



T-41-49  
**Spectra-Band  
Photocell Series**

A series of spectral-response silicon photocells designed for unique product applications.

**VIO-BLUE**

Enhanced violet and blue response. Also can be used in U.V. detection because of high sensitivity to short wavelength radiation.

**GREEN BLAZE**

Photopic curve response for use in innumerable light response applications — with high reliability and low cost.

**INFRA-R**

Visible cut-off, high infrared response. Solves ambient light problems in IR activated photoelectric applications.

**FEATURES**

- Select spectral response
- No bias power source needed
- High temperature stability and high sensitivity through silicon construction
- Low noise
- High reliability
- A wide variety of sizes and packages, special geometries available

**APPLICATIONS**

- Photographic equipment
- Color, pattern recognition equipment
- Light discriminating systems

**SPECTRA-BAND PHOTOCELLS**

TOIs' special spectral response photocells are designed for the photographic industry, photometric instrumentation, and photoelectric control/switching applications.

**MECHANICAL SPECIFICATIONS**

Spectra-Band Cell Configurations								
	Part Number	Part Number	Part Number	Part Number	Part Number	Part Number	Part Number	
GREEN BLAZE	GB02505EPL	GB0505EPL	GB1010EPL	GB1020EPL	GBTO-18	GBTO-5	GBTO-8	
INFRA-R	FR02505EPL	FR0505EPL	FR1010EPL	FR1020EPL	FRTO-18	FRTO-5	FRTO-8	
VIO-BLUE	VB02505EPL	VB0505EPL	VB1010EPL	VB1020EPL	VBTO-18	VBTO-5	VBTO-8	
Package	Coated Cell	Coated Cell	Coated Cell	Coated Cell	Modified TO-18	TO-5	TO-8	
Lead Termination	6" Length Std.	6" Length Std.	6" Length Std.	6" Length Std.	Leads	Leads	Leads	
Cell Dimensions	In.	0.1 x 0.2	0.2 x 0.2	0.4 x 0.4	0.4 x 0.8	0.055 x 0.055	0.1 x 0.2	0.28 x 0.28
	Cm.	0.25 x 0.5	0.5 x 0.5	1.0 x 1.0	1.0 x 2.0	0.14 x 0.14	0.25 x 0.5	0.72 x 0.72
Active Area (Sq. Cm.)	0.1	0.2	0.9	1.8	0.018	0.1	0.5	





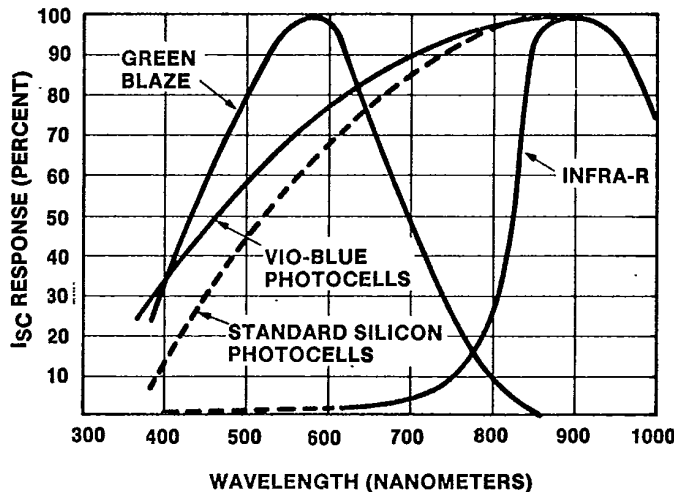
# Spectra-Band Photocell Series

## TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

INFRA-R SERIES										
Parameter	Symbol	Unit	Test Condition	FR02505EPL	FR0505EPL	FR1010EPL	FR1020EPL	FRT0-18	FRT0-5	FRT0-8
Short Circuit Current	$I_{SC}$	mA	100 mW/cm <sup>2</sup> , AM1 Solar Radiation	1.3	2.6	11.5	23.0	0.3	1.3	6.4
Open Circuit Voltage	$V_{OC}$	Volts	100 mW/cm <sup>2</sup> , AM1 Solar Radiation	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Forward Voltage	$V_F$	Volts	$I_F = 1$ mA	0.50	0.50	0.45	0.40	0.50	0.50	0.45
Dark Current	$I_D$	$\mu$ A	$V_R = 0.1$ V	0.2	0.4	0.8	0.9	0.2	0.2	0.5
Capacitance	$C_T$	pF	$V_R = 0$ V	1.0	3.0	10.0	15.0	1.0	1.0	8.0
Responsivity	$R_e$	A/W	$\lambda_p = 900$ nm, $V_R = 0$	0.45	0.45	0.45	0.45	0.40	0.40	0.40

VIO-BLUE SERIES										
Parameter	Symbol	Unit	Test Condition	VB02505EPL	VB0505EPL	VB1010EPL	VB1020EPL	VBTO-18	VBTO-5	VBTO-8
Short Circuit Current	$I_{SC}$	mA	100 mW/cm <sup>2</sup> , AM1 Solar Radiation	2.3	4.7	21.0	42.0	0.5	2.3	11.6
Open Circuit Voltage	$V_{OC}$	Volts	100 mW/cm <sup>2</sup> , AM1 Solar Radiation	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Forward Voltage	$V_F$	Volts	$I_F = 1$ mA	0.50	0.50	0.45	0.40	0.50	0.50	0.45
Dark Current	$I_D$	$\mu$ A	$V_R = 0.1$ V	0.2	0.4	0.8	0.9	0.2	0.2	0.5
Capacitance	$C_T$	pF	$V_R = 0$ V	1.0	3.0	10.0	15.0	1.0	1.0	8.0
Responsivity	$R_e$	A/W	$\lambda_p = 900$ nm, $V_R = 0$	0.48	0.48	0.48	0.48	0.44	0.44	0.44

GREEN-BLAZE SERIES										
Parameter	Symbol	Unit	Test Condition	GB02505EPL	GB0505EPL	GB1010EPL	GB1020EPL	GBTO-18	GBTO-5	GBTO-8
Short Circuit Current	$I_{SC}$	mA	100 mW/cm <sup>2</sup> , AM1 Solar Radiation	0.27	0.55	2.5	5.0	0.06	0.27	1.38
Open Circuit Voltage	$V_{OC}$	Volts	100 mW/cm <sup>2</sup> , AM1 Solar Radiation	0.47	0.47	0.47	0.47	0.47	0.47	0.47
Forward Voltage	$V_F$	Volts	$I_F = 1$ mA	0.50	0.45	0.45	0.40	0.50	0.50	0.45
Dark Current	$I_D$	$\mu$ A	$V_R = 0.1$ V	0.3	0.4	0.8	1.0	0.3	0.3	0.5
Capacitance	$C_T$	pF	$V_R = 0$ V	1.0	2.0	3.0	5.0	1.0	1.0	2.0
Responsivity	$R_e$	A/W	$\lambda_p = 555$ nm	0.20	0.20	0.20	0.20	0.19	0.19	0.19



### TYPICAL SHORT CIRCUIT CURRENT ( $I_{SC}$ ) RESPONSE

- Standard Silicon Photovoltaic Cell (at 900 nm) ~ 0.48 A/W
- Vio-Blue (at 900 nm) ~ 0.48 A/W
- Green Blaze (at 555 nm) ~ 0.20 A/W
- Infra-R (at 900 nm) ~ 0.45 A/W

TYPICAL SPECTRAL RESPONSE CHARACTERISTICS — NORMALIZED



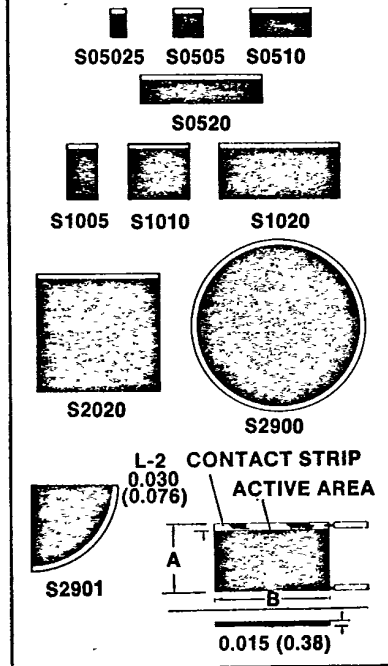
# Silicon Photocell Sensors

## SILICON PHOTOCELL SENSORS

TOI silicon photocells are employed in photometer, switching, position detection, tape and disc EOT-BOT sensing, solar energy conversion, and other numerous applications. Silicon photosensors with special geometries, spectral response and switching characteristics, are available on a custom basis, and are widely used in the optical encoder, character recognition, and optical instrumentation fields.

### STANDARD CELL OUTLINES

Also available as gridded type.



Standard Size Part Numbers	Cell Dimensions		Photo Active Area		(1) Test Voltage (Volts)
	in.	cm.	in. <sup>2</sup>	cm <sup>2</sup>	
S05025	0.20 x 0.10	0.5 x 0.25	.017	0.1	.43
S0505	0.20 x 0.20	0.5 x 0.5	.034	0.2	.43
S0510	0.20 x 0.40	0.5 x 1.0	.068	0.4	.43
S0520	0.20 x 0.80	0.5 x 2.0	.136	0.8	.43
S1005	0.40 x 0.20	1.0 x 0.5	.074	0.4	.43
S1010	0.40 x 0.40	1.0 x 1.0	.148	0.9	.43
S1020	0.40 x 0.80	1.0 x 2.0	.296	1.9	.43
S2020	0.80 x 0.80	2.0 x 2.0	.620	3.8	.43
S2900	1.125 Dia.	2.86	.88	5.7	.43
S2901	Quarter Section of S2900	—	.22	1.4	.43

NOTE: (1) Irradiance: 100 mW/cm<sup>2</sup>, AM1 solar radiation.

### Part Number Code for Ordering Silicon Light Sensors

EXAMPLE:

S 05 05 G E 6 PL

Silicon	"A" Width	"B" Length	Gridded Type	Device Type	Minimum Conversion Efficiency	Leads If Desired
(Outline L-2)	05 = 0.20" (0.5 cm) 10 = 0.40" (1.0 cm) 20 = 0.80" (2.0 cm)		Add "G" for cells 0.4" x 0.4" (1.0 x 1.0 cm) and larger	"E" P on N	5% to 10% (6 = 6%, etc.)	PL — (Pigtail Leads)

## TYPICAL PERFORMANCE CHARACTERISTICS

STANDARD SILICON PHOTOCELL						
Parameter	Symbol	Unit	Test Condition	S05025	S0505	S0510
Short Circuit Current	I <sub>SC</sub>	mA	100 mW/cm <sup>2</sup> , AM1 Solar Radiation	1.8	3.8	7.5
Short Circuit Current	I <sub>SC</sub>	mA	100 fc, Tungsten @ 2870°K	0.07	0.13	0.27
Open Circuit Voltage	V <sub>OC</sub>	Volts	100 mW/cm <sup>2</sup> , AM1 Solar Radiation	0.43	0.43	0.43
Forward Voltage	V <sub>F</sub>	Volts	I <sub>F</sub> = 1 mA	0.50	0.50	0.42
Dark Current	I <sub>D</sub>	μA	V <sub>R</sub> = 0.1 V	0.3	0.5	0.6
Capacitance	C <sub>T</sub>	pF	V <sub>R</sub> = 0 V	1.5	2.4	5.0
Responsivity	R <sub>e</sub>	A/W	λ <sub>p</sub> = 900 nm	0.48	0.48	0.48

STANDARD SILICON PHOTOCELL (Continued)						
Parameter	Symbol	Unit	Test Condition	S1010	S1020	S2020
Short Circuit Current	I <sub>SC</sub>	mA	100 mW/cm <sup>2</sup> , AM1 Solar Radiation	17.0	35.0	72.0
Short Circuit Current	I <sub>SC</sub>	mA	100 fc, Tungsten @ 2870°K	0.55	1.10	2.2
Open Circuit Voltage	V <sub>OC</sub>	Volts	100 mW/cm <sup>2</sup> , AM1 Solar Radiation	0.43	0.43	0.43
Forward Voltage	V <sub>F</sub>	Volts	I <sub>F</sub> = 1 mA	0.42	0.40	0.30
Dark Current	I <sub>D</sub>	μA	V <sub>R</sub> = 0.1 V	0.8	1.8	25.0
Capacitance	C <sub>T</sub>	pF	V <sub>R</sub> = 0 V	20.0	25.0	70.0
Responsivity	R <sub>e</sub>	A/W	λ <sub>p</sub> = 900 nm	0.48	0.48	0.48