LIGHT EMITTING DIODE SPECIFICATION

DESCRIPTION: ITR92B4

REVISION: V2.2

ISSUE DATE: 2019-01-18

Features:

●Good batch consistency
●Small quiescent current, fast response and stable performance
●nice appearance
●Complete variety, short production cycle, small batch stocking
●Available in different sizes as required for easy installation anywhere in the product

Application:

●Intelligent induction
●Consumer electronics
●Industrial equipment induction

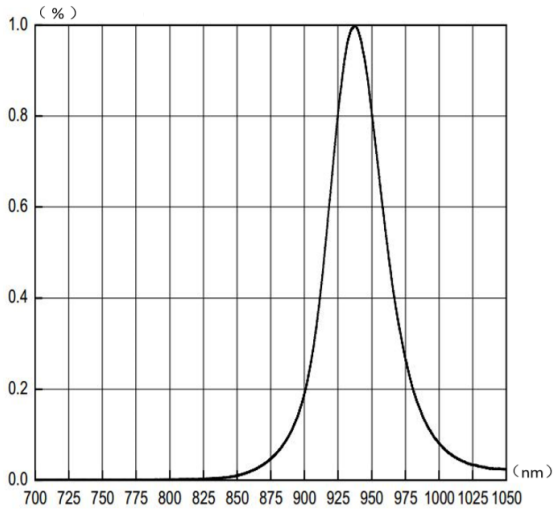
Part Number	Interval width	Emission	Receive
ITR92B4	4mm	GaAlAs	Silicon

Electro-Optical Characteristics(Ta=25℃, @20mA)

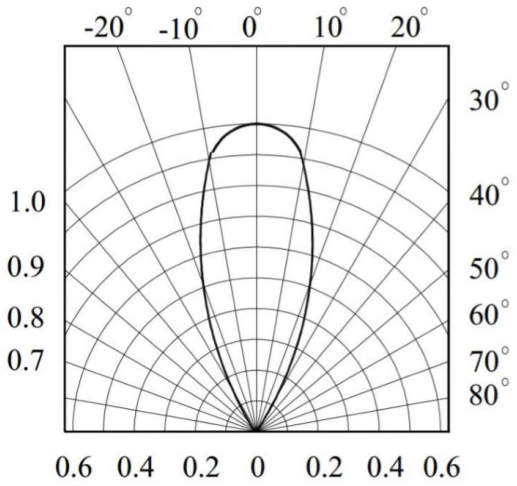
Item	Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Emission	Forward Voltage	V_F	I_F=20mA	--	1.2	1.6	V
	Reverse Current	I_R	V_R=5V	--	10	--	μA
	Peak Wavelength	λ_p	I_F=20mA	--	940	--	nm
	Viewing Angle	2θ1/2	I_F=20mA	--	60	--	Deg
Receive	Collector Dark Current	I_{CEO}	Ee=0mw/cm^2 V_{CE}=20V	--	--	100	nA
	Collector-Emitter Saturation Voltage	VCE(sat)	I_C=2mA Ee=1mw/cm^2	--	--	0.4	V
Conversion characteristics	Collector current	$I_{C(on)}$	I_F=20mA V_{CE}=5V	0.5	--	10	mA
	Rise Time	t_r	V_{CE}=5V,I_C=1mA RL=1000Ω	--	15	--	μS
	Fall time	t_f		--	15	--	μS

Optical & Electrical Characteristics

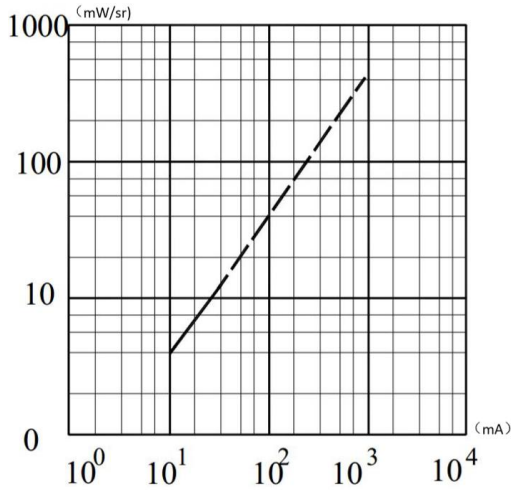
1.Wavelength curve



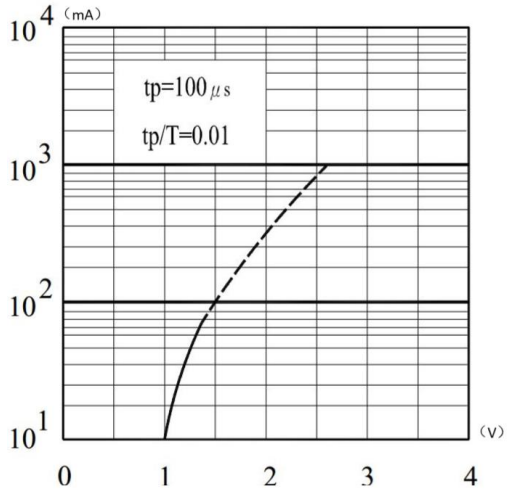
2.View angle



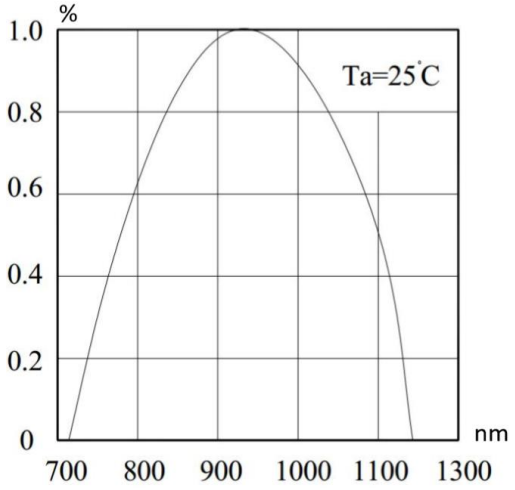
3. forward current Vs. radiation intensity



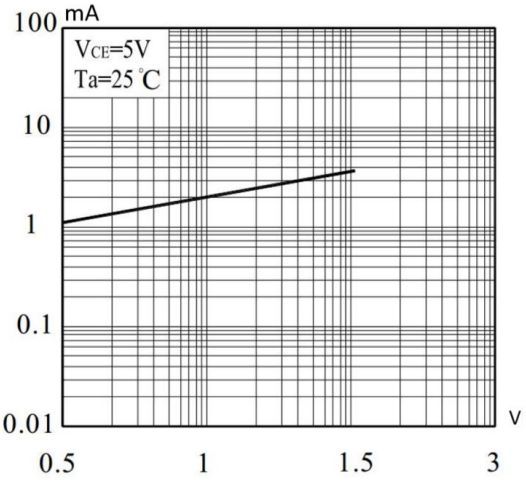
4. forward current Vs. forward voltage



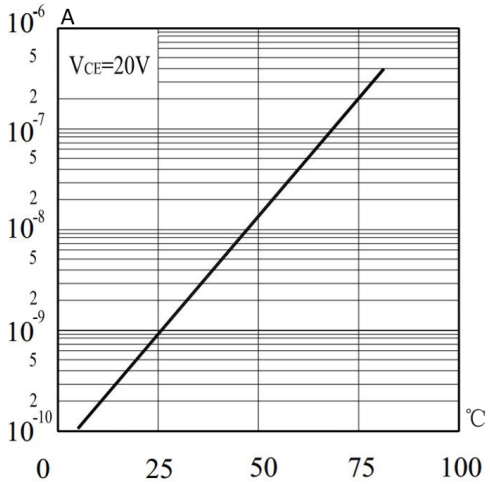
5. Wavelength sensing curve



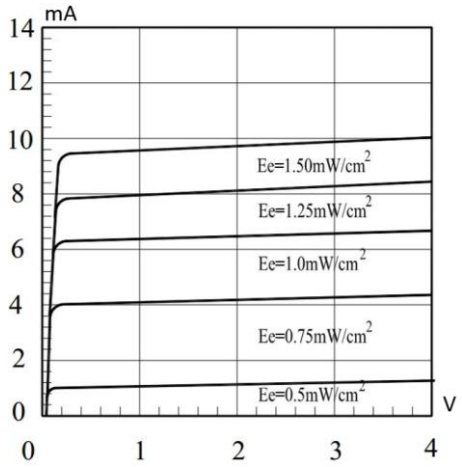
6. Collector current Vs. voltage relationship



7. Dark current Vs. temperature



8. Collector Vs. collector-emitter voltage relationship



Item	Parameter	Symbol	Rating	Unit	Remark
Emission	Maximum continuous forward current	IF	50	mA	--
	Maximum pulse forward current	IFP	1	A	Pulse width≦100μs, Duty≦1%
	Reverse voltage	VR	5	V	--
	Maximum power	Pd	75	mW	--
Receive	Dissipated power	Pc	75	mW	--
	Collector current	Ic	20	mA	--
	Collector-emitter voltage	V_{CEO}	30	V	--
	Emitter-collector voltage	V_{ECO}	5	V	Pulse width≦100μs, Duty≦1%
Operating temperature		Topr	-25~+85	℃	--
Storage temperature		Tstg	-40~+100	℃	--
Welding temperature		Tsol	260	℃	Wave soldering, 3mm from the epoxy body ≤ 3S

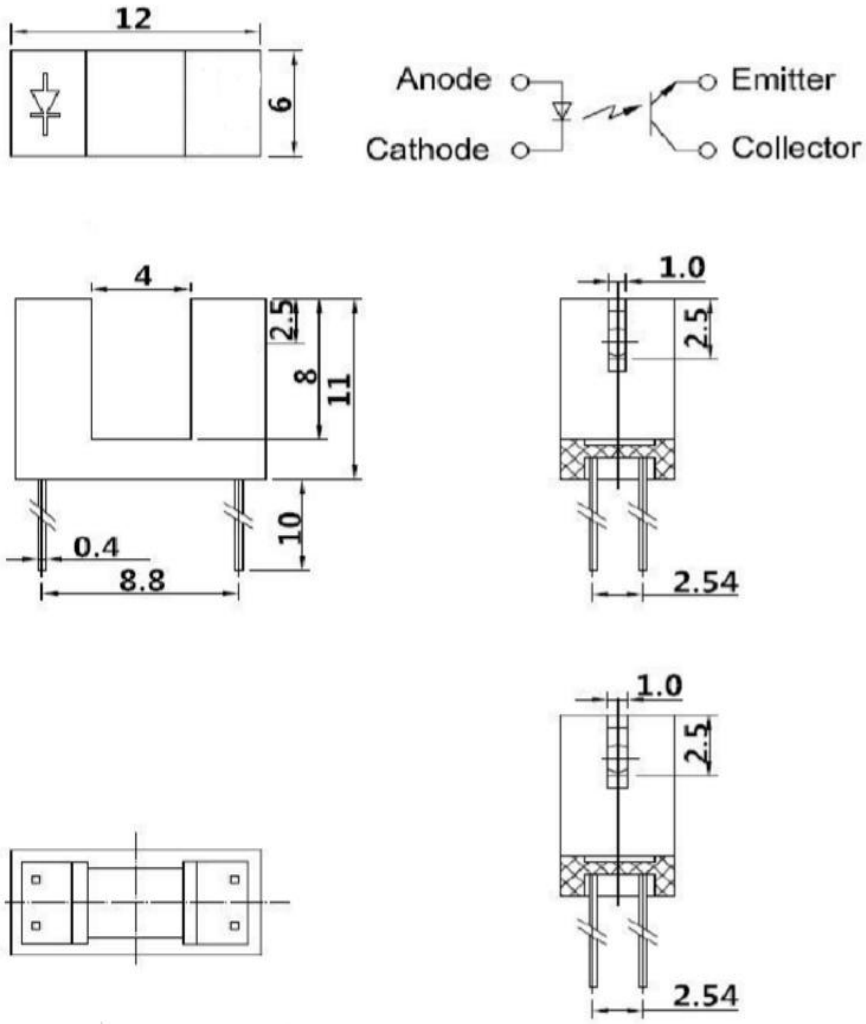
Reliability Test Items And Conditions

Test Items	Reference	Test Conditions	Time	Quantity	Criterion
Thermal Shock	MIL-STD-202G	-40℃ (30min) -100℃ (30min)	100 Cycles	22	0/22
Temperature And Humidity Cyclic	JEITA ED-4701 200 203	-10℃~65℃; 0%~90%RH	10cycles	22	0/22
High Temperature Storage	JEITA ED -4071 200 201	Ta=100℃	1000H	22	0/22
Low Temperature Storage	JEITA ED -4071 200 202	Ta=-40℃	1000H	22	0/22
High Temperature High Humidity Storage	JEITA ED -4071 100 103	Ta=60℃; RH=90%	1000H	22	0/22
High Temperature Life Test	JESD22-A108D	Ta=80℃	1000H	22	0/22
Life Test	JESD22-A108D	Ta=25℃ IF=20mA	1000H	22	0/22
Resistance to Sodering Heat	GB/T 4937, Ⅱ, 2.2&2.3	Tsol*=(240±5)℃10secs	2 times	22	0/22

Criteria For Judging Damage

Test Items	Symbol	Test Conditions	Criteria For Judging Damage
Forward Voltage	V_F	$I_F=I_{FT}$	Initial Data±10%
Recerse Current	I_R	V_R=5V	I_R≤10uA
Luminous Intensity	IV	$I_F=I_{FT}$	Average I_V degradation≤30% ; Single LED I_V degradation≤50%
Resistance to Soldering Heat	-	-	Meterial without internal cracks,no meterial between stripped,no deaded light

Product size (Unit:mm)



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.25(0.01") unless otherwise noted.
3. Lead spacing is measured where the leads emerge from the package.

LabelStyle

Packaging

1.1000PCS/1Bag,8Bags/1Box
2.10Boxes/1Carton

Precautions

1. Lead Forming

1.1 During lead formation, the leads should be bent at a point at least 3mm from the base of the epoxy bulb.

1.2 Lead forming should be done before soldering.

1.3 Avoid stressing the LED package during leads forming. The stress to the base may damage the LED's characteristics or it may break the LEDs.

1.4 Cut the LED lead frames at room temperature. Cutting the lead frames at high temperatures may cause failure of the LEDs.

1.5 When mounting the LEDs onto a PCB, the PCB holes must be aligned exactly with the lead position of the LED. If the LEDs are mounted with stress at the leads, it causes deterioration of the epoxy resin and this will degrade the LEDs.

2. Storage

2.1 The LEDs should be stored at 30°C or less and 70%RH or less after being shipped from Everlight and the storage life limits are 3 months. If the LEDs are stored for 3 months or more, they can be stored for a year in a sealed container with a nitrogen atmosphere and moisture absorbent material.

2.2 Please avoid rapid transitions in ambient temperature, especially, in high humidity environments where condensation can occur.

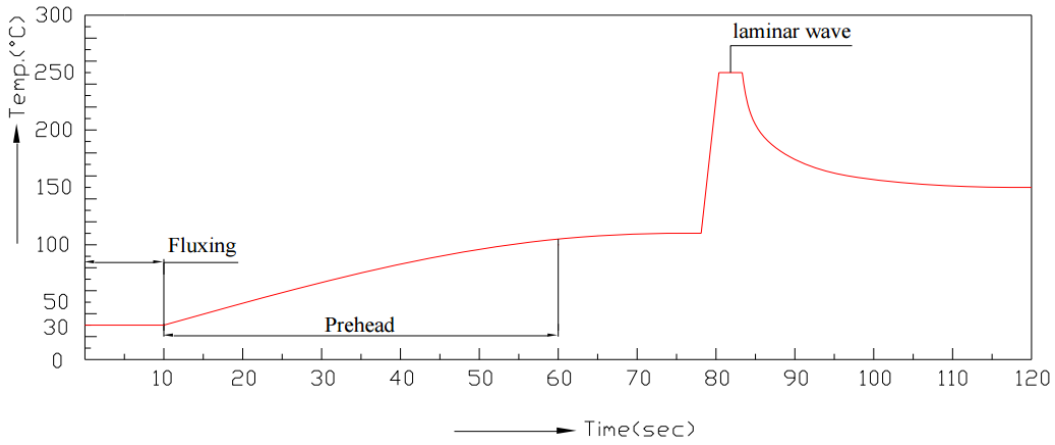
3. Soldering

3.1 Careful attention should be paid during soldering. When soldering, leave more then 3mm from solder joint to epoxy bulb, and soldering beyond the base of the tie bar is recommended.

3.2 Recommended soldering conditions:

Hand Soldering		DIP Soldering	
Temp. at tip of iron	300℃ Max. (30W Max.)	Preheat temp.	100℃ Max. (60 sec Max.)
Soldering time	3 sec Max.	Bath temp. & time	260 Max., 5 sec Max
Distance	3mm Min.(From solder joint to epoxy bulb)	Distance	3mm Min. (From solder joint to epoxy bulb)

3.3 Recommended soldering profile



3.4 Avoiding applying any stress to the lead frame while the LEDs are at high temperature particularly when soldering.

3.5 Dip and hand soldering should not be done more than one time

3.6 After soldering the LEDs, the epoxy bulb should be protected from mechanical shock or vibration until the LEDs return to room temperature.

3.7 A rapid-rate process is not recommended for cooling the LEDs down from the peak temperature.

3.8 Although the recommended soldering conditions are specified in the above table, dip or hand soldering at the lowest possible temperature is desirable for the LEDs.

3.9 Wave soldering parameter must be set and maintain according to recommended temperature and dwell time in the solder wave.

4. Cleaning

4.1 When necessary, cleaning should occur only with isopropyl alcohol at room temperature for a duration of no more than one minute. Dry at room temperature before use.

4.2 Do not clean the LEDs by the ultrasonic. When it is absolutely necessary, the influence of ultrasonic cleaning on the LEDs depends on factors such as ultrasonic power and the assembled condition. Ultrasonic cleaning shall be pre-qualified to ensure this will not cause damage to the LED