

Features

- Hermetic 2-pin TO-46 package
- Narrow viewing angle
- High reliability and rugged construction
- High reliability screening available
- Radiation tolerant
- Operating temperature range -65°C to +125°C

Applications

- Encoders
- Position Sensors
- Level Detection

Description

The IB5D1 / IB5D2 / IB5D3 consist of AlGaAs 824nm infrared LED mounted in a narrow angle hermetic TO-46 package.

Schematic Diagram

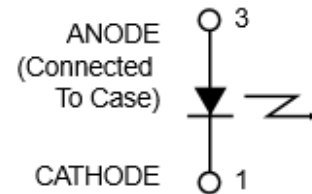


Figure 1. IB5DX Schematic Diagram

Package Dimensions in inches (mm)

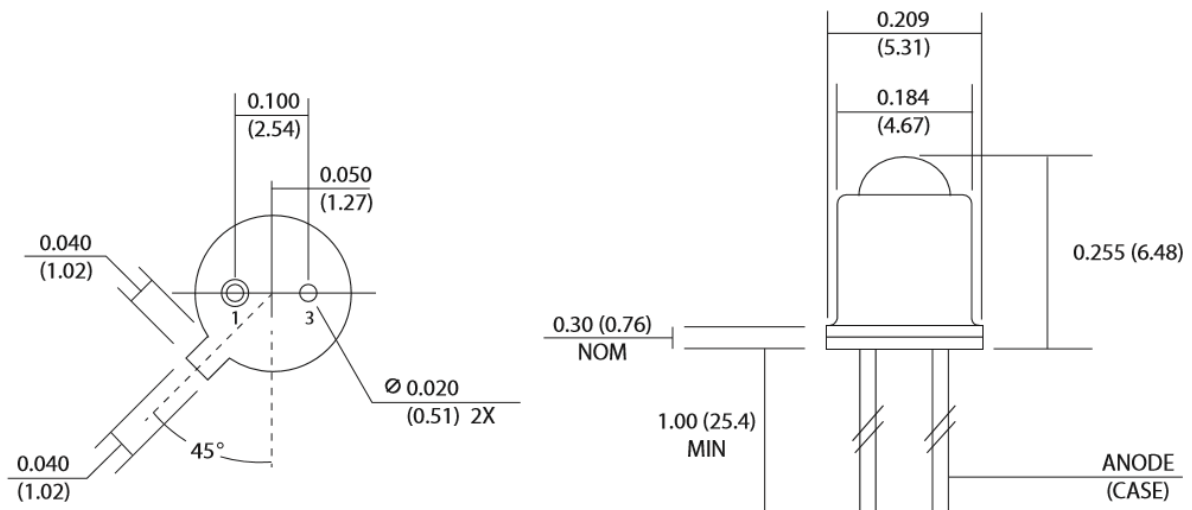


Figure 2. IB5DX Package Dimensions

Absolute Maximum Rating at 25°C (Note 1)

Symbol	Parameters	Ratings	Units	Notes
T _{OPR}	Operating temperature	-65 to +125	°C	
T _{STG}	Storage temperature	-65 to +150	°C	
T _{SOL}	Soldering temperature (10 seconds maximum)	240	°C	
P _D	Power dissipation, ambient	170	mW	2
P _D	Power dissipation, case	1300	mW	3
V _R	Reverse Voltage	3	V	
I _F	Continuous Forward Current	100	mA	
I _F	Peak Forward Current (PW 10 μs; 100Hz)	3	A	

Notes

1. When using this product, please observe the absolute maximum ratings. Only one parameter may be set at the limit to ensure no damage to the device. Exceeding any of the limits listed here may damage the device.
2. Linear derating factor: 1.70 mW/°C above 25°C ambient.
3. Linear derating factor: 13.0 mW/°C above 25°C case.

ESD Precaution

Please be advised that normal static precautions should be taken in the handling and assembly of this device to prevent damage or degradation which may be induced by electrostatic discharge (ESD).

Electrical Characteristics $T_A = 25^\circ\text{C}$ (unless otherwise specified) (Note 1)

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
λ_P	Peak Emission Wavelength	$I_F = 100\text{mA}$	-	824	-	nm	
V_F	Forward Voltage	$I_F = 100\text{mA}$	-	-	1.7	V	
I_R	Reverse Leakage Current	$V_F = 3\text{V}$	-	-	10	μA	
P_O	Output Power, IB5D1	$I_F = 100\text{mA}$	12.0	-	-	mW	2
	Output Power, IB5D2	$I_F = 100\text{mA}$	9.0	-	-	mW	2
	Output Power, IB5D3	$I_F = 100\text{mA}$	10.5	-	-	mW	2
Θ	Emission Angle at $\frac{1}{2}$ Sensitivity	$I_F = 100\text{mA}$	-	± 8	-	$^\circ$	
t_r	Rise Time		-	1.5	-	μs	
t_f	Fall Time		-	1.5	-	μs	

Notes

1. Performance guaranteed only under conditions listed in above tables.
2. Total power output, P_O , is the total power radiated by the device into a solid angle of 2π steradians.

Typical Characteristic Curves

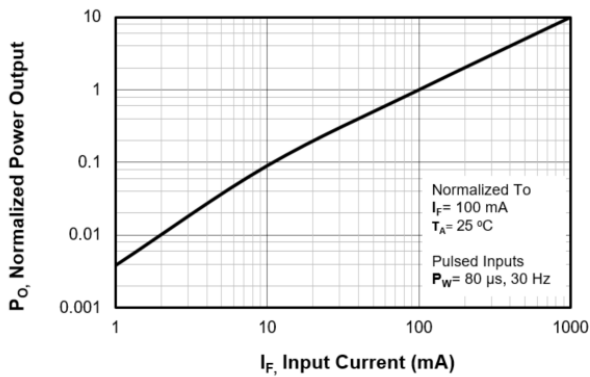


Figure 3. Power Output vs Input Current

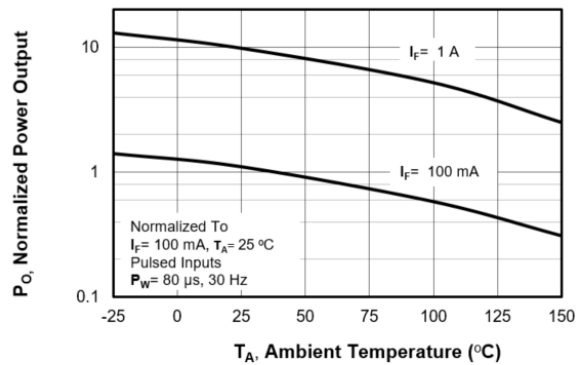


Figure 4. Power Output vs Temperature

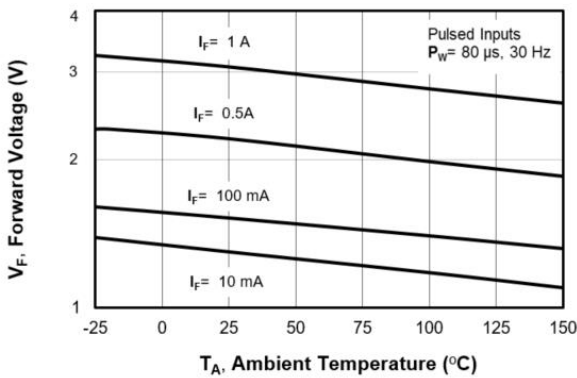


Figure 5. Forward Voltage vs Temperature

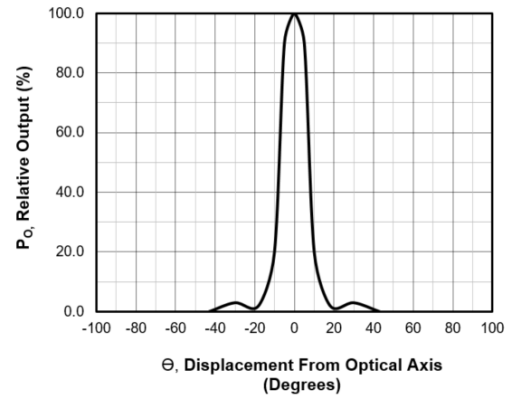


Figure 6. Typical Radiation Pattern

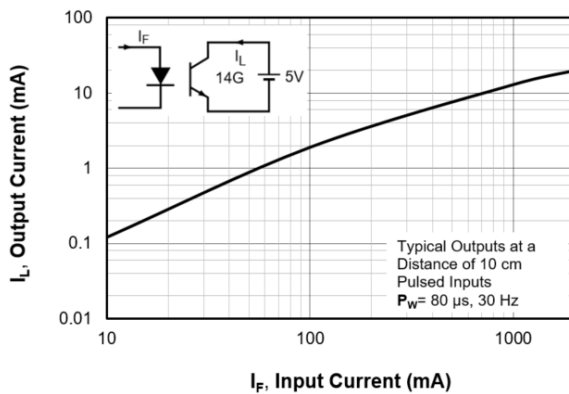


Figure 7. Output Vs Input with 14G Detector

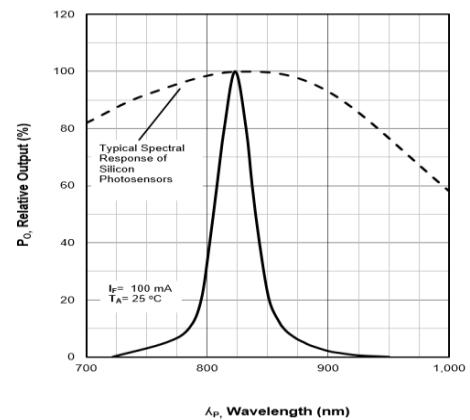


Figure 8. Output Vs Wavelength



Radiation Tolerant
Hermetic Infrared Emitting Diode

IB5D1
IB5D2
IB5D3

Ordering Information

<i>Manufacturing Part Number</i>	<i>Part Description</i>
IB5D1	Radiation Tolerant Hermetic Infrared Emitting Diode 2-pin TO-46 Package
IB5D2	Radiation Tolerant Hermetic Infrared Emitting Diode 2-pin TO-46 Package
IB5D3	Radiation Tolerant Hermetic Infrared Emitting Diode 2-pin TO-46 Package

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