



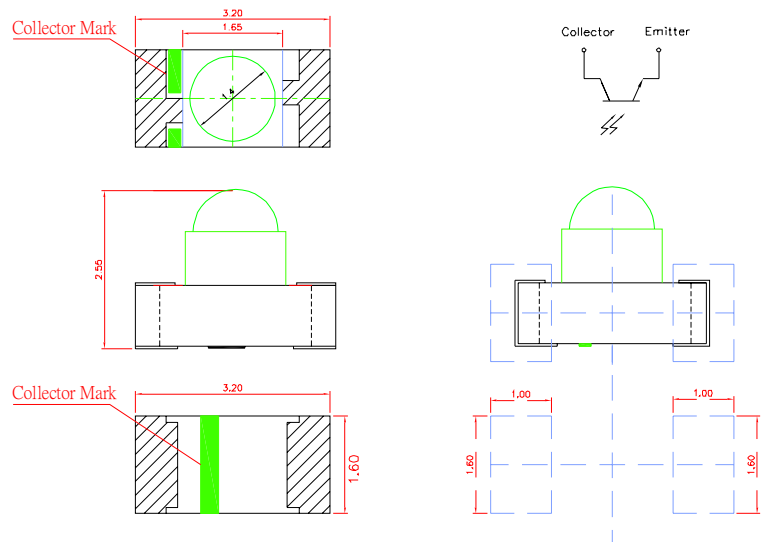
### ● Features:

1. Lens Appearance : BLACK.
2. 3.2x1.6x2.55mm(1206) standard package.
3. Suitable for all SMT assembly methods.
4. Compatible with infrared and vapor phase reflow solder process.
5. Compatible with automatic placement equipment.
6. This product doesn't contain restriction Substance, comply ROHS standard.

### ● Applications:

1. Remote Control.
2. Smoke Detector
3. Photo Detector
4. Automatic Control System

### ● Package Dimensions:



#### NOTES:

1. All dimensions are in millimeters.
2. Tolerance is  $\pm 0.10$ mm unless otherwise specified.
3. Specifications are subject to change without notice.

### ● Absolute Maximum Ratings(Ta=25°C)

Parameter	Symbol	Rating	Unit
Power Dissipation	Pd	100	mW
Emitter-Collector Breakdown Voltage	BV <sub>CEO</sub>	50	V
Emitter-Collector Voltage	BV <sub>ECO</sub>	5	V
Operating Temperature	Topr	-40°C~85°C	-
Storage Temperature	Tstg	-40°C~85°C	-
Soldering Temperature	Tsol	See Page6	-

\* 1 Condition for I<sub>FP</sub> is pulse of 1/10 duty and 0.1msec width..



### ● Electrical and optical characteristics(Ta=25°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectrum Sensitivity	$\lambda_p$	-	-	940	-	nm
Collector Light Current	$I_{C(ON)}$	$V_{CE}=5V, \lambda_p=940nm, H=1.0mw/cm^2$	7.165	14.859	-	mA
Collector Dark Current	$I_{CEO}$	$V_{CE}=20V$	-	-	50	nA
Rise Time	$T_r$	$V_{CE}=5V, I_c=1mA, R_L=1K\Omega$	-	15	-	us
Fall Time	$T_f$	$V_{CE}=5V, I_c=1mA, R_L=1K\Omega$	-	15	-	us
Viewing Angle	$2\theta_{1/2}$	$I_F=50mA$ -	-	50	-	deg

### ● Typical Electro-Optical Characteristics Curves

Fig.1 Collector current vs Collector emitter voltage

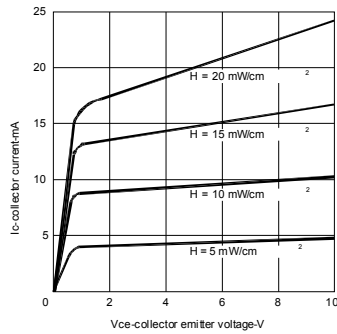


Fig.2 Collector current vs Irradiance

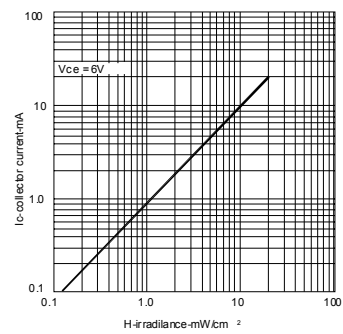


Fig.3 Dark current vs Free-air temperature

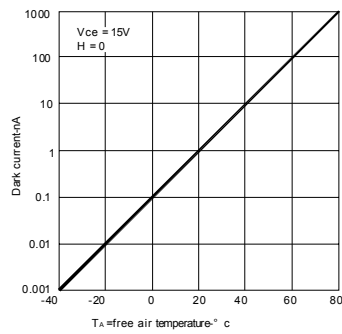


Fig.5 Relative spectral response

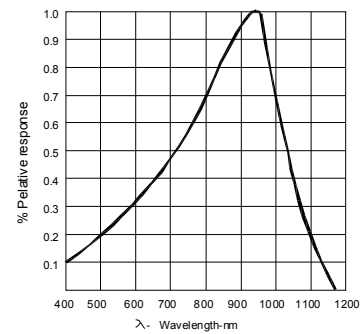
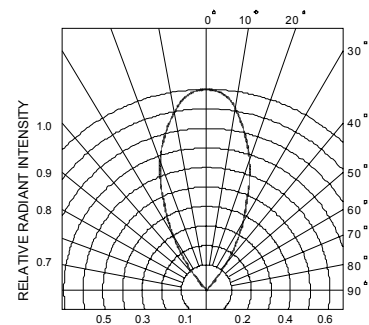
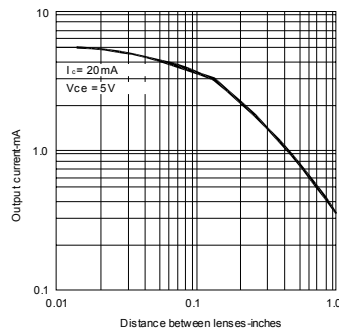


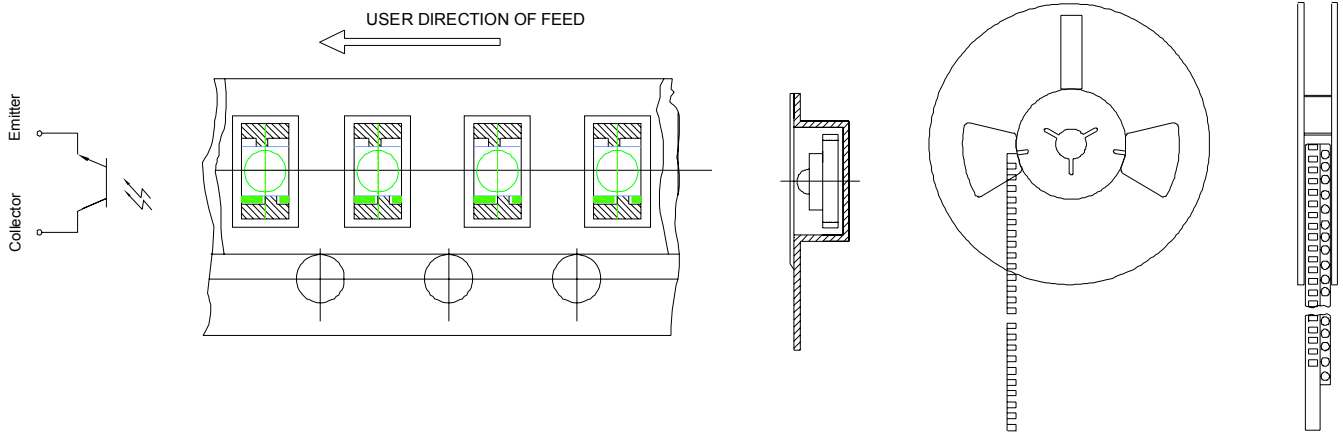
Fig.6 Coupling characteristics



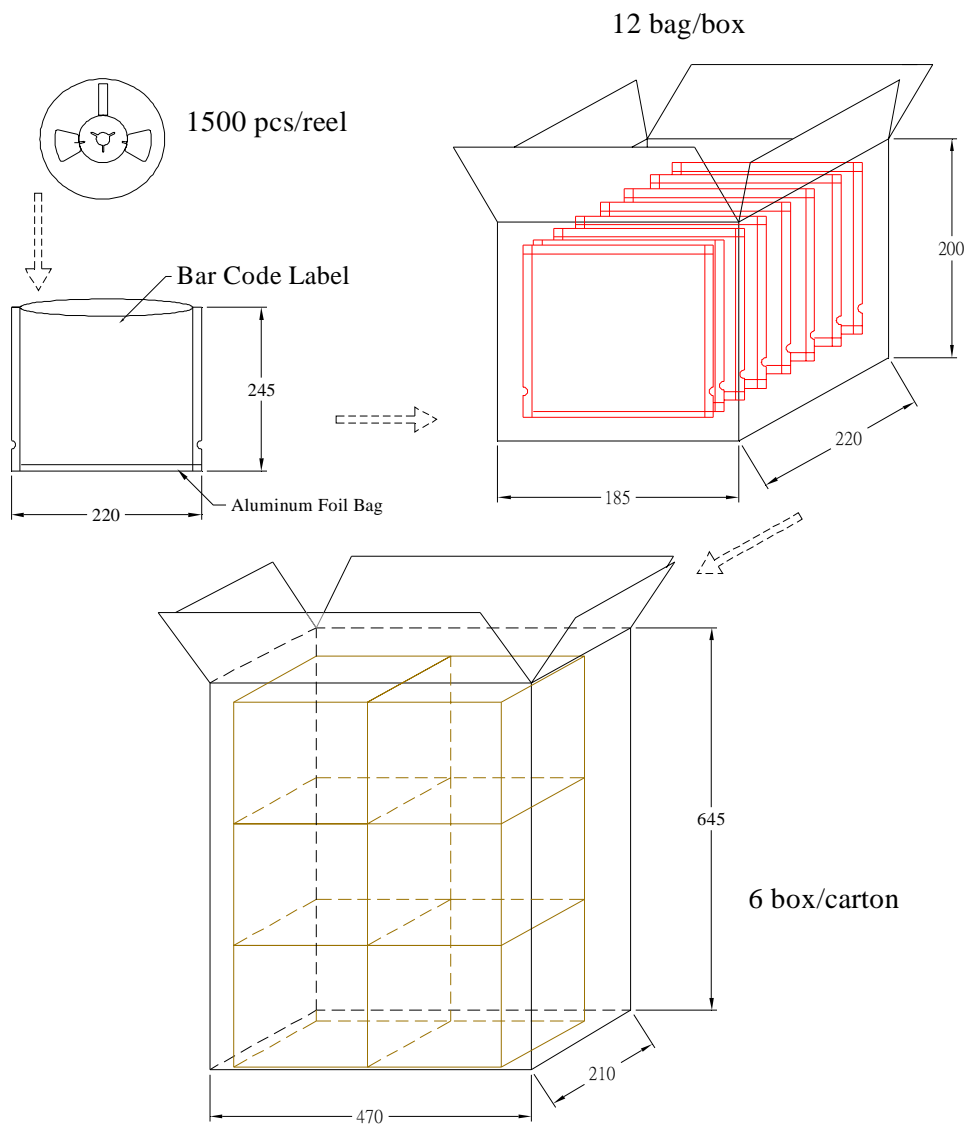


### ● Tapping and packaging specifications(Units: mm)

Quantity:1500PCS



### ● Package Method:(unit:mm) Vacuum





● **Bin Limits:**

Collector Light Current Bin Limits( $V_{CE}=5V$ ,  $H=1.0\text{mw/cm}^2$ ,  $\lambda_p=940\text{nm}$ )

BIN CODE	$I_{C(ON)}$ (mA)	
	Min	Max
Q	7.165	10.319
R	10.319	14.859
S	14.859	21.398
T	21.398	30.815

Tolerance for each Bin limit is  $\pm 15\%$ .

● BIN : x



Collector Light Current Bin Code



### ● Reliability Test

Classification	Test Item	Reference Standard	Test Conditions	Result
Endurance Test	Operation Life	MIL-STD-750D:1026 MIL-STD-883D:1005 JIS-C-7021 :B-1	Ta: Under room temperature Test time:1,000hrs IF=Product Recommended IF	0/32
	High Temperature High Humidity Storage	MIL-STD-202F:103B JIS-C-7021 :B-11	Ta:85±5℃ RH:90%-95% Test time:240hrs	0/32
	High Temperature Storage	MIL-STD-883:1008 JIS-C-7021 :B-10	Ta:100±5℃ Test time:1,000hrs	0/32
	Low Temperature Storage	JIS-C-7021 :B-11	Ta: -40±5℃ Test time=1,000hrs	0/32
Environmental Test	Temperature Cycling	MIL-STD-202F:107D MIL-STD-750D:1051 MIL-STD-883D:1010 JIS-C-7021 :A-2	Ta:-35±5℃~25±5℃~85±5℃~25±5℃ 30min 5min 30min 5min	0/32
	Thermal Shock	MIL-STD-202F:107D(1980) MIL-STD-750D:1051(1995) MIL-STD-883D:1011(1991)	Ta:-40±5℃ ~+85±5℃ 10min 10 min Time: 20min/cycle 10cycle	0/32
	Wetting balance	MIL-STD-883:2003 MIL-STD-202F:208D MIL-STD-883D:2003	Ta:230±5℃ Time:5±0.5s	0/32
	Solder Resistance	MIL-STD-202F:210A MIL-STD-883D:1011 JIS-C-7021 :A-1	Ta:260±10℃ Time:10±1s	0/32

### ● Judgment criteria of failure for the reliability

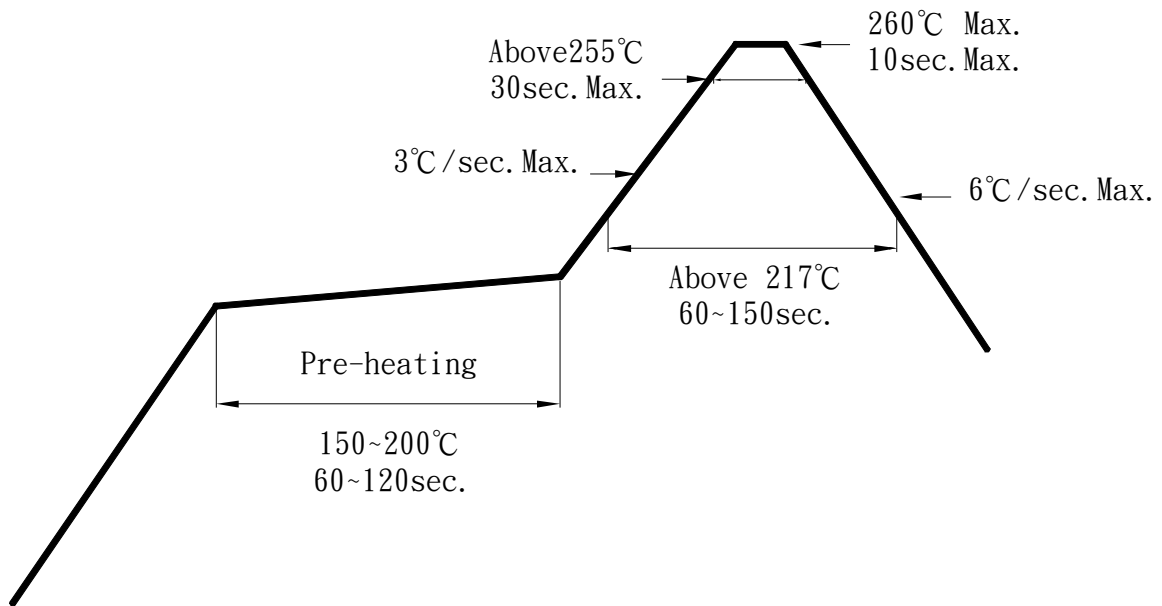
Measuring items	Symbol	Measuring conditions	Judgment criteria for failure
Forward voltage	$V_F$ ( V )	$I_F=50\text{mA}$	Initial Level*1.1
Reverse current	$I_R(\mu\text{A})$	$V_R=5\text{V}$	Over U*2
Luminous intensity	$I_v$ ( mcd )	$I_F=50\text{mA}$	Initial Level*0.7

Note: 1.U means the upper limit of specified characteristics.

2.Measurment shall be taken between 2 hours and after the test pieces have been returned to normal ambient conditions after completion of each test.



### ● IR-Reflow Soldering



1. Avoid any external stress applied to the resin while the LEDs are at high temperature, especially during soldering .
2. Avoid rapid cooling or any excess vibration during temperature ramp-down process
3. Although the soldering condition is recommended above, soldering at the lowest possible temperature is feasible for the LEDs

### ● IRON Soldering

350°C Within 3 sec.,One time only.



### ● Notes for designing:

Care must be taken to provide the current limiting resistor in the circuit so as to drive the BRIGHT LEDs within the rated figures. Also, caution should be taken not to overload BRIGHT LEDs with instantaneous voltage at the turning ON and OFF of the circuit.

When using the pulse drive care must be taken to keep the average current within the rated figures. Also, the circuit should be designed so as to be subjected to reverse voltage when turning off the BRIGHT LEDs.

### ● Storage:

In order to avoid the absorption of moisture, it is recommended to solder BRIGHT LEDs as soon as possible after unpacking the sealed envelope.

If the envelope is still packed, to store it in the environment as following:

- (1) Temperature : 5°C-30°C (41°F) Humidity : RH 60% Max.
- (2) After this bag is opened, devices that will be applied to infrared reflow, vapor-phase reflow, or equivalent soldering process must be:
  - a. Completed within 168 hours.
  - b. Stored at less than 30% RH.
- (3) Devices require baking before mounting, if:
  - (2) a or (2) b is not met.
- (4) If baking is required, devices must be baked under below conditions:  
48 hours at 60°C±3°C.

### ● Package and Label of Products:

- (1) Package: Products are packed in one bag of 1500 pcs (one taping reel) and a label is attached on each bag.
- (2) Label:

