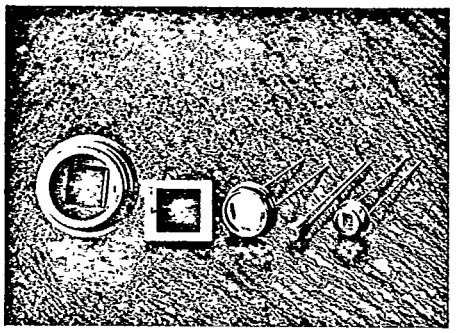
T-41-51



TO-Packaged Photodiodes

Advanced Optoelectronics offers a variety of high-reliability, cost-effective hermeticaly packaged photodiodes. These devices can be operated in photovoltaic mode with no applied bias or with reverse bias applied for high speed applications. All photodiodes offer linear response, high reliability, and high sensitivity.

The variety of devices offers the electrooptics design engineer the ability to optimize the spectral response, noise, risetime, and cost of the photodiode to the application.

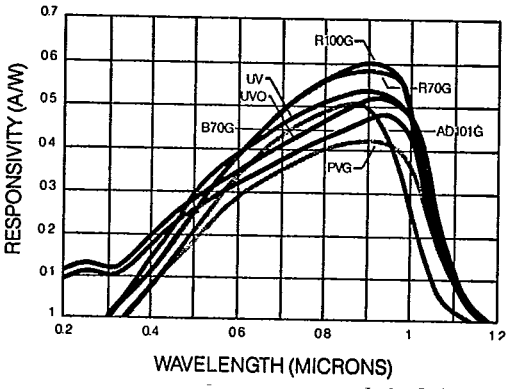
These photodiodes come in TO-18, TO-5, TO-8 and TO-3 packages depending upon the substrate size. Lower cost plastic packages are also available. The AD101 high speed silicon PIN photodiode can be furnished without a welded cap if the application requires butting the fiber directly against the active area.

All these silcon planar photodiodes are available in cell form for mounting onto printed circuit boards, packages or flex circuits. Substrate contacts are suitable for solder or epoxy die attach. Anode contacts can be gold or aluminum soldered or wire-bonded depending upon metallurgy requirements. For long wavelengths (900-1100 nm), surface-mount rear-entrance cells are available for customization to each application.

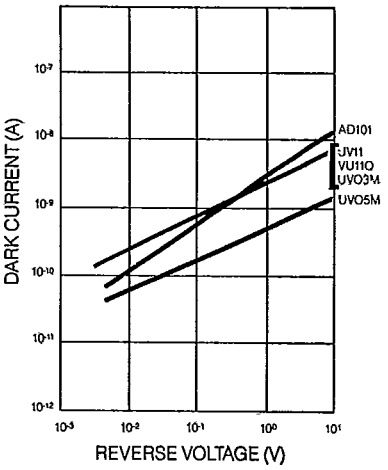
Application Examples:

- Medical Instrumentation
- Particle Detection & Measurement
- Fiber Optics
- Optical Encoding
- UV Chemical Analysis
- Process Control Instrumentation

RESPONSIVITY CURVES (TYPICAL)



DARK CURRENT vs. VOLTAGE

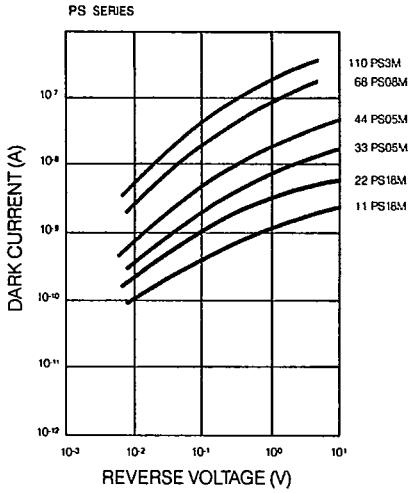


TO-PACKAGED PHOTODIODES

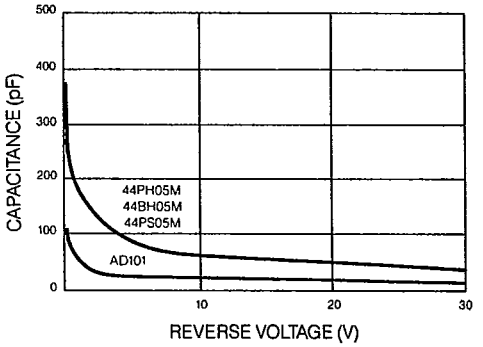
PRODUCT TYPE NUMBER	MECHANICAL PARAMETERS: PACKAGE OUTLINE	ELEMENT DIMENSION (mm)	PHOTO-SENSITIVE AREA (mm^2)	TYPICAL OPTICAL PARAMETERS: RESPONSE CURVE TYPE	RESPONSE RANGE (nm)	PEAK WAVE-LENGTH (nm)	RESPONSIVITY[1] 254 nm (A/W)	550 nm (A/W)	PEAK (A/W)	I_{sc}[2] (mA)
UV ENHANCED—OPTIMIZED DEEP UV DETECTION										
ADC-UV2	PII	10.0 x 10.0	100	UV	190-1100	950	0.09	0.31	0.52	3.00
ADC-UV2Q	PII	10.0 x 10.0	100	UVQ	200-1100	950	0.09	0.28	0.48	3.00
ADC-UV03M	T03	10.0 x 10.0	100	UVQ	200-1100	950	0.09	0.28	0.48	3.00
ADC-UV05M	T05	2.14 Dia.	3.6	UVQ	200-1100	950	0.09	0.28	0.48	0.11
BLUE/VISIBLE/RESPONSE—LOW NOISE/HIGH SPEED/BLUE ENHANCED										
11BH18M	T018	1.02 x 1.02	1.0	B70G	320-1100	950	—	0.34	0.54	0.03
22BH18M	T018	1.52 x 1.52	2.3	B70G	320-1100	950	—	0.34	0.54	0.07
33BH05M	T05	2.29 x 2.29	5.2	B70G	320-1100	950	—	0.34	0.54	0.16
44BH05M	T05	4.17 x 4.17	17	B70G	320-1100	950	—	0.34	0.54	0.52
68BH08M	T08	8.38 x 6.45	53	B70G	320-1100	950	—	0.34	0.54	1.60
110BH3M	T03	9.75 x 9.75	94	B70G	320-1100	950	—	0.34	0.54	2.82
NEAR IR RESPONSE, HIGH PERFORMANCE—HIGH SPEED/LOW DARK CURRENT										
11PS18M	T018	1.02 x 1.02	1.0	R70G	320-1100	950	—	0.31	0.58	0.03
22PS18M	T018	1.52 x 1.52	2.3	R70G	320-1100	950	—	0.31	0.58	0.07
33PS05M	T05	2.29 x 2.29	5.2	R70G	320-1100	950	—	0.31	0.58	0.16
44PS05M	T05	4.17 x 4.17	17	R70G	320-1100	950	—	0.31	0.58	0.52
68PS08M	T08	8.38 x 6.45	53	R70G	320-1100	950	—	0.31	0.58	1.60
110PS3M	T03	9.75 x 9.75	94	R70G	320-1100	950	—	0.31	0.58	2.82
310PS3M	T03/3	20 Dia	317	R100G	320-1100	950	—	0.31	0.59	9.51
NEAR IR RESPONSE—OPTIMIZED IR RESPONSE										
11PH18M	T018	1.02 x 1.02	1.0	R70G	320-1100	950	—	0.31	0.58	0.03
22PH18M	T018	1.52 x 1.52	2.3	R70G	320-1100	950	—	0.31	0.58	0.07
33PH05M	T05	2.29 x 2.29	5.2	R70G	320-1100	950	—	0.31	0.58	0.16
44PH05M	T05	4.17 x 4.17	17	R70G	320-1100	950	—	0.31	0.58	0.52
68PH08M	T08	8.38 x 6.45	53	R70G	320-1100	950	—	0.31	0.58	1.60
110PH3M	T03	9.75 x 9.75	94	R70G	320-1100	950	—	0.31	0.58	2.82
AD101	T05	2.14 Dia	3.6	AD101G	320-1060	875	—	0.27	0.50	0.11
GENERAL PURPOSE—LOWER COST/PHOTOVOLTAIC OPERATION										
11PV18M	T018	1.02 x 1.02	1.0	PVG	250-1050	900	—	0.22	0.42	0.03
22PV18M	T018	1.52 x 1.52	2.3	PVG	250-1050	900	—	0.22	0.42	0.07
33PV05M	T05	2.29 x 2.29	5.2	PVG	250-1050	900	—	0.22	0.42	0.16
44PV05M	T05	4.17 x 4.17	17	PVG	250-1050	900	—	0.22	0.42	0.52
68PV08M	T08	8.38 x 6.45	53	PVG	250-1050	900	—	0.22	0.42	1.60
110PV3M	T03	9.75 x 9.75	94	PVG	250-1050	900	—	0.22	0.42	2.82

1) MINIMUM RESPONSIVITY IS 90% OF TYPICAL RESPONSIVITY. 2) SHORT CIRCUIT CURRENT (I_{sc}) IS MEASURED WITH 10 mW/cm² OF OPTICAL POWER FROM A TUNGSTEN LIGHT SOURCE OPERATED AT 2800 degK TEMPERATURE.

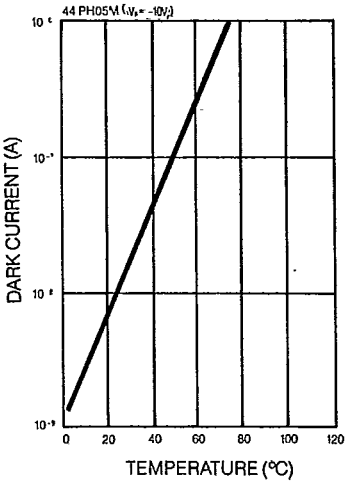
DARK CURRENT vs. VOLTAGE



CAPACITANCE vs. VOLTAGE



DARK CURRENT vs. TEMPERATURE



ELECTRICAL PARAMETERS								ADDITIONAL PERFORMANCE PARAMETERS			
DARK CURRENT			BREAKDOWN VOLT.	SHUNT	TYPICAL CAPACITANCE			RISETIME[3]		NEP	D*
V_R= -0.01V MAX. (nA)	V_R= -1.0V MAX. (nA)	V_R= -10V[4] MAX. (nA)	I_{DR}=10μA MIN. (V)	RESISTANCE TYP. (Mohm)	V_R= 0V (pF)	V_R= -1V (pF)	V_R= -10V[4] (pF)	V_R= 0 (ns)	V_R= -10 V (ns)	TYP.* (W/√Hz)	TYP. (cm√Hz/W)
0.20	2.00	6.3	7	57	2190	1050	374	500	40	1.7E-14	6.0E+13
0.20	2.00	6.3	7	57	2190	1050	374	500	40	1.7E-14	6.0E+13
0.20	2.00	6.3	7	57	2190	1050	374	500	40	1.7E-14	6.0E+13
0.04	0.40	1.3	20	275	79	38	13	450	3	7.6E-15	2.5E+13
0.15	20	40	70	200	23	11	4	450	2	8.9E-15	1.1E+13
0.30	40	80	70	100	51	24	9	450	2	1.3E-14	1.2E+13
0.50	86	170	30	60	114	55	20	450	3	1.6E-14	1.4E+13
1.20	280	550	12	30	380	180	65	450	9	2.3E-14	1.8E+13
2.20	550	1100	6	10	1170	560	200	460	25	4.0E-14	1.8E+13
4.40	1100	2200	3	5	2060	990	350	500	40	5.7E-14	1.7E+13
0.10	1.0	2.0	125	200	23	11	4	450	2	8.9E-15	1.1E+13
0.20	1.8	5.0	80	100	51	24	9	450	2	1.3E-14	1.2E+13
0.33	6.0	14.0	50	60	110	55	20	450	3	1.6E-14	1.4E+13
0.67	16.0	36.0	20	30	380	180	65	450	9	2.3E-14	1.8E+13
2.50	70.0	140.0	10	10	1200	560	200	460	25	4.0E-14	1.8E+13
5.00	150.0	220.0	5	5	2060	990	350	500	40	5.7E-14	1.7E+13
10.00	20.0	100.0	25	5	1950	820	280	500	35	5.7E-14	3.1E+13
0.10	3	15	100	200	23	11	4	450	2	8.9E-15	1.1E+13
0.20	5	25	70	100	51	24	9	450	2	1.3E-14	1.2E+13
0.33	6	30	40	60	110	55	20	450	3	1.6E-14	1.4E+13
0.67	20	60	25	30	380	180	65	450	9	2.3E-14	1.8E+13
2.50	140	400	7	10	1200	560	200	460	25	4.0E-14	1.8E+13
5.00	300	500	4	5	2050	990	350	500	40	5.7E-14	1.7E+13
0.10	3.0	30 (V_R= -50)	100	200	100	53	19	400	1(V_R= -50V)	8.9E-15	2.1E+13
15	2000	4000	7	20	130	67	24	600	500	2.8E-14	3.6E+12
30	4000	8000	7	10	300	150	55	600	500	4.0E-14	3.8E+12
50	8600	17200	3	6	670	340	120	610	500	5.2E-14	4.4E+12
120	27600	55200	1	3	2200	1100	410	640	500	7.3E-14	5.7E+12
220	55000	110000	1	1	6900	3490	1260	950	550	1.3E-13	5.8E+12
440	110000	220000	1	1	12000	6100	2200	1400	600	1.8E-13	5.4E+12

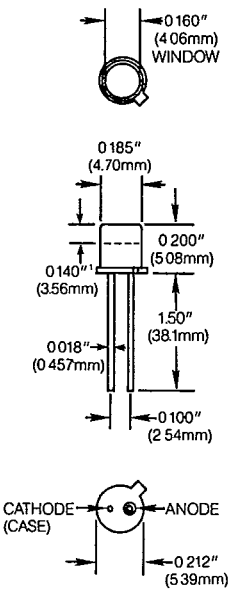
3) 50 OHM LOAD, λ = 800 nm

4) OR AT ½ BREAKDOWN VOLTAGE, WHICHEVER IS LESS

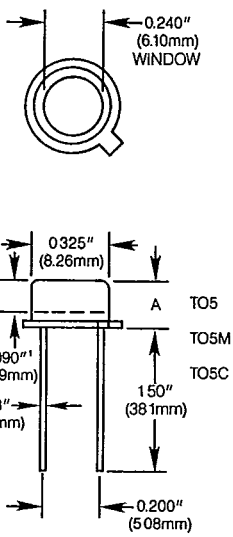
T-90-20
T-91-20

Package Outlines

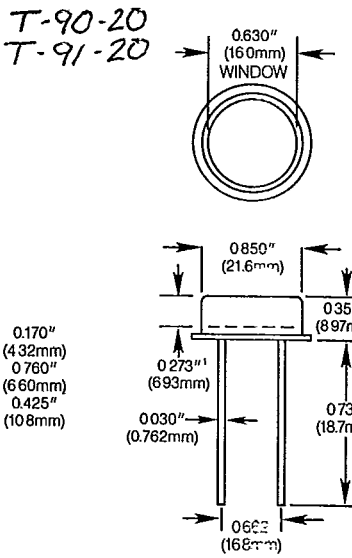
Advanced Optoelectronics offers a complete line of industry-standard TO-packages, as well as other package types. If your design requirements call for a package type beyond those in the catalog, Advanced Optoelectronics can accommodate your needs. Just give us a call.



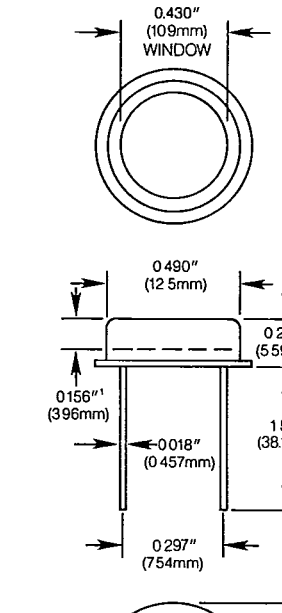
TO-18



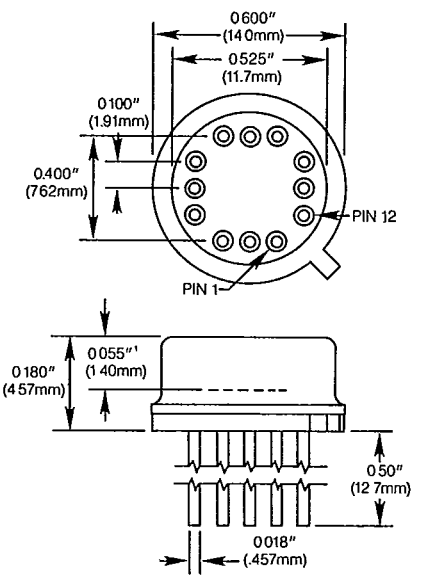
TO-5

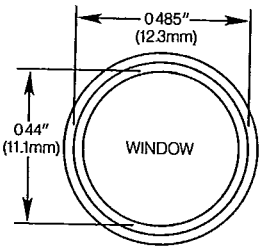


TO-3



TO-8





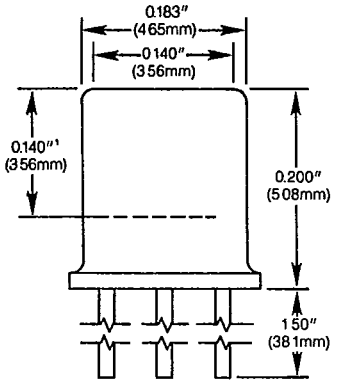
TO-8/12

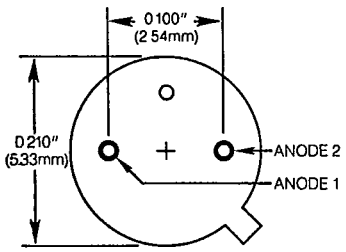
Warranty Information

All product specifications herein may be modified at any time by Advanced Optoelectronics. All Advanced Optoelectronics standard products are fully warranted for a period of one year from date of shipment against defects in material and workmanship. Uncapped detectors are warranted to be free of defects in materials or workmanship for a period of 60 days. Damage caused by mishandling is excepted. Warranty claims for visual and mechanical failures must be requested within 45 days of receipt of product. No claims will be processed without prior authorization.

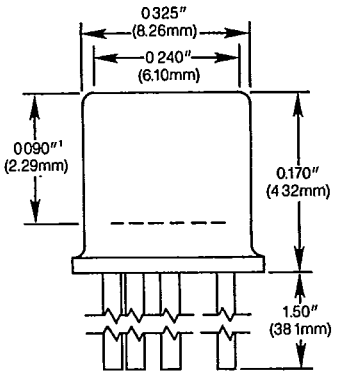
-------represents photosensitive surface

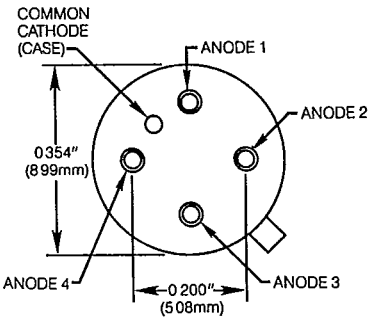
T-90-20
T-91-20



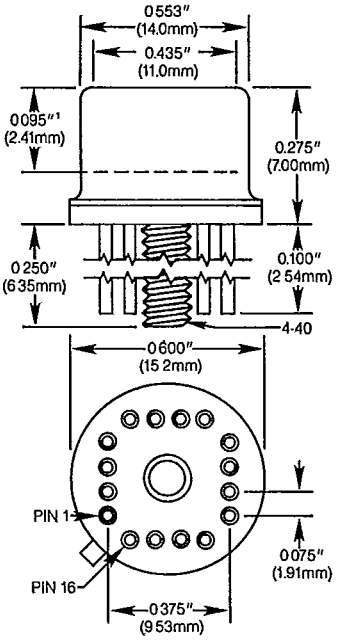


TO-18/3

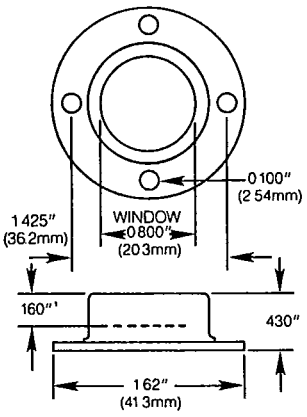


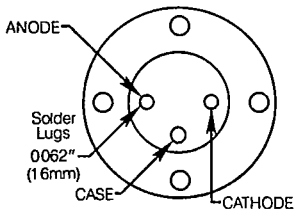


TO-5/5

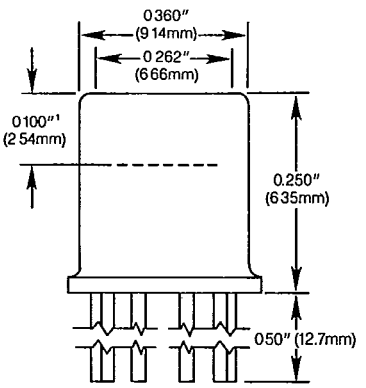


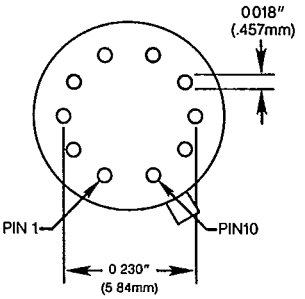
TO-8/16



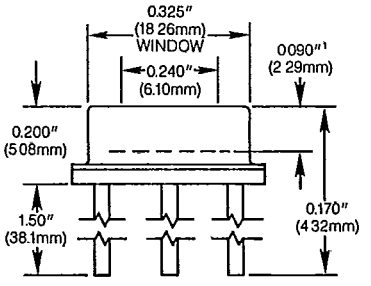


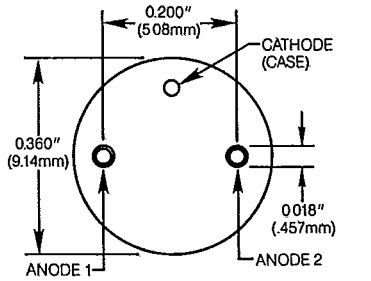
TO-3/3



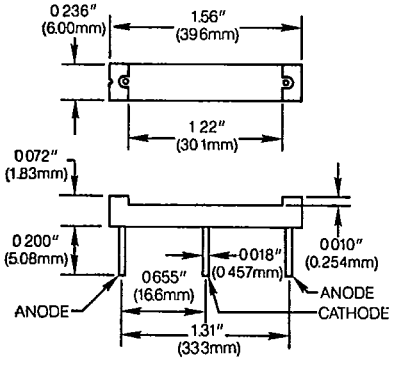


C-17

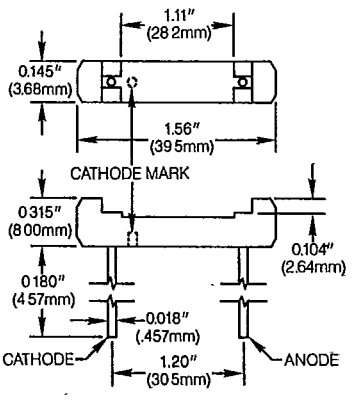




TO-5/3 (Modified)



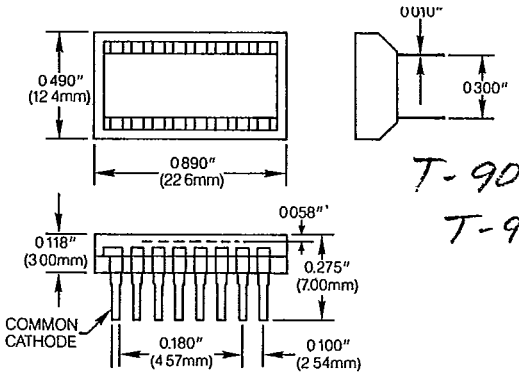
C-1



C-2

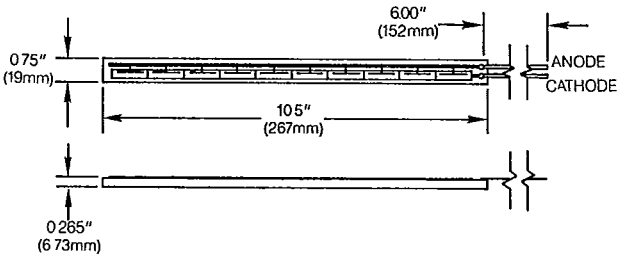
Advanced Optoelectronics... The Future

Advanced Optoelectronics is committed to product excellence and growth. A myriad of new products are in development. Our product expansion will reach beyond photosensor technology, giving you a broad range of choices for all of your optoelectronics requirements. During 1990, Advanced Optoelectronics will be introducing a family of diode-pumped solid state lasers and semiconductor laser arrays.

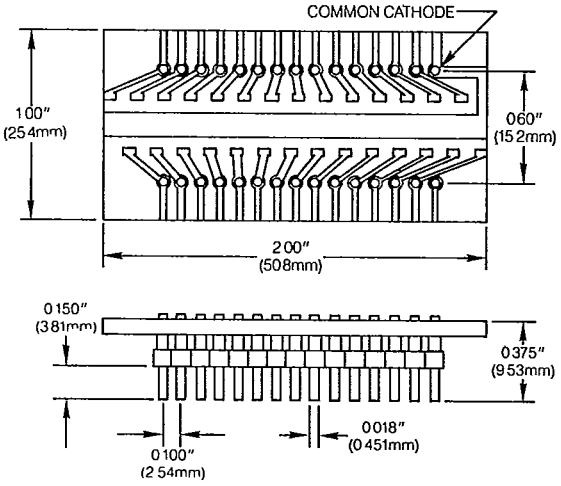


T-90-20
T-91-20

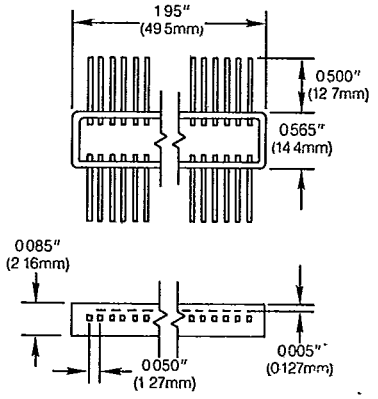
C-7



C-8



C-9



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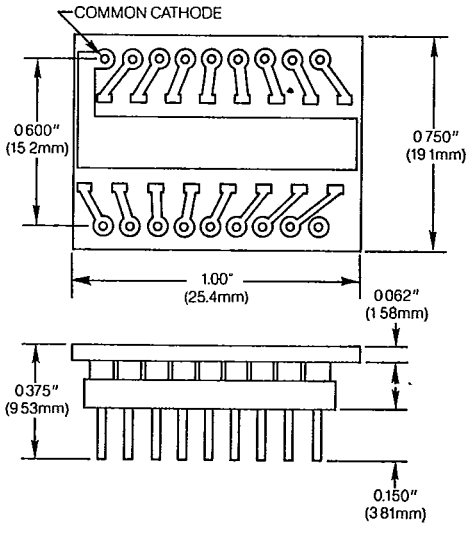
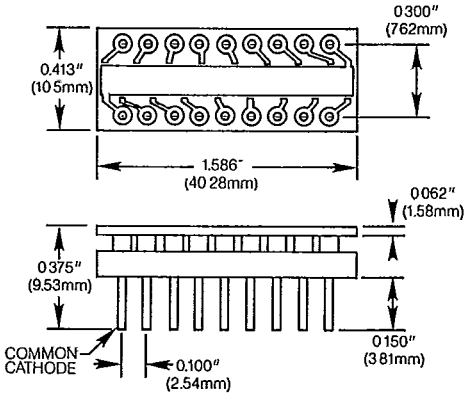


C-10



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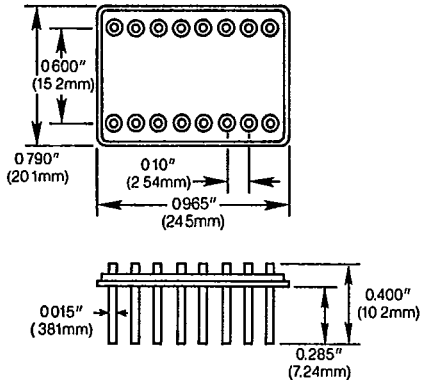

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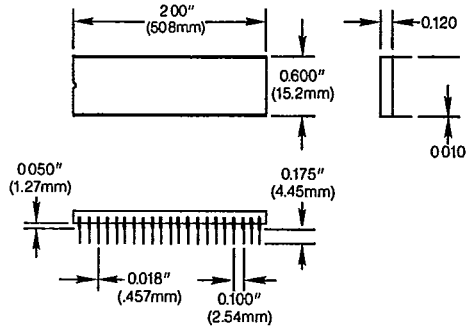
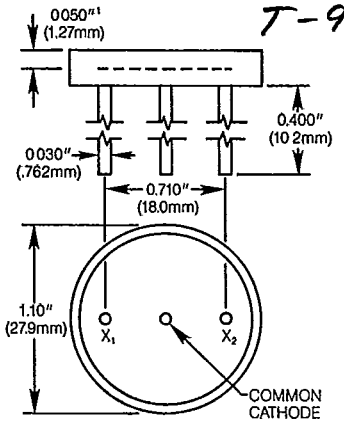


C-13



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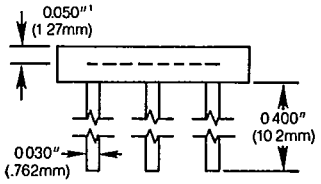

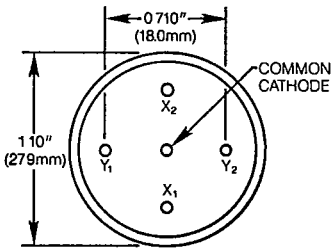

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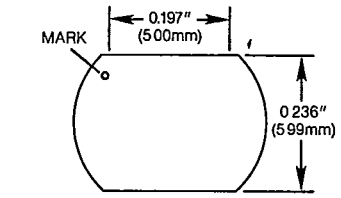

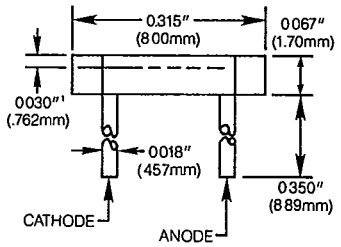

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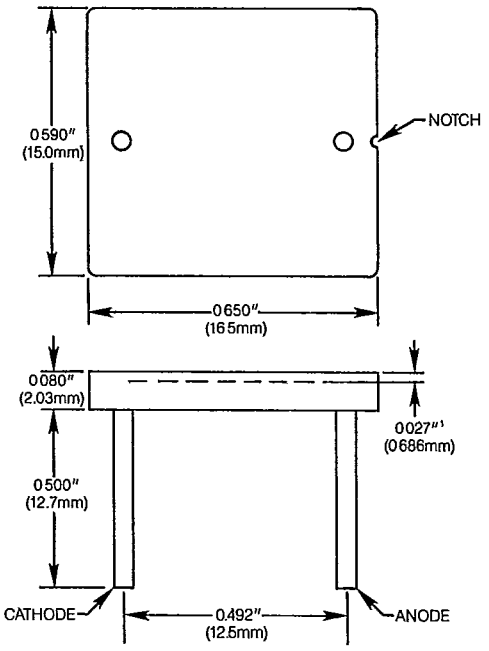

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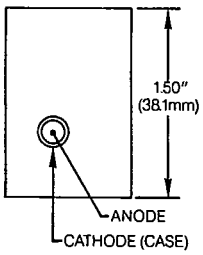

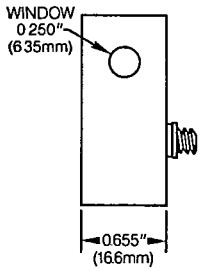

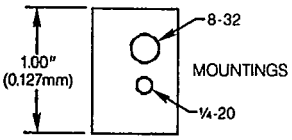

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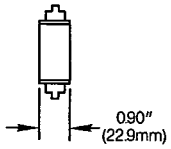
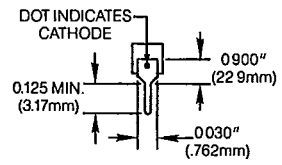
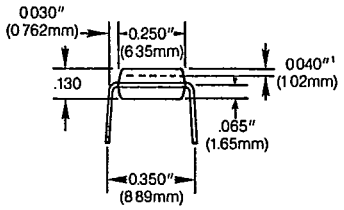
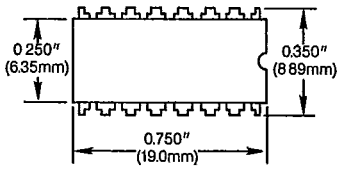
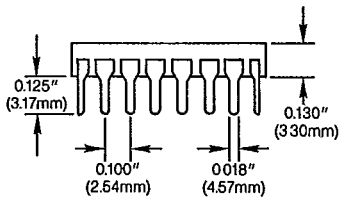


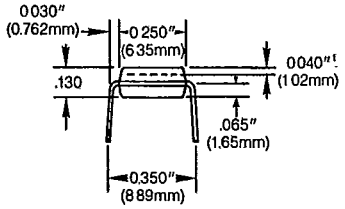




PDIP-1







PDIP-2

-------represents photosensitive surface