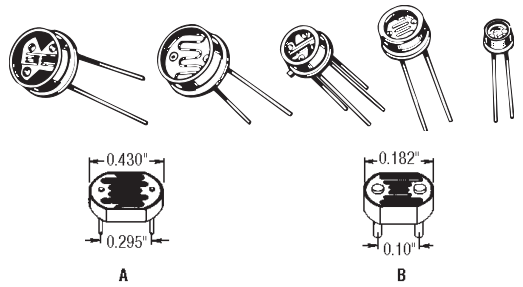
Photoconductive Cells



A B

Photoconductive cells provide a very economical and technically superior solution for many light level sensing applications. They offer wide dynamic range and sensitivity to low light levels. PerkinElmer is a major world supplier of photoconductive cells. PerkinElmer's photocells are available in low-cost plastic encapsulated packages as well as hermetic packages (TO-46, TO-5, TO-8). The following table lists a few of the standard packages and resistance ranges available.

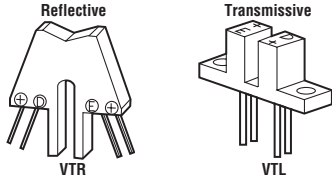
Electrical/Optical Characteristics @ 25°C (16 Hrs. Light Adapt, Min. @ 30-50 fc)

Stock No.	Mfr.'s Type	Resistance (Ohms) 10 Lux 2850K Min.	Typ.	Max.	Dark Min.	Sec.	Peak Spectral Response nm	Sensitivity (γ, typ.) Log (R10/R100) Log (100/10)	V_{Max} (V, pk)	Response Time @ 1 fc (ms, typ.) Rise (1-1/e)	Fall (1/e)	EACH 1-24
980-0100	VT43N3[1]*	16K	32.0K	48K	500K	30	550.0	0.90	400	90	18	**.79**
980-0015	VT935G-A[2,3]	10K	18.5K	27K	1M	5	550.0	0.90	100	35	5	**.35**
980-0105	VT935G-B[2,3]	20K	29.0K	38K	1M	5	550.0	0.90	100	35	5	**.35**
980-0016	VT935G-C[2,3]	31K	40.5K	50K	1M	5	550.0	0.90	100	35	5	**.35**
980-9977	VT20N2[4]	16K	34.0K	52K	500K	5	565.0	0.80	100	78	8	**4.37**
980-0110	VT33N1[5]	20K	40.0K	60K	500K	5	550.0	0.90	100	35	5	**3.23**
980-0112	VT50N3[6]	16K	32.0K	48K	1M	5	565.0	0.80	300	78	8	**5.35**
980-0005	VT53N1	16K	32.0K	48K	16K	1M	5.3	0.85	200	35	5	**5.44**

Application: [1]Street light; [2]Night light; [3]Toys/camera; [4]Low light detection; [5]Photocopier; [6]Flame detection. **Package Style/Dimensions:** [1]Fig. A; [2]Fig. B; [4]TO-46, Hermetic; [5]TO-5, Hermetic; [6]TO-8, Hermetic. *Resistance values for this cell are @ 1 fc, 6500K.

Optoswitches

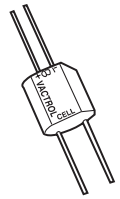
These optical switches are designed for object sensing applications. These are offered in reflective and transmissive configurations.



Stock No.	Mfr.'s Type	Specific Features	Light Current mA Min.	Test Conditions I_F mA	V_{CE} Volts	Light Current nA Max.	Test Conditions I_F mA	V_{CE} Volts	Saturation V Volts Max.	Test Cond. I_F mA	I_C mA	EACH 1-24
980-9902	VTR17D1	Sealed Case†	0.300	20	5	100	0	5	—	—	—	**5.67**
980-0004	VTL13D7-20	Sealed Case	0.225	20	5	100	0	10	0.4	20	0.25	**5.35**

*PCB-mount leads. †Flying leads.

Analog Optoisolators — VACTROLS®



Vactrols combine a solid-state light source (LED) with a photoconductive cell to provide input-output isolation. Sealed in an axial plastic package. Used for photochoppers, linear isolators, SCR and Triac firing, logic circuit inputs, noiseless switching and proportional control circuits. External current limiting resistor required.

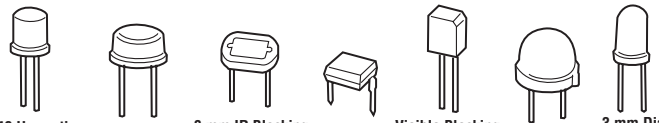
Single Element Analog Optoisolators

Stock No.	Mfr.'s Type	Output Resistance On Resistance (Ohms) Input Current mA	Dark Adapted Typ.	Off Resistance Min. Megohms	Response Ascent Typ. ms	Decay to 100 KΩ max. ms	Cell Voltage Max. Volts	EACH 1-49
980-0700	VTL5C1	40/10	200/600	50.0	2.5	35	100	**4.07**
980-0705	VTL5C2	40/10	200/800	1.0	3.5	500	200	**2.75**
980-0710	VTL5C3	40/10	1.5/5K	10.0	2.5	35	250	**2.94**
980-0716	VTL5C4	40/10	75/125K	0.4	6.0	1500	50	**4.10**
980-0006	VTL5C10	2	400	400K	3.8	75	50	**2.67**

Dual Element Analog Optoisolators (Specs Refer to Each Element)

980-0725	VTL5C4/2	40/1	0.15K/1.5K	0.4	6.0	1500	30	**2.49**
980-0730	VTL5C3/2	40/1	2K/55K	10.0	3.0	50	100	**3.79**

Silicon Photodiodes



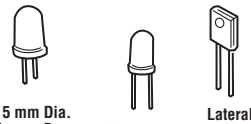
TO-46 Hermetic VTB1113 | TO-5 IR Blocking VTB5051B | 8 mm IR Blocking VTB8441B | Mini DIP VTD34 | Visible Blocking VTP100 | Wide Angle VTP1188S | 3 mm Dia. VTP3310LA

Electrical/Optical Characteristics @ 25°C

Stock No.	Mfr.'s Type	Active Area in² (mm²)	Short Circuit Current I_{SC} H=100 fc 2850K μA Min.	μA Typ.	Spectral Sensitivity S_R A/W @ nm Typ.	Dark Current I_D H=0 Max. nA	V_R (Volts)	Shunt Resist. R_{SH} V=10 mV H=0 Typ. (Ohms)	Special Application Range λ.RANGE nm Min.	Max.	EACH 1-24
980-2625	VTB1113	0.0025 (1.600)	30.0	60	0.19 @ 365	0.02	2	7.0 G	320	1100	**3.10**
980-9999	VTB5051B	0.0230 (14.80)	8.0	13	Visible	0.25	2	560.0 M	330	720	**31.85**
980-2675	VTB8441B	0.0080 (5.160)	4.0	5	Visible	0.10	2	1.4 G	330	720	**5.90**
980-0007	VTB5051UVJ	0.3300 (8.380)	130.0	0.12	0.10	250.00	2	0.56	200	1100	**28.21**
980-0008	VTB6061UVJ	0.4870 (12.37)	350.0	0.12	0.10	2.00	2	0.10	200	1100	**37.83**
980-0009	VTB9412B	0.2360 (6.000)	1.3	0.02	—	20.00	2	0.25	330	720	**2.89**
980-0150	VTD34	0.0120 (7.450)	50.0	70	0.60 @ 950	30.00	10	—	400	1100	**1.98**
980-2680	VTP100	0.0120 (7.450)	35.0	55	0.50 @ 925	30.00	10	250.0 M	725	1150	**1.64**
980-0135	VTP1188S	0.0170 (11.00)	—	200	0.55 @ 925	30.00	10	67.0 M	400	1100	**1.88**
980-0140	VTP3310LA	0.0011 (0.684)	24.0	36	0.55 @ 925	35.00	50	10.0 G	400	1150	**.88**

IR Emitters and Phototransistors

PerkinElmer offers a broad line of high-performance IREDs and detectors in a variety of packages and specifications. IREDs are often used with solid state phototransistor or phototrandarlington detectors having internal gains from 100 to more than 100,000.



5 mm Dia. Narrow Beam VTE1285 | 3 mm Dia. VTE3372LA VTT3323LA | Lateral VTE7172 VTT7122

IR Emitters — Electrical/Optical Characteristics @ 25°C

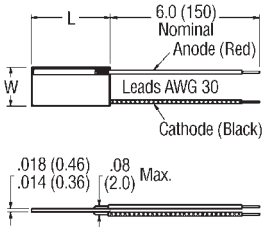
Stock No.	Mfr.'s Type	Total Power P_O mW Typ.	Irradiance E_e mW/cm² Min.	dist. mm	Dia. mm	Peak Radiant Intensity I_e mW/sr Min.	Forward Test Current I_{FT} mA	Forward Drop V_F @ I_{FT} Volts Typ.	Max.	Half Power Beam Angle ø1/2 Typ.	Wave-length nm	EACH 1-49
980-0011	VTE1261	20.0	3.0	36.00	6.40	39.0	100	1.5	2.0	±35°	880	**.43**
980-9991	VTE1285	20.0	3.0	36.30	6.35	39.0	100	1.5	2.0	±8°	880	**.64**
980-0002	VTE3372LA	3.0	2.0	10.16	2.10	2.0	20	1.3	1.8	±10°	880	**.63**
980-0003	VTE7172	2.5	0.4	16.70	4.60	1.1	20	1.3	1.8	±25°	880	**1.92**

Phototransistors — Electrical/Optical Characteristics @ 25°C

Stock No.	Mfr.'s Type	Light Current I_C mA Min.	H fc (mW/cm2) V_{CE}=5 V	Dark Current I_{CEO} H=0 nA Max.	V_{CE} (Volts)	Collector Breakdown $V_{BR(CEO)}$ I_C=100 μA H=0 Volts Min.	Emitter Breakdown $V_{BR(CEO)}$ I_E=100 μA H=0 Volts Min.	Saturation Voltage $V_{CE(SAT)}$ I_C=1 mA H=400 fc Volts Max.	Rise/Fall Time t_R/t_F I_C=1 mA R_L=100 Ω μsec. Typ.	EACH 1-49
980-0165	VTT3323LA	2	20 (1)	100	10	30	5	0.25	3	**.55**
980-0170	VTT7122	1	100 (5)	100	10	30	5	0.25	2	**.57**
980-0012	VTT9103	13	100 (5)	100	5	30	5	0.55	10	**2.41**

Photodiodes with Solderable Contacts

PerkinElmer manufactures large-area photodiodes with solderable contacts. They serve a variety of applications. Many of our customers have found it cost effective for us to do the value added assemblies, such as PCB assembly and/or custom testing. A sampling of popular solderable contact photodiodes is listed below.



Electrical/Optical Characteristics @ 25°C

Stock No.	Mfr.'s Type	Active Area in² (mm²)	Short Circuit Current I_{SC} H=1000 Lux 2850K μA Min.	Spectral Sensitivity S_R A/W @ nm Typ.	Open Circuit Volt. V_{OC} 2850K Volts Typ.	H Lux	Dark Current I_D H=0 μA Max.	V_R (Volts)	Shunt Resist. R_{SH} V=10 mV H=0 MΩ Typ.	Junction Cap. C_J V=0 V H=0 nF Typ.	EACH 1-24
980-0120	VTS3082[1]	0.144 (93)	550	0.6 @ 925	0.45	1000	0.2	0.1	1.2	1.75	**8.39**
980-0115	VTS3085[2]	0.032 (21)	130	0.6 @ 925	0.45	1000	0.1	0.1	3.0	0.50	**4.41**

Chip Size (L × W): [1]0.400" × 0.400" (10.16 × 10.16 mm); [2]0.200 × 0.200" (5.08 × 5.08 mm).