

INFRARED EMITTING DIODES



Lead-Free Parts

LSIR21931F/S1-PF/TR1

**DATA SHEET**

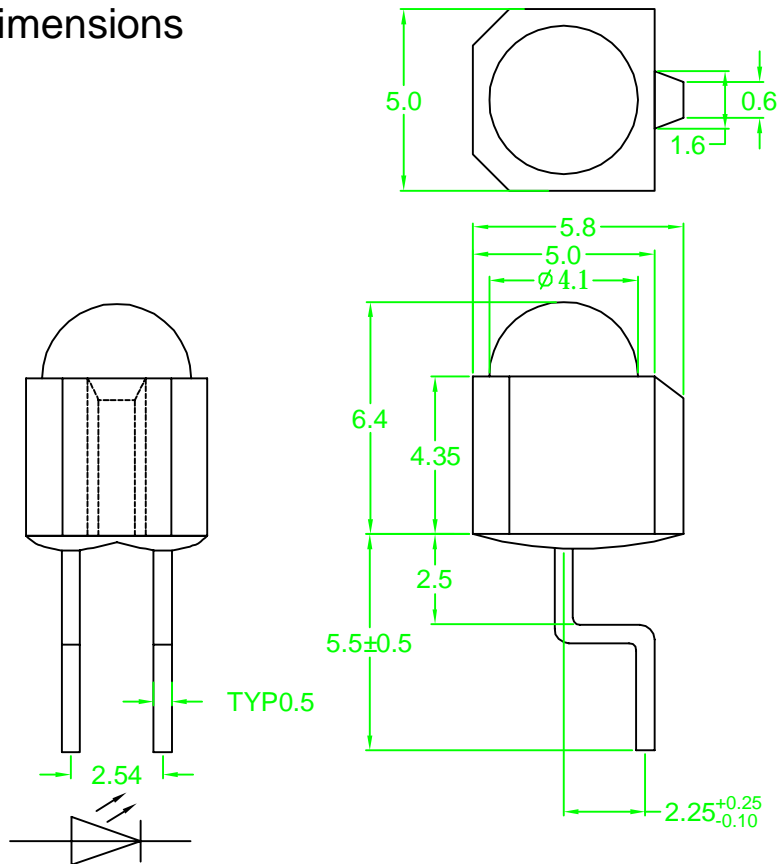
DOC. NO : QW0905-LSIR21931F/S1-PF/TR1

REV : C

DATE : 14- Sep. - 2017



### Package Dimensions



Note : 1.All dimension are in millimeter tolerance is  $\pm 0.25$ mm unless otherwise noted.  
2.Specifications are subject to change without notice.

### Features:

1. High radiant intensity.
2. Suitable for pulse applications.
3. Low average degradation.

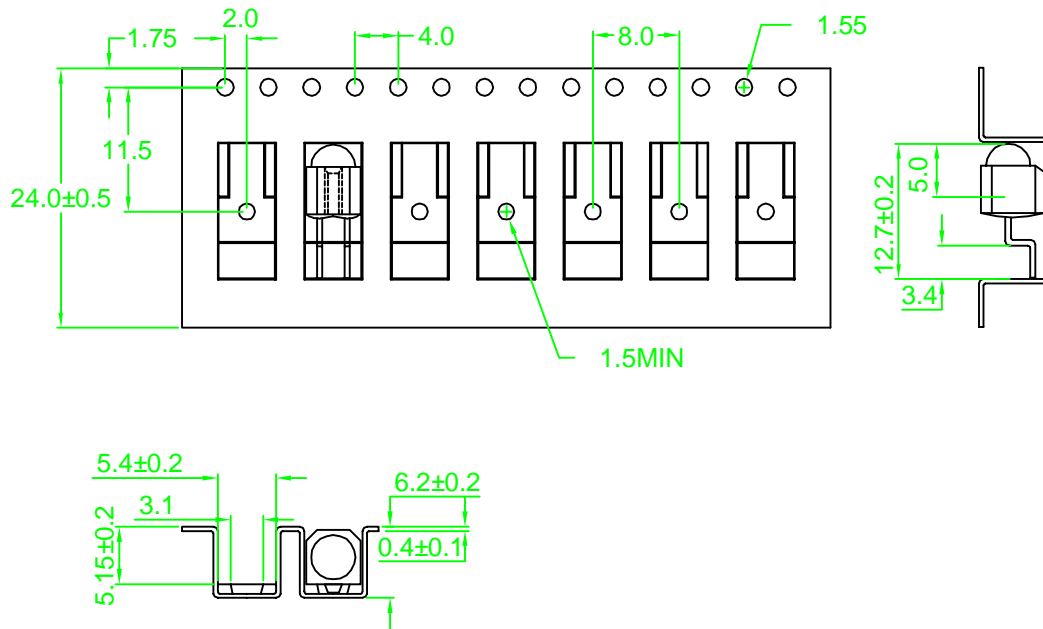
### Descriptions:

The **LSIR21931F/S1-PF/TR1** series are super-high efficiency Gallium Aluminum Arsenide infrared emitting diodes encapsulated in water clear plastic T-1 3/4 package individually

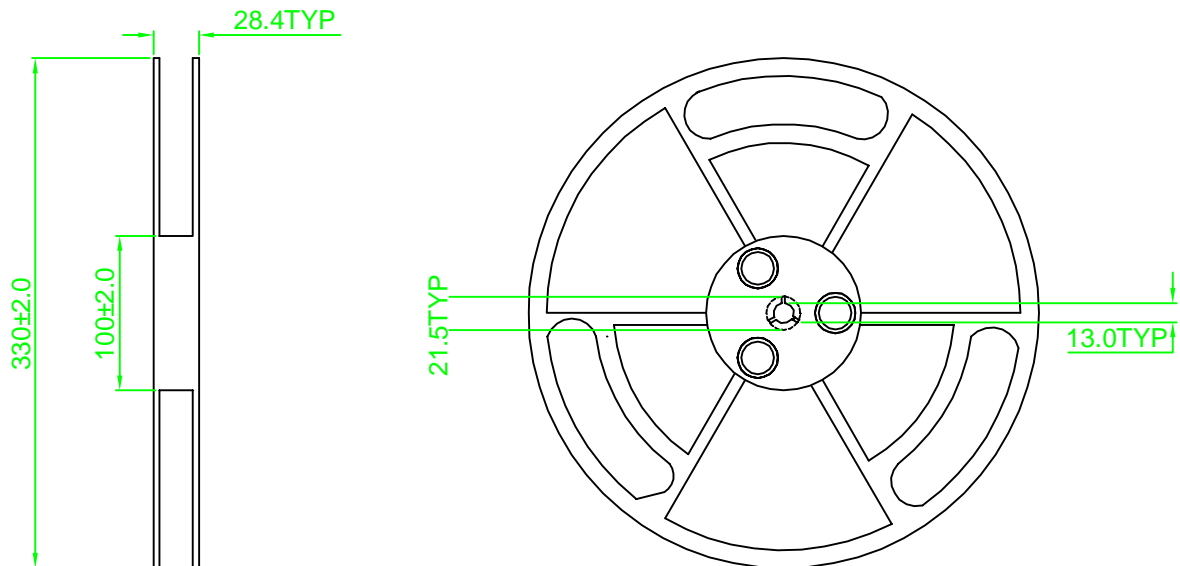
### Device Selection Guide:

PART NO	MATERIAL	LENS COLOR
LSIR21931F/S1-PF/TR1	AlGaAs	Blue Transparent

### Reel Dimensions



### Carrier Type Dimensions



Part No.	Quantity/Reel
LSIR21931F/S1-PF/TR1	1500 devices

Absolute Maximum Ratings at Ta=25 °C

Parameter	Symbol	Ratings	UNIT
		SIR(F)	
Forward Current	IF	50	mA
Peak Forward Current (200uS every 4 seconds)	IFP	0.5	A
Peak Forward Current (300PPS,1µs Pulse)	IFP	3	A
Power Dissipation	PD	100	mW
Reverse Voltage	Vr	5	V
Electrostatic Discharge( * )	ESD	2000	V
Operating Temperature	Topr	-55 ~ +100	°C
Storage Temperature	Tstg	-55 ~ +100	°C
Storage Term	Shelf life of the products in unopened bag is 3 months(max) at <30° C and 70% RH from the delivery date.If the shelf life exceeds 3 months or more, the LEDs need to be stored in a sealed container with desiccant(silica gel) to ensure their shelf life will not exceed 1 year		

### Electrical Optical Characteristics (Aa=25°C)

PARAMETER	SYMBOL	Min.	Typ.	Max.	UNIT	TEST CONDITION
Radiant Intensity	Le	35	75		mW/sr	IF=50mA
Aperture Radiant Incidence	Ee	5	15		mW/cm <sup>2</sup>	IF=50mA
Peak Wavelength	$\lambda$ peak		880		nm	IF=50mA
Spectral Line Half Width	$\Delta \lambda$		40		nm	IF=50mA
Forward Voltage	VF		1.4	1.7	V	IF=50mA
Reverse Current	IR			100	$\mu$ A	VR=5V
Viewing Angle	$2\theta$ 1/2		22		deg	

Note : 1.The forward voltage data did not including  $\pm 0.1V$  testing tolerance.  
2. The radiant intensity data did not including  $\pm 15\%$  testing tolerance.

### Brightness Code For Standard LED Lamps

#### SIR(F) CHIP

Group	Luminous Intensity(mcd) at 50 mA	
	Min.	Max.
A14	35	42
A15	42	50
A16	50	60
A17	60	75
A18	75	85

## Typical Electro-Optical Characteristics Curve

SIR(F) CHIP

Fig.1 Forward Current vs. Forward Voltage

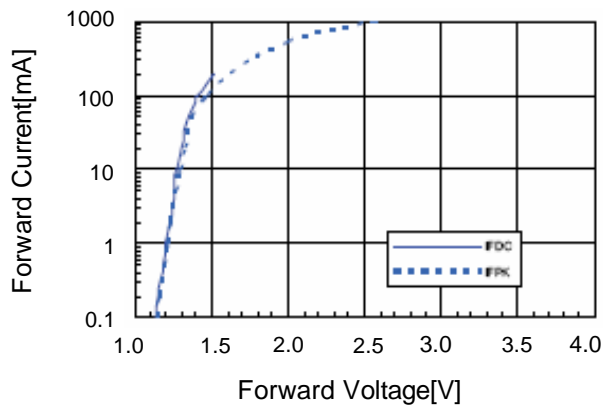


Fig.2 Relative Radiant Power vs. Wavelength

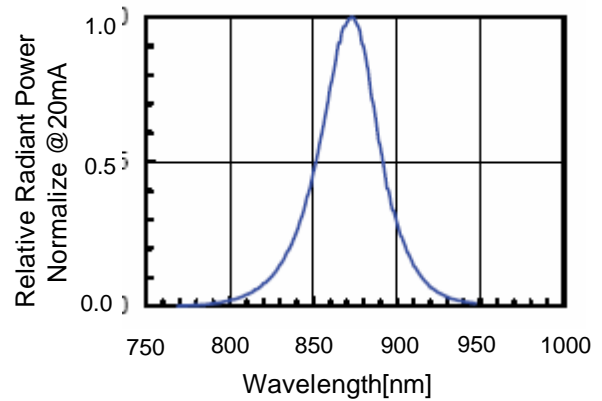


Fig.3 Relative Radiant Power vs. Forward DC Current

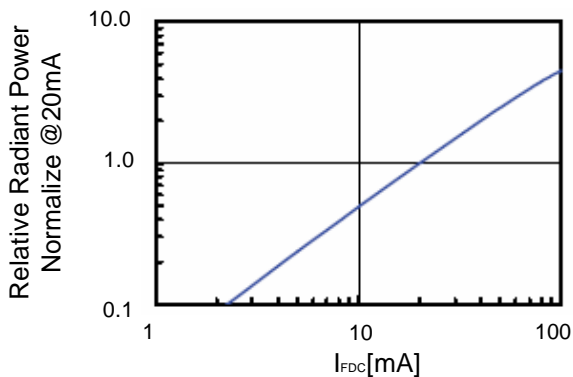


Fig.4 Relative Radiant Power vs. Forward Peak Current

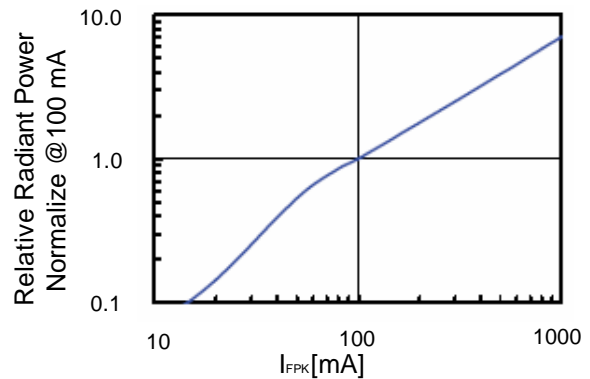


Fig.5 Forward DC Voltage vs. Temperature

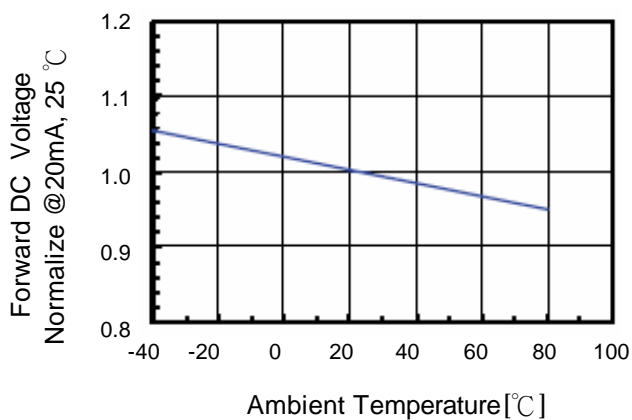
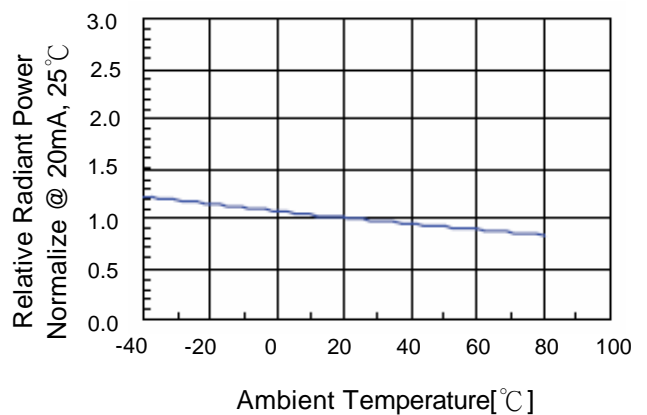


Fig.6 Relative Radiant Power vs. Temperature



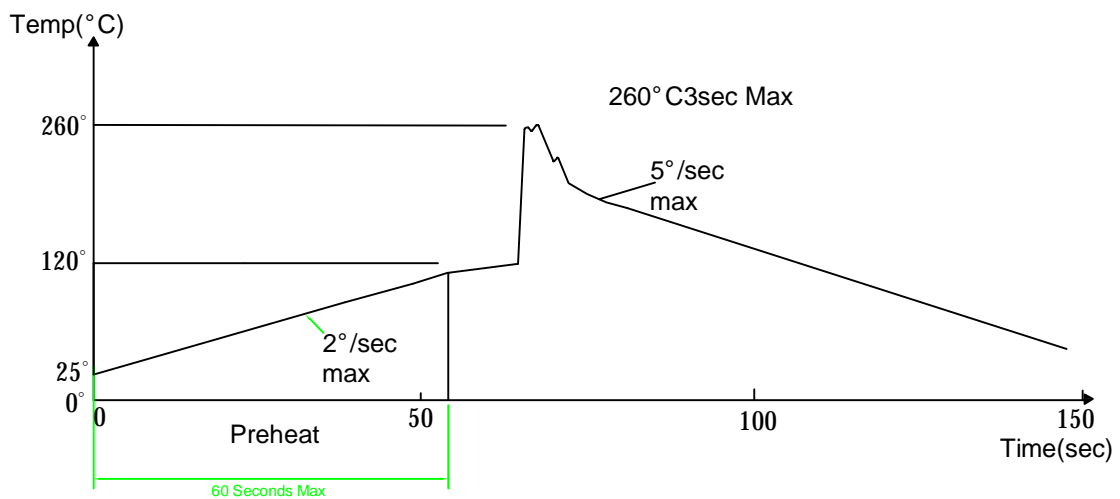
## Soldering Condition(Pb-Free)

### 1.Iron:

Soldering Iron:30W Max  
Temperature 350° C Max  
Soldering Time:3 Seconds Max(One Time)  
Distance:2mm Min(From solder joint to body)

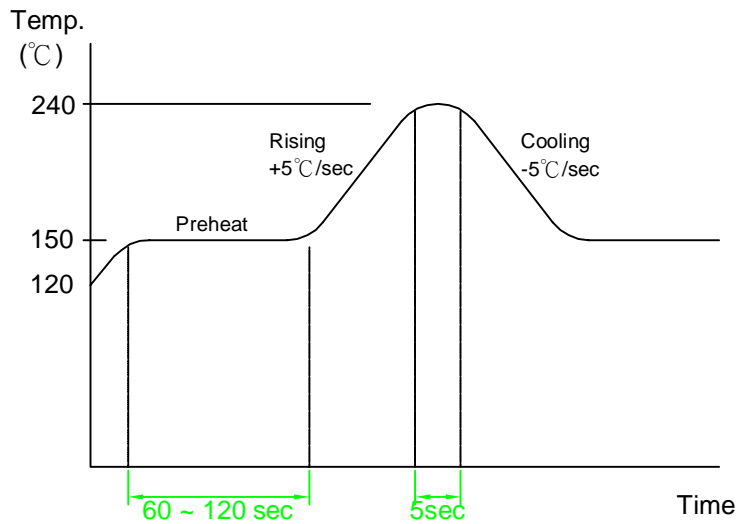
### 2.Wave Soldering Profile

Dip Soldering  
Preheat: 120° C Max  
Preheat time: 60seconds Max  
Ramp-up  
2° C/sec(max)  
Ramp-Down:-5° C/sec(max)  
Solder Bath:260° C Max  
Dipping Time:3 seconds Max  
Distance:2mm Min(From solder joint to body)

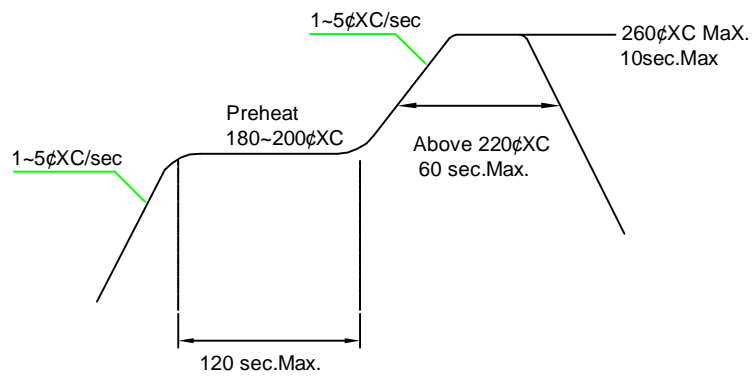


Recommended Soldering Conditions

3-1. LEAD Reflow Solder



3-2 PB-Free Reflow Solder



Reflow Soldering should not be done more than two times.



**Reliability Test:**

Test Item	Test Condition	Description	Reference Standard
Operating Life Test	1.Under Room Temperature 2.If=20mA 3.t=1000 hrs (-24hrs, +72hrs)	This test is conducted for the purpose of detemining the resisance of a part in electrical and themal stressed.	MIL-STD-750: 1026 MIL-STD-883: 1005 JIS C 7021: B-1
High Temperature Storage Test	1.Ta=105 °C ±5°C 2.t=1000 hrs (-24hrs, +72hrs)	The purpose of this is the resistance of the device which is laid under ondition of hogh temperature for hours.	MIL-STD-883:1008 JIS C 7021: B-10
Low Temperature Storage Test	1.Ta=-40 °C ±5°C 2.t=1000 hrs (-24hrs, +72hrs)	The purpose of this is the resistance of the device which is laid under condition of low temperature for hours.	JIS C 7021: B-12
High Temperature High Humidity Test	1.Ta=65 °C ±5°C 2.RH=90%~95% 3.t=240hrs ±2hrs	The purpose of this test is the resistance of the device under tropical for hous.	MIL-STD-202:103B JIS C 7021: B-11
Thermal Shock Test	1.Ta=105 °C ±5°C & -40 °C ±5°C (10min) (10min) 2.total 10 cycles	The purpose of this is the resistance of the device to sudden extreme changes in high and low temperature.	MIL-STD-202: 107D MIL-STD-750: 1051 MIL-STD-883: 1011
Solder Resistance Test	1.T.Sol=260 °C ±5°C 2.Dwell time= 10 ±1sec.	This test intended to determine the thermal characteristic resistance of the device to sudden exposures at extreme changes in temperature when soldering the lead wire.	MIL-STD-202: 210A MIL-STD-750: 2031 JIS C 7021: A-1
Solderability Test	1.T.Sol=245 °C ±5°C 2.Dwell time=5 ±1sec	This test intended to see soldering well performed or not.	MIL-STD-202: 208D MIL-STD-750: 2026 MIL-STD-883: 2003 JIS C 7021: A-2