

5mm Infrared LED EL-1BL5D

SIVAGO[®]
SEMICONDUCTOR

Features

- Package type: leaded
- Package form: T-1 $\frac{3}{4}$
- Dimensions (in mm): \varnothing 5
- Peak wavelength: $\lambda_p = 940$ nm
- High reliability
- High radiant power
- High radiant intensity
- Angle of half intensity: $\varphi = \pm 50^\circ$
- Low forward voltage
- Suitable for high pulse current operation
- Good spectral matching with Si photodetectors
- Lead (Pb)-free component in accordance with RoHS

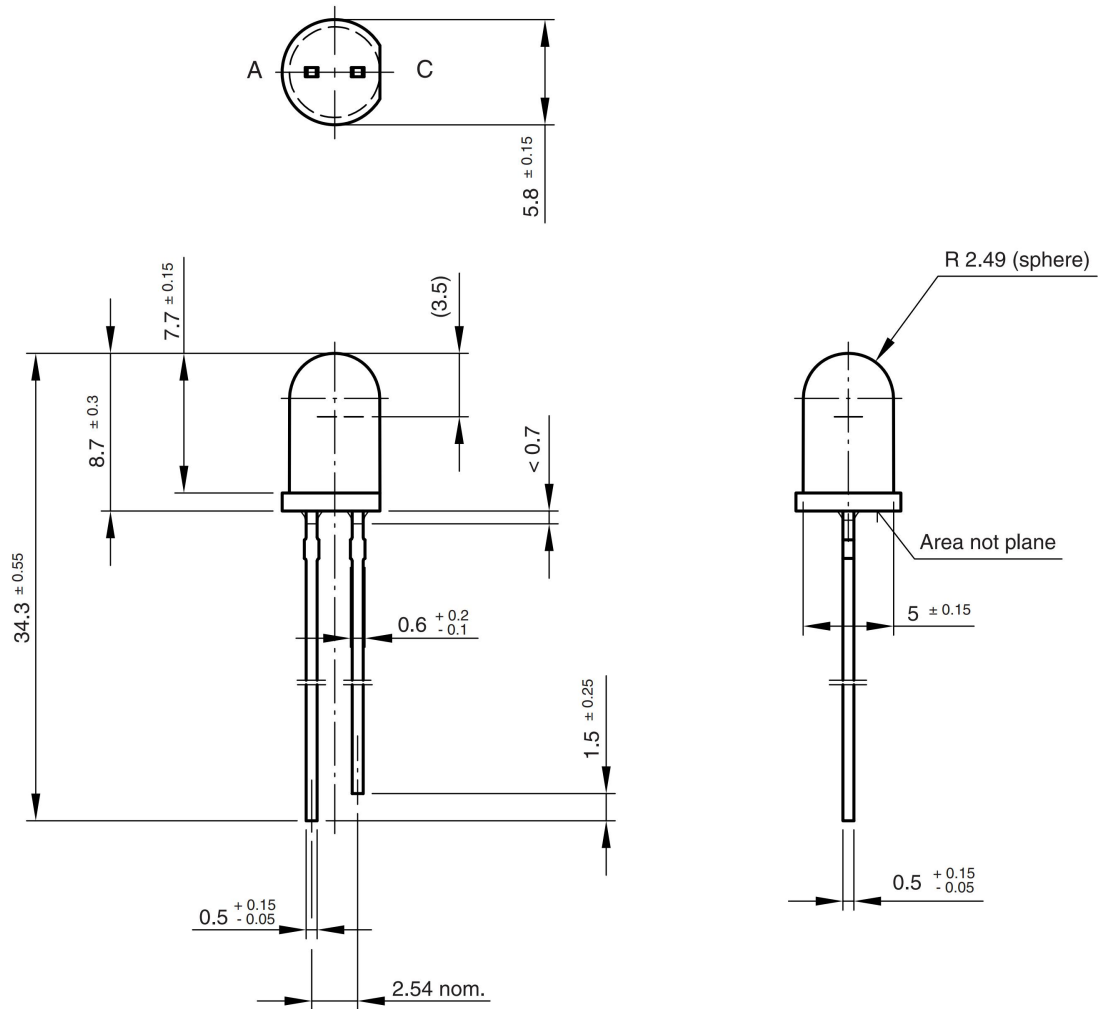


Application

- Infrared remote control units with high power requirements
- Free air transmission systems
- Infrared source for optical counters and card readers

Description

Infrared Emitting Diode (EL-1BL5D) is a high intensity diode , molded in a blue plastic package. The device is spectrally matched with phototransistor , photodiode and infrared receiver module.

PACKAGE DIMENSIONS

NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is ± 0.25 mm (.010") unless otherwise noted.
3. Lead spacing is measured where the leads emerge from the package.

ABSOLUTE MAXIMUM RATINGS AT TA =25°C

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V_R	5	V
Forward current		I_F	100	mA
Peak forward current	$t_p/T = 0.5, t_p = 100 \mu s$	I_{FM}	200	mA
Surge forward current	$t_p = 100 \mu s$	I_{FSM}	1.5	A
Power dissipation		P_V	160	mW
Junction temperature		T_j	100	°C
Operating temperature range		T_{amb}	- 40 to + 85	°C
Storage temperature range		T_{stg}	- 40 to + 100	°C
Soldering temperature	$t \leq 5 s, 2 mm$ from case	T_{sd}	260	°C
Thermal resistance junction/ambient	J-STD-051, leads 7 mm soldered on PCB	R_{thJA}	230	K/W

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

*2:Soldering time ≤ 5 seconds.

ELECTRICAL OPTICAL CHARACTERISTICS AT TA=25°C

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	V_F		1.35	1.6	V
	$I_F = 1 \text{ A}, t_p = 100 \mu\text{s}$	V_F		2.6	3	V
Temperature coefficient of V_F	$I_F = 1 \text{ mA}$	TK_{V_F}		- 1.8		mV/K
Reverse current	$V_R = 5 \text{ V}$	I_R			10	μA
Junction capacitance	$V_R = 0 \text{ V}, f = 1 \text{ MHz}, E = 0$	C_j		25		pF
Radiant intensity	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	I_e	40	60	200	mW/sr
	$I_F = 1 \text{ A}, t_p = 100 \mu\text{s}$	I_e	340	500		mW/sr
Radiant power	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	ϕ_e		35		mW
Temperature coefficient of ϕ_e	$I_F = 20 \text{ mA}$	TK_{ϕ_e}		- 0.6		%/K
Angle of half intensity		φ		± 50		deg
Peak wavelength	$I_F = 100 \text{ mA}$	λ_p		940		nm
Spectral bandwidth	$I_F = 100 \text{ mA}$	$\Delta\lambda$		50		nm
Temperature coefficient of λ_p	$I_F = 100 \text{ mA}$	TK_{λ_p}		0.2		nm/K
Rise time	$I_F = 100 \text{ mA}$	t_r		800		ns
Fall time	$I_F = 100 \text{ mA}$	t_f		800		ns
Virtual source diameter	method: 63 % encircled energy	d		2.4		mm

BASIC CHARACTERISTICS

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

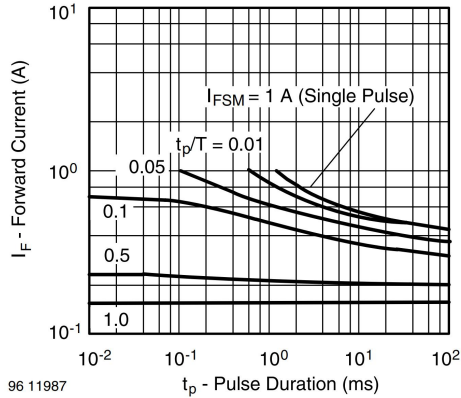


Fig. 3 - Pulse Forward Current vs. Pulse Duration

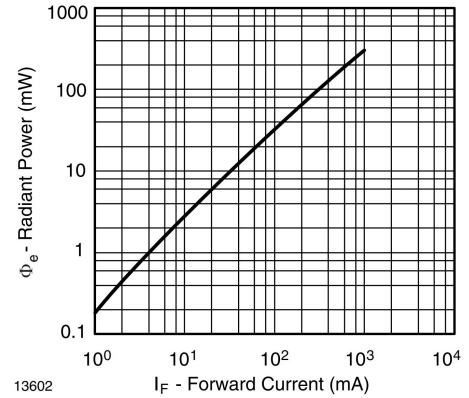


Fig. 6 - Radiant Power vs. Forward Current

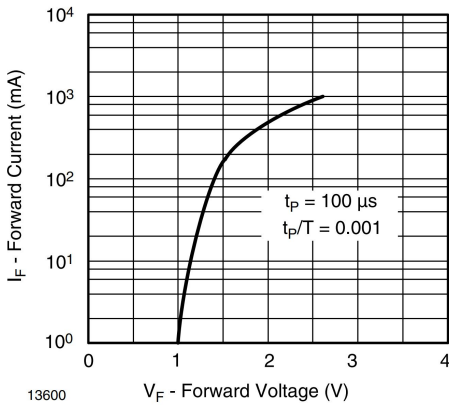


Fig. 4 - Forward Current vs. Forward Voltage

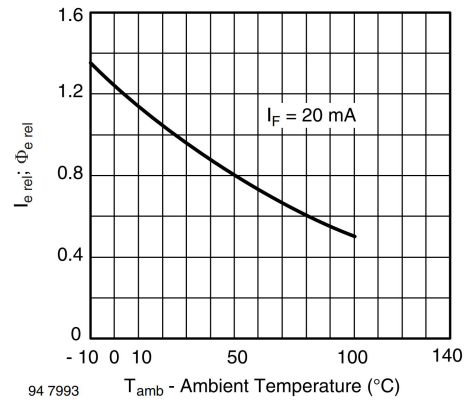


Fig. 7 - Relative Radiant Intensity/Power vs. Ambient Temperature

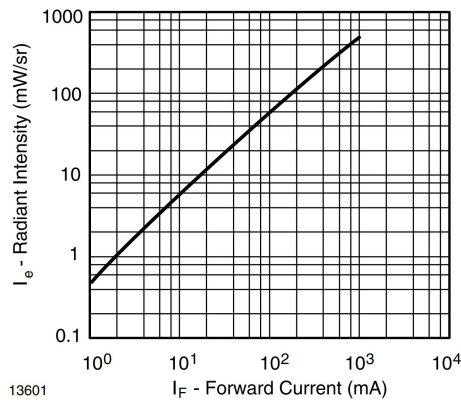


Fig. 5 - Radiant Intensity vs. Forward Current

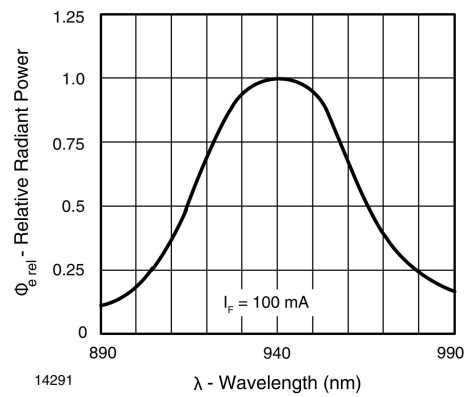


Fig. 8 - Relative Radiant Power vs. Wavelength

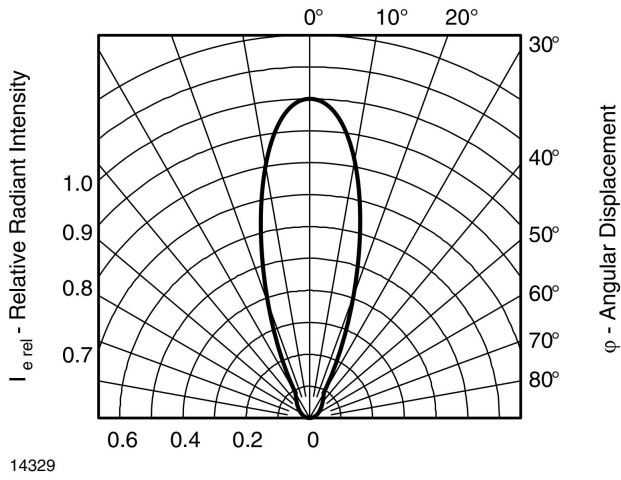


Fig. 9 - Relative Radiant Intensity vs. Angular Displacement

Packing Quantity Specification

1. 1000Pcs/1Bag,8 Bag/1Box
2. 4Boxes/1Carton

Label Form Specification

製品名 PRODUCT	
コードNo. CODE No.	
数量 Q'TY	
ロットNo. LOT No.	
備考 REMARKS	
	

- PRODUCT: Part Number
- CODE NO.: Product Serial Number
- QTY: Packing Quantity
- LOT No: Lot Number
- REMARKS:Remarks

Notes

Lead Forming

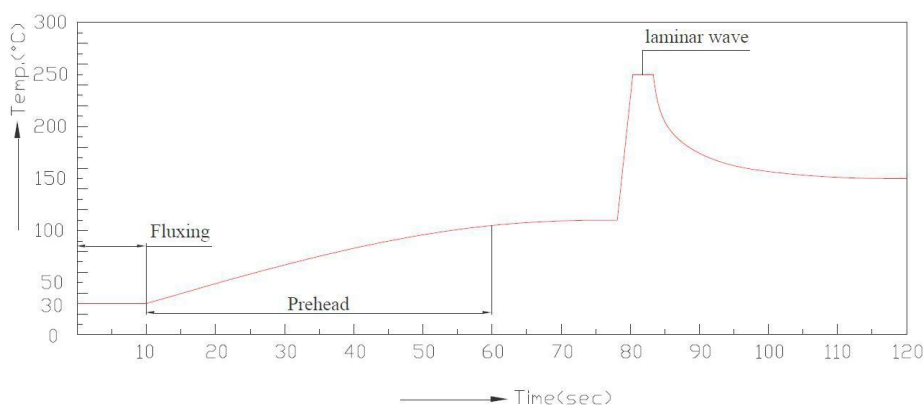
1. During lead formation, the leads should be bent at a point at least 3mm from the base of the epoxy bulb.
2. Lead forming should be done before soldering.
3. Avoid stressing the LED package during leads forming. The stress to the base may damage the LED's characteristics or it may break the LEDs.
4. Cut the LED lead frames at room temperature. Cutting the lead frames at high temperatures may cause failure of the LEDs.
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.

Soldering

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

Hand Soldering		DIP Soldering	
Temp. at tip of iron	300°C Max. (30W Max.)	Preheat temp.	100°C 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. Recommended soldering profile



- Avoiding applying any stress to the lead frame while the LEDs are at high temperature particularly when soldering.
- Dip and hand soldering should not be done more than one time
- After soldering the LEDs, the epoxy bulb should be protected from mechanical shock or vibration until the LEDs return to room temperature.
- A rapid-rate process is not recommended for cooling the LEDs down from the peak temperature.
- 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.
- Wave soldering parameter must be set and maintain according to recommended temperature and dwell time in the solder wave.

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