Luckylight

Spherical Side View Lens

Infrared Emitting Diode

Technical Data Sheet

Part No.: IR9286C

Features:

- ◇ Low forward voltage.
- ◇ 2.54mm lead spacing.
- ◇ High reliability.
- ◇ High radiant intensity.
- ◇ Peak wavelength λp=940nm.
- ◇ The product itself will remain within RoHS compliant Version.

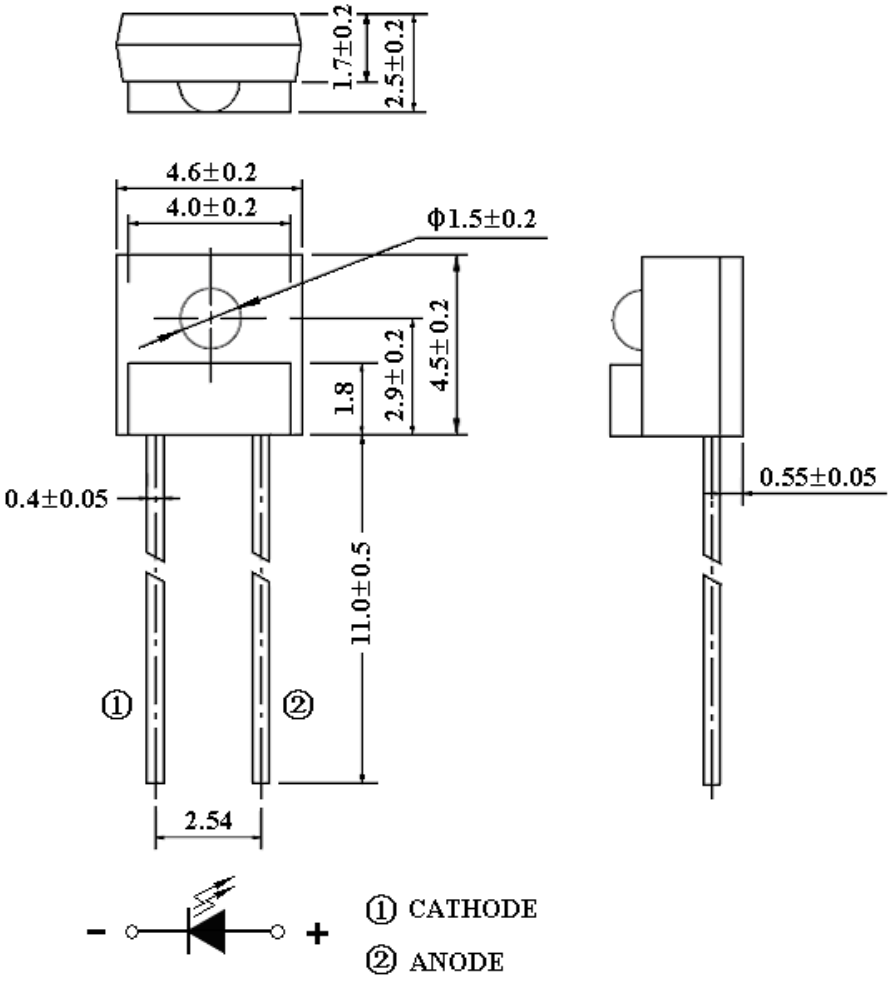
Descriptions:

- ◇ The IR9286C is a GaAlAs/GaAs high intensity infrared emitting diode, molded in a water clear epoxy package. The miniature side-facing device has a chip that emits radiation from the side of the water clear package.

Applications:

- ◇ Mouse.
- ◇ Optoelectronic switch.
- ◇ Photo interrupter.
- ◇ Infrared applied system.

Package Dimension:



Part No.	Chip Material	Lens Color	Source Color
IR9286C	GaAlAs/GaAs	Water Clear	Infrared

Notes:

1. All dimensions are in millimeters.
2. Tolerance is ± 0.25 mm (.010”) unless otherwise specified.
3. Specifications are subject to change without notice.

Absolute Maximum Ratings at Ta=25℃

Parameters	Symbol	Max.	Unit
Power Dissipation	PD	75	mW
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	IFP	1.0	A
Forward Current	IF	50	mA
Reverse Voltage	VR	5	V
Operating Temperature Range	Topr	-40℃ to +80℃	
Storage Temperature Range	Tstg	-40℃ to +85℃	
Soldering Temperature [4mm (.157") From Body]	Tsld	260℃ for 5 Seconds	

Electrical Optical Characteristics at Ta=25℃

Parameters	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Light Current	IC(ON)	265	---	1870	μA	IF=4mA, VCE=3.50V
Viewing Angle*	2θ1/2	---	40	---	Deg	IF=20mA (Note 1)
Peak Emission Wavelength	λp	---	940	---	nm	IF=20mA
Dominant Wavelength	λd	---	945	---	nm	IF=20mA
Spectral Bandwidth	△λ	---	50	---	nm	IF=20mA
Forward Voltage	VF	---	1.20	1.50	V	IF=20mA
Reverse Current	IR	---	---	10	μA	VR=5V

Notes:

1. θ1/2 is the off-axis angle at which the luminous intensity is half the axial luminous intensity.

Reliability Test Items And Conditions:

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

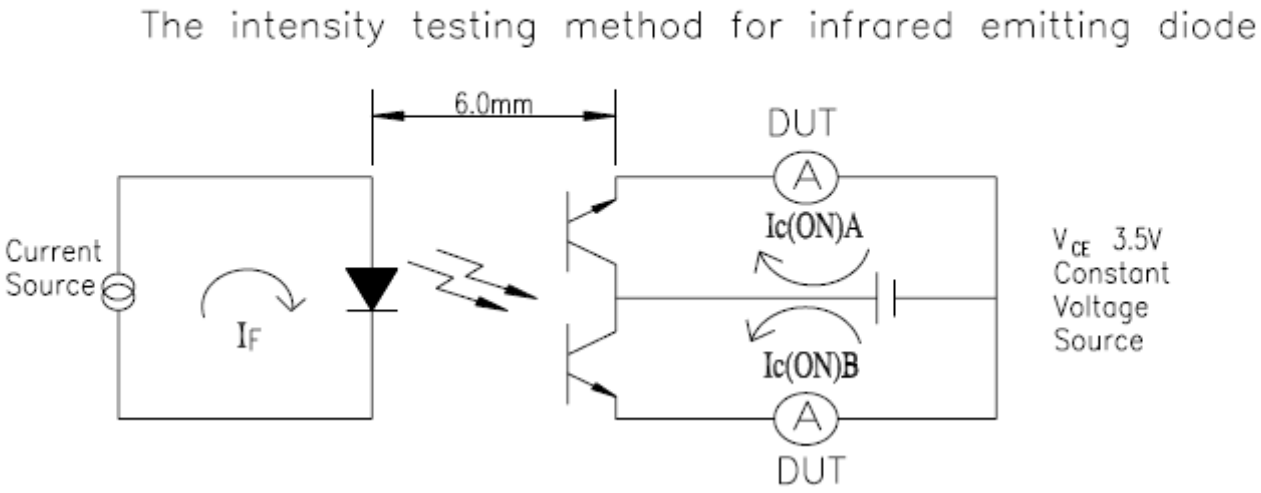
Confidence level: 90%.

LTPD: 10%.

Test Items	Test Conditions	Failure Judgement Criteria	Samples(n) / Defect (c)
Operating life test	V_{CE}=5V, I_F=20mA Ta：25℃ 1000hrs	$I_{c(on)} \leqq L \times 0.8$ $V_F \geqq U \times 1.2$ $I_R \geqq U \times 2$ L：Lower specification limit U：Upper specification limit	n =22，c=0
Temperature cycle	1cycle –55℃to+25℃to +85℃ (30min) (5min) (30min) 50 cycle test		n =22，c=0
Thermal shock	-55℃ to +85℃ (5min) (10 sec) (5min) 50cycle test		n =22，c=0
High temperature storage	Temp：+100℃ 1000hrs		n =22，c=0
Low temperature storage	Temp：-55℃ 1000hrs		n =22，c=0
High temperature High humidity	Ta：85℃ RH：85% 1000hrs		n =22，c=0
Solder heat	Temp：260 ± 5℃ 10 sec		n =22，c=0
Solderability	Temp：230 ± 5℃ 3 sec 4mm from the bottom of the package.	More than 90% of lead to be covered by soldering	n =22，c=0

Test Method For $I_{C(ON)}$:

Condition: I_F=4mA,V_{CE}=3.5V



Wide Rank

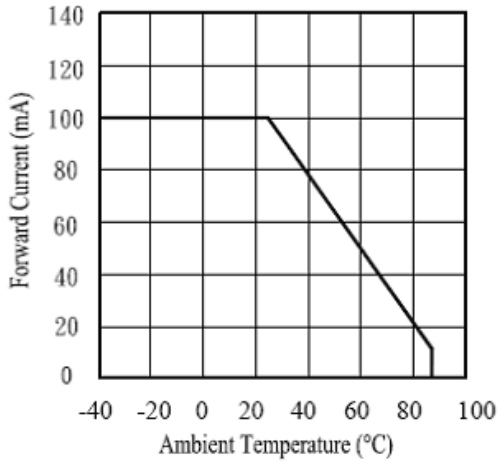
Parameter	Symbol	Min	Max	Unit	Test Condition
5-2	Ic(ON)	1053	1870	μA	I_F=4mA,V_{CE}=3.5V
6-1	Ic(ON)	650	1274	μA	I_F=4mA,V_{CE}=3.5V
6-2	Ic(ON)	465	750	μA	I_F=4mA,V_{CE}=3.5V
7-1	Ic(ON)	347	550	μA	I_F=4mA,V_{CE}=3.5V
7-2	Ic(ON)	306	441	μA	I_F=4mA,V_{CE}=3.5V
7-3	Ic(ON)	265	358	μA	I_F=4mA,V_{CE}=3.5V

Thin Rank

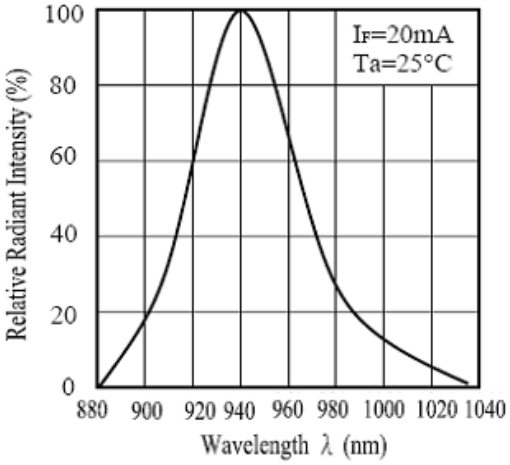
Color Code	Ranks	Symbol	Min	Max	Unit	Test Condition
Yellow	E3	Ic(ON)	286	431	μA	I_F=4mA,V_{CE}=3.5V
Silver	E4	Ic(ON)	357	519	μA	I_F=4mA,V_{CE}=3.5V
Green	E5	Ic(ON)	428	608	μA	I_F=4mA,V_{CE}=3.5V
Purple	E6	Ic(ON)	500	696	μA	I_F=4mA,V_{CE}=3.5V
White	E7	Ic(ON)	571	784	μA	I_F=4mA,V_{CE}=3.5V
Brown	E8	Ic(ON)	643	872	μA	I_F=4mA,V_{CE}=3.5V
Orange	E9	Ic(ON)	714	960	μA	I_F=4mA,V_{CE}=3.5V

Typical Electrical / Optical Characteristics Curves
(25°C Ambient Temperature Unless Otherwise Noted)

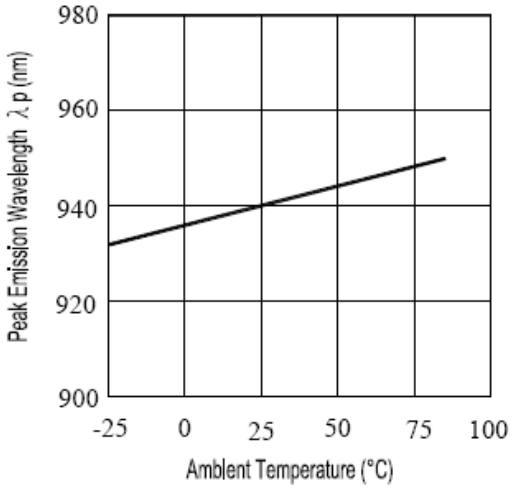
Forward Current vs. Ambient Temperature



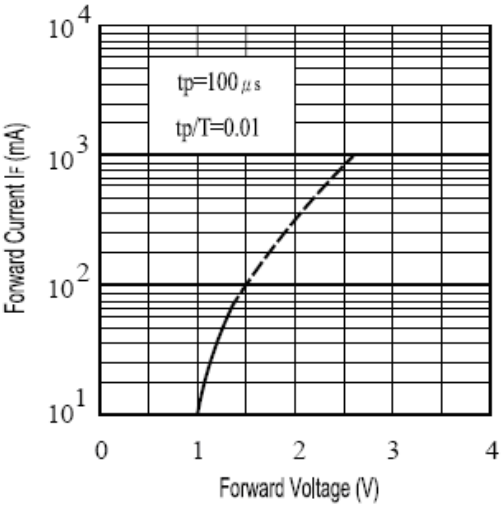
Spectral Distribution



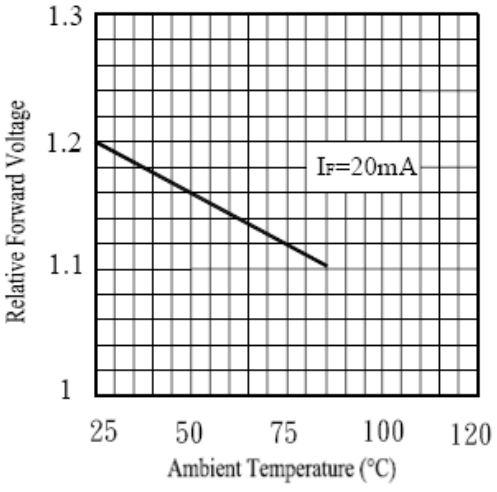
Peak Emission Wavelength Ambient Temperature



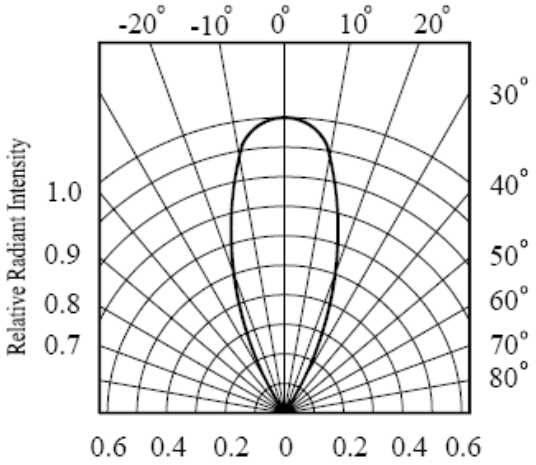
Forward Current vs. Forward Voltage



Forward Voltage vs. Ambient Temperature



Relative Radiant Intensity vs. Angular Displacement



Reliability Test Items And Conditions:

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

Confidence level: 90%.

LTPD: 10%.

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

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℃ or less and 60%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℃ 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℃ Max. 60 sec. Max. 260℃ 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.