all devices, equipment and machinery must be properly grounded when handling the LEDs, which are sensitive against static electricity and surge.

Precautions are to be taken against surge voltage to the equipment that mounts the LEDs. Unusual characteristics such as significant increase of current leakage, decrease of turn-on voltage or non-operation at a low current can occur when the LED is damaged.

5. Thermal Constraints

The temperature of the package surface is strongly recommended below 200°C in operation. | 12