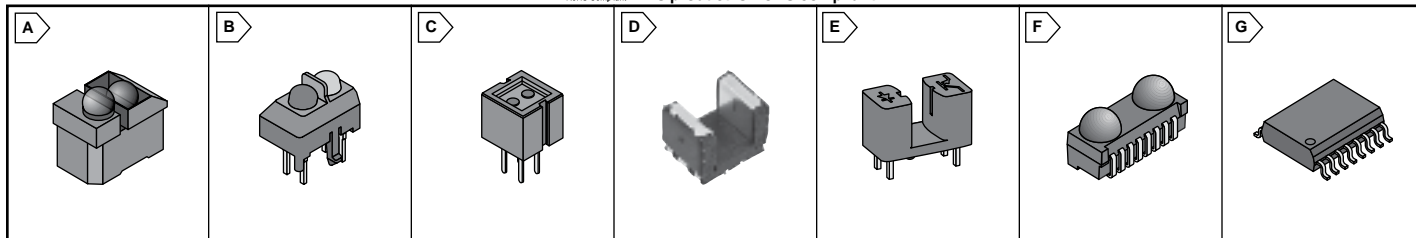


# VISHAY Opto Components

**This product is RoHS compliant.**



Vishay is a leading manufacturer of optical sensors. These sensors integrate an infrared emitter and photo detector in a single package. The most common types of optical sensors are transmissive and reflective sensors. Both types detect the presence of an object without any mechanical or electrical contact. The output signal of the sensor is used to control various functions of an application.

## REFLECTIVE SENSORS

Reflective sensors incorporate an infrared emitter and photo detector adjacent to each other. When an object is in the sensing area, the emitted light is reflected back towards the photo detector, the amount of light energy reaching the detector increases. This change in light energy or photo current is similarly used as an input signal in the application.

TCND3000 is a reflective optical sensor for applications using the HALIOS® (High Ambient Light Independent Optical System) principle. It consists of an infrared emitter and a photodetector forming the optical sensing path. According to the HALIOS principle a second infrared emitter is used for compensation of disturbing ambient light.

### Features:

- Detector type: pin photodiode
- Dimensions (L x W x H in mm): 4.83 x 2.54 x 2.21
- Peak operating distance: 20 mm
- Peak operating range: 10 mm to 20 mm
- Typical output current under test: IC > 5.6 µA
- Daylight blocking filter
- Touch distance: 10 mm (1)
- Proximity distance: 20 mm (1)
- High ambient light suppression for sunlight: ≥200 klx
- High ambient light suppression for CIE standard illuminant A: ≥100 klx

For quantities greater than listed, call for quote.

MOUSER STOCK NO.		Fig.	V <sub>BR</sub>		Angle of Half Intensity (°)	Reverse Dark Current (max.)(nA)	Reverse Light Current (typ.)(µA)	Peak Emission Wavelength (nm)	Diode Capacitance (V <sub>R</sub> =0 (pF))	Rise/Fall Times (typ.)(ns)	Price Each			
Mfr.	Mfr. Part No.		(V) (min)	@ IR (µA)							1	100	500	1000
<b>Surface Mount</b>														
	782—TCND3000	A	5	10	±20	0.01	5.6	885	----	----	2.83	2.55	2.15	2.01

### Applications:

- Position sensor for shaft encoder
- Detection of reflective material such as paper, IBM cards, magnetic tapes etc.
- Limit switch for mechanical motions in VCR
- General purpose - wherever the space is limited
- Optoelectronic scanning and switching devices i.e., index sensing, coded disk scanning etc. (optoelectronic encoder assemblies).

For quantities greater than listed, call for quote.

MOUSER STOCK NO.		Fig.	V <sub>CEO</sub>		Forward Voltage (Typ.)(V)	Radiant Intensity (Max.)(mW/sr)	Collector Current (Typ.)(mA)	Peak Wavelength (nm)	Max. Dist. for CTRrel (mm)	Dist. Range for Rel. I <sub>OUT</sub> >20% (mm)	Daylight Blocking Filter	Price Each			
Mfr.	Mfr. Part No.		(V) (min)	@ IC (mA)								1	100	500	1000
<b>Thru-Hole</b>															
	782—TCRT5000	B	70	1	1.25	21	1	940	2.5	0.2 to 15	Yes	.98	.74	.57	.45
	782—CNY70	C	32	50	1.25	7.5	1	940	0	0 to 5	Yes	1.18	.823	.638	.504

## TRANSMISSIVE SENSORS

Transmissive sensors, also called interrupter sensors, incorporate an infrared emitter and photo detector that face each other as shown. When an object is located between the emitter and detector in the sensing path, it interrupts or breaks the optical beam of the emitter. The light energy reaching the detector changes. This change in light energy or photo current is used to affect an event in the application.

### Applications (TCPT1300):

- Automotive optical sensors
- Accurate position sensor for encoder
- Detection of motion speed

### Applications (TCST1230):

- Optical switch
- Shaft encoder

For quantities greater than listed, call for quote.

MOUSER STOCK NO.		Fig.	V <sub>CEO</sub>		Forward Voltage (Typ.)(V)	Reverse Current (Max.)(µA)	Collector Current (Min.)(mA)	Peak Wavelength (nm)	Aperture (mm)	Dist./Gap (mm)	Rise/Fall Times (Typ.)(ns)	Price Each			
Mfr.	Mfr. Part No.		(V) (min)	@ IC (mA)								1	100	500	1000
<b>Surface Mount</b>															
	782—TCPT1300	D	20	1	1.2	10	0.3	950	0.3	3	20/30	1.69	1.29	1.04	.82
<b>Thru-Hole</b>															
	782—TCST1230	E	70	1	1.25	-----	0.5	950	0.5	2.8	15/10	1.00	.73	.55	.43

## IrDA - TRANSCEIVERS

Vishay's infrared data transceivers enable short-distance wireless communication. Design engineers in the growing handheld market trust in their performance and rely on the application engineering support that only Vishay provides. Vishay offers a transceiver for every application.

### Applications:

- Mobile Phone
- PDAs
- Notebook Computers
- Digital still and video cameras
- Printers, fax machines, photo copiers, screen projectors
- Data Loggers
- GPS
- Medical data collection
- Kiosks, POS, point and pay devices including IrFM - applications
- Internet TV boxes, video conferencing systems

For quantities greater than listed, call for quote.

MOUSER STOCK NO.		Fig.	Type	Operating Voltage (V)	Input Currents (mA)	Data Rate (Min./Max.) (kbits/s)	Transmit Distance (m)	Logic Voltage (V)	Output Sink Current (mA)	Power Dissipation (Max.)(mW)	Price Each			
Mfr.	Mfr. Part No.										1	100	500	1000
<b>Surface Mount</b>														
	782—TFBS4650-TR1	F	Serial	2.4 to 3.6	±40	9.4/115.2	0 to ≥0.3	-----	20	250	3.21	2.35	1.87	1.49
	782—TFBS4711-TR1	F	Serial	2.4 to 5.5	10	9.4/115.2	0 to 8.0	-----	25	-----	3.10	2.37	1.84	1.40
	782—TFDU4101	F	Serial	2.4 to 5.5	10	2.4/115.2	0 to 1.0	Vlog=VCC	25	250	5.66	4.15	3.30	2.54
	782—TFDU6103	F	Fast	2.7 to 5.5	10	-----/4000	0 to 1.0	Vlog=VCC	25	500	3.65	3.06	2.52	2.03
	782—TFDU6300-TR1	F	Fast	2.4 to 3.6	10	-----/4000	0 to ≥0.7	-----	25	500	3.95	3.42	2.61	2.29
	782—TFDU6300-TT3	F	Fast	2.4 to 3.6	10	-----/4000	0 to ≥0.7	-----	25	500	4.74	3.47	2.76	2.37

## IrDA - ENCODER/DECODER

The TOIM4232 Endec IC provides proper pulse shaping for the SIR IrDA front end infrared transceivers as of the 4000-series. For transmitting the TOIM4232 shortens the RS232 output signal to IrDA compatible electrical pulses to drive the infrared transmitter. In the receive mode the TOIM4232 stretches the received infrared pulse to the proper bit width depending on the operating bit rate. The IrDA bit rate varies from 2.4 kbit/s to 115.2 kbit/s. The TOIM4232 is using a crystal clock 3.6864 MHz for its pulse stretching and shortening. The clock can be generated by the internal oscillator. An external oscillator can be used too. The TOIM4232 is programmable to operate from 1200 bit/s to 115.2 kbit/s by the communication software through the RS232 port. The output pulses are software programmable as either 1,627 us or 3/16 of bit time. The typical power consumption is very low with about 10 mW in operational state and in the order of a few microwatts in standby mode.

### Features:

- Pulse shaping function (shortening and stretching) used in SIR IrDA applications
- Directly interfaces the SIR transceiver TFD.- and TFB.- series to an RS232 port
- Programmable baud clock generator (1200 Hz to 115.2 kHz), 13 baud rates
- 3/16 bit pulse duration or 1.627 µs pulse selectable
- Low operating current

For quantities greater than listed, call for quote.

MOUSER STOCK NO.		Fig.	Type	Operating Voltage (V)	Input Voltage (High/Low) (Typ.)(V)	Output Voltage (Min./Max.)(V)	Data Rate (Min./Max.) (kbits/s)	Consumption Current Standby (Max.)(mA)	Consumption Current Dynamic (Typ.)(mA)	Price Each			
Mfr.	Mfr. Part No.									1	100	500	1000
<b>Surface Mount</b>													
	782—TOIM4232	G	Serial	2.7 to 3.6	1.7/1.1	2.0/0.4	2.4/115.2	1	2	7.29	5.50	4.54	4.10