CA3-3K

Product Code: KWNP-3535xxH

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REVISION HISTORY

Rev.	Date	Charged	Approved	Revision Summary
A	2016/03/07	Frank	Bruce	***First issue(CA3-3K Preliminary)***
B	2016/03/23	Frank	Bruce	***Revised:*** ***1. TAPE AND REEL*** ***2. PACKING***
C	2016/04/14	Frank	Bruce	**Revised:** ***1. FLUX CHARACTERISTICS (Tj = 85 °C)*** ***2. PERFORMANCE GROUPS –FORWARD VOLTAGE (Tj = 85 °C)***
D	2016/04/26	Frank	Bruce	***Revised:*** ***1. Product Code*** ***2. FLUX CHARACTERISTICS (Tj = 85 °C)*** ***3. RELATIVE SPECTRAL POWER DISTRIBUTION*** ***4. GPI's STANDARD WHITE CHROMATICITY REGINS PLOTTED ON THE 1931 CIE CURVE***
E	2017/03/28	Frank	Bruce	***Revised:*** ***1. FLUX CHARACTERISTICS (Tj = 85 °C)*** ***2. RELATIVE SPECTRAL POWER DISTRIBUTION*** ***3. PERFORMANCE GROUPS – BRIGHTNESS (Tj = 85 °C)*** ***4. PERFORMANCE GROUPS – Wd (TJ = 85 °C)*** ***5. PERFORMANCE GROUPS – CHROMATICITY*** ***6. GPI's STANDARD WHITE CHROMATICITY REGINS PLOTTED ON THE 1931 CIE CURVE*** ***7. CAUTIONS***
F	2017/05/03	Frank	Bruce	***Revised:*** ***1. FLUX CHARACTERISTICS (Tj = 85 °C)*** ***2. PERFORMANCE GROUPS – BRIGHTNESS (Tj = 85 °C)*** ***3. PERFORMANCE GROUPS – CHROMATICITY*** ***4. GPI's STANDARD WHITE CHROMATICITY REGINS PLOTTED ON THE 1931 CIE CURVE***

ABSOLUTE MAXIMUM RATING (T_j= 85 °C)

Characteristics	Value	Unit
DC Forward Current	3000	mA
Power Dissipation	10.5	W
DC Reverse Voltage	5	V
Storage Temperature	-40 ~ 125	℃
Operating Temperature	-30 ~ 85	℃
LED Junction Temperature	150	℃

PRODUCT CHARACTERISTICS

Characteristics	Unit	minimum	Typ.	Maximum
Thermal resistance, junction to solder point	℃/W		3.7	
Viewing Angle (FWHM)	degrees		120	
Temperature coefficient of voltage	mV/℃		-2.5	
DC Forward Current	mA		1050	3000
Reverse Voltage	V			5
Forward Voltage(@1050mA)	V		2.95	3.4
LED junction temperature	℃			150

FLUX CHARACTERISTICS (T_j = 85 °C)

Color	CCT		Base Order codes Minimum Luminous Flux (lm) @ 1050mA	Calculated Minimum Luminous Flux (lm)*		Order Code
	Min	Max	Group	@85°C	2000mA	3000mA	
70 CRI, Cool White	6300K	8000K	U19	380	653	885	KWNP-3535C7H
			U20	400	688	932	
			U21	420	722	978	
			U22	440	756	1025	
			U23	460	791	1071	
80 CRI Warm White	2600K	3700K	U17	340	584	792	KWNP-3535W8H
			U18	360	618	838	
			U19	380	653	885	
90 CRI, Cool White	5300	6000	U14	280	481	652	KWNP-3535C9H
			U15	300	516	699	
			U16	320	550	745	
95 CRI, Warm White	2800	3200	U13	260	447	605	KWNP-3535WCH
			U14	280	481	652	
			U15	300	516	699	

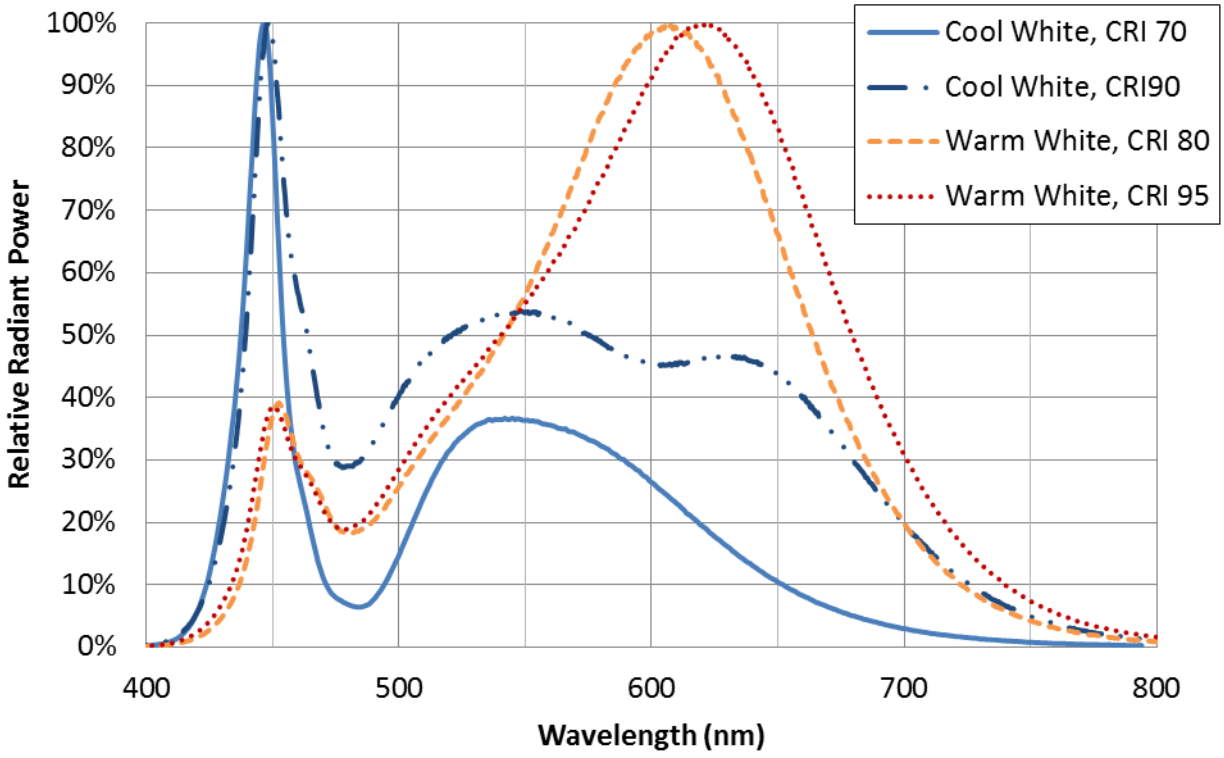
Notes:
• GPI maintains a tolerance of ±5% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and ±2 on CRI measurements.
• Calculated flux values are for reference only.

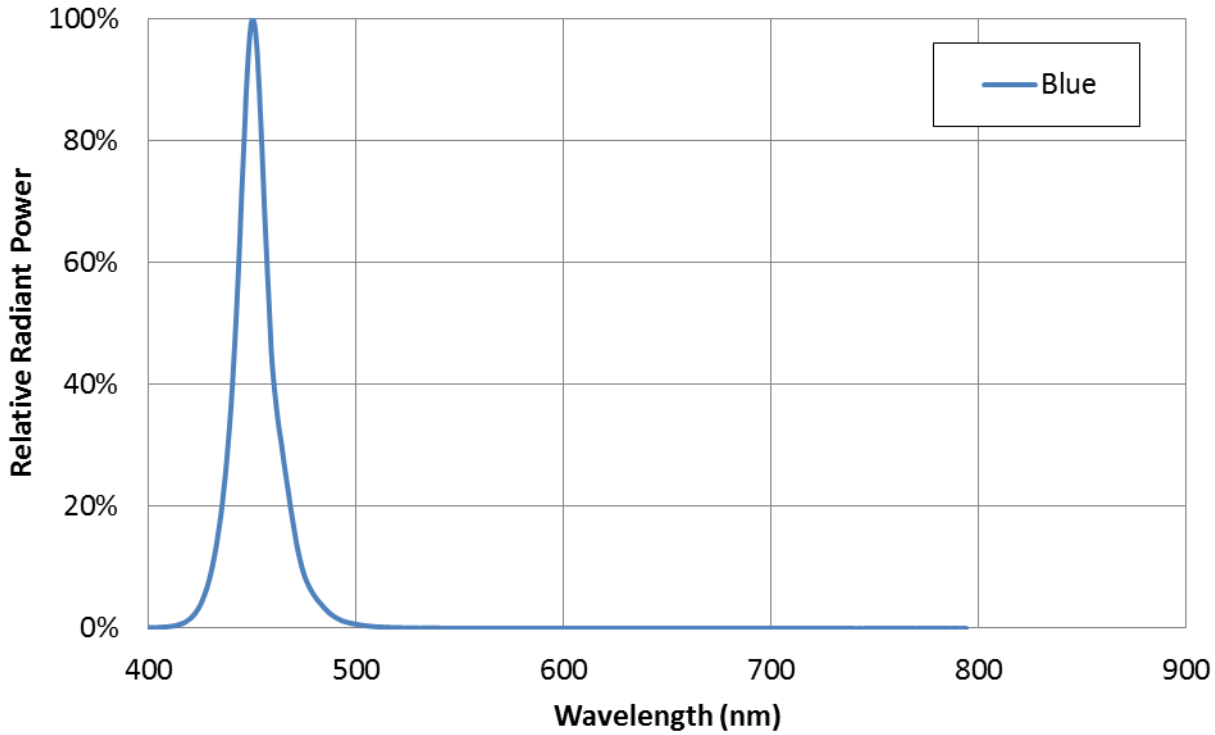
FLUX CHARACTERISTICS (T_j = 85 °C) – CONTINUED

Color	Wd		Base Order codes Minimum Luminous Flux (lm) @ 1050mA		Calculated Minimum Luminous Flux (lm)*		Order Code
	Min	Max	Group	@85ºC	2000mA	3000mA	
Blue	450	465	A08	40	68	93	KWNP-3535PBH
			A09	45	77	104	
			A10	50	86	116	
			A11	55	94	128	

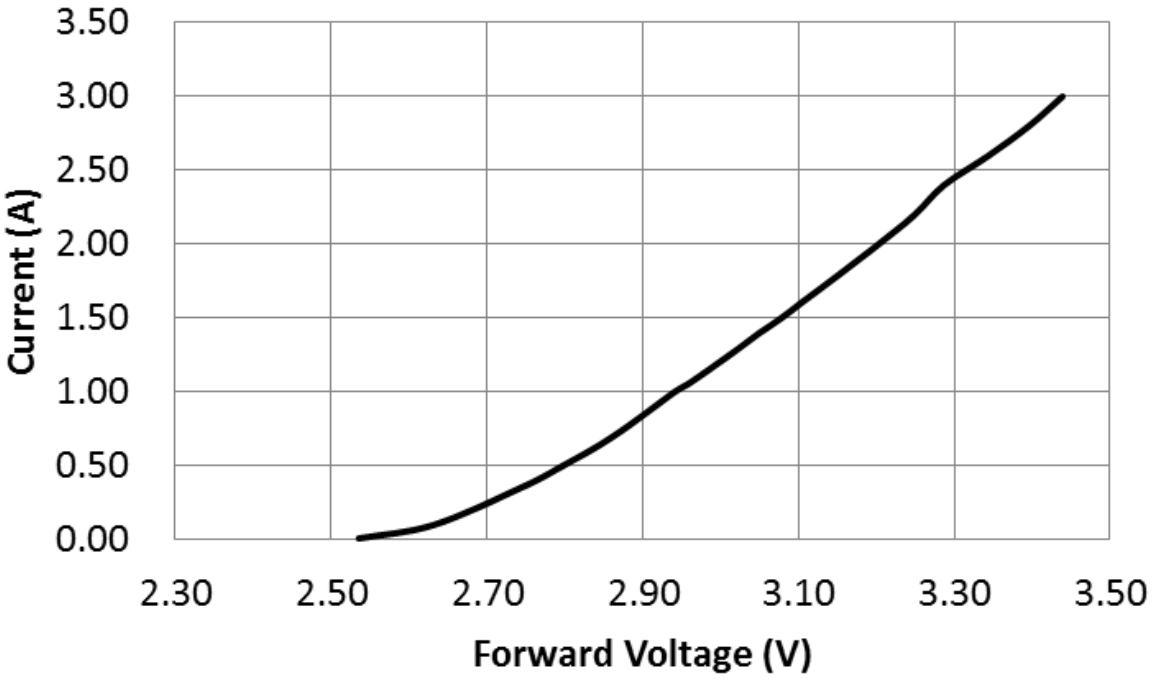
Notes:
• GPI maintains a tolerance of ±5% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and ±2 on CRI measurements.
• Calculated flux values are for reference only.

RELATIVE SPECTRAL POWER DISTRIBUTION

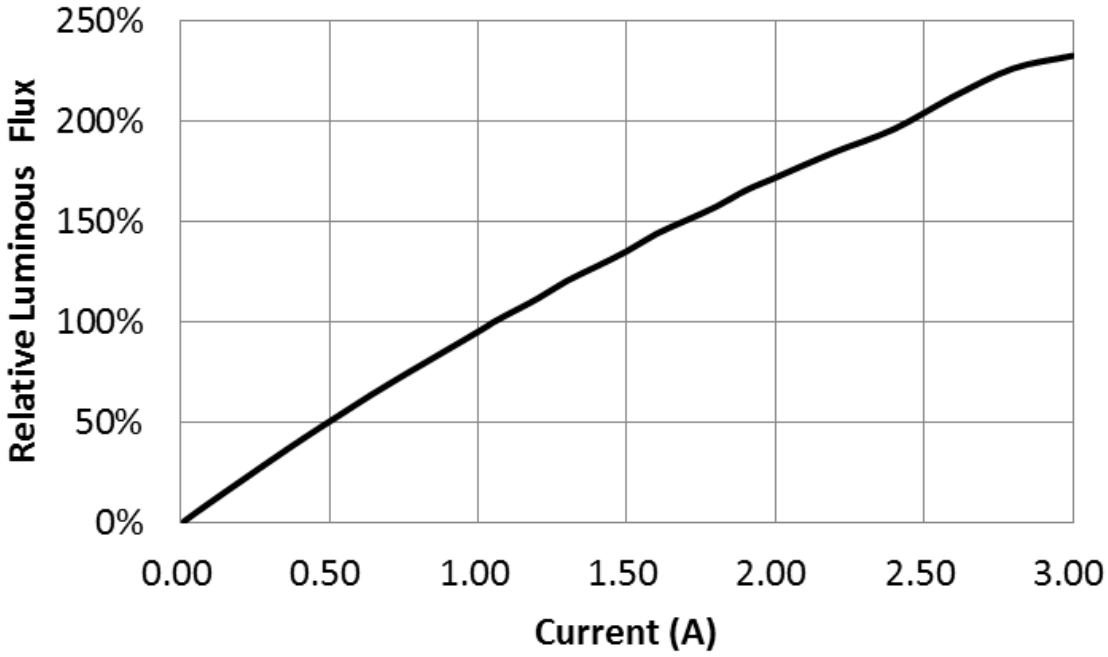




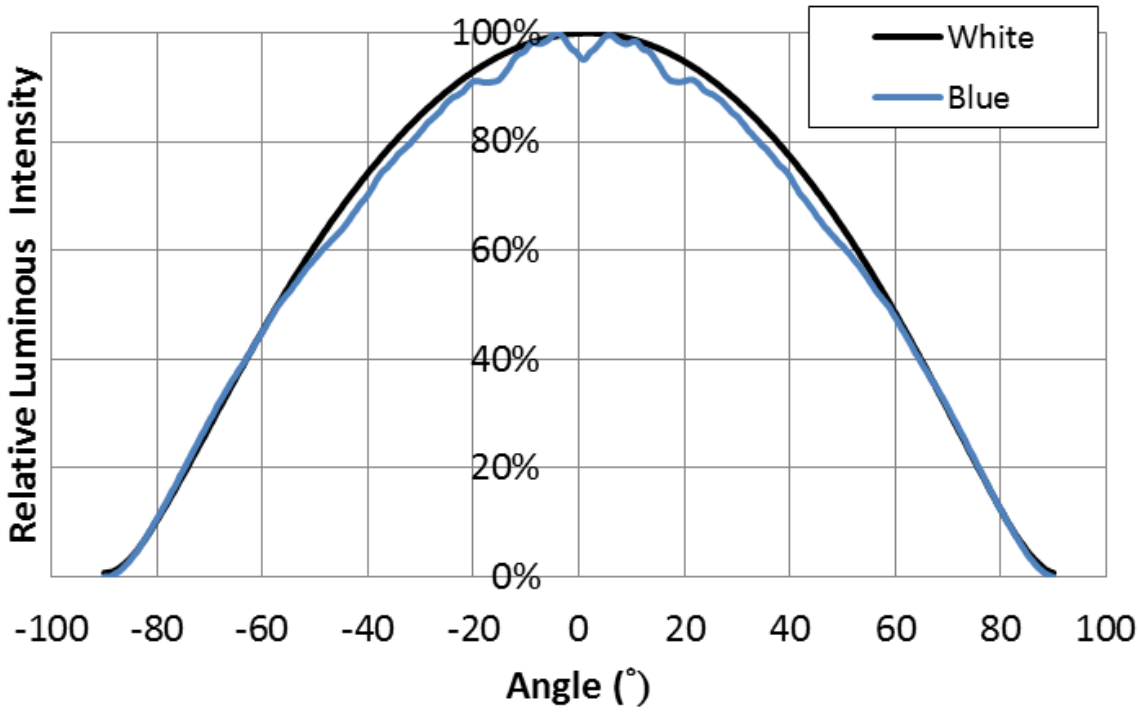
ELECTRICAL CHARACTERISTIC (T_j = 85 °C)



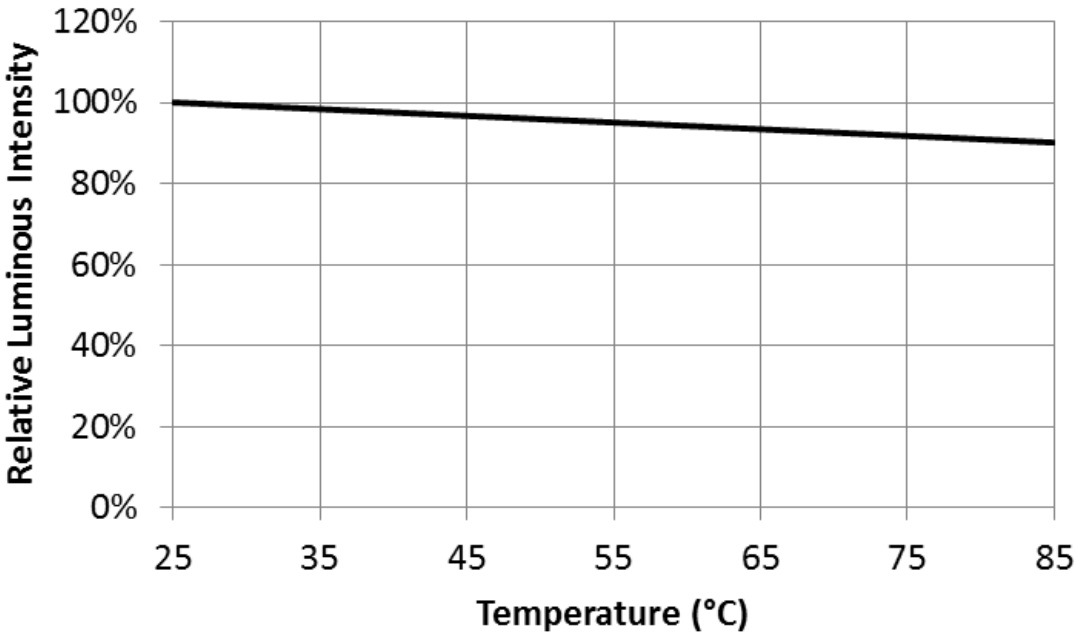
RELATIVE LUMINOUS FLUX VS. CURRENT (T_j= 85 °C)



TYPICAL SPATIAL DISTRIBUTION



RELATIVE LUMINOUS INTENSITY vs. TEMPERATURE (I=1050mA)



PERFORMANCE GROUPS – BRIGHTNESS (T_j = 85 °C)

Group code	Min. Luminous Flux (lm)	Max. Luminous Flux (lm)
U13	260	280
U14	280	300
U15	300	320
U16	320	340
U17	340	360
U18	360	380
U19	380	400
U20	400	420
U21	420	440
U22	440	460
U23	460	480

Group code	Min. Luminous Flux (lm)	Max. Luminous Flux (lm)
A08	40	45
A09	45	50
A10	50	55
A11	55	60

PERFORMANCE GROUPS –FORWARD VOLTAGE (T_j = 85 °C)

Group code	Minimum Forward Voltage (V)	Maximum Forward Voltage (V)
M9	2.8	3.0
MA	3.0	3.2
MB	3.2	3.4

PERFORMANCE GROUPS – Wd (T_J = 85 °C)

Group code	Minimum Wavelength (nm)	Maximum Wavelength (nm)
450	450	455
455	455	460
460	460	465

PERFORMANCE GROUPS – CHROMATICITY

Bin Code	CCT	Bin	x1	y1	x2	y2	x3	y3	x4	y4
AA	6300K – 7000K	AA1	0.3150	0.3440	0.3204	0.3490	0.3209	0.3432	0.3155	0.3385
		AA2	0.3155	0.3385	0.3209	0.3432	0.3213	0.3374	0.316	0.333
		AA3	0.316	0.333	0.3213	0.3374	0.3217	0.3315	0.3165	0.3265
		AA4	0.3165	0.3265	0.3217	0.3315	0.3221	0.3257	0.3170	0.3200
		AAA	0.3150	0.3440	0.3090	0.3385	0.3099	0.3329	0.3155	0.3385
		AAB	0.3155	0.3385	0.3099	0.3329	0.3108	0.3273	0.3160	0.3330
		AAC	0.3090	0.3385	0.3030	0.3330	0.3043	0.3273	0.3099	0.3329
		AAD	0.3099	0.3329	0.3043	0.3273	0.3055	0.3215	0.3108	0.3273

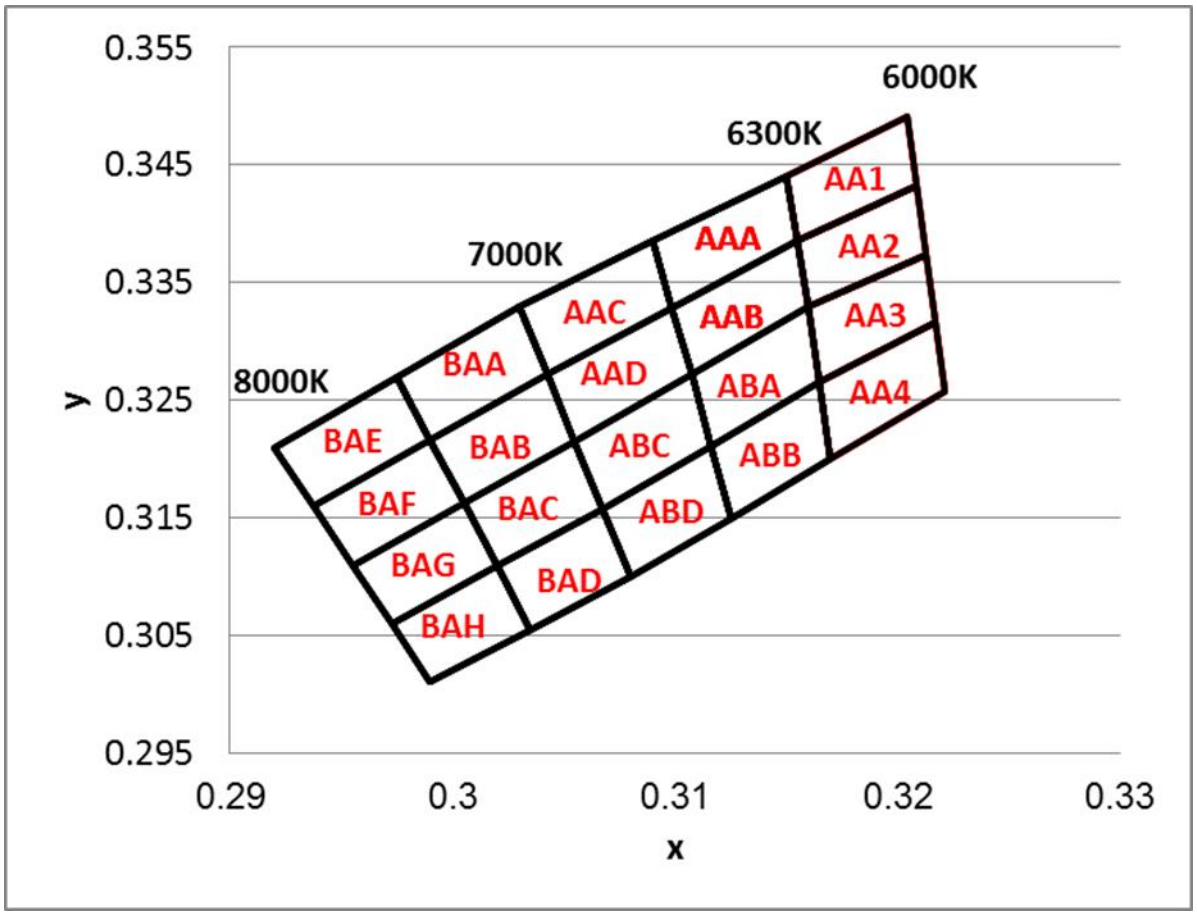
Bin Code	CCT	Bin	x1	y1	x2	y2	x3	y3	x4	y4
AB	6300K – 7000K	ABA	0.3160	0.3330	0.3108	0.3273	0.3116	0.3211	0.3165	0.3265
		ABB	0.3165	0.3265	0.3116	0.3211	0.3125	0.3150	0.3170	0.3200
		ABC	0.3108	0.3273	0.3055	0.3215	0.3068	0.3158	0.3116	0.3211
		ABD	0.3116	0.3211	0.3068	0.3158	0.3080	0.3100	0.3125	0.3150

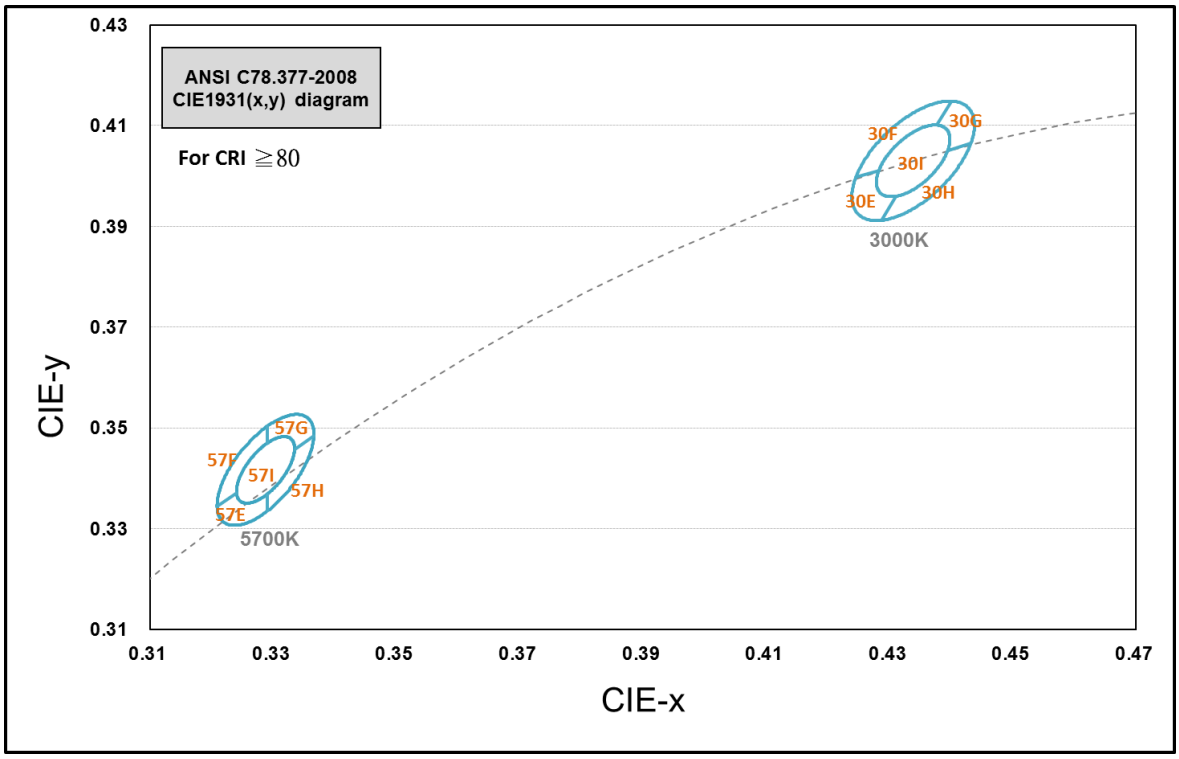
Bin Code	CCT	Bin	x1	y1	x2	y2	x3	y3	x4	y4
BA	7000K – 8000K	BAA	0.3030	0.3330	0.2975	0.3270	0.2990	0.3216	0.3043	0.3273
		BAB	0.3043	0.3273	0.2990	0.3216	0.3005	0.3163	0.3055	0.3215
		BAC	0.3055	0.3215	0.3005	0.3163	0.3020	0.3109	0.3068	0.3158
		BAD	0.3068	0.3158	0.3020	0.3109	0.3035	0.3055	0.3080	0.3100
		BAE	0.2975	0.3270	0.2920	0.3210	0.2938	0.3160	0.2990	0.3216
		BAF	0.2990	0.3216	0.2938	0.3160	0.2955	0.3110	0.3005	0.3163
		BAG	0.3005	0.3163	0.2955	0.3110	0.2973	0.3060	0.3020	0.3109
		BAH	0.3020	0.3109	0.2973	0.3060	0.2990	0.3010	0.3035	0.3055

CCT	Mac Adam ellipse	Center x	Center y	a	b	theta
5700K	3-step	0.3287	0.3417	0.00746	0.0032	59.09
	5-step	0.3287	0.3417	0.01243	0.00533	59.09

CCT	Mac Adam ellipse	Center x	Center y	a	b	theta
3000K	3-step	0.4338	0.403	0.00834	0.00408	53.22
	5-step	0.4338	0.403	0.0139	0.0068	53.22

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



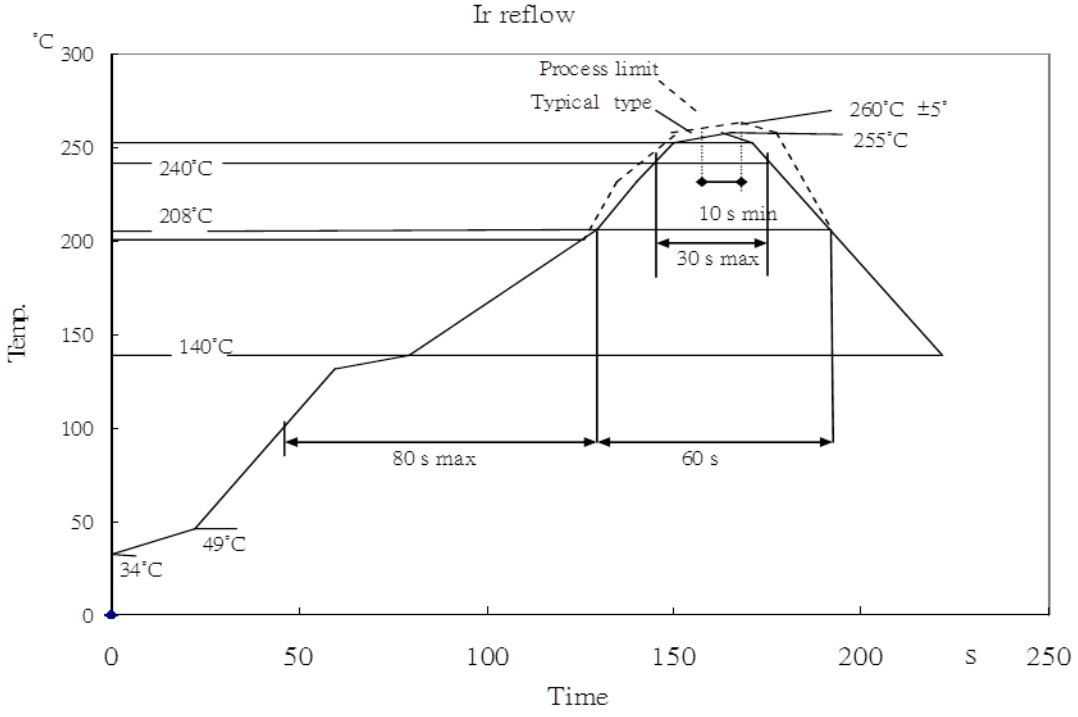


RELIABILITY

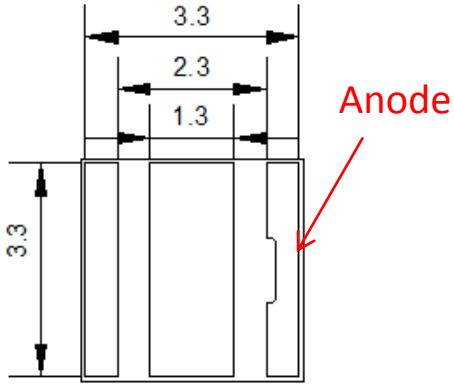
Test Item	Test Conditions		Test Period	Ac/Re
Room Temperature Operating Life（RTOL）	IF=1050mA DC		1000hrs	0/1
Wet High Temperature Operating Life（WHTOL）	TA=85°C；85% humidity IF=1050mA DC		1000hrs	0/1
High Temperature Operating Life（HTOL）	TA=85°C；IF=1050mA DC		1000hrs	0/1
Thermal Cycle	-40℃	125℃	1000 cycle	0/1
	30min	30 min		
Reflow Soldering	Tmax.=260℃		3 times	0/1

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

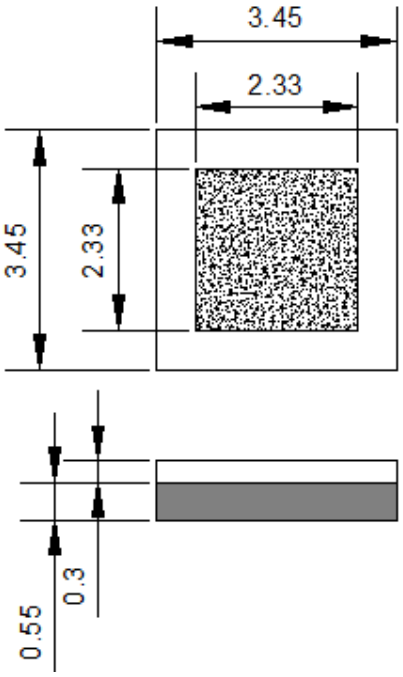
Reflow Soldering Characteristics



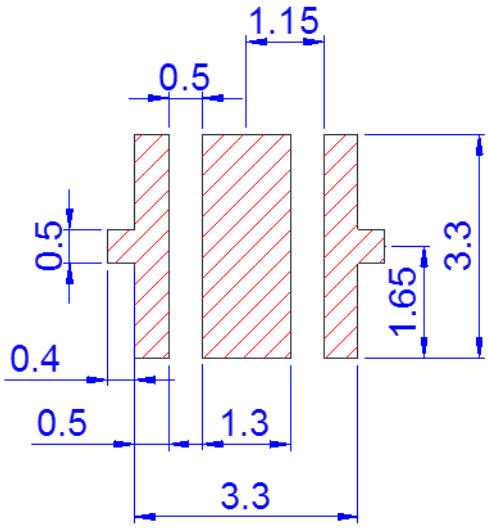
MECHANICAL DIMENSIONS



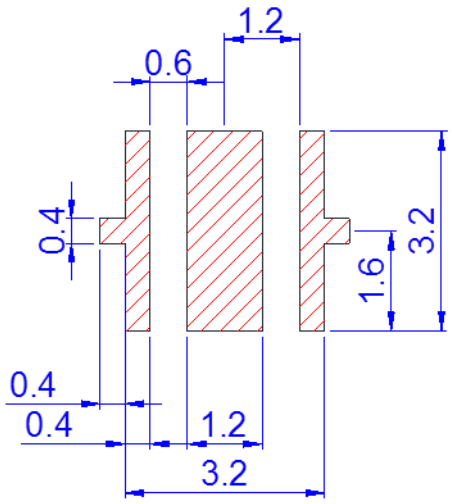
Bottom Layout



Dimension



Recommended Solder Pad



Recommended Stencil Pattern

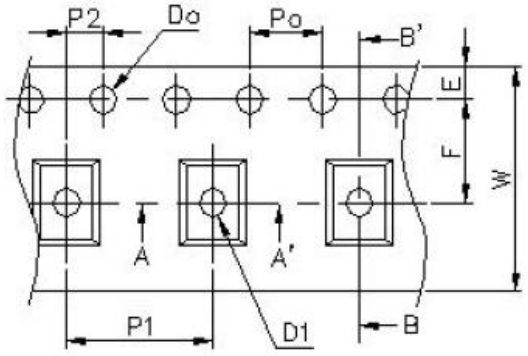
(Hatched Area is opening)

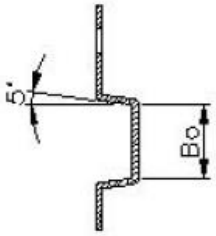
Note:

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

TAPE AND REEL

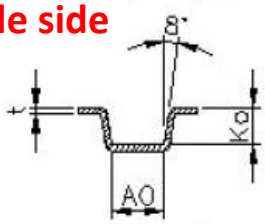
Cathode side





SEC: B–B'

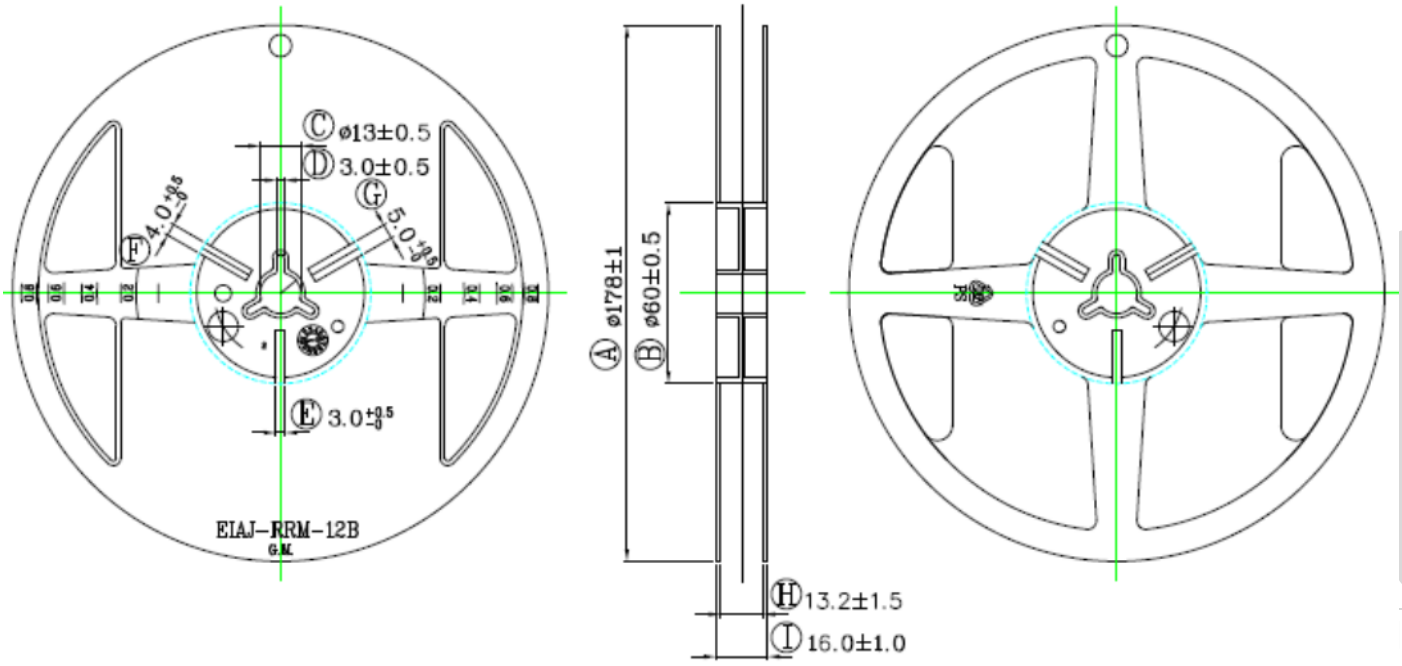
Anode side



SEC: A–A'

Item	Specification	Tol. (+/-)
W	**12.00**	± 0.20
E	**1.75**	± 0.10
F	**5.50**	± 0.05
D0	**1.50**	+0.10, -0
D1	**1.50**	± 0.10
P0	**4.00**	± 0.05
P1	**8.00**	± 0.10
P2	**2.00**	± 0.10
P0 x 10	**40.00**	± 0.20

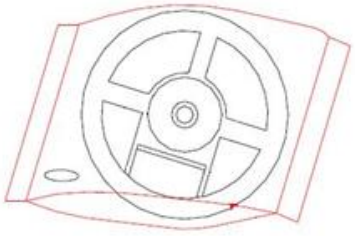
t	**0.25**	± 0.05
A0	**3.70**	± 0.10
B0	**3.75**	± 0.10
K0	**1.53**	± 0.10



Note:

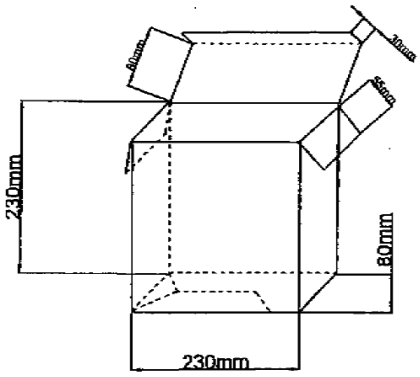
• Dimension unit: millimeter.

PACKING

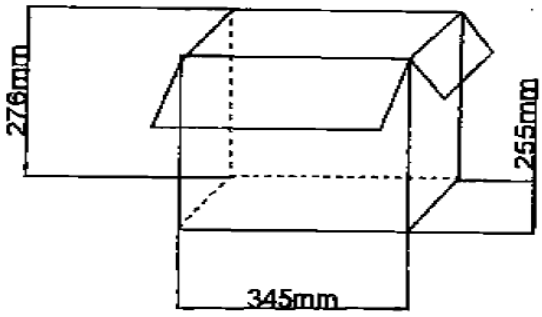


1 Anti-Static Reel in 1 Moistureproof Foil Bag.

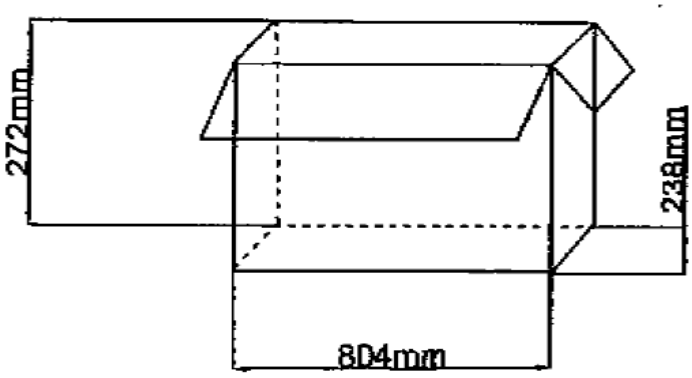
(Within Moisture Absorbent Material)



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 CA3-3K LEDs to have 1 year floor life in condition <=30C/ 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 CA3-3K 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℃ in operation.