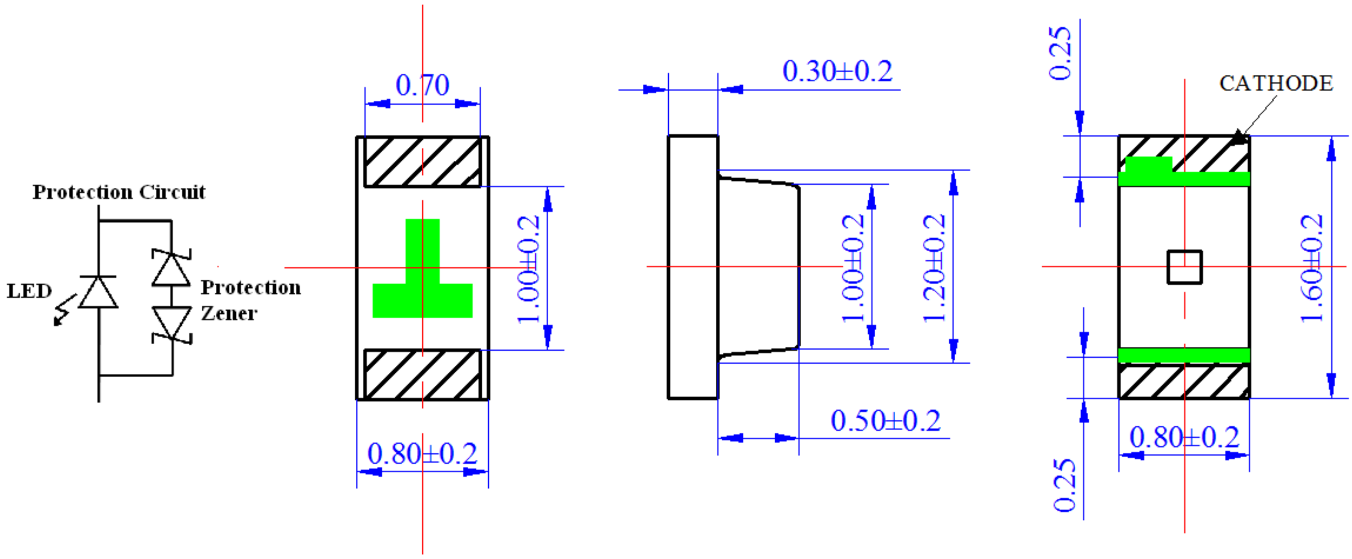
0603 Package Chip LEDs

MODEL NO : EC02 – 0603QWC/S5Ag/QN

Features

- Package in 8mm tape on 7″ diameter reel.
- Compatible with automatic placement equipment.
- Compatible with infrared and vapor phase reflow solder process.
- ESD protection.
- Pb-free.
- The product itself will remain within RoHS complaint version.

Package Dimensions



Part No.	Chip		Lens Color
	Material	Emitted color	
EC02-0603QWC/S5Ag/QN	InGaN	White	Yellow Diff.

Note:

1. All dimensions are in millimeters.
2. Tolerance is ±0.1mm unless otherwise noted.

Absolute maximum Ratings (Ta = 25℃)

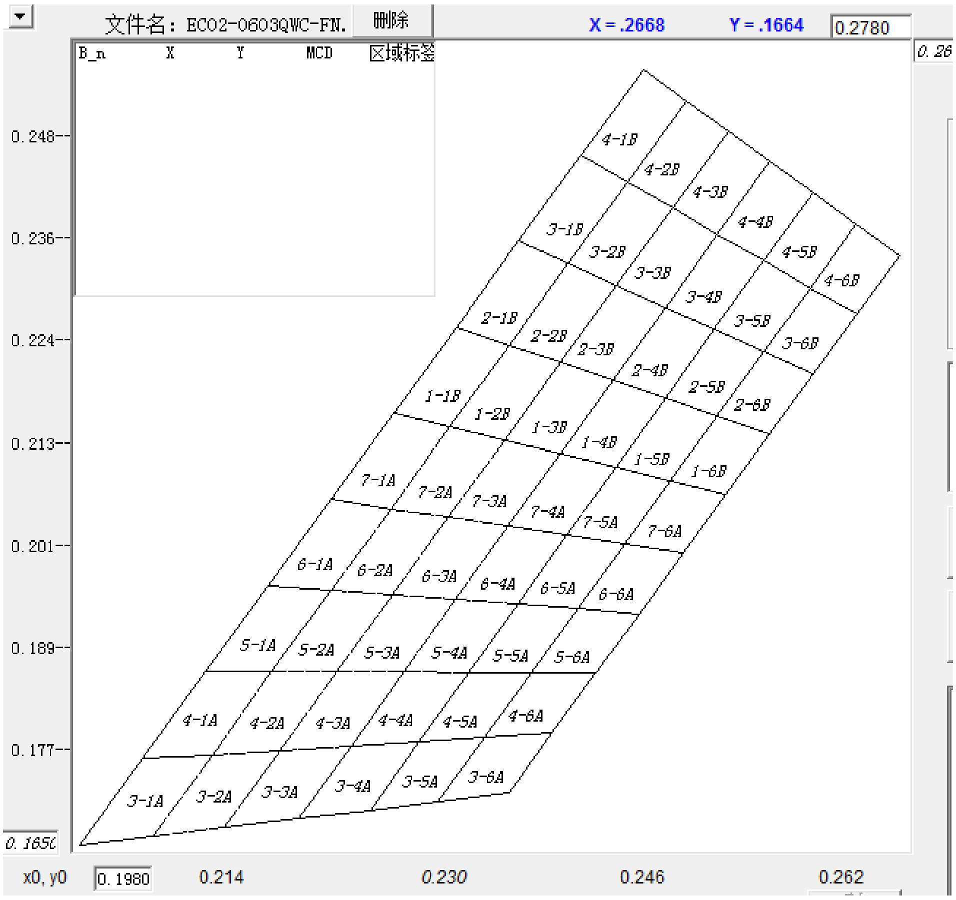
Parameter	Symbol	Max	Unit
Forward current	I_F	30	mA
Reverse voltage	V_R	5	V
Power dissipation	Pd	120	mW
Peak forward current	IFP	100	mA
Operating temperature	Topr	-30℃ ~ 85℃	
Storage temperature	Tstg	-40℃ ~ 90℃	
Soldering temperature	Tsol	260℃ for 5 Seconds	

★Peak Forward Current Pulse width=100us,Duty cycle=1%

Electro / Optical Characteristics (Ta = 25℃)

Parameter	Symbol	Condition	Min	Tpy	Max	Unit
Luminous Intensity	Iv	IF = 5mA	180	250	----	Mcd
Forward Voltage	V_F		2.6	2.9	3.1	V
Reverse Current	I_R	V_R = 4V	----	----	0.5	μA
View Angle	2θ 1/2	IF = 5mA	----	120	----	deg
Chromaticity Coordinates	X		----	0.24	----	
	Y		----	0.21	----	

CIE Chromaticity Diagram



Classifying standard

BIN	CIE	Bottom	Left	Top	Right	BIN	CIE	Bottom	Left	Top	Right
5-3A	X	0.2295	0.2231	0.2284	0.2345	5-4A	X	0.2357	0.2295	0.2345	0.2404
	Y	0.1861	0.1861	0.1952	0.1946		Y	0.1861	0.1861	0.1946	0.1941
6-2A	X	0.2284	0.2226	0.2283	0.2338	6-3A	X	0.2345	0.2284	0.2338	0.2395
	Y	0.1952	0.1957	0.2053	0.2043		Y	0.1946	0.1952	0.2043	0.2032
6-4A	X	0.2404	0.2345	0.2395	0.2451	7-2A	X	0.2338	0.2283	0.2339	0.2392
	Y	0.1941	0.1946	0.2032	0.2022		Y	0.2043	0.2053	0.2148	0.2133
7-3A	X	0.2395	0.2338	0.2392	0.2445	7-4A	X	0.2451	0.2395	0.2445	0.2498
	Y	0.2032	0.2043	0.2133	0.2117		Y	0.2022	0.2032	0.2117	0.2101
1-2B	X	0.2392	0.2339	0.2396	0.2445	1-3B	X	0.2445	0.2392	0.2445	0.2495
	Y	0.2133	0.2148	0.2244	0.2224		Y	0.2117	0.2133	0.2224	0.2203
1-4B	X	0.2498	0.2445	0.2495	0.2545	2-2B	X	0.2445	0.2396	0.2452	0.2498
	Y	0.2101	0.2117	0.2203	0.2182		Y	0.2224	0.2244	0.2340	0.2314
2-3B	X	0.2495	0.2445	0.2498	0.2545	2-4B	X	0.2545	0.2495	0.2545	0.2592
	Y	0.2203	0.2224	0.2314	0.2288		Y	0.2182	0.2203	0.2288	0.2262

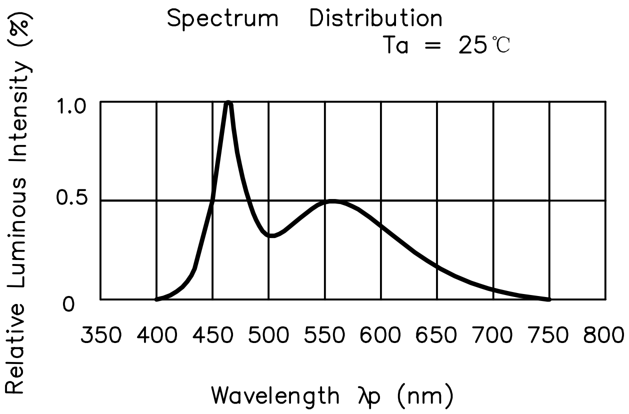
Bin Range Of Luminous Intensity

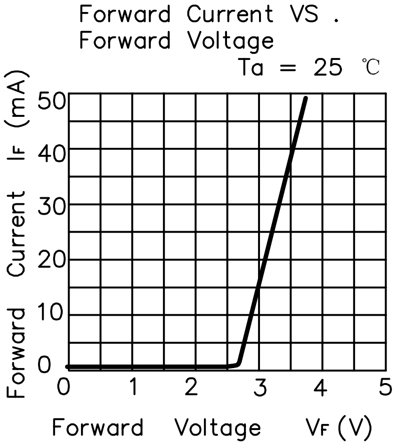
Bin	Min	Max	Unit	Condition
Ra1	180.0	200.0	mcd	I_F=5mA
Ra2	200.0	225.0		
Rb1	225.0	250.0		
Rb2	250.0	280.0		
Sa1	280.0	315.0		
Sa2	315.0	350.0		
Sb1	350.0	385.0		
Sb2	385.0	420.0		

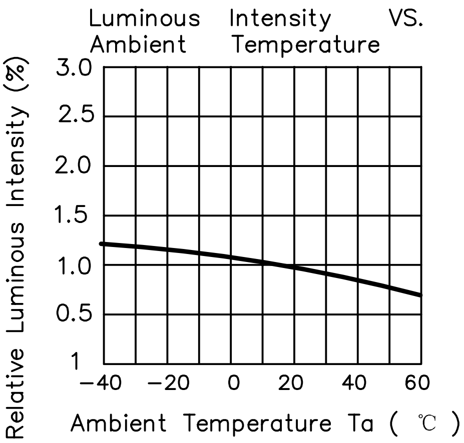
Bin Range Of Forward Voltage

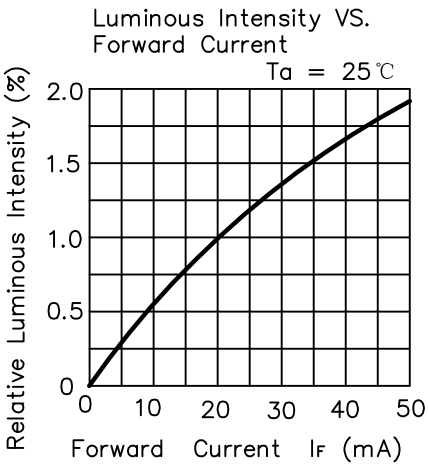
Bin	Min	Max	Unit	Condition
E2	2.6	2.7	V	I_F=5mA
E3	2.7	2.8		
E4	2.8	2.9		
E5	2.9	3.0		

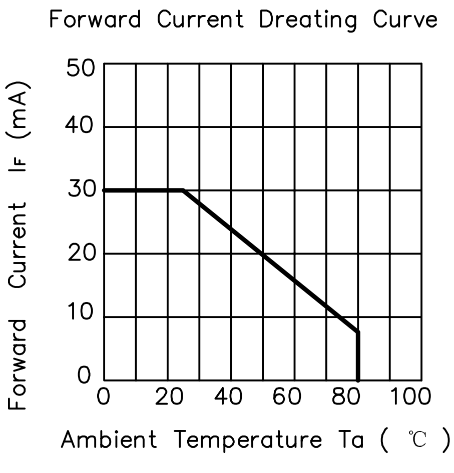
Typical Electro-Optical Dharacteristics Curves

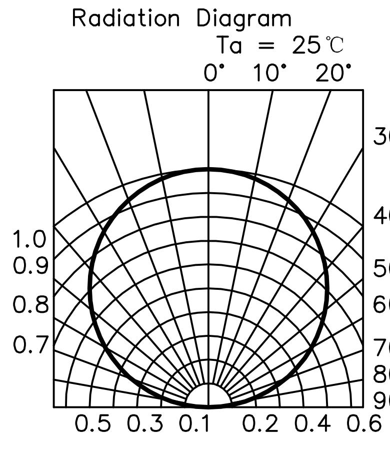










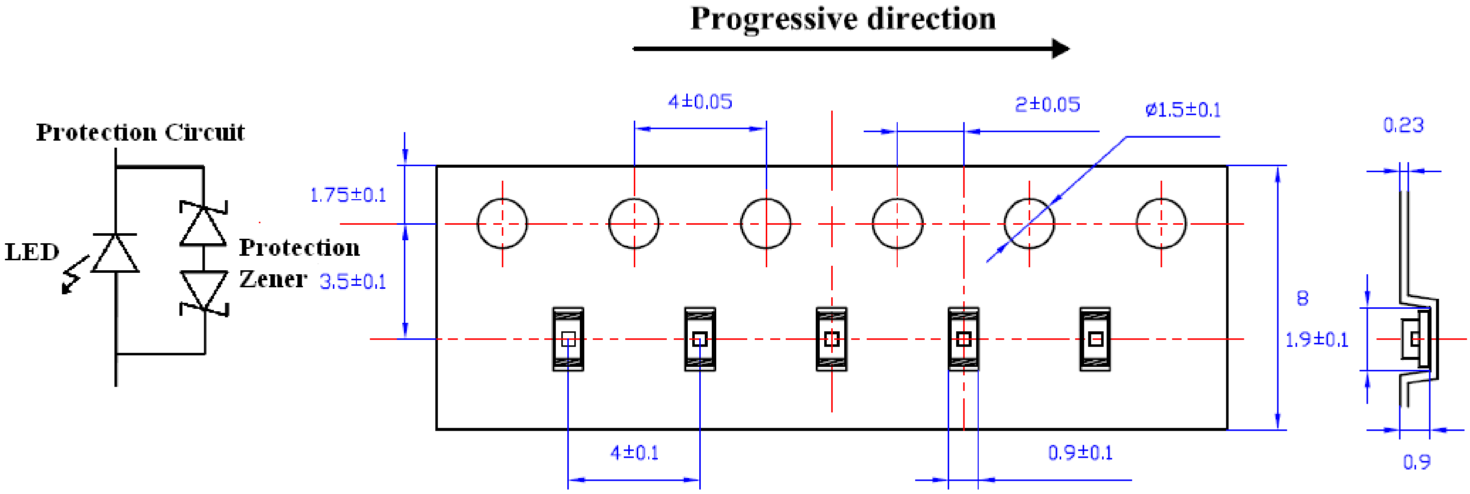


Reliability Test Items And Conditions

The reliability of products shall be satisfied with items listed below.
Confidence level 90%
LTPD 10%

NO.	Items	Test Condition	Test Hours/Cycles	Sample Size	Ac/Re
1	Reflow Soldering	Temp.:260℃±5℃ Min. 5 sec	6 Min	20 PCS	0/1
2	Temperature Cycle	H:+85℃~±25℃ 60min 20min L : -35℃~±25℃ 60min 20min	5Cycles	20 PCS	0/1
3	Thermal Shock	H : +85℃±5℃ 20min L : -35℃±5℃ 20min	10Cycles	20 PCS	0/1
4	High Temperature Storage	Temp. : +85℃±5℃	1000 Hrs	20 PCS	0/1
5	Low Temperature Storage	Temp. : -35℃±5℃	1000 Hrs	20 PCS	0/1
6	DC Operating Life	IF = 20 mA	1000 Hrs	20 PCS	0/1
7	High Temperature / High Humidity	+65℃±5℃ / 90%-95%RH	240 Hrs	20 PCS	0/1

Carrier Tape Ddimensions : Loaded quantity 3000 PCS per reel



Note: The tolerances unless mentioned are ±0.1 ,Unit = mn.

Explanation ：

1. **Over-current-proof**
   Customer must apply resistors for protection , otherwise slight voltage shift will cause big current change .

2. Storage:

2.1 Do not open moisture proof bag before the products are ready to use.

2.2 Before opening the package , the LEDs should be kept at 30℃ or less and 90%RH or less.

2.3 After opening the package , the LEDs should be kept at 30℃ or less and 60%RH or less.

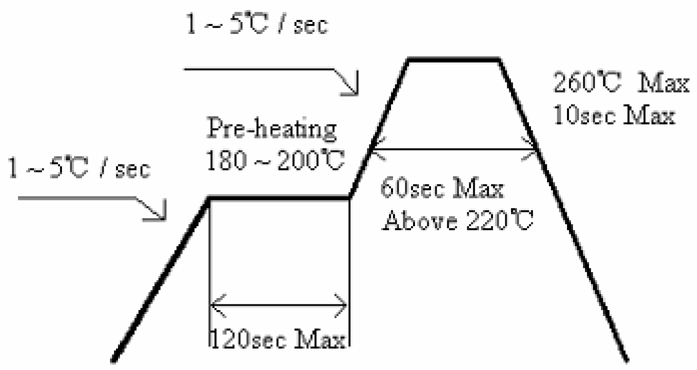
2.4 The LEDs should be used within 168 hours after opening the package.

3 .Soldering Iron

Each terminal is to go to the tip of soldering temperature less than 350℃ for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals , and do soldering of each terminal , Be careful because the damage of the product is often started at the time of the hand solder.

4. Soldering Condition

4.1 Pb-free solder temperature profile.



4.2 Reflow soldering should not be done more than two times.
4.3 When soldering , do not prt stress on the LEDs during heating .
4.4 After soldering , do not warp the circuit board .

5. Repairing

Repair should not be done after the LEDs have been soldered . When repairing is unavoidable , a double-head soldering iron should be used (as below figure) . It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing .