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L120TG3-12V

Hi-Eff Green

(3mm) Diffused Standard Dome, 4.5mm Height
45° Viewing Angle
With Integrated Resistor, 12V



DWG BY:
BL / JG
12-19-18

R&D:
LUV
09-29-22

MFG:
LD
09-29-22

QA:
LUV
09-29-22

REVISION LTR: PRELIMINARY

09-26-22

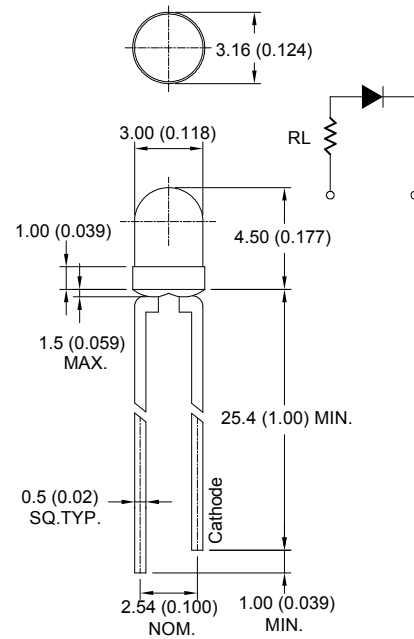
● **Features:**

1. Chip material: GaP/GaP
2. Emitted color: Hi-Eff Green
3. Lens Appearance: Green Diffused
4. For DC and pulse operation.
5. With current limiting resistor for 12V
6. TTL & CMOS compatible.
7. 3mm diameter package.
8. Internal Resistor 800Ω
9. Product does not contain restricted substances, RoHS standard compliant.

● **Applications:**

1. TV sets
2. Monitors
3. Telephones
4. Computers
5. Circuit boards

● **Package Dimensions:**



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.25\text{mm}$ ($0.01''$) unless otherwise specified.
3. Lead spacing is measured where the leads emerge from the package.
4. Specifications are subject to change without notice.

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

Parameter	Symbol	Rating	Unit
Power Dissipation	Pd	80	mW
Forward Current	I _F	30	mA
Peak Forward Current* ¹	I _{FP}	150	mA
Operating Temperature	Topr	-40°C~+85°C	
Storage Temperature	Tstg	-40°C~+85°C	

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

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

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Current	I_F	$V_F=12V$	-	12	16	mA
Luminous Intensity	I_v	$V_F=12V$	-	10	-	mcd
Peak Wave Length	λ_p	$I_F=20mA$	-	568	-	nm
Dominant Wave Length	λ_d	$I_F=20mA$	566	-	576	nm
Spectral Line Half-width	$\Delta\lambda$	$I_F=20mA$	-	30	-	nm
Viewing Angle	$2\theta_{1/2}$	$I_F=20mA$	-	45	-	deg

● **Typical Electro-Optical Characteristics Curves**

Fig.1 Relative intensity vs. Wavelength

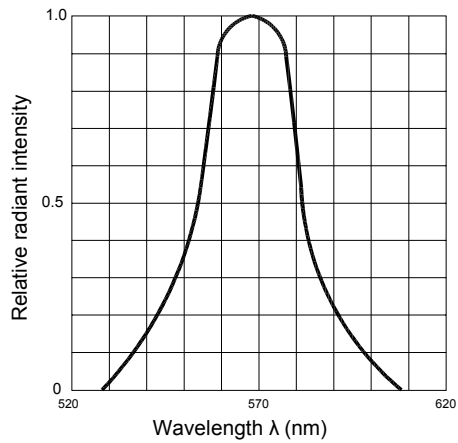


Fig.2 Forward current derating curve vs. Ambient temperature

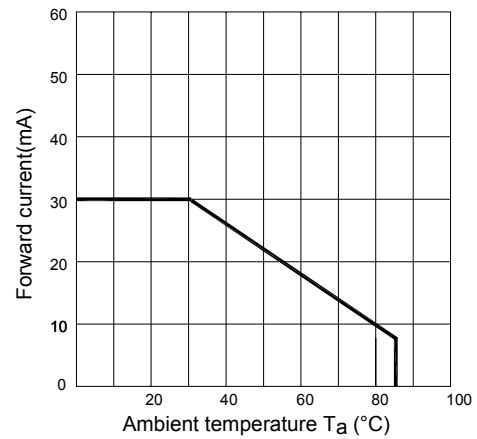


Fig.4 Relative luminous intensity vs. Ambient temperature

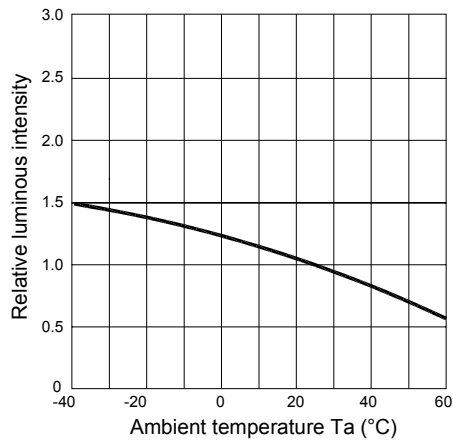
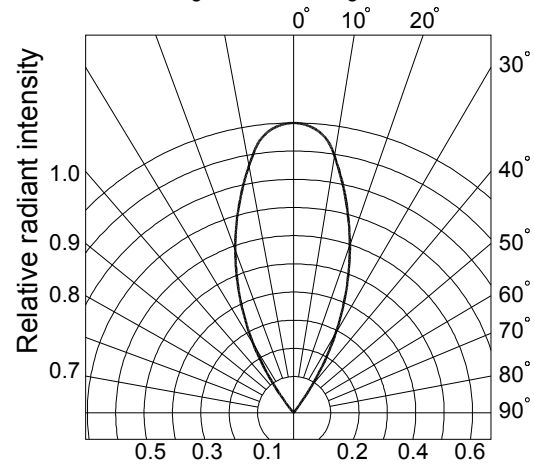


Fig.6 Radiation diagram



● 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 T _a =+25°C±5°C Test time=1,000hrs	0/32
	High Temperature High Humidity Storage	MIL-STD-202:103B JIS-C-7021 :B-11	T _a =+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 T _a = +85°C±5°C Test time=1,000hrs	0/32
	Low Temperature Storage	JIS-C-7021:B-12	Low T _a = -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	T _a : +85°C(30min) ~ +25°C(5min) ~ -45°C(30min) ~ +25°C (5min) Test Time: 70min/cycle 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

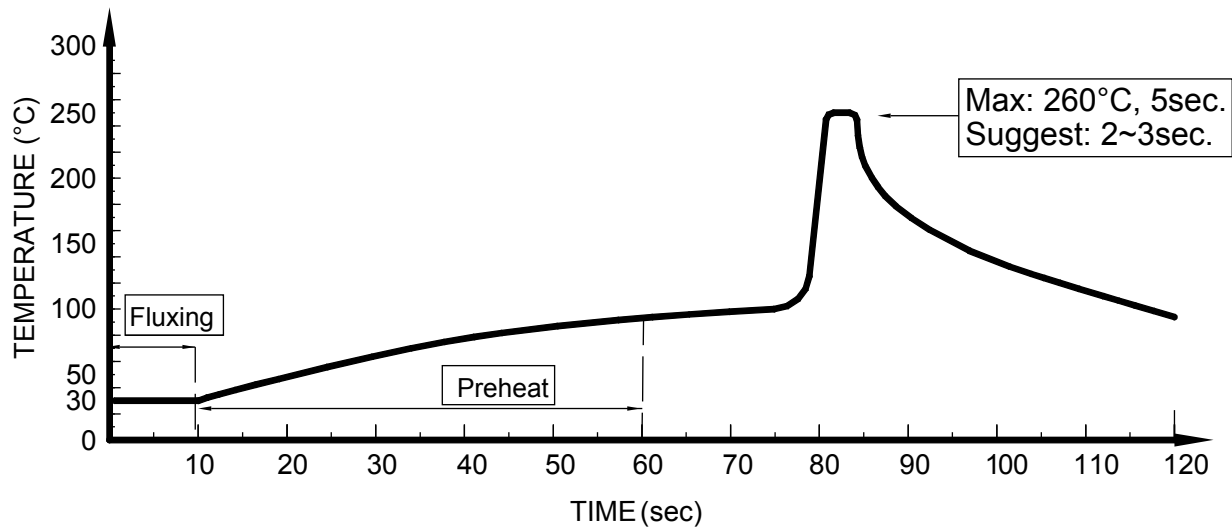
● Judgment criteria of failure for the reliability

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. Avoid any external stress being 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 exposing the epoxy lens to mechanical shock or vibration until the LEDs have returned to room temperature.
4. Avoid rapid cooling during the 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.

