

Part No.: 503IRC2E-2AC

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## Features:

- ♦ Standard T-1 3/4 package.
- ♦ Viewing angle=20°.
- ♦ Low forward voltage.
- High radiant intensity.
- ♦ Reliable and rugged.
- ♦ The product itself will remain within RoHS complaint Version.

## Descriptions:

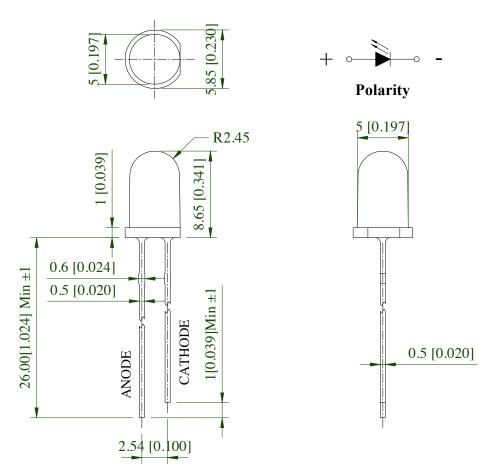
♦ The device is spectrally matched with silicon photodiode and phototransistor.

## Applications:

- ♦ Floppy disk drive.
- ♦ Optoelectronic switch.
- ♦ Camera.
- ♦ Video.
- ♦ Infrared remote control units with high power requirement.
- ♦ Free air transmission system.

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## Package Dimension:



Part No.	Chip Material	Lens Color	Source Color
503IRC2E-2AC	GaAlAs	Water Clear	Infrared

### Notes:

- 1. All dimensions are in millimeters (inches).
- 2. Tolerance is  $\pm 0.25$  (.01") mm unless otherwise specified.
- 3. Protruded resin under flange is 1.0 mm (.04 $^{\prime\prime}$  ) max.
- 4. Specifications are subject to change without notice.

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# Absolute Maximum Ratings at Ta=25 $^{\circ}$ C

Parameters	Symbol	Max.	Unit
Power Dissipation	PD	100	mW
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	IFP	1	А
Forward Current	IF	100	mA
Reverse Voltage	VR	5	V
Operating Temperature Range	Topr	-40°C to +85°C	
Storage Temperature Range	Tstg	-40℃ to +100℃	
Soldering Temperature [4mm(.157") From Body]	Tsld	260°C for 5 Seconds	

# Electrical Optical Characteristics at Ta=25 $^{\circ}$ C

Parameters	Symbol	Min.	Тур.	Max.	Unit	Test Condition
Dadiant Intensity	Ee	7.8	12.0		mW/cr	IF =20mA
Radiant Intensity	се	20.0	45.0		mW/sr	IF =50mA
Viewing Angle*	201/2		20		Deg	IF =20mA(Note 1)
Peak Emission Wavelength	λр		940		nm	IF =20mA
Spectral Bandwidth	Δλ		50		nm	IF =20mA
Forward Voltage	VF	0.80	1.20	1.50	V	IF =20mA
Forward voitage	VF	1.00	1.30	1.70		IF =50mA
Reverse Current	IR			10	μΑ	VR=5V

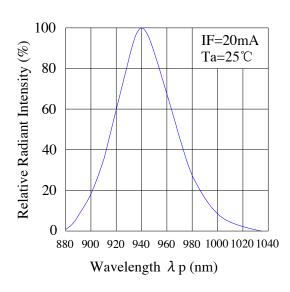
### Notes:

 $1.\theta_{1/2}$  is the off-axis angle at which the luminous intensity is half the axial luminous intensity.

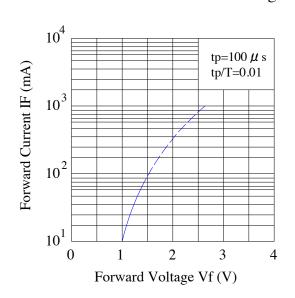
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# Typical Electrical / Optical Characteristics Curves (25℃ Ambient Temperature Unless Otherwise Noted)

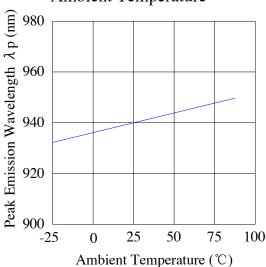
## Spectral Distribution



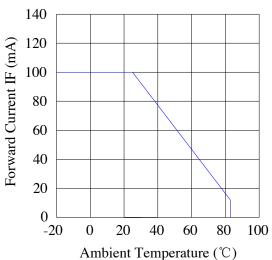
### Forward Current & Forward Voltage



Peak Emission Wavelength & Ambient Temperature



Forward Current & Ambient Temperature



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Fig.5 Relative Intensity vs. **Forward Current** 

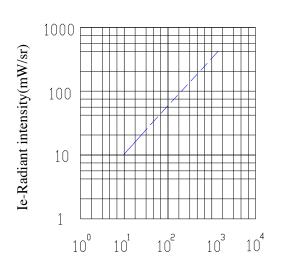
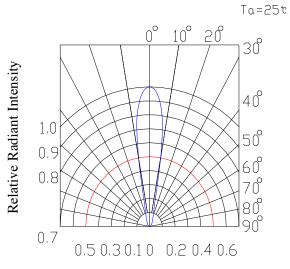


Fig.6 Relative Radiant Intensity vs. **Angular Displacement** 



IF-Forward Current(mA)

Fig.7 Relative Intensity vs. **Ambient Temperature(°C)** 

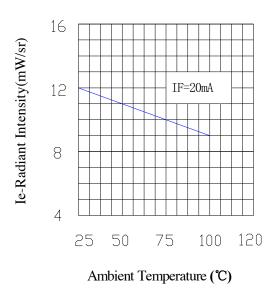
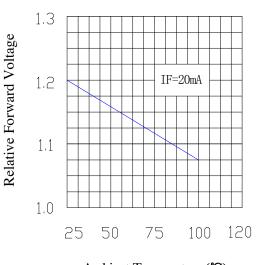


Fig.8 Forward Voltage vs. **Ambient Temperature(°C)** 



Ambient Temperature (°C)

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## Reliability Test Items And Conditions:

The reliability of products shall be satisfied with items listed below:

Confidence level: 90%.

LTPD: 10%.

## 1) Test Items and Results:

No.	. Item	Test Conditions	Test Hours/ Cycles	Sample Sizes	Failure Judgment Criteria	Ac/ Re
1	Reflow Soldering	TEMP.: 260℃ <u>+</u> 5℃ 5secs	6mins	22pcs		0/1
2	Temperature Cycle	H: $+100^{\circ}$ C 15mins $ \int $ 5 mins $ \int $ L: $-40^{\circ}$ C 15mins	50Cycles	22pcs	IR≧U×2	0/1
3	Thermal Shock	H: $+100$ $^{\circ}$ 15mins $ \int $ 10mins $ \int $ L: $-10$ $^{\circ}$ 5mins	50Cycles	22pcs	Ee≦L×0.8 VF≧U×1.2 U: Upper	0/1
4	High Temperature Storage	TEMP.: +100℃	1000hrs	22pcs	Specification Limit L: Lower	0/1
5	Lower Temperature Storage	TEMP.: -40℃	1000hrs	22pcs	Specification Limit	0/1
6	DC Operating Life	V <sub>CE</sub> =5V	1000hrs	22pcs		0/1
7	High Temperature/ High Humidity	85℃ / 85% R.H	1000hrs	22pcs		0/1

## 2) Criteria For Judging The Damage:

Itom	Cymbol	Took Conditions	Criteria for	Judgment
Item	Symbol	Test Conditions	Min	Max
Forward Voltage	VF	IF=50mA		F.V.*)×1.1
Reverse Current	IR	VR=5V	_	F.V.*)×2.0

\*) F.V.: First Value.

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## Please read the following notes before using the product:

#### 1. Over-current-proof

Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).

#### 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 80%RH or less.
- 2.3 The LEDs should be used within a year.
- 2.4 After opening the package, the LEDs should be kept at  $30^{\circ}$ C or less and  $60^{\circ}$ RH or less.
- 2.5 The LEDs should be used within 168 hours (7 days) after opening the package.

#### 3. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than  $260^{\circ}$  for 5 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

When soldering, for Lamp without stopper type and must be leave a minimum of 3mm clearance from the base of the lens to the soldering point.

To avoided the Epoxy climb up on lead frame and was impact to non-soldering problem, dipping the lens into the solder must be avoided.

Do not apply any external stress to the lead frame during soldering while the LED is at high temperature.

Recommended soldering conditions:

Soldering Iron		Wave Soldering		
Temperature Soldering Time	300℃ Max. 3 sec. Max. (one time only)	Pre-heat Pre-heat Time Solder Wave Soldering Time	100°C Max. 60 sec. Max. 260°C Max. 5 sec. Max	

Note: Excessive soldering temperature and / or time might result in deformation of the LED lens or catastrophic failure of the LED.

#### 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. It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.

#### 6. Caution in ESD

Static Electricity and surge damages the LED. It is recommended to use a wrist band or anti-electrostatic glove when handling the LED. All devices equipment and machinery must be properly grounded.

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