

PRODUCT SPECIFICATION

DATE: 02/17/2006

cosmo ELECTRONICS CORPORATION	H.P LED : KLH10RGB3	NO. 61L70023	REV. 1
		SHEET 1 OF 8	

1. Features

Cosmo's high power LED packages can handle up to 350-500mA DC current, and available in 625nm, 525nm, and 470nm wavelength in mono or multiple colors. These packages are formed by bonding 3 pcs LED chips on a 20mmx20mm metal PCB. A heat sink is mechanically screwed to the board to cool down metal surface temperature below 70°C. The main features of these packages are as follows :

- Very high flux output per LED.
- Flat PCB package. On each PCB, the quantity of LED being adjustable from 1 to 3 to meet user's need. These LEDs being connected in series.
- Very long operation life time up to 100k hours attainable, by using a proper heat sink.
- $130\pm 10^\circ$ cool beam in most packages.

2. Applications

- Outdoor and indoor architectural lighting
- Reading light (car/bus/aircraft)
- Decorative/entertainment lighting
- Bollards/Security/Garden lighting
- Traffic signal
- Portable lighting (flashlight/bicycle)
- Edge-lit signs (exit sign/point of sales)
- LCD backlights
- Light guide

3. Operation and Storage Temperature

Parameter	Symbol	Value	Unit
Operation temperature	Topr	(Data to be ready, -30~+85)	°C
Storage temperature	Tstg	(Data to be ready, -40~+110)	°C

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cosmo

ELECTRONICS CORPORATION

H.P LED :

KLH10RGB3

NO. 61L70023

SHEET 2 OF 8

REV.

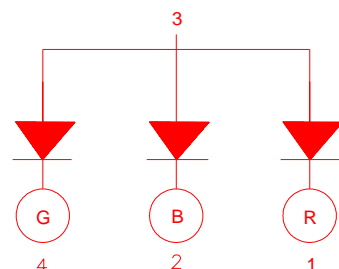
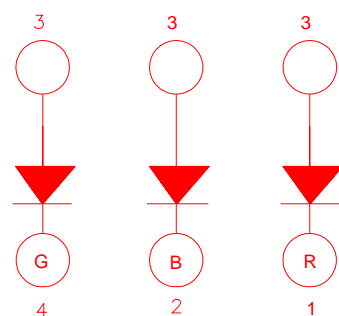
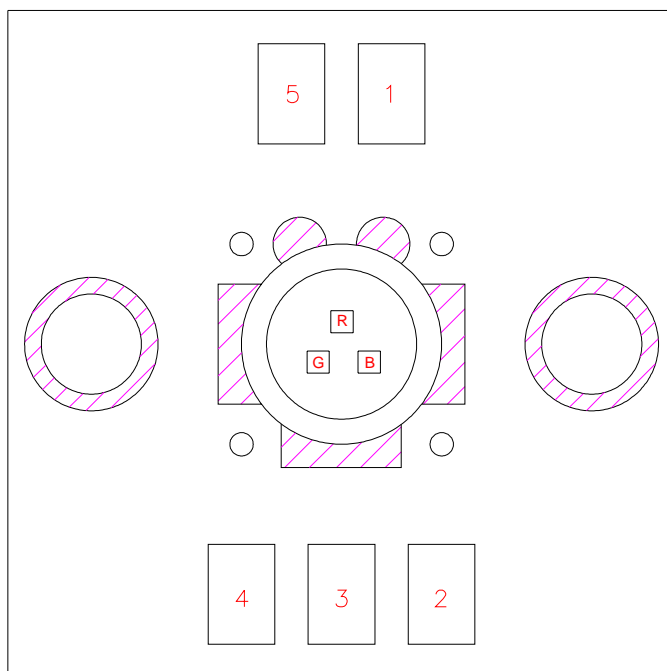
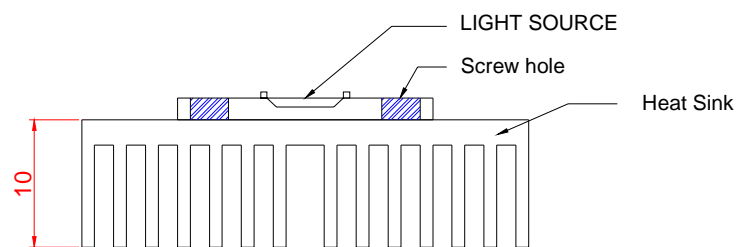
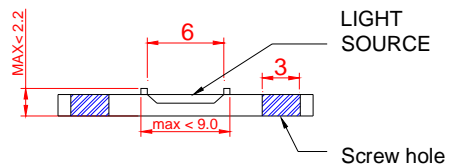
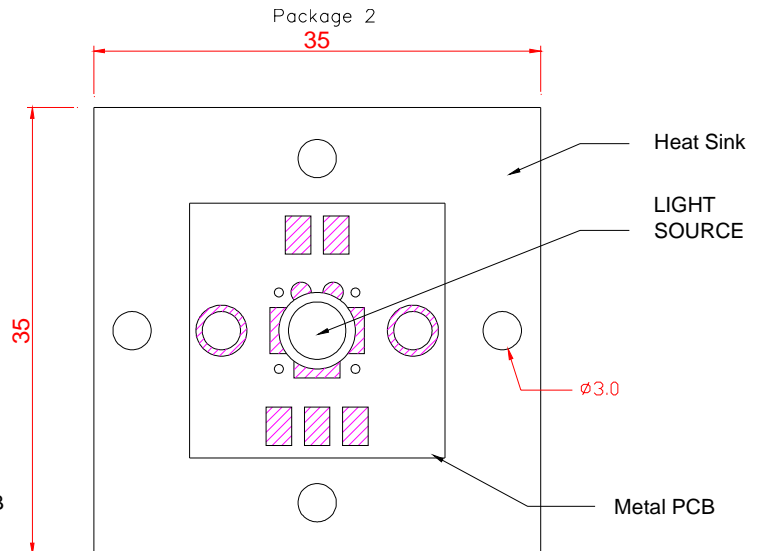
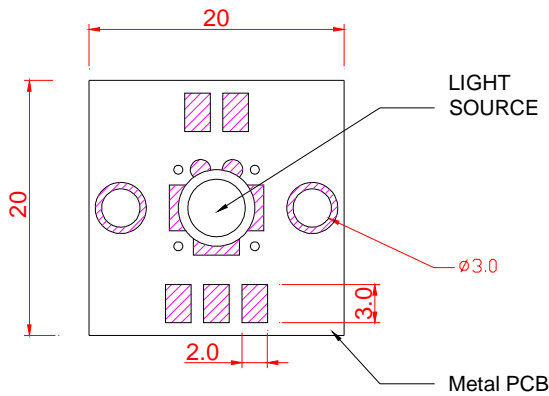
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4. Dimensions

●35(L)x35(W)x12(H)mm

Package 1

Unit=mm ±1mm



PRODUCT SPECIFICATION

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cosmo ELECTRONICS CORPORATION	H.P LED : KLH10RGB3	NO. 61L70023	REV. 1
		SHEET 3 OF 8	

5. Electrical & Optical Characteristics

At Ta = 25°C

Parameter		Symbol	PART NO	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity	Ultra Red	Iv	KLH10RGB3	12	16	-	Lm	IF = 350mA Note 1
	Green			16	20	-		
	Blue			2	5	-		
Viewing Angle		2 1/2	Ultra Red/ Blue/Green	-	130	-	deg	Note 2
Dominant Wavelength		d	Ultra Red	-	624	-	nm	IF = 350mA Note 3
			Green	-	525	-		
			Blue	-	468	-		
Spectral Line Half-Width			Ultra Red	-	20	-	nm	-
			Green	-	35	-		
			Blue	-	30	-		
Forward Voltage		VF	Ultra Red	-	2.2	2.6	V	IF = 350mA
			Green	-	3.5	4.2		
			Blue	-	3.5	4.2		
Reverse Current		Ir	Ultra Red/ Blue/Green	-	-	100	μ A	VR = 5V

Note :

1. Luminous intensity is measured with a photo detector and filter combination that follows the CIE etc - response curve. And the equipment measured luminous intensity tolerance is $\pm 5\%$.
2. 1/2 is the off - axis angle at which the luminous intensity is half the axial luminous intensity.
3. The dominant wavelength, d is derived from the CIE chromaticity diagram and represents the color of the device.
4. Caution in ESD:
Static Electricity maybe cause damages to the LED. It is recommend to use a wrist band or anti - electrostatic glove when handing the LED.

All devices, equipment and machinery must be properly grounded.

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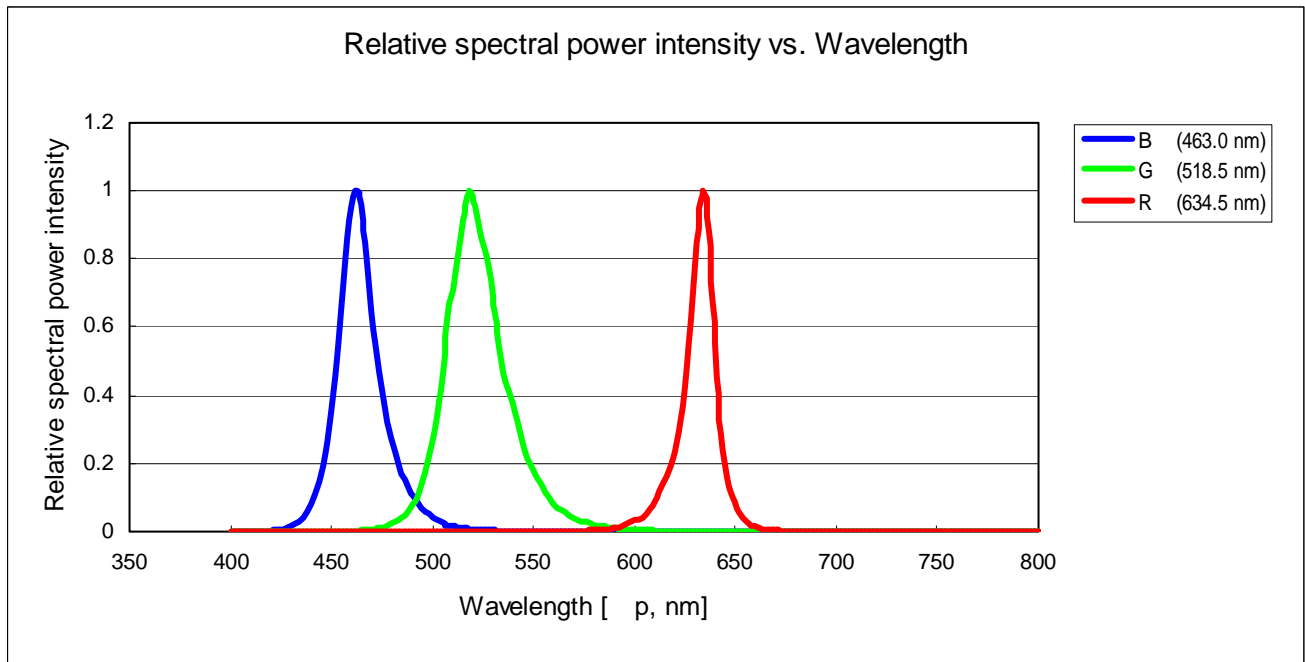
SHEET 4 OF 8

REV.

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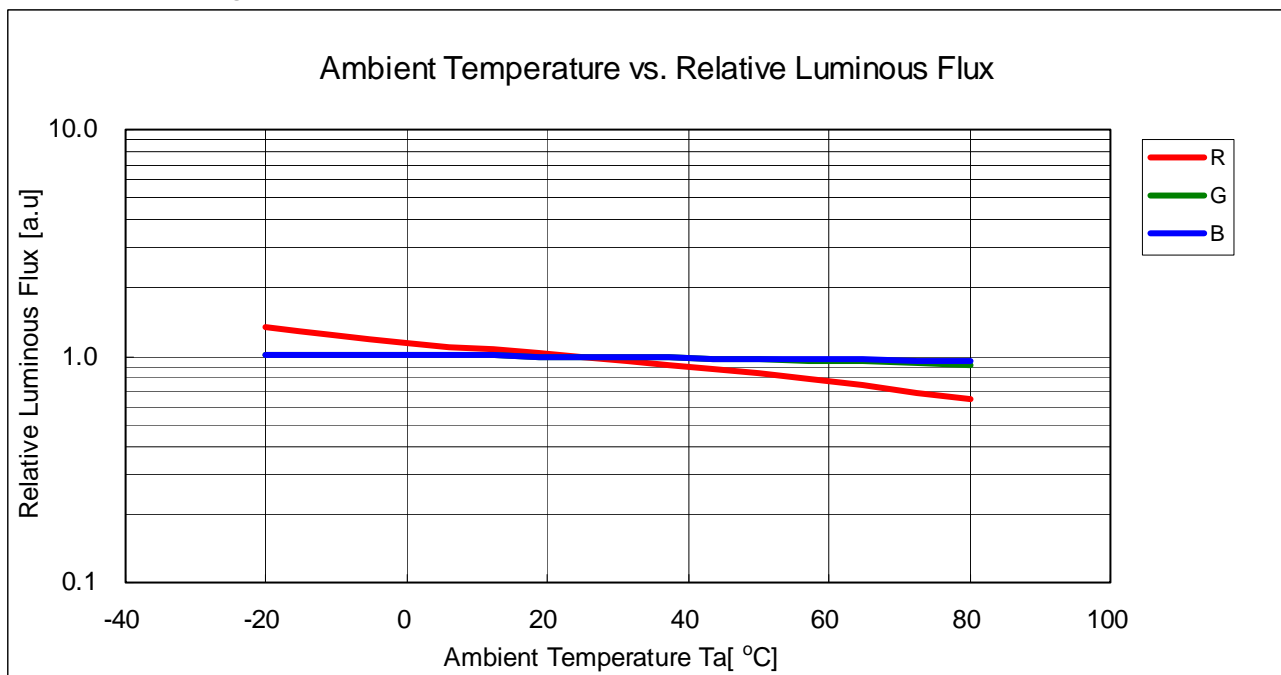
6. Wavelength Characteristics

- Relative spectral power intensity of white vs. wavelength (Ta=25°C)



7. Light Output Characteristics

- Relative light output vs. junction temperature



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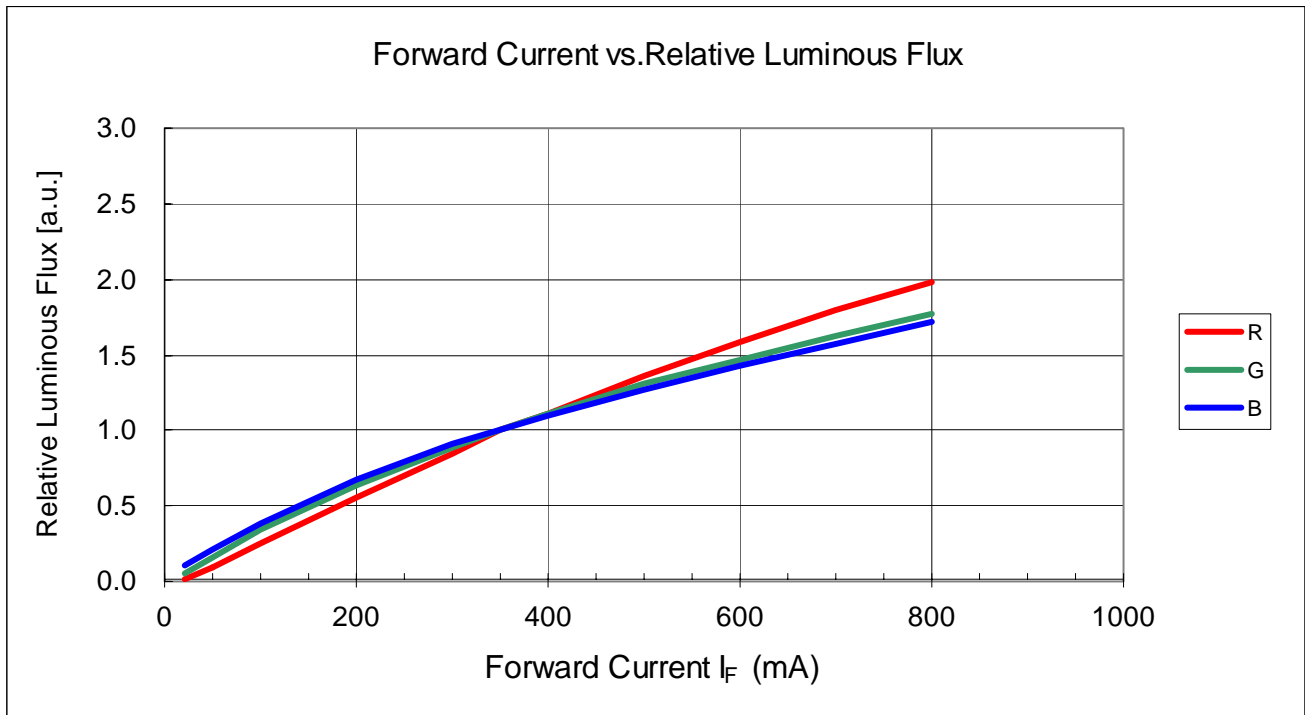
SHEET 5 OF 8

REV.

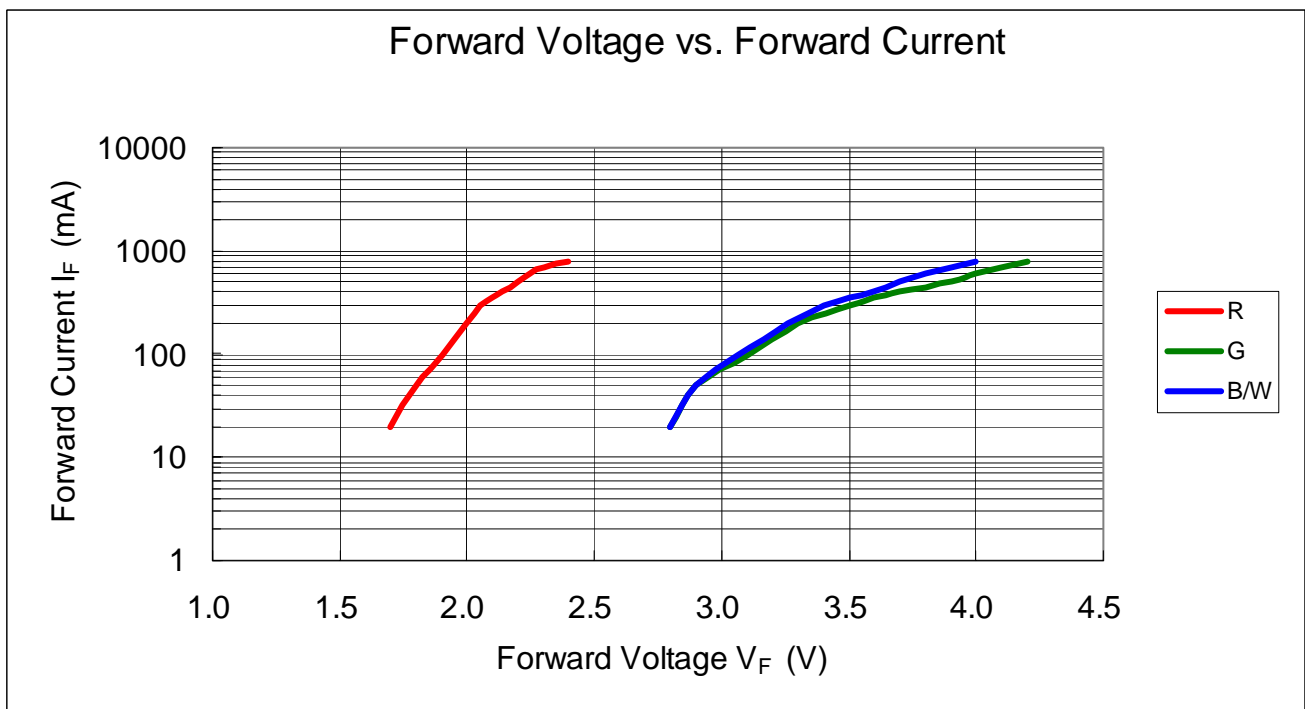
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8. Spatial Radiation Pattern

Forward current vs. relative luminous flux ($T_a=25^\circ\text{C}$)



- Forward voltage vs. forward current ($T_a=25^\circ\text{C}$)



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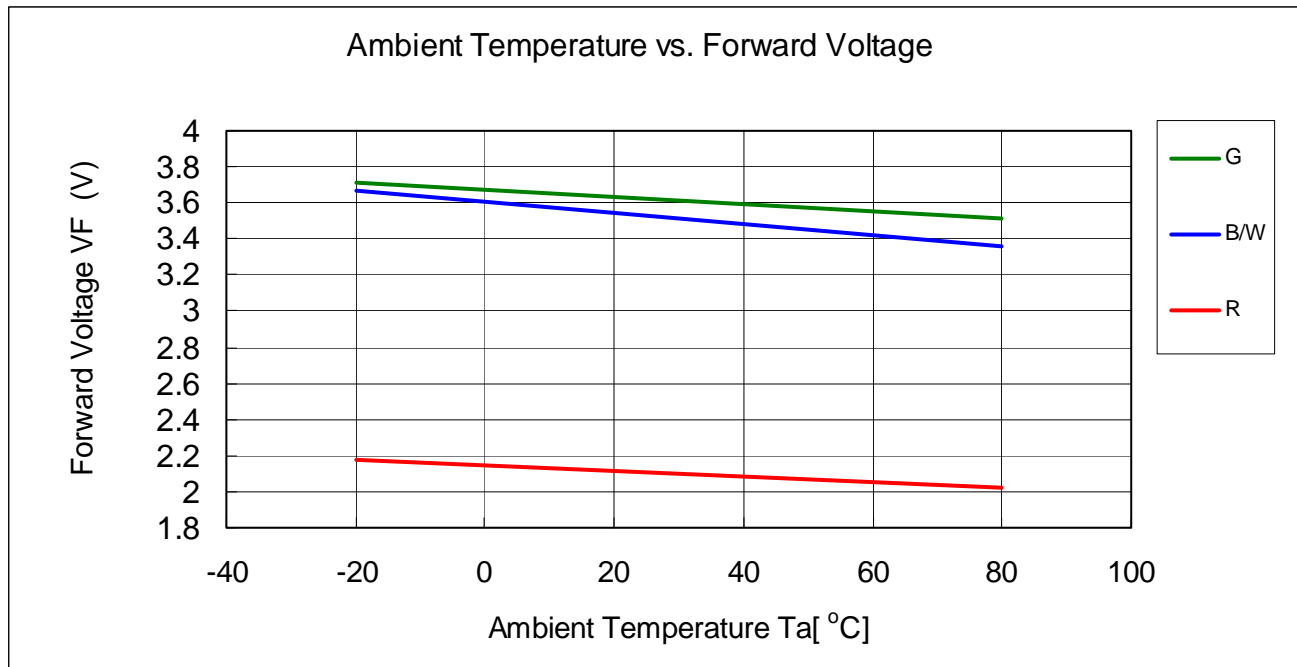
NO. 61L70023

SHEET 6 OF 8

REV.

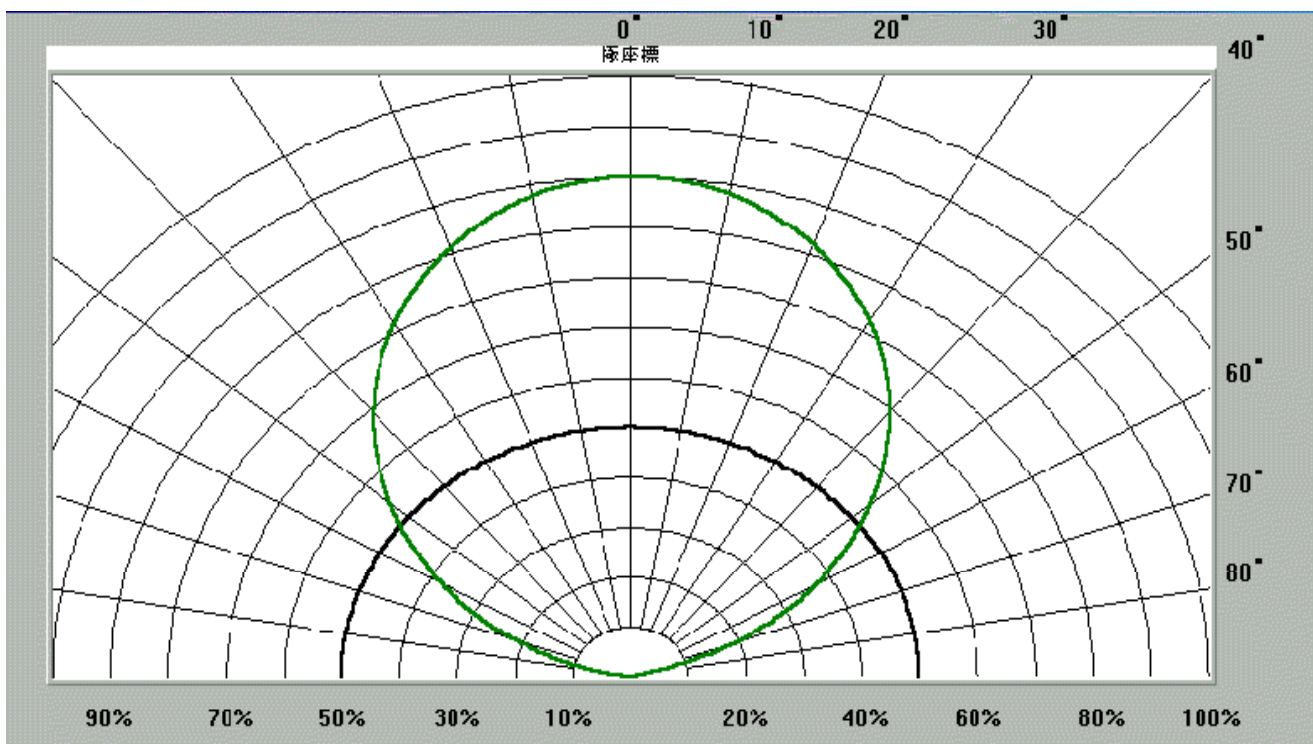
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- Forward voltage vs. ambient temperature ($I_F=350\text{mA}$)



9. Spatial Radiation Pattern

- White



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cosmo ELECTRONICS CORPORATION	H.P LED : KLH10RGB3	NO. 61L70023	REV. 1
		SHEET 7 OF 8	

10. Reliability Test

Stress Test	Stress Conditions	Stress Duration	Failure Criteria	Failure rate
1.High temperature operation life	85°C at 350mA	1,000 hrs	(1) $I_V < 50\%$ degradation (2) $V_f \text{ max} = 110\%$ initial	0/12
2.Room temperature operation life	25°C at 350 mA	1,000 hrs		0/12
3. Low temperature operation life	-40°C at 350 mA	1,000 hrs		0/12
4. Wet high temperature operation life	85°C / 60% RH at 350 mA	1,000 hrs		0/12
5.Powered temperature cycle	(1.)-45°C/18min at 350 mA (2.)Transform /42min (3.)85°C /18min at 350 mA	200 cycles		0/12
6.Temperature Cycle	(1.)-45°C /30 min (2.)25°C /5 min (3.)120°C /30 min (4.)25°C /5 min	200 cycles		0/12
7.High temperature storage	110°C	1,000 hrs		0/12
8. Low temperature storage	-40°C	1,000 hrs		0/12
9.High temperature humidity storage	60°C / 90% RH	1,000 hrs		0/12
10.Thermal shock	(1.)-40°C /20min (2.)Transform /20sec (3.)110°C /20min	200 cycles		0/12

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SHEET 8 OF 8

REV.

1

11. BIN Rank

Rank		VF(V)	IV(lm)	WD(nm)
A	R	2.0~2.6	14~20	625~640
	G	3.0~3.8	18~24	515~520
	B	3.0~3.8	3~6	460~470
B	R	2.0~2.6	14~20	625~640
	G	3.0~3.8	18~24	520~525
	B	3.0~3.8	3~6	460~470
C	R	2.0~2.6	14~20	625~640
	G	3.0~3.8	18~24	525~530
	B	3.0~3.8	3~6	460~470