PRODUCT SPECIFICATION

DATE: 03/08/2005

cosmo ELECTRONICS CORPORATION	H.P LED : KLH00BGA3	NO. 61L70020	REV. 1
		SHEET 1 OF 7	

1. Features

Cosmo's high power LED packages can handle up to 350-500mA DC current, and available in 590nm, 525nm, and 470nm wavelength in mono or multiple colors. These packages are formed by bonding 3 pcs of 40 mil LED chips on a 20mmx20mm metal PCB. A heat sink is mechanically screwed to the board to cool down metal surface temperature below 70℃. 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 ± 10^{o} 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)	℃
Storage temperature	Tstg	(Data to be ready, -40~+110)	℃

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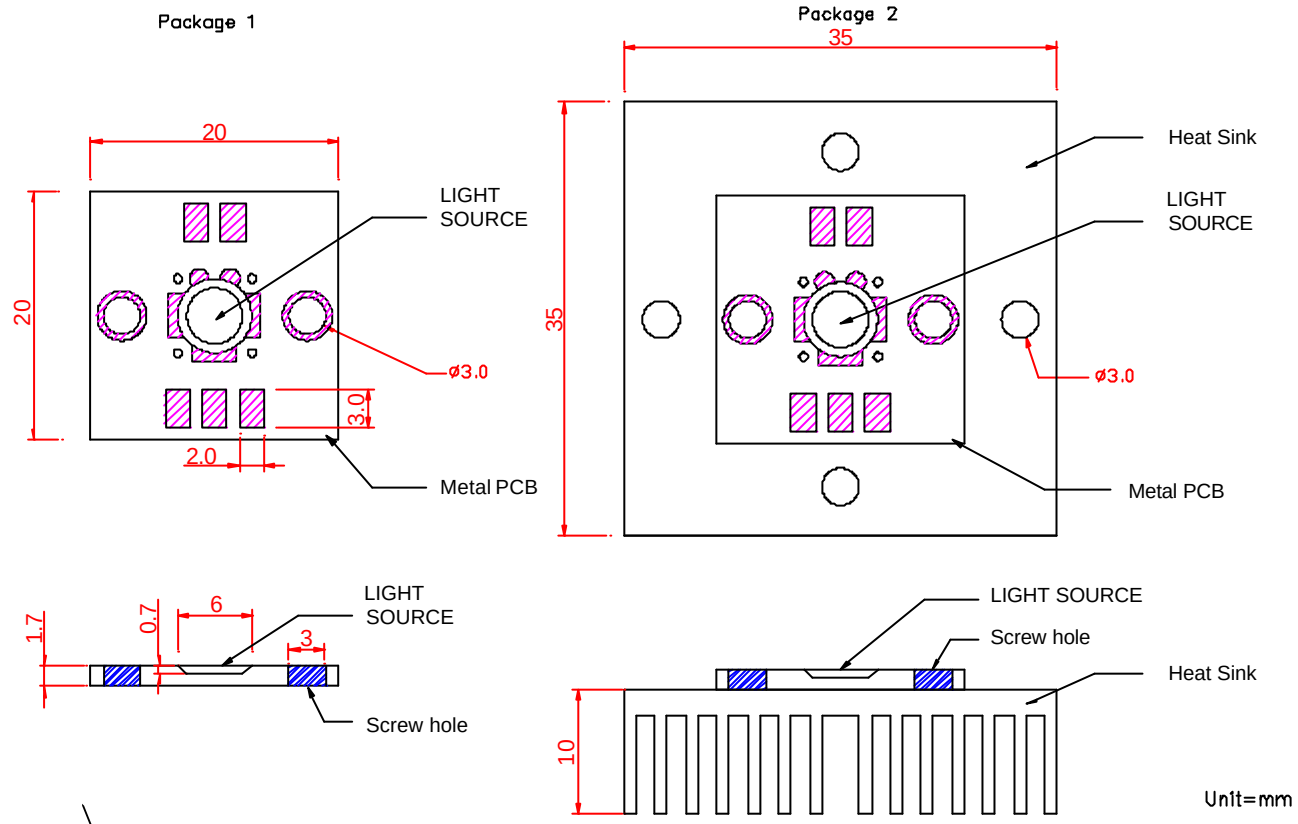
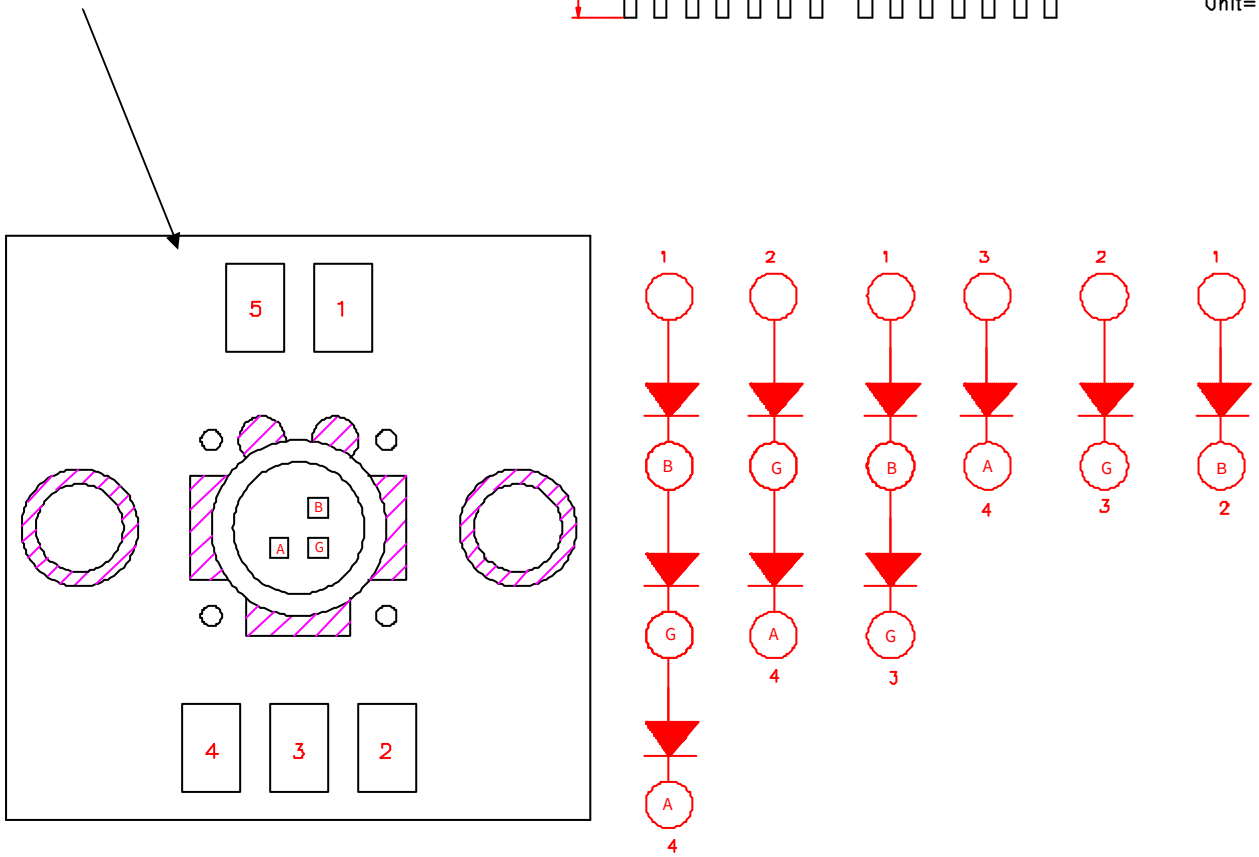
4. Dimensions

- 35(L)x35(W)x12(H)mm





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5. Electrical & Optical Characteristics

At Ta = 25°C

Parameter		Symbol	PART NO	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity	Blue	Iv	KLH00BGA3	3	5	-	Lm	IF = 350mA Note 1
	Green			16	20	-		
	Amber			14	16	-		
Viewing Angle		2θ 1/2	Ultra Red/ Blue/Green	-	130	-	deg	Note 2
Dominant Wavelength		λd	Blue	-	470	-	nm	IF = 350mA Note 3
			Green	-	530	-		
			Amber	-	590	-		
Spectral Line Half-Width		Δλ	Blue	-	30	-	nm	-
			Green	-	35	-		
			Amber	-	20	-		
Forward Voltage		VF	Blue	-	3.6	4	V	IF = 350mA
			Green	-	3.6	4		
			Amber	-	2.4	2.6		
Reverse Current		Ir	Amber / Blue/Green	-	-	100	μA	VR = 5V

Note :

1. Luminous intensity is measured with a photo detector and filter combination that follows the CIE ete - response curve. And the equipment measured luminous intensity torellance is ±5%.
2. θ 1/2 is the off - axis angle at which the luminous intensity is half the axial luminous intensity.
3. The dominant wavelength, λd 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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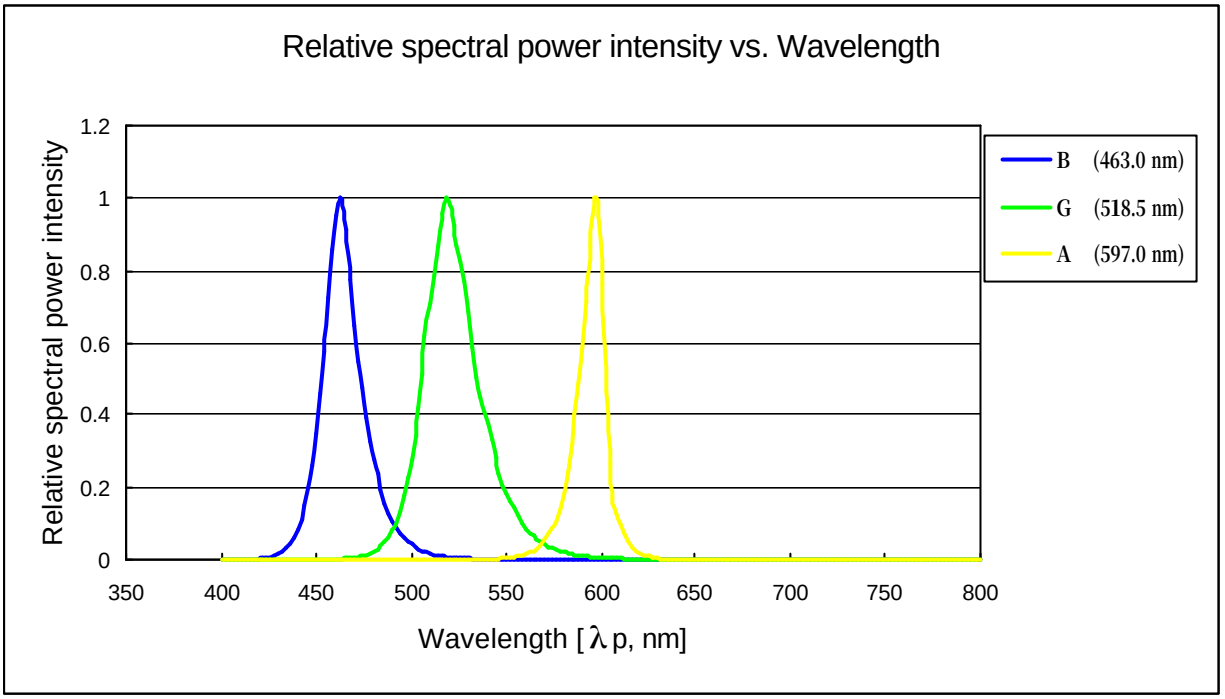
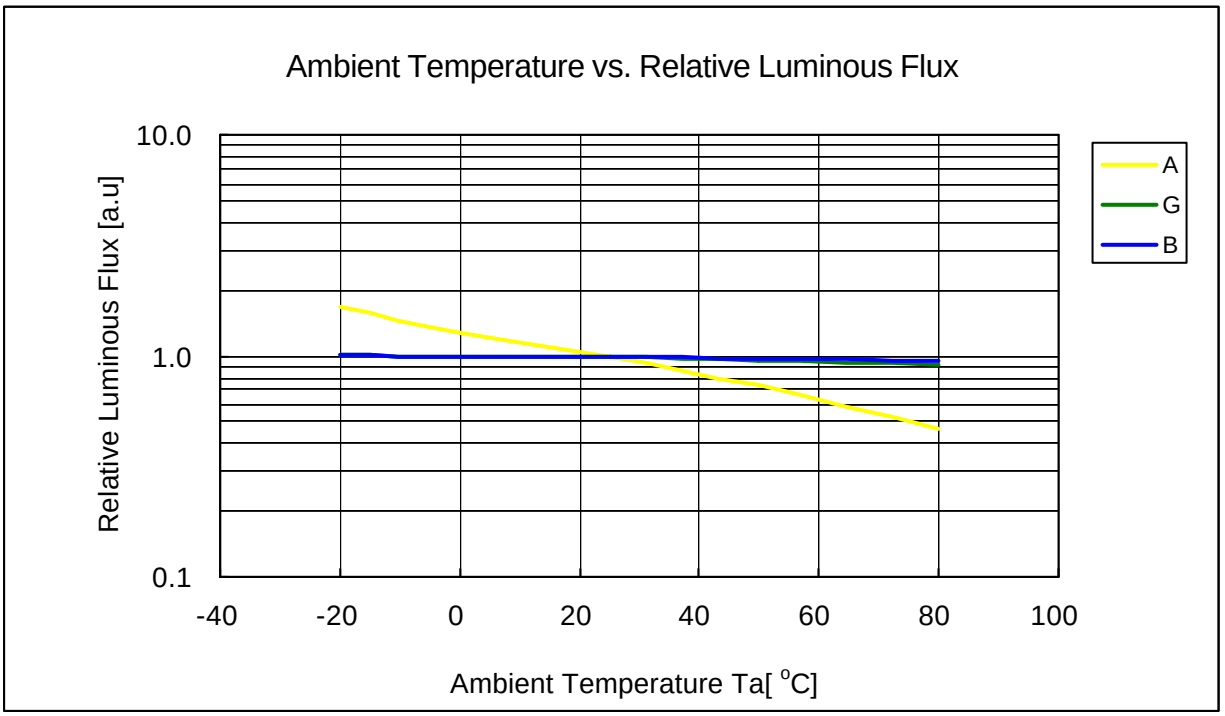
6. Wavelength Characteristics

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



7. Light Output Characteristics

- Relative light output vs. junction temperature



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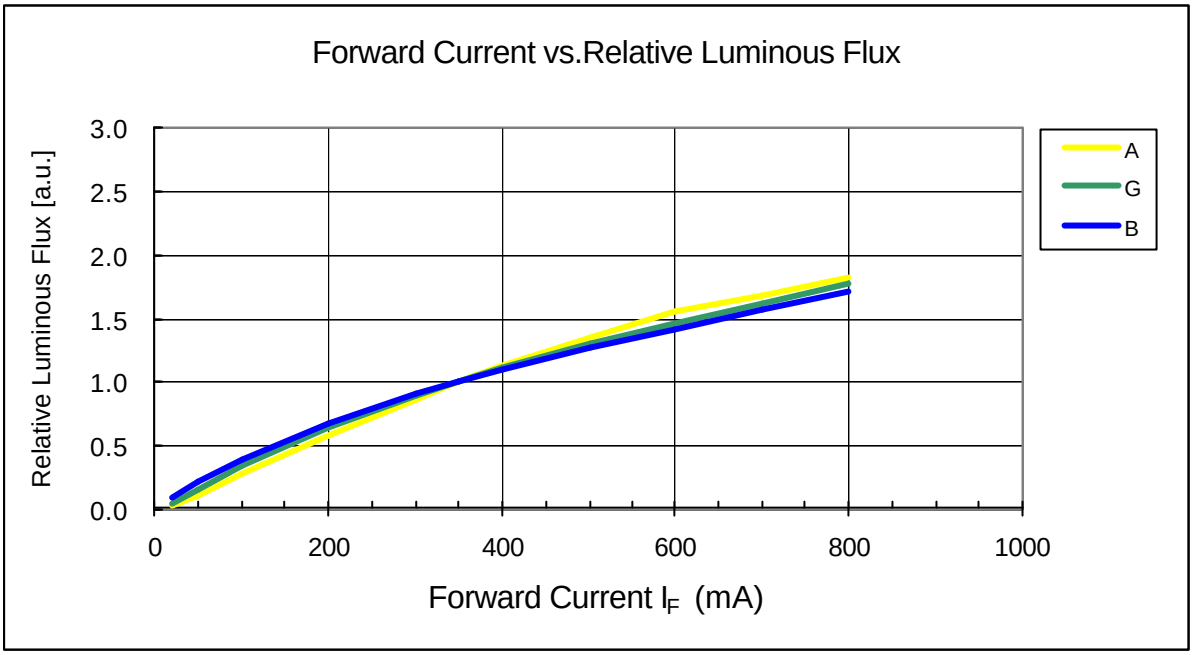
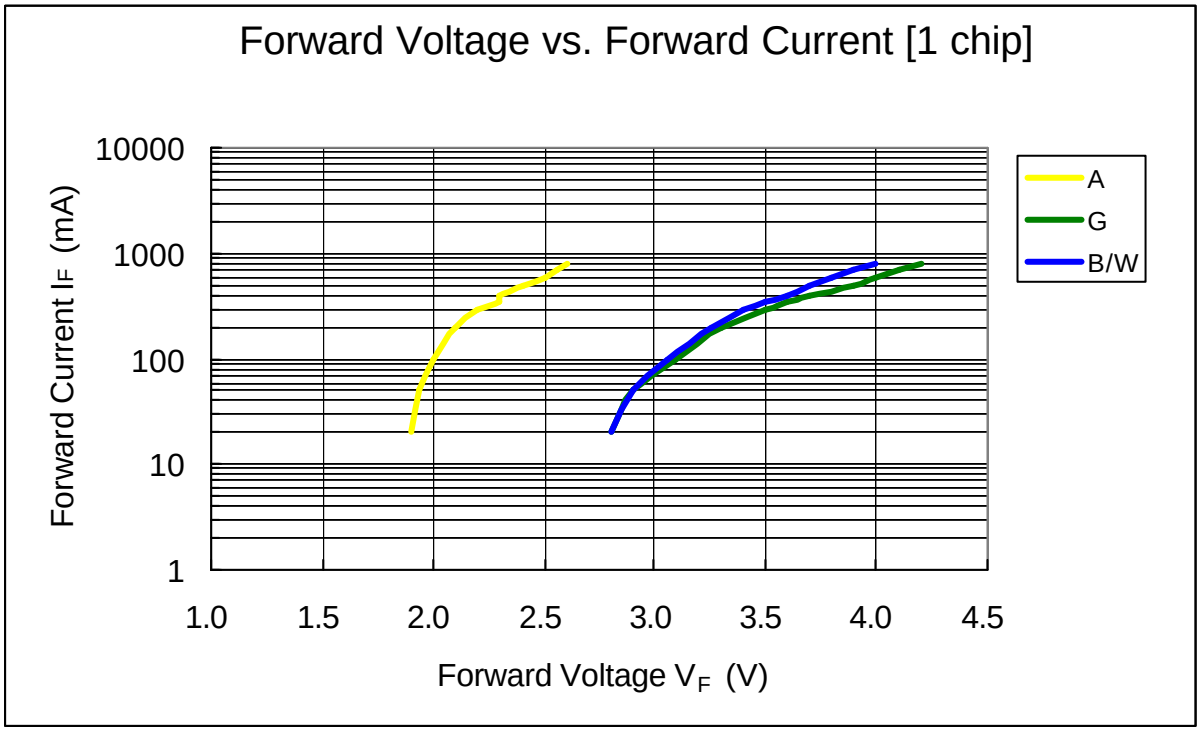
8. Spatial Radiation Pattern

●Forward current vs. relative luminous flux (Ta=25℃)



● Forward voltage vs. forward current (Ta=25℃)



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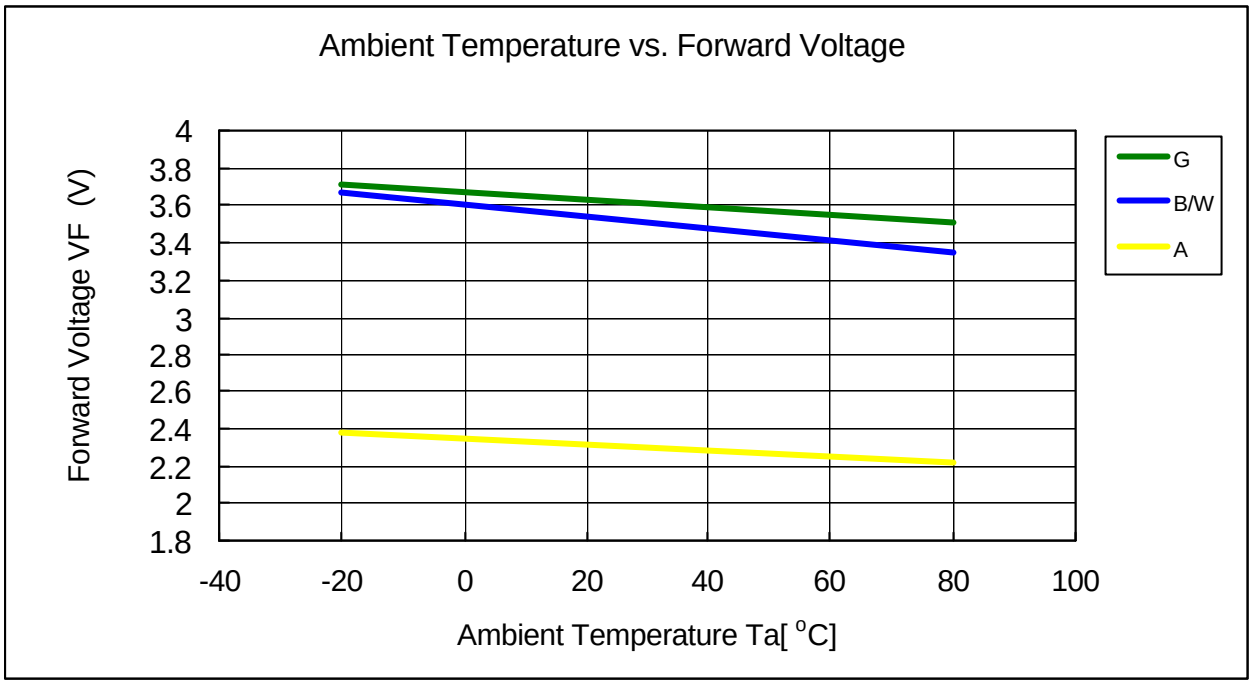
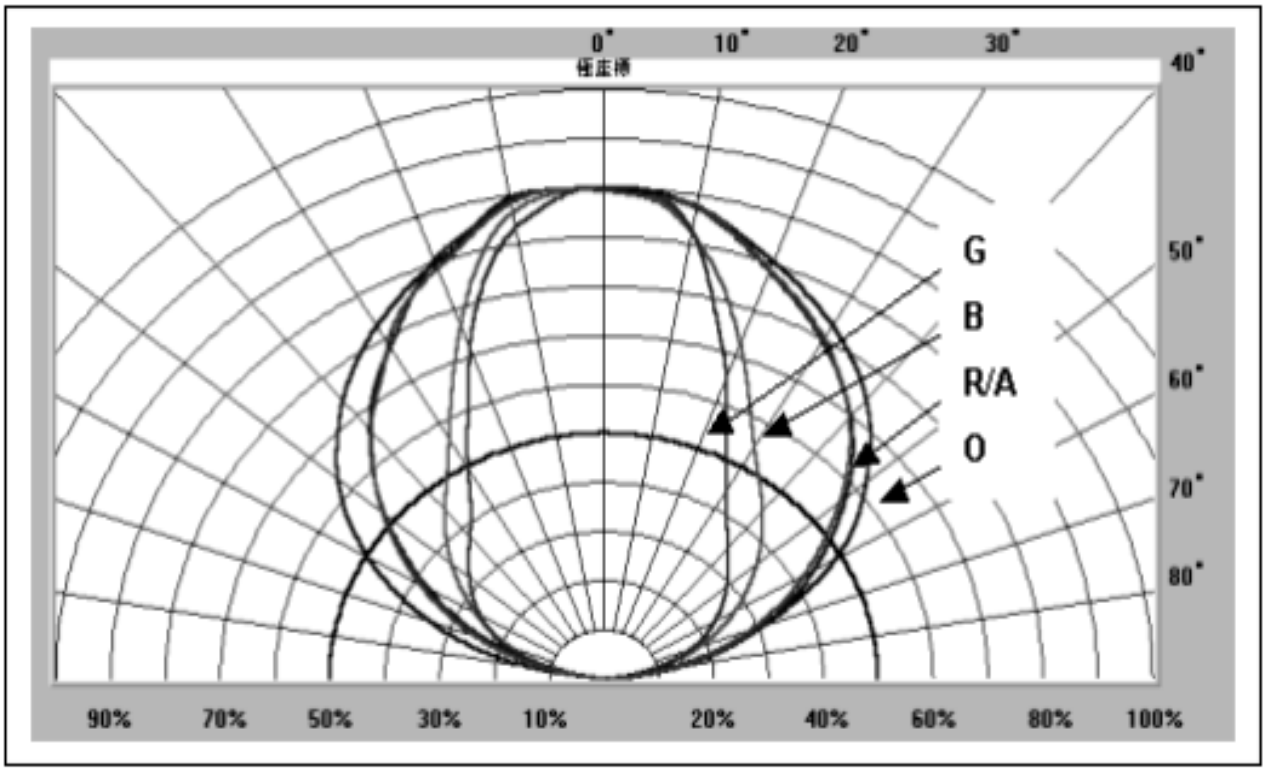
- Forward voltage vs. ambient temperature (I_F=350mA)



9. Spatial Radiation Pattern

- **1 Chip/PCB**



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10. Reliability Test

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