

# Silicon Photodetectors

# Series 0

## General Purpose

The Series 0 are a range of general purpose silicon photodiodes designed for operation at a reverse bias voltage of up to 30 volts for applications where low capacitance or fast speed of response are important.

Although these detectors are tailored for maximum responsivity in the 780 to 950 nm range they may be successfully used for pulsed applications throughout the spectral range from 430 to 1064 nm.

### ABSOLUTE MAXIMUM RATINGS

	Max. Rating	Unit
DC Reverse Voltage	50	V
Peak Pulse Current (1 $\mu$ S, 1% duty cycle)	200	mA
Peak DC Current	10	mA
Storage Temperature Range Except for: LD20-0, LD35-0, MD25-0, MD100-0	-45 to +100 -25 to +80	degree C
Operating Temperature Range Except for: LD20-0, LD35-0, MD25-0, MD100-0	-25 to +75 0 to +75	degree C
Soldering Temperature for 5 seconds max.	200	degree C

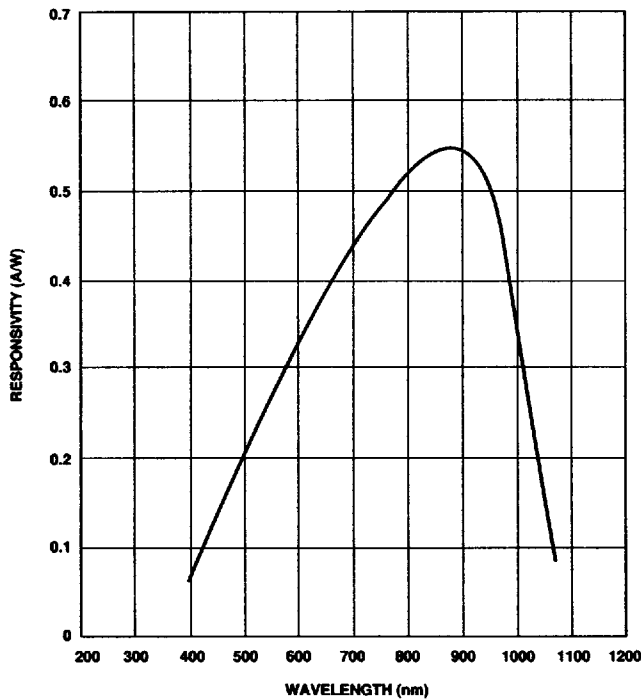


Fig.13 SERIES 0 - TYPICAL SPECTRAL RESPONSE

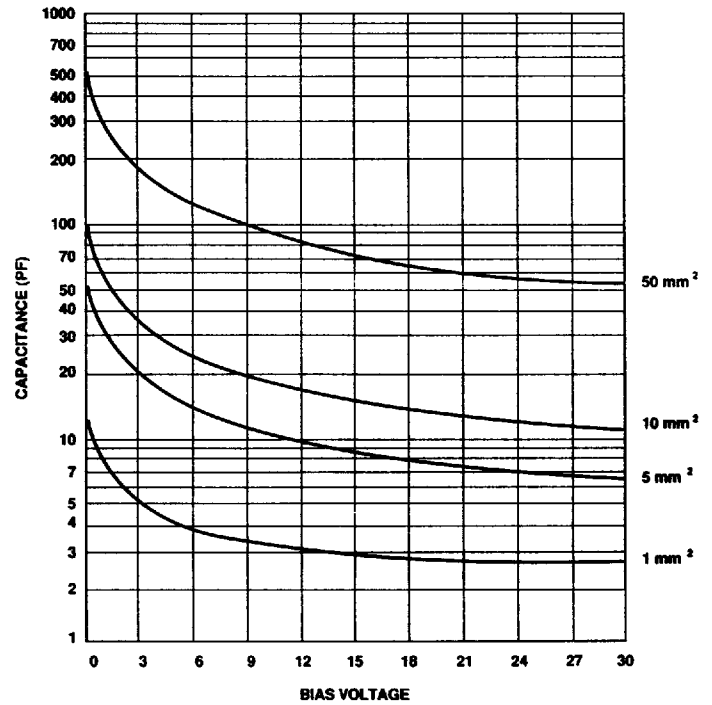


Fig.14 SERIES 0 - TYPICAL CAPACITANCE VERSUS BIAS VOLTAGE FOR A GIVEN DETECTOR AREA

# Series 0

## Electrical / Optical Specifications

Characteristics measured at 22° C (±2) ambient, and a reverse bias of 30 volts, unless otherwise stated.

### Single Elements

Type No.	Active Area		Responsivity A/W L = 900 nm		Dark Current nA		NEP $WHz^{-1/2}$ L = 900 nm	Capacitance pF		Risetime ns L = 900 nm $R_L = 50 \Omega$ Typ.	Package
	mm <sup>2</sup>	mm	Min.	Typ.	Max.	Typ.	Typ.	V <sub>r</sub> = 0V Max.	V <sub>r</sub> = 30V Max.		
OSD1-0	1	1.13 dia	0.47	0.54	25	5	$1.6 \times 10^{-13}$	12	3	10	1
OSD5-0	5	2.52 dia	0.47	0.54	25	8	$2.0 \times 10^{-13}$	50	8	8	3
OSD15-0	15	3.8 x 3.8	0.47	0.54	100	20	$3.2 \times 10^{-13}$	150	20	9	3
OSD50-0	50	7.98 dia	0.47	0.54	600	180	$6.9 \times 10^{-13}$	500	65	13	9
OSD100-0	100	11.3 dia	0.47	0.54	1000	300	$1.3 \times 10^{-12}$	1000	130	19	13
OSD200-0	200	15.96 dia	0.47	0.54	2200	440	$1.5 \times 10^{-12}$	2000	300	30	13
OSD300-0	300	19.54 dia	0.47	0.54	3200	570	$1.7 \times 10^{-12}$	3000	450	42	15

### Quadrants

(Values given are per element unless otherwise stated)

Type No.	Active Area (Total)			Responsivity A/W L = 900 nm		Dark Current nA		NEP $WHz^{-1/2}$ L = 900 nm	Capacitance pF		Risetime ns L = 900 nm $R_L = 50 \Omega$ Typ.	Crosstalk % L = 900 nm		Package
	mm <sup>2</sup>	mm	Sep. mm	Min.	Typ.	Max.	Typ.	Typ.	V <sub>r</sub> = 0V Max.	V <sub>r</sub> = 30V Max.	Max.	Typ.		
QD7-0	7	2.99 dia	0.2	0.47	0.54	300	7	$1.8 \times 10^{-13}$	20	4	10	5	1	7
QD50-0	50	7.98 dia	0.2	0.47	0.54	500	40	$4.2 \times 10^{-13}$	125	18	9	5	1	10
QD100-0	100	11.3 dia	0.2	0.47	0.54	1000	70	$5.5 \times 10^{-13}$	250	30	10	5	1	11
QD320-0	320	20.2 dia	0.2	0.47	0.54	5000	200	$9.4 \times 10^{-13}$	800	100	16	5	1	14

### Linear Arrays

(Values given are per element unless otherwise stated)

Type No.	No. of Elements	Array Dimensions				Responsivity A/W L = 900 nm		Dark Current nA		NEP $WHz^{-1/2}$ L = 900 nm	Capacitance pF		Risetime ns L = 900 nm $R_L = 50 \Omega$ Typ.	Package
		Area mm <sup>2</sup>	Width mm	Lgth. mm	Sep. mm	Min.	Typ.	Max.	Typ.	Typ.	V <sub>r</sub> = 0V Max.	V <sub>r</sub> = 30V Max.		
LD2-0A	2	1.00	2.00	0.5	0.05	0.47	0.54	100	2	$1.0 \times 10^{-13}$	12	3	15	4
LD2-0B	2	2.02	1.42	1.42	0.45	0.47	0.54	100	4	$1.3 \times 10^{-13}$	22	4	11	4
LD20-0	20	3.6	4.0	0.9	0.05	0.47	0.54	200	4	$1.3 \times 10^{-13}$	37	7	10	16
LD35-0	35	4.42	4.6	0.96	0.03	0.47	0.54	300	5	$1.5 \times 10^{-13}$	45	8	10	17

### Matrix Arrays

(Values given are per element unless otherwise stated)

Type No.	No. of Elements	Array Dimensions				Responsivity A/W L = 900 nm		Dark Current nA		NEP $WHz^{-1/2}$ L = 900 nm	Capacitance pF		Risetime ns L = 900 nm $R_L = 50 \Omega$ Typ.	Package
		Area mm <sup>2</sup>	Width mm	Lgth. mm	Sep. mm	Min.	Typ.	Max.	Typ.	Typ.	V <sub>r</sub> = 0V Max.	V <sub>r</sub> = 30V Max.		
MD25-0	5 x 5	7.29	2.7	2.7	0.1	0.47	0.54	200	4	$1.3 \times 10^{-13}$	92	15	9	18
MD100-0	10 x 10	1.96	1.4	1.4	0.1	0.47	0.54	200	4	$1.3 \times 10^{-13}$	22	4	11	19

Note: Recommended operating voltage range 0 to 30 volts, for all Series 0 Detectors.