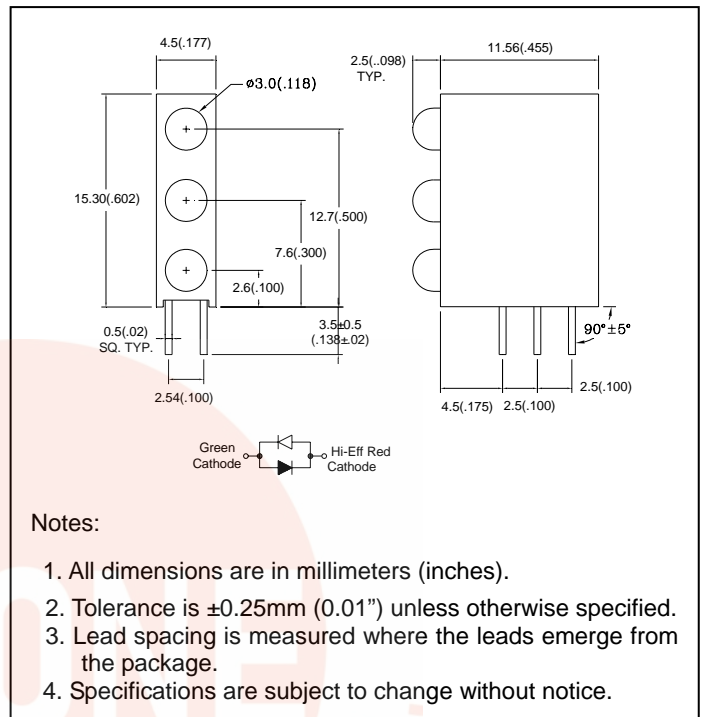


● **Features:**

1. Chip material: GaAsP/GaP(Red) and GaP/GaP (Green)
2. Emitted color : Hi-Eff Red and Green
3. Lens Appearance : White Diffused
4. Designed for ease in circuit board assembly.
5. Black case enhance contrast ratio.
6. Solid state light source.
7. Reliable and rugged.
8. This product don't contained restriction substance, compliance RoHS standard.

● **Package dimensions**



● **Applications:**

1. TV set
2. Monitor
3. Telephone
4. Computer
5. Circuit board

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

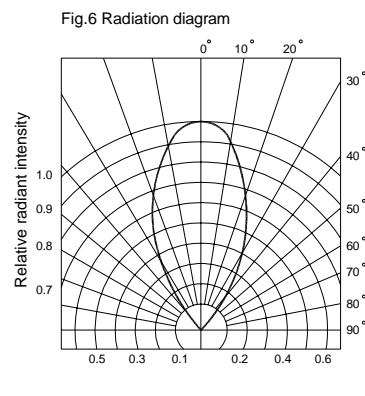
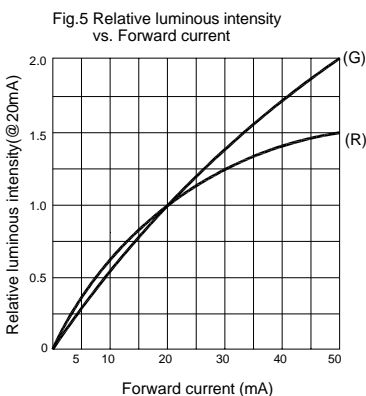
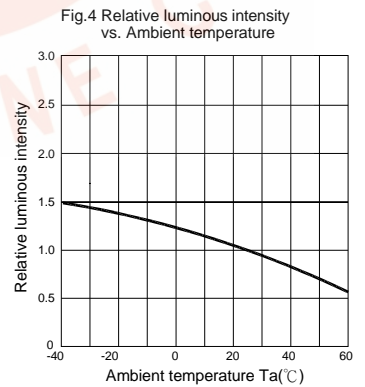
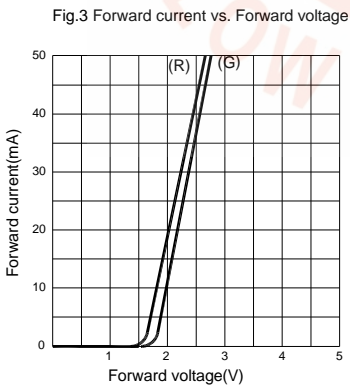
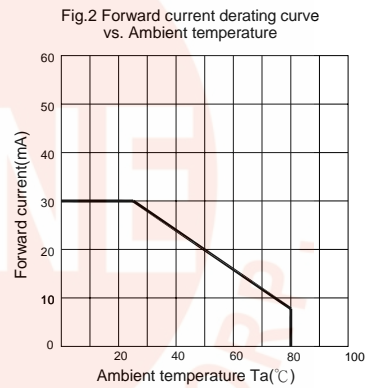
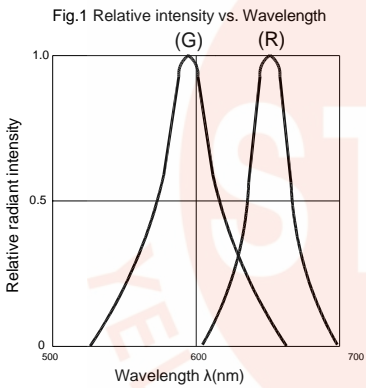
Parameter	Symbol	Hi-Eff Red	Green	Unit
Power Dissipation	Pd	80	80	mW
Forward Current	I _F	30	30	mA
Peak Forward Current* ¹	I _{FP}	150	150	mA
Operating Temperature	Topr	-40°C ~85°C		
Storage Temperature	Tstg	-40°C ~100°C		
Soldering Temperature	Tsol	260°C max (for 5 seconds)		
Hand Soldering Temperature	Tsol	350°C max(for 3 seconds)		

*¹Condition for I_{FP} is pulse of 1/10 duty and 0.1msec width.

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

Parameter	Symbol	Condition	Color	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	$I_F=20mA$	Hi-Eff Red Green	-	2.1 2.2	2.6 2.6	V
Luminous Intensity	I_v	$I_F=20mA$	Hi-Eff Red Green	-	8.0 10	-	mcd
Peak Wave Length	λ_p	$I_F=20mA$	Hi-Eff Red Green	-	640 568	-	nm
Dominant Wave Length	λ_d	$I_F=20mA$	Hi-Eff Red Green	617 560	-	638 574	nm
Spectral Line Half-width	$\Delta \lambda$	$I_F=20mA$	Hi-Eff Red Green	-	35 30	-	nm
Viewing Angle	$2\theta_{1/2}$	$I_F=20mA$	Hi-Eff Red Green	-	55	-	deg

● **Typical Electro-Optical Characteristics Curves**



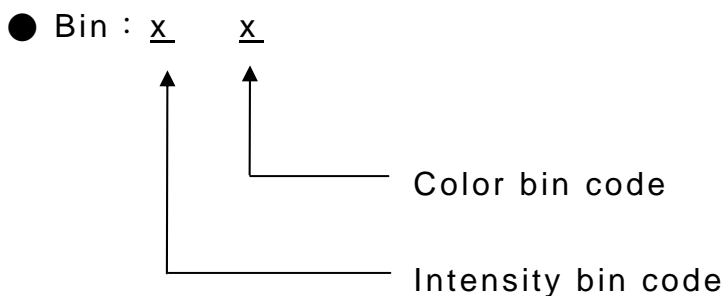
● **Bin Limits(Green)**

1. Intensity Bin Limits (At $I_F=20\text{mA}$)

Bin Code	Min. (mcd)	Max. (mcd)
F	2.4	3.7
G	3.7	5.5
H	5.5	8.2
J	8.2	12.3
K	12.3	18.5
L	18.5	28

2. Color Bin Limits (At $I_F=20\text{mA}$) : Dominant Wave Length $\lambda_d(\text{nm})$

Bin Code	Min. (nm)	Max. (nm)
1	560	562
2	562	564
3	564	566
4	566	568
5	568	570
6	570	572
7	572	574



NOTES:1.Tolerance of measurement of luminous intensity. :±15%

2.Tolerance of measurement of dominant wavelength :±1.0nm

● Reliability Test

Classification	Test Item	Reference Standard	Test Conditions	Result
Endurance Test	Operation Life	MIL-STD-750:1026 MIL-STD-883:1005 JIS-C-7021 :B-1	I _F =20mA Ta=+25°C ±5°C Test time=1,000hrs	0/32
	High Temperature High Humidity Storage	MIL-STD-202:103B JIS-C-7021 :B-11	Ta=+85°C ±5°C RH=90%-95% Test time=240hrs	0/32
	High Temperature Storage	MIL-STD-883:1008 JIS-C-7021 :B-10	High Ta=+85°C ±5°C Test time=1,000hrs	0/32
	Low Temperature Storage	JIS-C-7021 :B-12	Low Ta=-45°C ±5°C Test time=1,000hrs	0/32
Environmental Test	Temperature Cycling	MIL-STD-202:107D MIL-STD-750:1051 MIL-STD-883:1010 JIS-C-7021 :A-4	Ta: +85°C (30min) ~ +25°C (5min) ~ -45°C (30min) ~ +25°C (5min) Test Time : 70min/ctcle 10cycle	0/32
	Thermal Shock	MIL-STD-202:107D MIL-STD-750:1051 MIL-STD-883:1011	-45°C ±5°C ~ +85°C ±5°C 20min 20min Test Time=10cycle	0/32
	Solder Resistance	MIL-STD-202:201A MIL-STD-750:2031 JIS-C-7021 :A-1	Preheating : 120°C, within 120-180 sec. Operation heating : 255°C ±5°C within 5 sec. 260°C (Max)	0/32
	Solderability	MIL-STD-202F:208D MIL-STD-750D:2026 MIL-STD-883D:2003 JIS C 7021:A-2	T.sol=230±5°C Dwell Time=5±1secs	0/32

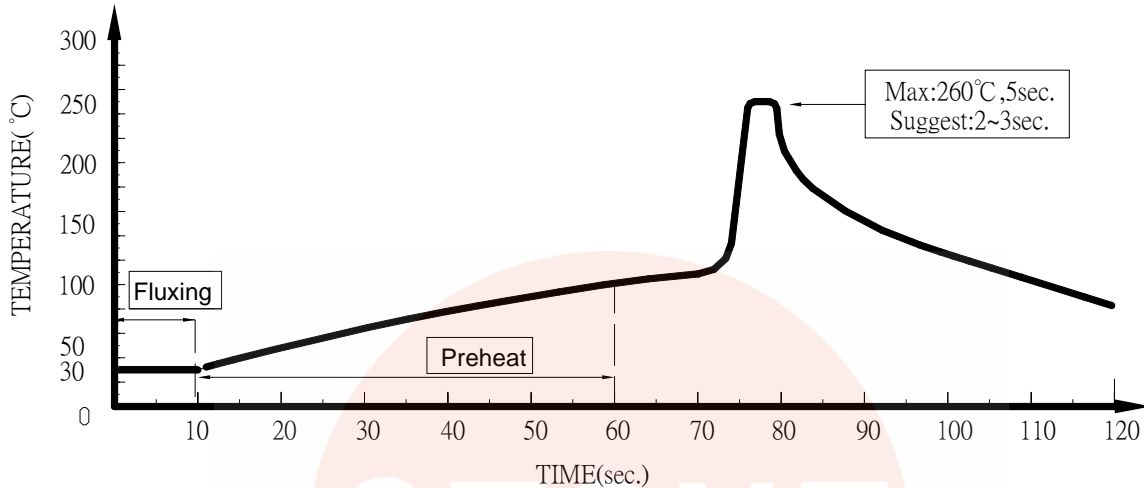
● Judgment criteria of failure for the reliability

Measuring items	Symbol	Measuring conditions	Judgment criteria for failure
Forward voltage	V _F (V)	I _F =20mA	Over U ¹ x1.2
Reverse current	I _R (uA)	V _R =5V	Over U ¹ x2
Luminous intensity	I _v (mcd)	I _F =20mA	Below S ¹ X0.5

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

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

● **Dip Soldering**



1. Please avoid any external stress applied to the lead-frames and epoxy while the LEDs are at high temperature, especially during soldering
2. DIP soldering and hand soldering should not be done more than one time.
3. After soldering, avoid the epoxy lens from mechanical shock or vibration until the LEDs are back to room temperature.
4. Avoid rapid cooling during temperature ramp-down process
5. Although the soldering condition is recommended above, soldering at the lowest possible temperature is feasible for the LEDs

● **IRON Soldering**

A : Max : 350°C Within 3 sec. One time only.

B : For 3mm LED without flange, if the LED epoxy lays flat on the PCB, the welding condition is 350°C within 2 seconds, one time only.

