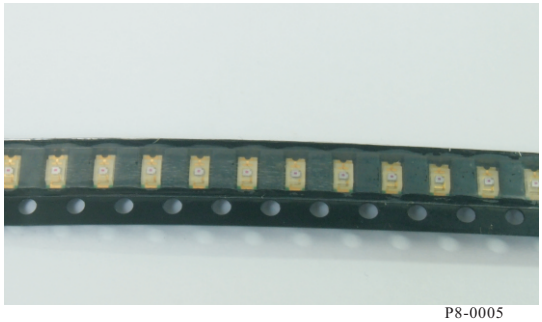
Visible Light Sensor

(0.15uA per lux)

GBD-A2C



P8-0005

Description

The GBD-A2C is a low cost visible light sensor, with a current output which is directly proportional to the light level. It has a built in optical filter to provide a response which is close to the human eye, or “photopic”.

The output current can be converted to a voltage by connecting it in series with a resistor. The dynamic range is determined by the external resistor and power supply (10K and 5V gives a range of 0 to over 2500 Lux, but it can be over 6000 Lux with a 1K resistor). The internal dark current cancellation enables high accuracy over the full temperature range, even at low light levels.

Features

- RoHS compliant and complete CdS replaceable
- High IR rejection
- Current output highly linear V.S. light level
- Near human eye photopic response
- Dark-current cancellation
- Temperature stable

Applications

- Dawn/dusk sensing
- Surveillance Camera
- Display backlighting in LCD monitors
- Street light

Product Summary

Usable Light Range	Typ I_{PSS}(uA)	Φ(deg)	λ0.5(nm)
0 ~ 6000 Lux	250 (Rss=10K)	120	400 to 700

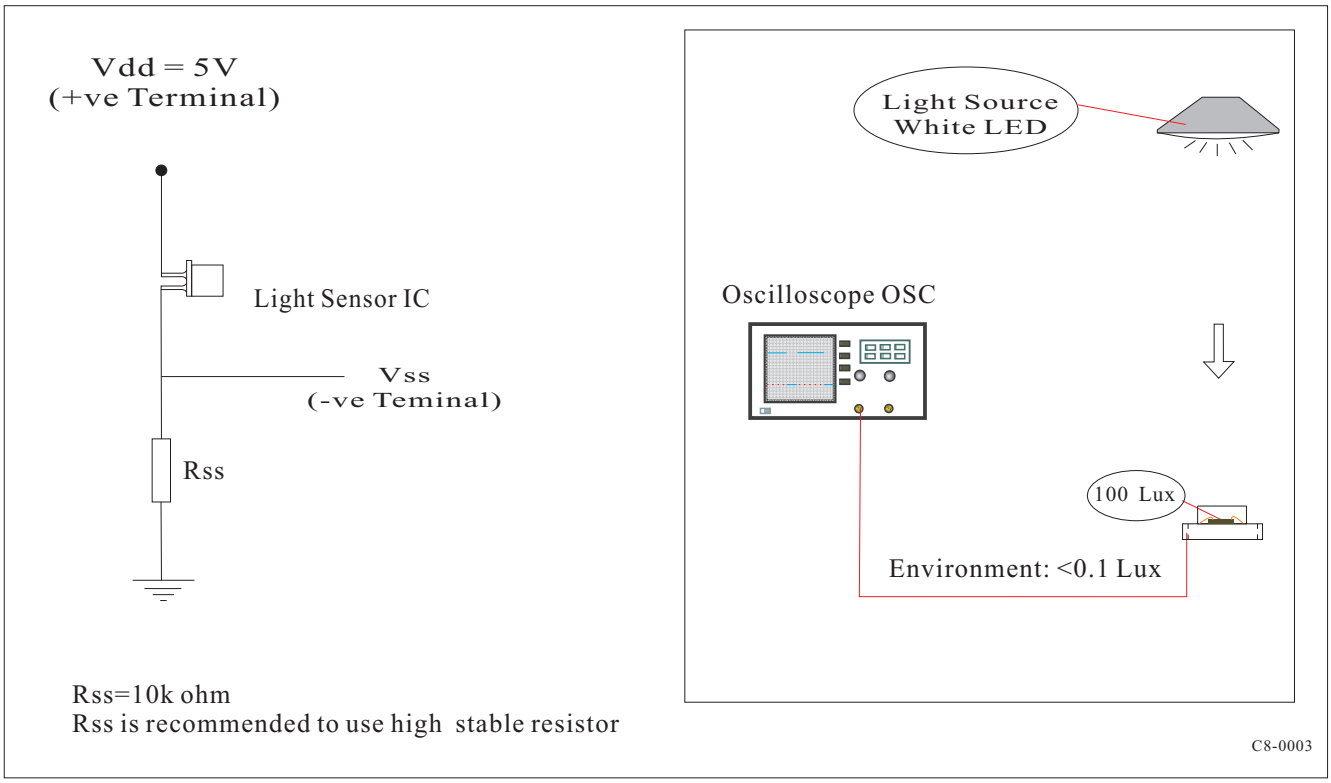
Ordering Information

Packaging	Each Bulk	MOQ	Package Form
Bulk	3000 PCS	1000 PCS	5mm (T1$\frac{3}{4}$)

Absolute Maximum Ratings(Ta=25°C)

Parameter	Test Condition	Symbol	Rating	Unit
Supply Input Voltage		V_{dd}	-0.3 to 10	V
Supply Current	Visible Light	I_{ss}	Internally Limited	mA
Operating Temperature		T_{amb}	-40 to +85	°C
Storage Temperature		T_{stg}	-40 to +100	°C

■ Test Circuit



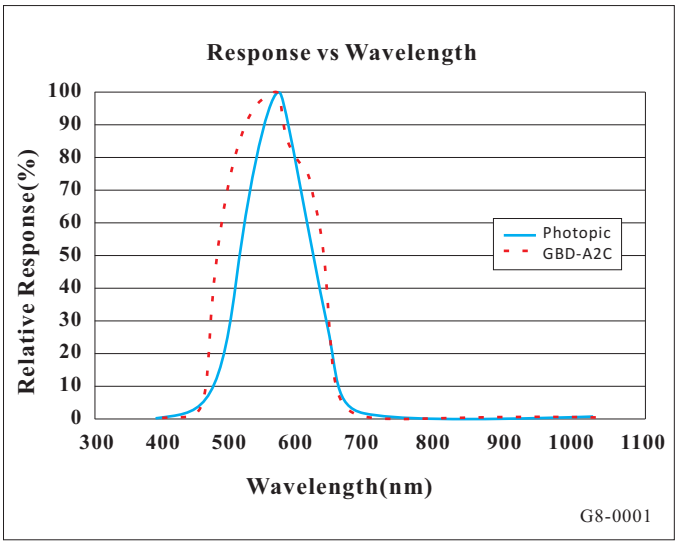
Rss=10k ohm
Rss is recommended to use high stable resistor

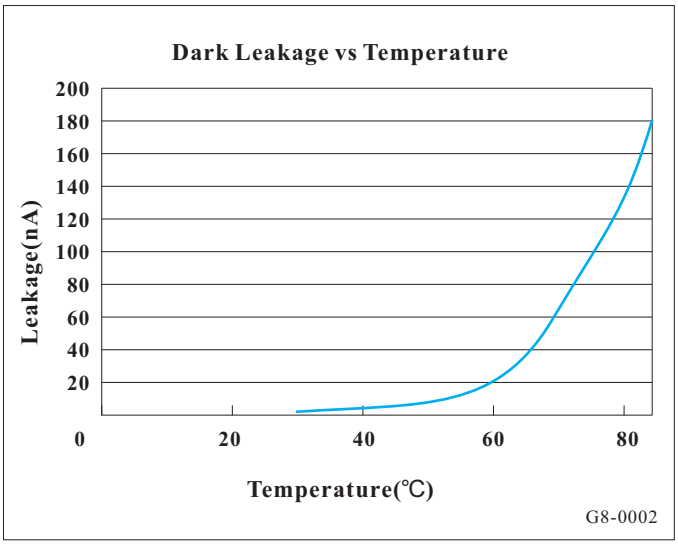
■ Electrical Specification

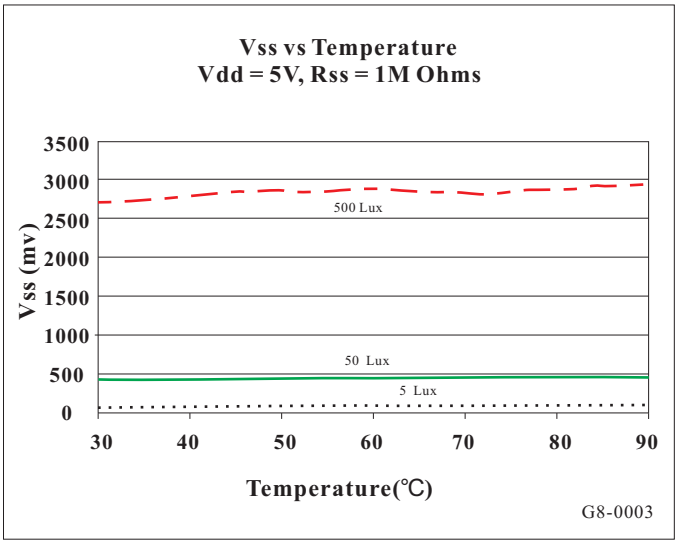
The following parameters apply over the operating temperature -40℃ to +85℃,and with Rss=10K Ohms,Vdd=5V,as per C8-0001

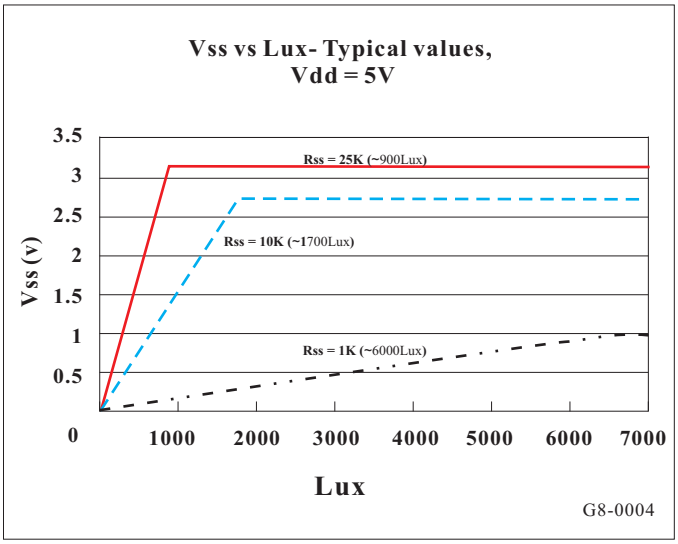
Parameter	Symbol	Min	Typ	Max	Units	Test Conditions
Infra Red Response			1	5	% of peak	900 nm
Minimum operational voltage	Vdd-Vss		2.5 1.5		v v	Iss = 250 uA Iss = 50 uA
Light Current +/-50%	Iss	150 75 7.5	300 150 15	450 225 22.5	uA uA uA	2000 Lux 1000 Lux 100 Lux
Dark Current	I(dark)		<1 150		nA nA	0 Lux, Ta = 25℃ 0 Lux, Ta = 85℃
Gain linearity		-10		10	%	
Peak Spectral Response			520		nm	
Sensitive Area			0.054		mm²	

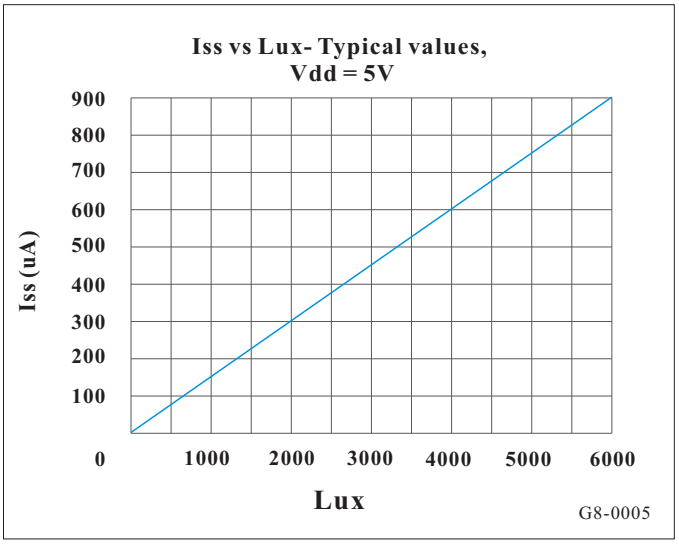
▪ Charts

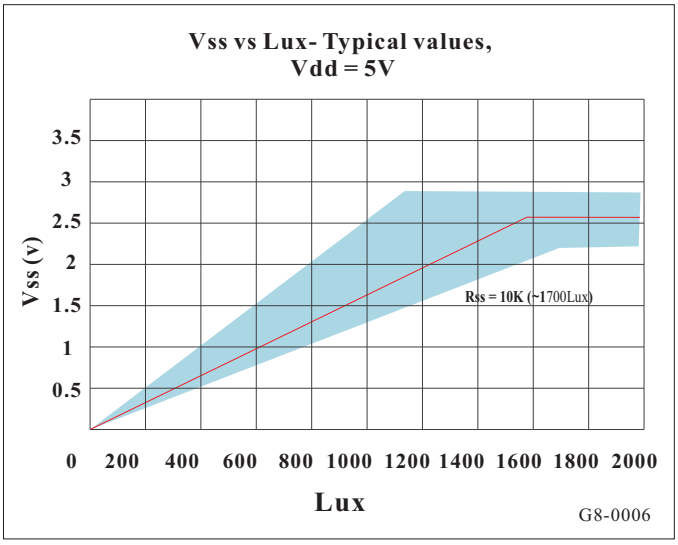

Response vs Wavelength
Relative Response(%)
100
90
80
70
60
50
40
30
20
10
0
300
400
500
600
700
800
900
1000
1100
Wavelength(nm)
Photopic
GBD-A2C
G8-0001


Dark Leakage vs Temperature
Leakage(nA)
200
180
160
140
120
100
80
60
40
20
0
20
40
60
80
Temperature(℃)
G8-0002

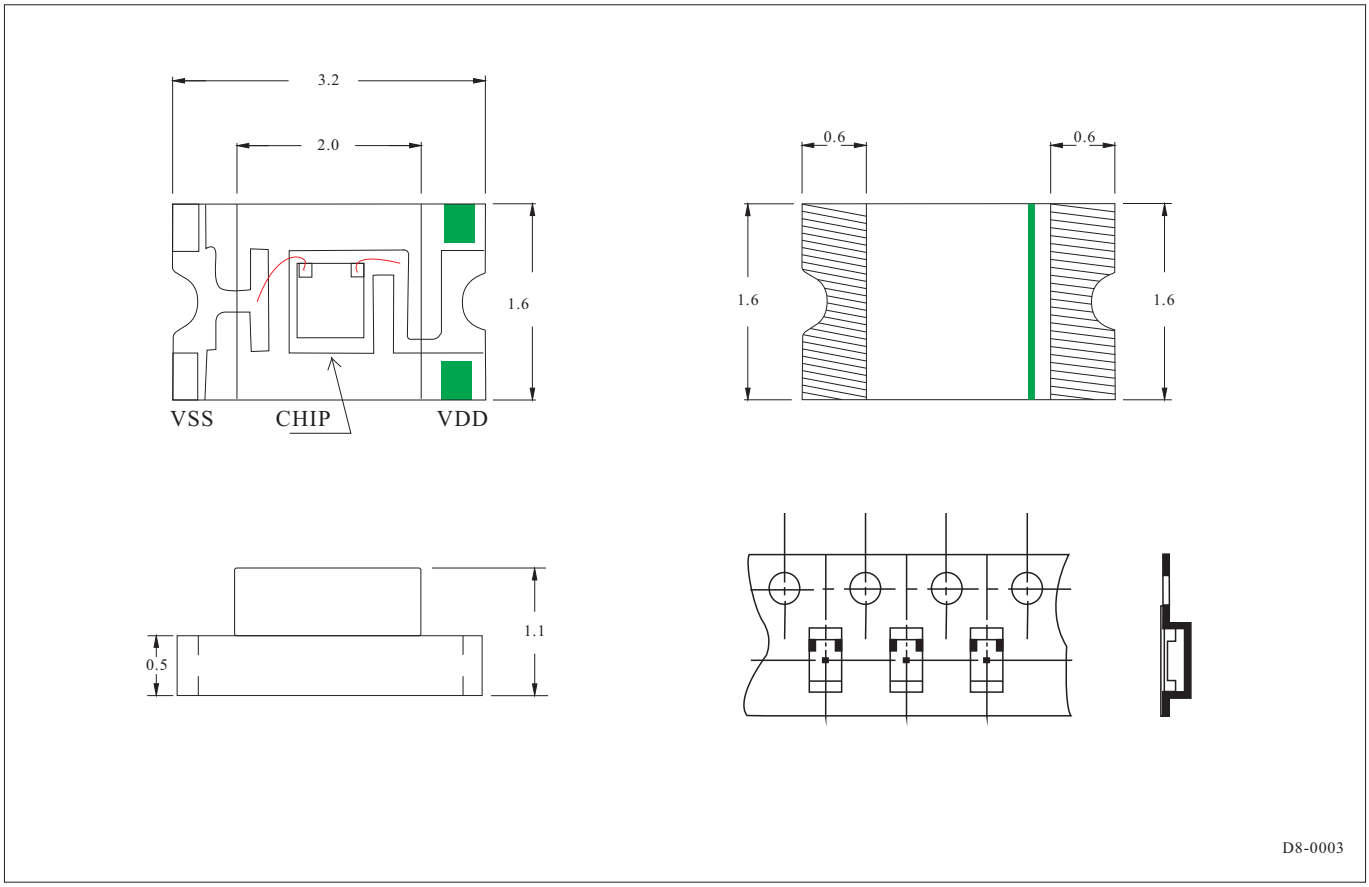

Vss vs Temperature
Vdd = 5V, Rss = 1M Ohms
Vss (mv)
3500
3000
2500
2000
1500
1000
500
0
500 Lux
50 Lux
5 Lux
30
40
50
60
70
80
90
Temperature(℃)
G8-0003


Vss vs Lux- Typical values,
Vdd = 5V
Vss (v)
3.5
3
2.5
2
1.5
1
0.5
0
Rss = 25K (~900Lux)
Rss = 10K (~1700Lux)
Rss = 1K (~6000Lux)
1000
2000
3000
4000
5000
6000
7000
Lux
G8-0004

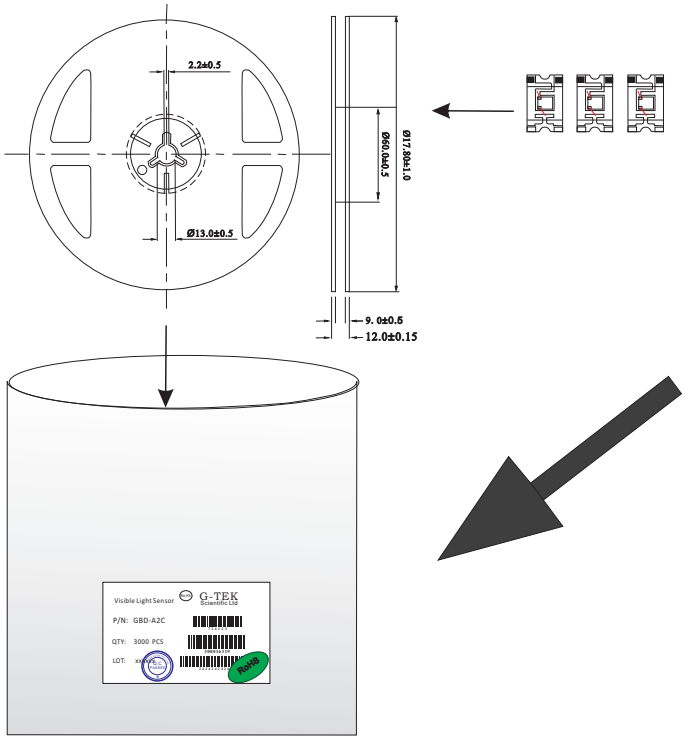

Iss vs Lux- Typical values,
Vdd = 5V
Iss (uA)
900
800
700
600
500
400
300
200
100
0
1000
2000
3000
4000
5000
6000
Lux
G8-0005

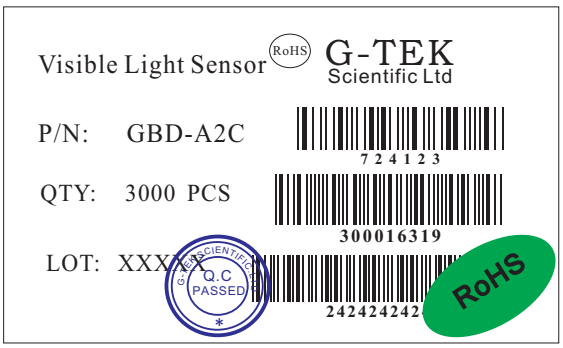

Vss vs Lux- Typical values,
Vdd = 5V
Vss (v)
3.5
3
2.5
2
1.5
1
0.5
Rss = 10K (~1700Lux)
0
200
400
600
800
1000
1200
1400
1600
1800
2000
Lux
G8-0006

▪ Dimensions

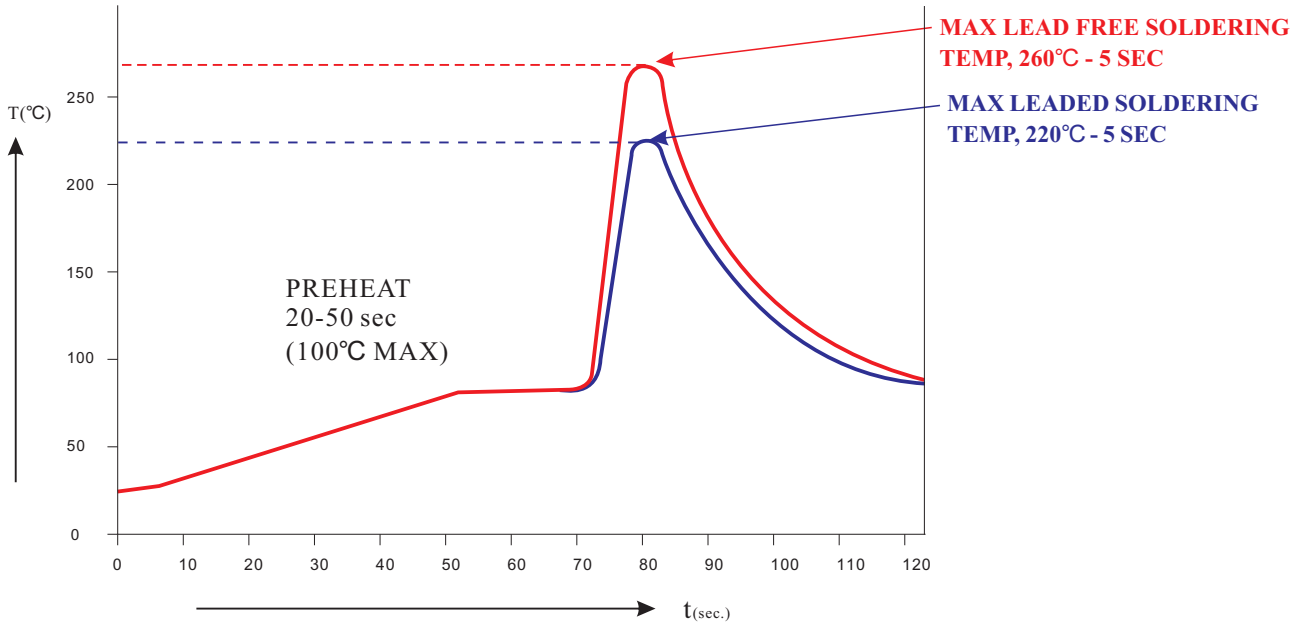


▪ Packaging and Labeling Plan





■ Wave Solder Profile



Recommended Lead Free Wave Soldering Profile	
Preheat Temperature: 100℃ Max	Peak Temperature: 260℃ Max.
Preheat Time: 20~50 Seconds	Solder Time Above 217℃: 5 Seconds Max.
Note: Turn Off top heater at preheat to prevent the lamp body directly exposed to the heat source.	

■ Disclaimer

All PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

■ Material Category Policy

We declare that this part is ROHS 2002/95/EC compliant, based on our understanding of the directive.

This part is manufactured where the banned substances would not be used during processing .

G-Tek Scientific Ltd will perform periodic screening based on the determined risks, and are developing procedures as part of our management system to ensure compliance.