

FEATURES:

- Bar code reader / fine line sensor
- 0.007" - 0.013" resolution
- Compact size
- Plastic lens

PRODUCT DESCRIPTION

Opto Technology's OTBC-05XX series combines two emitters, a lens and photodetector into one low cost plastic housing. The rectangular aperture inside the package offers high resolution with good depth of field. The OTBC-058X has two 940nm infrared emitting diodes with PIN Diode or Phototransistor and the OTBC-059X has two 660nm visible light emitting diodes with either sensor option. Custom apertures for these devices are available upon request.

ABSOLUTE MAXIMUM RATINGS

General

Storage Temperature Range ----- - 55°C to +100°C
 Operating Temperature Range ----- - 40°C to +85°C
 Lead Soldering Temperature (1/16" from case
 for 5 seconds soldering iron, 10 seconds flow soldering) ----- 260°C

Infrared Emitter (940 nm)

Reverse Voltage ----- 5 V
 Continuous Forward Current ----- 25 mA
 Power Dissipation ----- 100 mW

Visible Emitter (660 nm)

Reverse Voltage ----- 4 V
 Continuous Forward Current ----- 20mA
 Power Dissipation ----- 70 mW

Phototransistor

Collector-Emitter Voltage ----- 35 V
 Emitter-Collector Voltage ----- 6 V
 Power Dissipation (Derate 2.4 mW/°C above 25°C) ----- 250 mW

PIN Diode

Reverse Voltage ----- 35V
 Dark Current $V_f=20V$ ----- 150nA
 Power Dissipation (Derate 1.5 mW/°C above 25°C) ----- 150 mW



OPTO TECHNOLOGY, INC.

160 E. Marquardt Drive, Wheeling, IL 60090
 Phone: (847) 537-4277 Fax: (847) 537-4785
 Website: www.optotech.com

Infrared Emitter

Parameter	Symbol	Min	Typ	Max	Units
Forward Voltage ($I_F = 20 \text{ mA}$)	V_F			1.45	V
Reverse Current ($V_R = 5 \text{ V}$)	I_R			100	μA
Peak Wavelength ($I_F = 20 \text{ mA}$)	λ_P		940		nm
Radiant Intensity ($I_F = 20 \text{ mA}$)	I	1.3	2.5		mW/sr
Spectral Bandwidth at 50% ($I_F = 20 \text{ mA}$)	$\Delta\lambda$		50		nm
Half Intensity Beam Angle	θ		10		Degrees

Visible Emitter

Parameter	Symbol	Min	Typ	Max	Units
Forward Voltage ($I_F = 20 \text{ mA}$)	V_F		2.1	2.8	V
Reverse Current ($V_R = 4 \text{ V}$)	I_R			100	μA
Peak Wavelength ($I_F = 20 \text{ mA}$)	λ_P		660		nm
Spectral Bandwidth at 50% ($I_F = 20 \text{ mA}$)	$\Delta\lambda$		20		nm
Half Intensity Beam Angle	2θ		10-20		Degrees

Phototransistor

Parameter	Symbol	Min	Typ	Max	Units
Light Current ($E_e=1.0\text{mW}/\text{cm}^2$, $V_{CE}=5\text{V}$)	$I_{CE(ON)}$	1	2.8		mA
Dark Current ($E_e=0$, $V_{CE}=10\text{V}$)	I_{CE0}			60	nA
Saturation Voltage ($I_C=1.0\text{mA}$,)	$V_{CE(SAT)}$			0.5	V
Rise Time ($V_{CC}=5\text{V}$, $R_L=100\Omega$)	T_r		6		μs
Fall Time ($V_{CC}=5\text{V}$, $R_L=100\Omega$)	T_f		8		μs

Pin Diode

Parameter	Symbol	Min	Typ	Max	Units
Light Current ($E_e=1.0\text{mW}/\text{cm}^2$)	I_L	8	20		μA
Dark Current ($E_e=0$, $V_f=20\text{V}$)	I_D			100	nA
Total Capacitance ($V=0$, $f=1 \text{ MHz}$)	C_t		40		pF
Rise Time ($R_L=1\text{k}\Omega$)	T_r		1		μs
Fall Time ($R_L=1\text{k}\Omega$)	T_f		1		μs

Coupled Characteristics

Parameter	Symbol	Min	Typ	Max	Units
Light Current ($I_F = 20 \text{ mA}$, $V_{CE} = 5\text{V}$, $d = 0.225 \text{ in}$, OTBC-0580-X1X) ¹	$I_{CE(ON)}$	2.0			μA
Dark Current ($I_F = 0 \text{ mA}$, $V_{CE} = 5\text{V}$, OTBC-0580-X1X) ²	I_{CE0}			200	nA
Light Current ($I_F = 20 \text{ mA}$, $V_{CC} = 5\text{V}$, $d = 0.225 \text{ in}$, OTBC-0581-X1X) ¹	$I_{CE(ON)}$	0.02			μA
Dark Current ($I_F = 0 \text{ mA}$, $V_{CC} = 5\text{V}$, OTBC-0581-X1X) ²	I_{CE0}			5	nA
Light Current ($I_F = 20 \text{ mA}$, $V_{CE} = 5\text{V}$, $d = 0.225 \text{ in}$, OTBC-0590-X1X) ¹	$I_{CE(ON)}$	2.0			μA
Dark Current ($I_F = 0 \text{ mA}$, $V_{CE} = 5\text{V}$, OTBC-0590-X1X) ²	I_{CE0}			200	nA
Light Current ($I_F = 20 \text{ mA}$, $V_{CC} = 5\text{V}$, $d = 0.225 \text{ in}$, OTBC-0591-X1X) ¹	$I_{CE(ON)}$	0.02			μA
Dark Current ($I_F = 0 \text{ mA}$, $V_{CC} = 5\text{V}$, OTBC-0591-X1X) ²	I_{CE0}			5	nA

¹ Reflecting surface is Eastman Kodak neutral white test card having a 90% diffused reflectance.

² No reflective surface

Reflective Surface

Parameter	Symbol	Min	Typ	Max	Units
Element Contrast		(80%)			%
Diffused Reflectance		(90%)			%
Element Width (0.003x0.045 Aperture)	W_N	0.007			in
Narrow Element to Narrow Space Ratio			0.95		

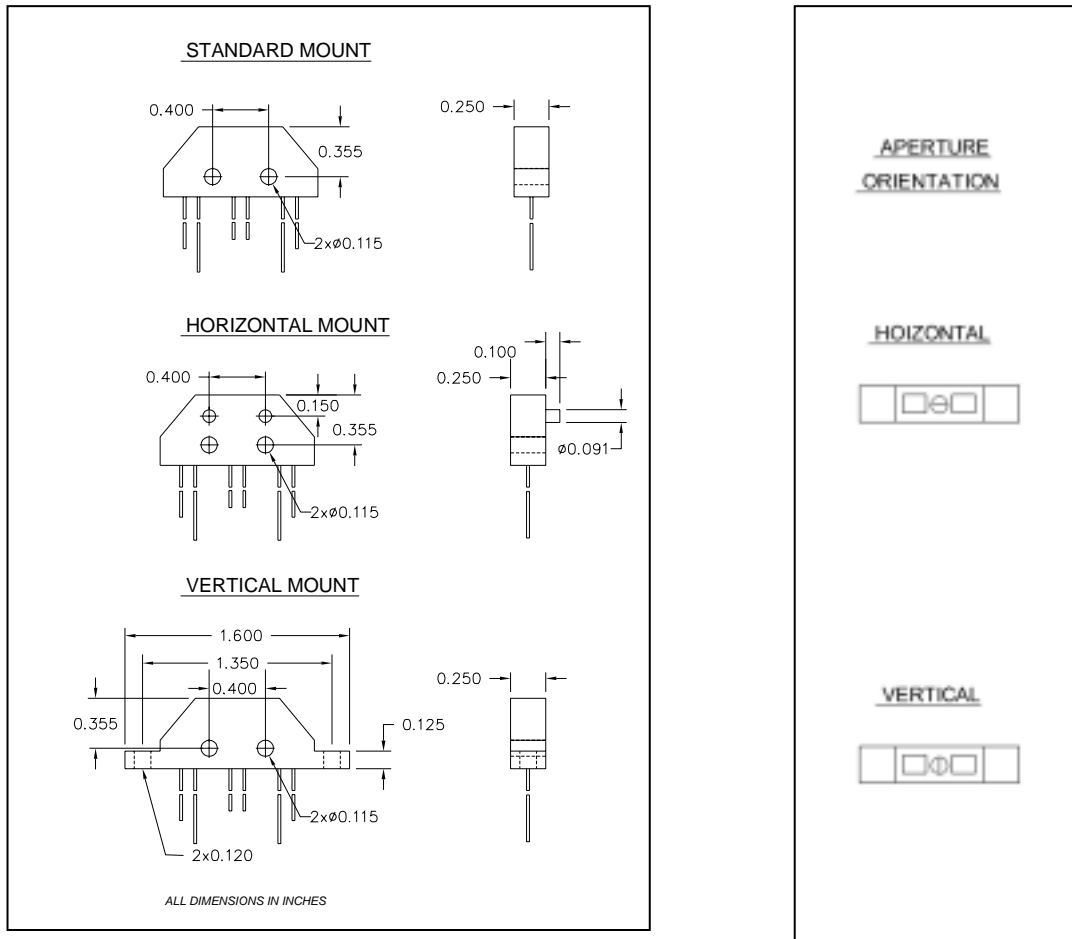
Product Specifications ($T_A = 25^\circ\text{C}$ unless noted)



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ORDERING INFORMATION



OTBC-05XX-XXX

