

Technical Data Sheet

4.66mm Infrared LED, T-1

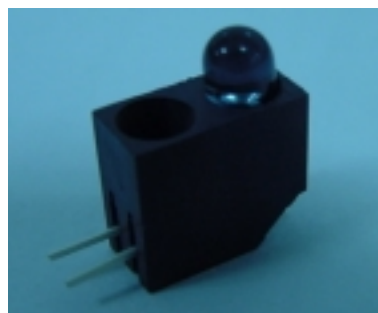
A593B/1IR1303

Features

- High reliability
- Peak wavelength $\lambda_p=940\text{nm}$
- Low forward voltage
- Good spectral matching to Si photodetector

Descriptions

A593B/1IR1303 are T1^{3/4} epoxy packaged infrared emitters with a peak wavelength of 940 nm. The device is spectrally matched with phototransistor, photodiode and infrared receiver module.



Applications

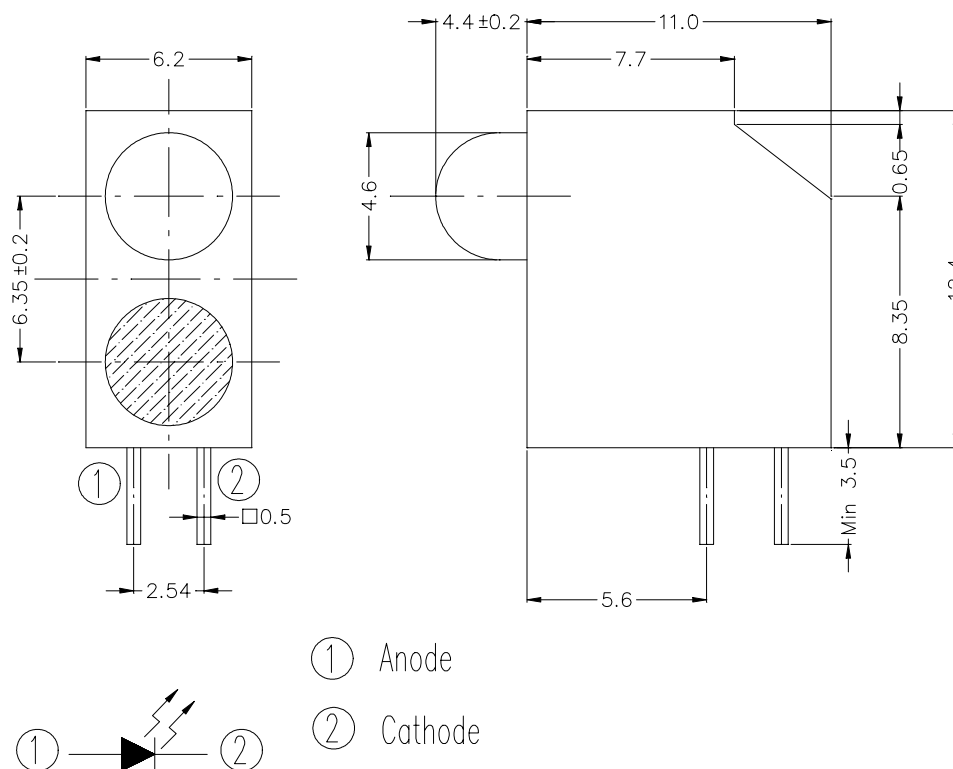
- Free air transmission system
- Optoelectronic switch
- Floppy disk drive
- Infrared applied system
- Smoke detector

Device Selection Guide

LED Part No.	Chip	Lens Color
	Material	
IR	GaAlAs	Blue

Device No:DAI-130-014

Package Dimensions



Notes: 1.All dimensions are in millimeters

2.Tolerances unless dimensions $\pm 0.25\text{mm}$

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Units
Continuous Forward Current	I_F	100	mA
Peak Forward Current	I_{FP}	1.0	A
Reverse Voltage	V_R	5	V
Operating Temperature	T_{opr}	-40 ~ +85	°C
Storage Temperature	T_{stg}	-40 ~ +85	°C
Soldering Temperature	T_{sol}	260	°C
Power Dissipation at(or below) 25°C Free Air Temperature	P_d	150	mW

Notes: *1: I_{FP} Conditions--Pulse Width $\leq 100 \mu\text{s}$ and Duty $\leq 1\%$.

*2:Soldering time ≤ 5 seconds.

Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Units
Radiant Intensity	E _e	I _F =20mA	5.6	15	----	mW/sr
		I _F =100mA	----	80	----	
		I _F =1A	----	800	----	
Peak Wavelength	λ _p	I _F =20mA	----	940	----	nm
Spectral Bandwidth	Δλ	I _F =20mA	----	45	----	nm
Forward Voltage	V _F	I _F =20mA	----	1.2	1.5	V
		I _F =100mA	----	1.4	1.8	
		I _F =1A	----	2.6	4.0	
Reverse Current	I _R	V _R =5V	----	----	10	μA
View Angle	2θ _{1/2}	I _F =20mA	----	30	----	deg

Notes: *1:I_F Conditions--Pulse Width ≤ 100 μs and Duty ≤ 1%.

Typical Electro-Optical Characteristics Curves

Fig.1 Forward Current vs. Ambient Temperature

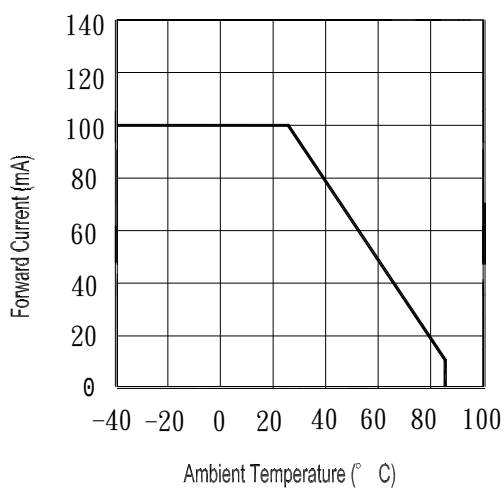


Fig.2 Spectral Distribution

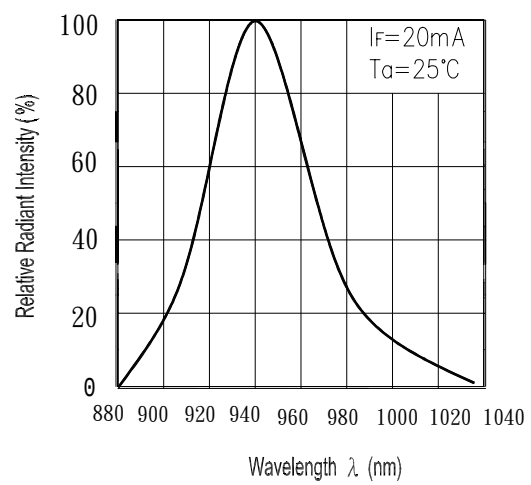


Fig.3 Peak Emission Wavelength vs. Ambient Temperature

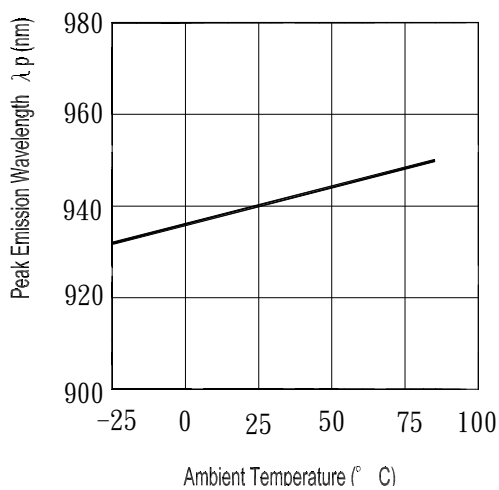
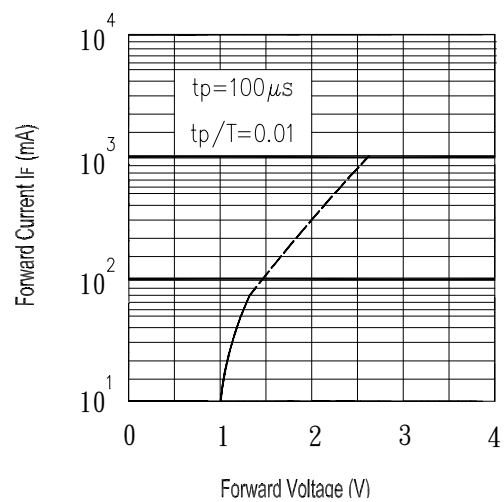


Fig.4 Forward Current vs. Forward Voltage



Typical Electro-Optical Characteristics Curves

Fig. 5 Relative Intensity vs.
Forward Current

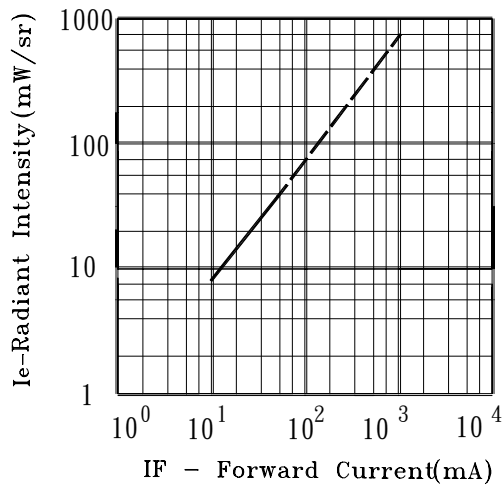


Fig. 6 Relative Radiant Intensity vs.
Angular Displacement

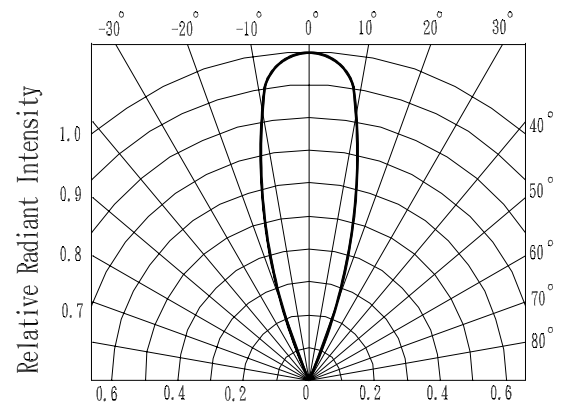


Fig. 7 Relative Intensity vs.
Ambient Temperature ($^{\circ}\text{C}$)

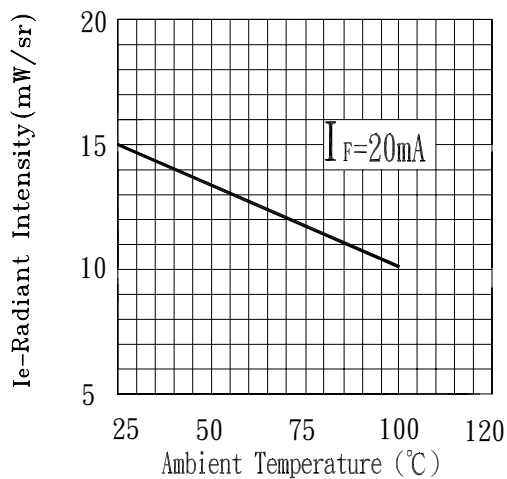
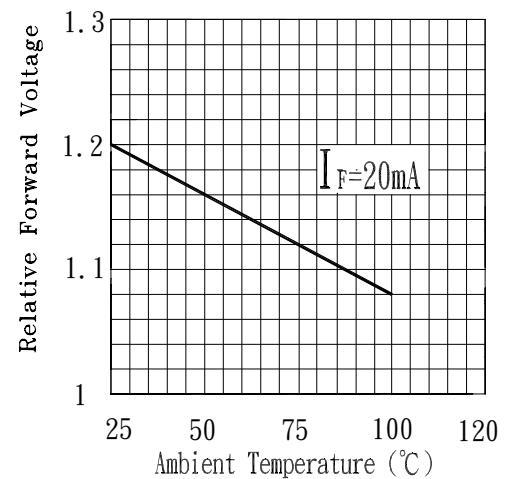


Fig. 8 Forward Current vs.
Ambient Temperature ($^{\circ}\text{C}$)



Reliability Test Item And Condition

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 Judgement Criteria	Ac/Re
1	Solder Heat	TEMP 260°C ± 5 °C	10 secs	22pcs	$I_R \geq U \times 2$ $E_e \leq L \times 0.8$ $V_F \geq U \times 1.2$ U : Upper Specification Limit L : Lower Specification Limit	0/1
2	Temperature Cycle	H : +85°C 30mins $\updownarrow$ 5mins L : -55°C 30mins	50Cycle	22pcs		0/1
3	Thermal Shock	H : +100°C 5mins $\updownarrow$ 10secs L : -10°C 5mins	50Cycle	22pcs		0/1
4	High Temperature Storage	TEMP. : +100°C	1000hrs	22pcs		0/1
5	Low Temperature Storage	TEMP. : -55°C	1000hrs	22pcs		0/1
6	DC Operating Life	I _F =20mA	1000hrs	22pcs		0/1
7	High Temperature/ High Humidity	85°C / 85% R.H	1000hrs	22pcs		0/1

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Device No: DAI-130-014