

LED SPECIFICATION

510HR3C

ATTENTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC DISCHARGE SENSITIVE DEVICES

Features

- Single color
- High bright output
- Low power consumption
- High reliability and long life

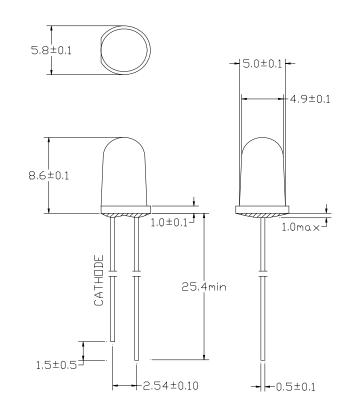
> Descriptions:

- Dice material: AlGaInP
- **Emitting Color:**

Super Bright Red

- Device Outline:
- Lens Type:

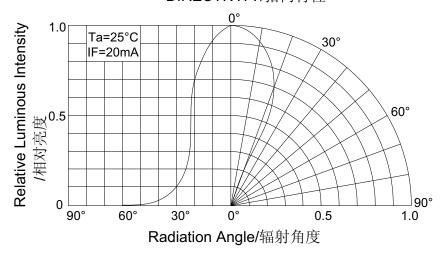
Water Clear



- All dimensions are millimeters
- Tolerance is +/-0.25mm unless otherwise noted

Directivity:

DIRECTIVITY/指向特性





Absolute maximum ratings (Ta = 25° C)

	too orate maximum ratings (ra 20 s /							
Parameter	Symbol	Test Condition	Va	Unit				
raiametei	Symbol	rest Condition	Min.	Max.	Offic			
Reverse Voltage	VR	IR = 30 μ A	5		V			
Forward Current	lF			30	mA			
Power Dissipation	Pd			75	mW			
Pulse Current	Ipeak	Duty=0.1mS,1kHz		100	mA			
Operating Temperature	Topr		-40	+85	$^{\circ}$			
Storage Temperature	Tstr		-40	+100	${\mathbb C}$			

Electrical and optical characteristics (Ta = 25° C)

Parameter	Symbol	Test Condition	Value			Unit
raianietei	Symbol	rest Condition	Min.	Тур.	Max.	Offic
Forward Voltage	VF	IF = 20mA		V2~V4		
Reverse Current	lR	VR = 5V			30	μ Α
Dominate Wavelength	λd	IF = 20mA		R2~R4		
Spectral Line half-width	Δλ	IF = 20mA		20		nm
Luminous Intensity	Iv	IF = 20mA		U~Y		
Viewing Angle	2 θ 1/2	IF = 20mA	10		13	Deg.



BIN ranking for LEDs

BRIGHTNESS BIN

Bin Code	IV(mcd)						
Α	0-5.0	Н	37.2-52.0	Q	390-550	Х	41805860
В	5.0-7.0	J	52.0-72.8	R	550-770	Υ	5860-8200
С	7.0-9.8	K	72.8-102	S	770-1100	Z1	8-10cd
D	9.8-13.7	L	102-145	Т	1100-1520	Z2	10-12cd
Е	13.7-19.0	М	145-200	U	1520-2130	Z3	12-14cd
F	19.0-26.6	N	200-280	V	2130-3000	Z4	14-16cd
G	26.6-37.2	Р	280-390	W	3000-4180	Z5	16-18cd

WAVELENGTH BIN

WAVELENGTII BIIN						
Ligth Col.	Bin Code		Ligth Col.		Wavel. (nm)	
	B1	450-455		YG1	555-558	
	B2	455-460		YG2	558-561	
BLUE	B3	460-465	YELLOW	YG3	561-564	
BLOL	B4	465-470	GREEN	YG4	564-567	
	B5	470-475	GHEER	YG5	567-570	
	B6	475-480		YG6	570-573	
	G1	491-494		YG7	573-576	
	G2	494-497		Y1	582-585	
	G3	497-500		Y2	585-588	
BLUE	G4	500-503	YELLOW	Y3	588-591	
GREEN	G5	503-506		Y4	591-594	
	G6	506-509		Y5	594-597	
	G7	509-512		YO1	597-600	
	G8	512-515	YELLOW	YO2	600-603	
	G9	515-518	ORANGE	YO3	603-606	
	G10	518-521		YO4	606-609	
	G11	521-524	DUDE	O1	609-612	
	G12	524-527	PURE ORANGE	O2	612-615	
	G13	527-530	OHANGE	O3	615-618	
PURE	G14	530-533		R1	618-621	
GREEN	G15	533-536		R2	621-624	
	G16	536-539		R3	624-627	
	G17	539-542	RED	R4	627-630	
	G18	542-545		R5	630-633	
	G19	545-548		R6	633-636	

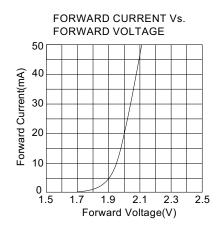
FORWARD VOLTAGE (VF) BIN

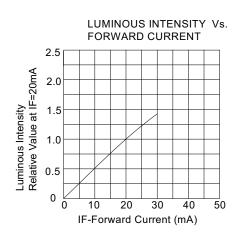
Bin Code	VF (V)						
V1	1.6-1.8	V5	2.4-2.6	V9	3.2-3.4	V13	4.0-4.2
V2	1.8-2.0	V6	2.6-2.8	V10	3.4-3.6	V14	4.2-4.4
V3	2.0-2.2	V7	2.8-3.0	V11	3.6-3.8	V15	4.4-4.6
V4	2.2-2.4	V8	3.0-3.2	V12	3.8-4.0	V16	4.6-4.8

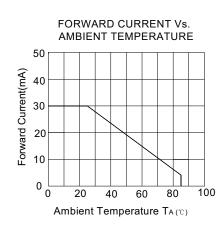


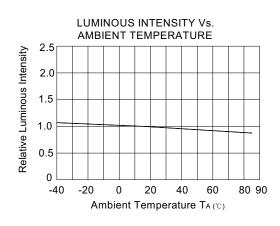


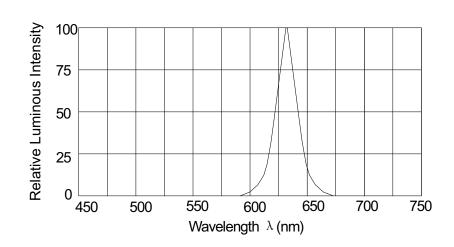
Typical electrical/optical characteristic curves:









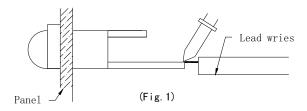




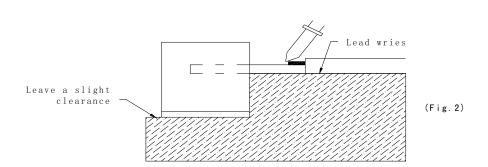
SOLDERING

METHOD	SOLDERING CONDITIONS	REMARK
DIP SOLDERING	Bath temperature: 260±5℃ Immersion time: with 5 sec	 Solder no closer than 3mm from the base of the package Using soldering flux," RESIN FLUX" is recommended.
SOLDERING IRON	Soldering iron: 30W or smaller Temperature at tip of iron: 260℃ or lower Soldering time: within 5 sec.	 During soldering, take care not to press the tip of iron against the lead. (To prevent heat from being transferred directly to the lead, hold the lead with a pair of tweezers while soldering

1) When soldering the lead of LED in a condition that the package is fixed with a panel (See Fig.1), be careful not to stress the leads with iron tip.



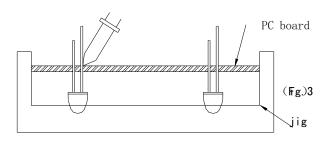
2) When soldering wire to the lead, work with a Fig (See Fig.2) to avoid stressing the package.



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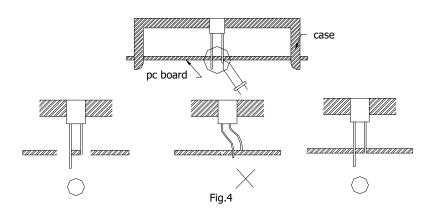
3) Similarly, when a jig is used to solder the LED to PC board, take care as much as possible to avoid steering the leads (See Fig.3).



- 4) Repositioning after soldering should be avoided as much as possible. If inevitable, be sure to preserve the soldering conditions with irons stated above: select a best-suited method that assures the least stress to the LED.
- Lead cutting after soldering should be performed only after the LED temperature has returned to normal temperature.

•LED MOUNTING METHOD

1) When mounting the LED by using a case, as shown Fig.4, ensure that the mounting holds on the PC board match the pitch of the leads correctly-tolerance of dimensions of the respective components including the LED should be taken into account especially when designing the case, PC board, etc. to prevent pitch misalignment between the leads and board holes, the diameter of the board holes should be slightly larger than the size of the lead. Alternatively, the shape of the holes should be made oval. (See Fig.4)



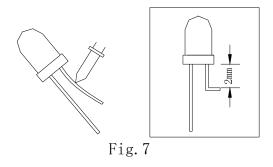


2) Use LEDs with stand-off (Fig.5) or the tube or spacer made of resin (Fig.6) to position the LEDs.

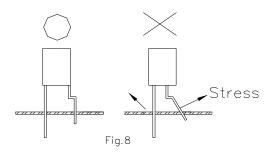


FORMED LEAD

1) The lead should be bent at a point located at least 2mm away from the package. Bending should be performed with base fixed means of a jig or pliers (Fig.7)



- 2) Forming lead should be carried our prior to soldering and never during or after soldering.
- 3) Form the lead to ensure alignment between the leads and the hole on board, so that stress against the LED is prevented. (Fig.8)



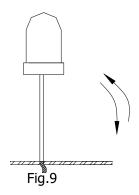
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LEAD STRENGTH

1) Bend strength

Do not bend the lead more than twice. (Fig.9)



Tensile strength (@Room Temperature)
 If the force is 1kg or less, there will be no problem. (Fig.10)



HANDLING PRECAUTIONS

Although rigid against vibration, the LEDs may damaged or scratched if dropped. So take care when handling.

•CHEMICAL RESISTANCE

- 1) Avoid exposure to chemicals as it may attack the LED surface and cause discoloration.
- 2) When washing is required, refer to the following table for the proper chemical to be sued. (Immersion time: within 3 minutes at room temperature.)

SOLVENT	ADAPTABILITY
Freon TE	\odot
Chlorothene	X
Isopropyl Alcohol	\odot
Thinner	X
Acetone	\times
Trichloroethylene	X

⊙--Usable X--Do not use.

NOTE: Influences of ultrasonic cleaning of the LED resin body differ depending on such factors as the oscillator output, size of the PC board and the way in which the LED is mounted.

Therefore, ultrasonic cleaning should only be performed after confirming there is no problem by conducting a test under practical.

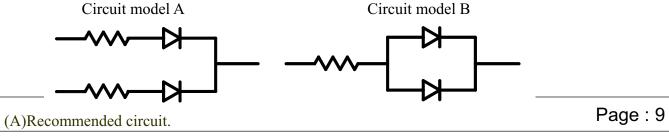


LED LAMP PASSED TESTS

Experiment Item:

	Test Condition		
Item	Lamp & IR	Reference Standard	
OPERATION LIFE	Ta: 25±5°C IF= 20mA RH: <=60%RH ① DYNAMIC:100mA 1ms 1/10 duty ② STATIC STATE: IF=20mA	MIL-STD-750: 1026 MIL-STD-883: 1005 JIS C 7021: B-1	
HIGH TEMPERATURE HIGH HUMIDITY STORAGE	Ta: $65^{\circ}\mathbb{C}\pm5^{\circ}\mathbb{C}$ RH: $90\sim95\%$ RH TEST TIME: 240HRS ±2 HRS	MIL-STD-202: 103B JIS C 7021: B-1	
TEMPERATURE CYCLING	105° C \sim 25° C \sim -55° C \sim 25° C \sim 30 min 5min 30min 5min 10CYCLES	MIL-STD-202: 107D MIL-STD-750: 1051 MIL-STD-883: 1010 JIS C 7021: A-4	
THERMAL SHOCK	105°ℂ±5°ℂ \sim -55°ℂ±5°ℂ 10min 10min 10CYCLES	MIL-STD-202: 107D MIL-STD-750: 1051 MIL-SYD-883: 1011	
SOLDER RESISTANCE	T,sol:260℃±5℃ DWELL TIME:10±lsec	MIL-STD-202 : 210A MIL-STD-750-2031 JIS C 7021 : A-1	
SOLDERABILITY	T,sol:230℃±5℃ DWELL TIME:5±lsec	MIL-STD-202 : 208D MIL-STD-750 : 2026 MIL-STD-883 : 2003 JIS C 7021 : A-2	

Drive Method



(B)The difference of brightness between LED's could be found due to the Vf-If characteristics of LED.