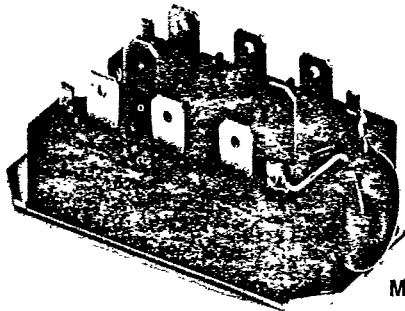
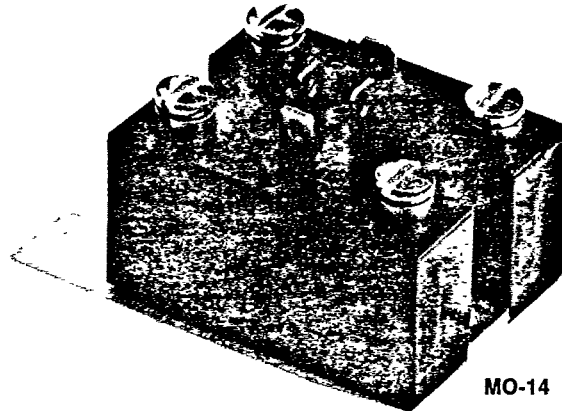


POWER MODULES



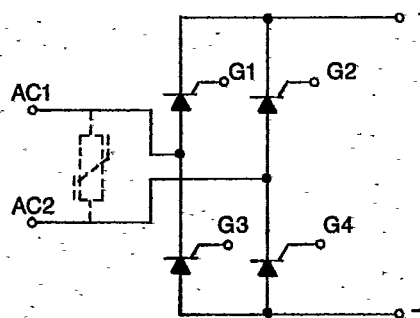
MO-12



MO-14

Average output current @ Base plate temp. 85°C		25A		50A	
Input voltage (RMS)		120	240	120	240
NATIONAL PART NUMBERS	Complete circuit	WV2BH25C	WV2BH25E	P231KW	P232KW
	W/O FW. Diode				
	W/O MOV protector	W2BH25C	W2BH25E	P231W	P232W
	W/O either option				
I_{rsm} Peak one cycle surge current (PK Amps)		300		600	
I²t For fusing at 8.3 msec (A ² sec)		370		1500	
V_{TM} Max. peak on-state volts @ peak amps., T _J = 25°C		1.6 50A		1.6 100A	
dv/dt Min. rate of voltage rise (V/μsec)		20		20	
V_{gr} Max gate volts		2.5		3	
I_{gr} Max. gate current		50		150	
Isolation voltage (RMS)		2500		2500	
R_{θcs} Thermal impedance Case-to-Sink (°C/W)		.1		.1	
Ambient temperature range °C		-40 to +125		-40 to +125	
T_J Max junction operating temperature °C		125		125	
Package Outline Number		MO-12		MO-14	

Circuit



OUTLINE DRAWINGS

T-91-20

DO-4

NOTE 1: 422, 453, .075, .178, .060 MIN., .060 MIN., .250 MAX., .405 MAX., .800 MAX., SEATING PLANE, TERM. 2, TERM. 1, NOTE 2, .424 MAX., .424, .437

NOTES:

1. COMPLETE THREADS TO EXTEND TO WITHIN 2-1/2 THREADS OF SEATING PLANE.
2. ANGULAR ORIENTATION OF THIS TERMINAL IS UNDEFINED.
3. 10-32 UNF-2A MAXIMUM PITCH DIAMETER OF PLATED THREADS SHALL BE BASIC PITCH DIAMETER (.1697", 4.29 MM) REF. (SCREW THREAD STANDARDS FOR FEDERAL SERVICES 1957) HANDBOOK H28 P1.

DO-8

.210 DIA., .310, 3.875, 4.625, 1.675 MAX., .605, .645, 1/8-24UNF-2A

DO-5

NOTE 1, 3: 422, 453, .115, .200, .156 MIN., TERM. 1, .375 MAX., NOTE 2, .667, .667, .080 MAX., .220, .245, .060 MIN., .140, .175, SEATING PLANE, TERM. 2, .450 MAX., 1.00 MAX.

NOTES:

1. COMPLETE THREADS TO EXTEND TO WITHIN 2-1/2 THREADS OF SEATING PLANE.
2. ANGULAR ORIENTATION OF THIS TERMINAL IS UNDEFINED.
3. 1/4-28 UNF-2A. MAXIMUM PITCH DIAMETER OF PLATED THREADS SHALL BE BASIC PITCH DIAMETER (.2268", 5.74 MM) REF. (SCREW THREAD STANDARDS FOR FEDERAL SERVICES 1957) HANDBOOK H28 1957 P1.
4. MINIMUM FLAT.

DO-9

1. The device with exception of the hexagon, thread, and flexible lead extension lies within the cylinder defined by 1.218 and length 3.25.

2. Angular orientation of terminal with respect to hexagonal portion is undefined. Square or radius on end of terminal is optional.

3. Length of incomplete or undercut threads.

4. Pitch diameter of 3/4-16 UNF-2A (coated) threads (SAS B1.1-1960).

5. A chamfer (or undercut) on one or both ends of the hexagonal portion is optional.

6. Minimum flat.

7. Seated height with lead bent at right angle.

DO-30

SEATING PLANE, TERM. 1, TERM. 2, φD, φW, φM, φD₁, F, N, N₁, Z, M, B

NOTES:

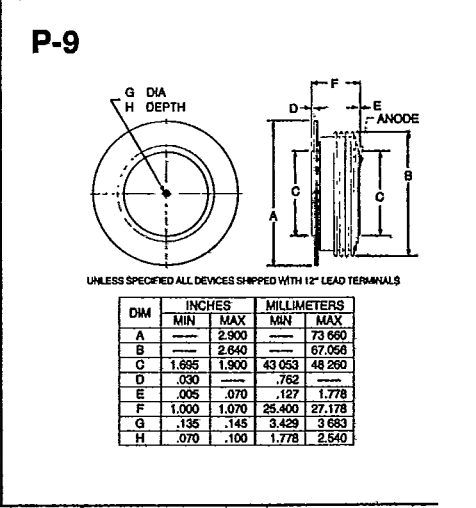
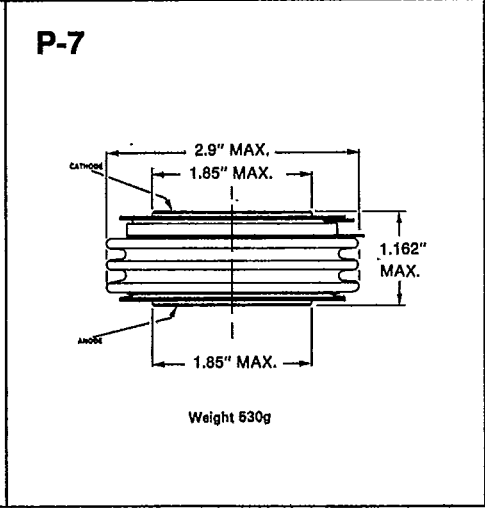
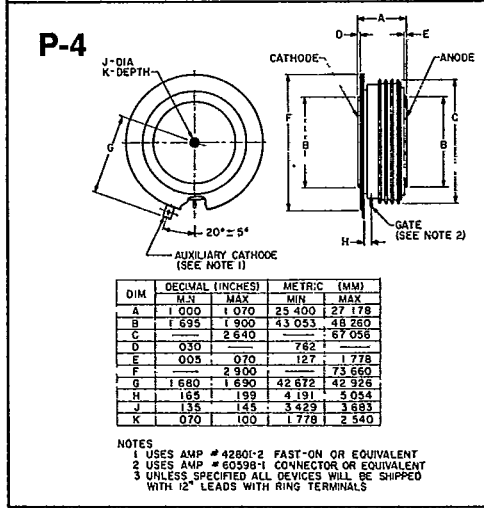
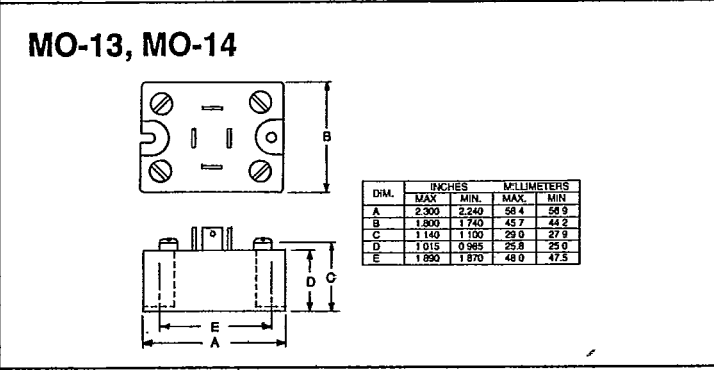
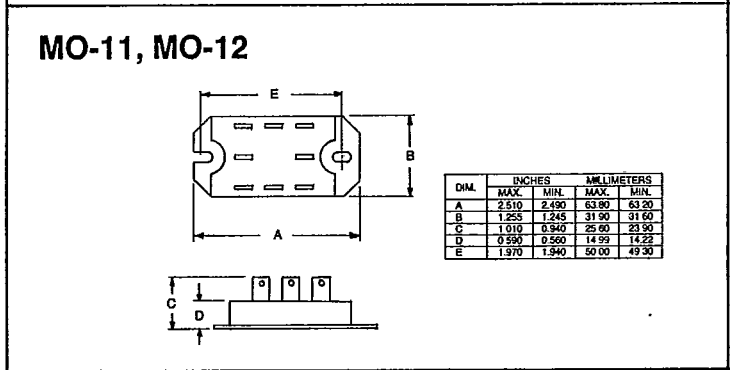
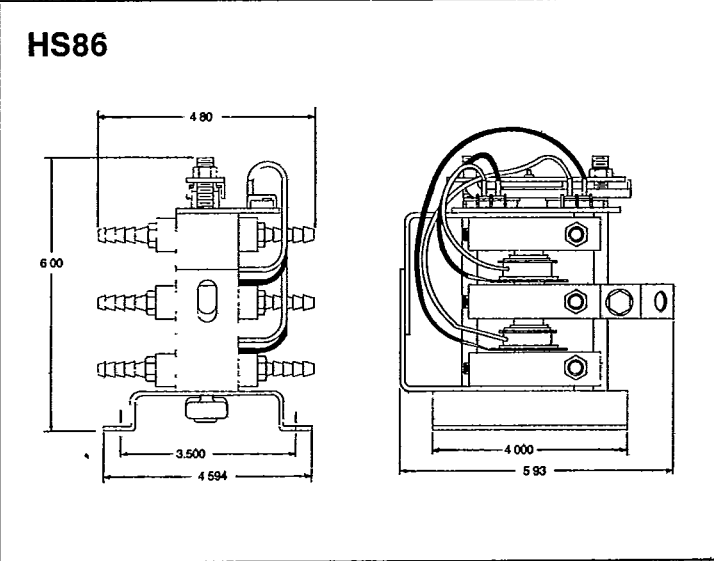
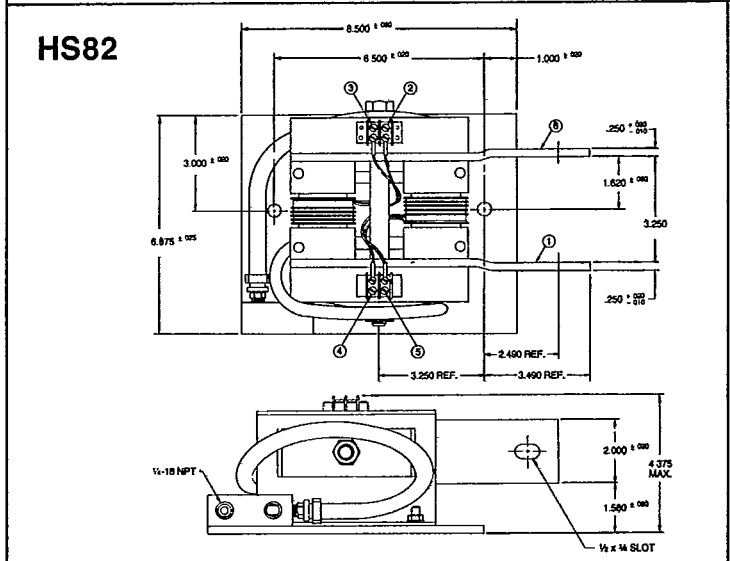
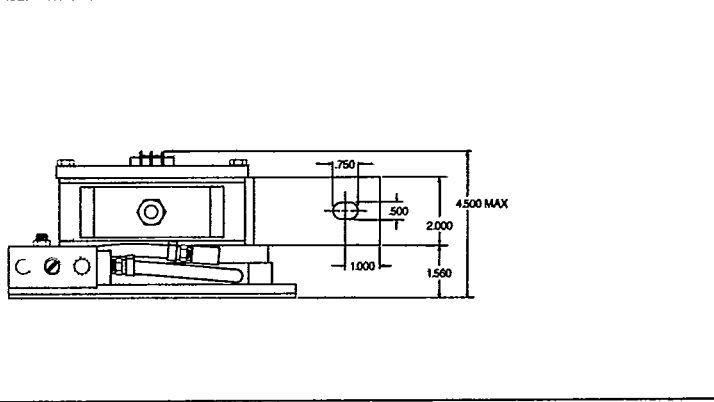
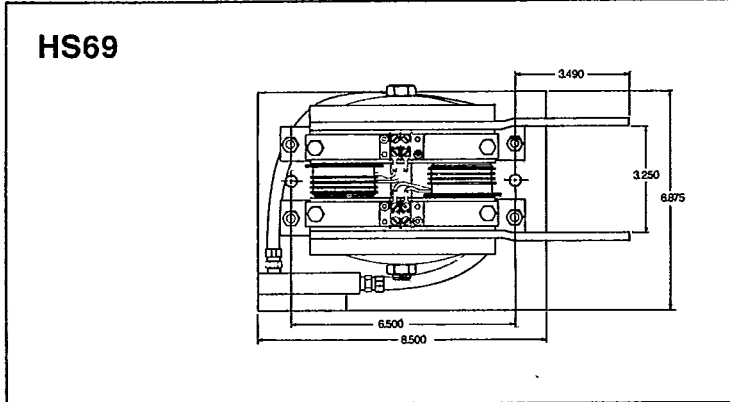
1. CONTOUR AND ORIENTATION OF TERMINAL LUG IS UNDEFINED.
2. THE BODY OF THE DEVICE, WITH THE EXCEPTION OF THE HEXAGON, THREAD, AND FLEXIBLE LEAD EXTENSION, LIES WITHIN THE CYLINDER DEFINED BY φD₁ AND LENGTH J.
3. A CHAMFER (OR UNDERCUT) ON ONE OR BOTH ENDS OF THE HEXAGONAL PORTION IS OPTIONAL.
4. SEATED HEIGHT WITH THE LEAD BENT AT RIGHT ANGLE.
5. LENGTH OF INCOMPLETE OR UNDERCUT THREADS OF φM.
6. PITCH DIA. OF 1/2-20 UNF-2A (COATED) THREADS (ASA B1.1-1960).
7. MINIMUM FLAT.

SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN.	MAX.	MIN.	MAX.	
B	.035	.100	.89	2.54	1
φD	-	1.227	-	31.16	-
φD ₁	-	1.031	-	26.18	2
E	1.031	1.063	28.19	27.00	-
F	.187	.500	4.8	12.7	3
J	-	2.500	-	63.50	2, 4
M	.437	.650	11.1	16.5	1
φM	.425	.499	10.80	12.67	5
N	.605	.645	15.37	16.38	-
N ₁	-	.125	-	3.17	5
φ	4.250	4.750	108.0	120.6	-
φT	.260	.296	6.61	7.51	-
φW	.4619	.4675	11.73	11.874	6
Z	.312	-	7.93	-	7

MILLIMETER DIMENSIONS ARE DERIVED FROM ORIGINAL INCH DIMENSIONS.

A-24-11
T-91-20

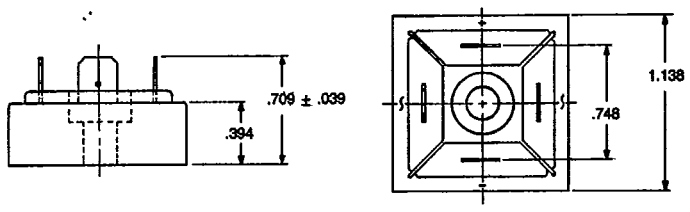
OUTLINE DRAWINGS



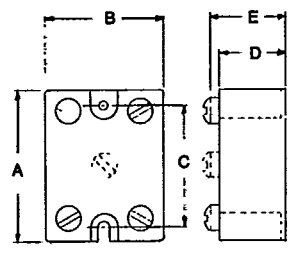
OUTLINE DRAWINGS

T-91-20

RB-1

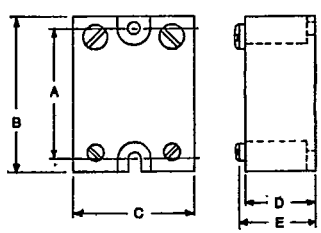


RB-2, RB-3



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	2.240	2.300	56.9	58.4
B	1.740	1.800	44.2	45.7
C	1.870	1.890	47.5	48.0
D	0.985	1.015	25.0	25.8
E	1.100	1.140	27.9	29.0

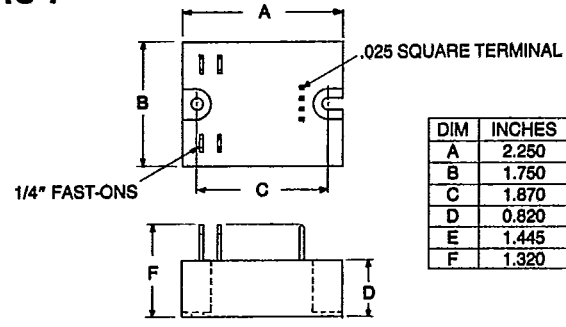
RO-1, RO-3, RO-5



SOLID STATE RELAY

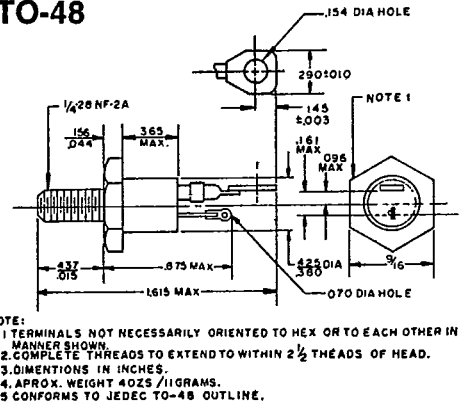
Dim.	RO-1		RO-2		RO-5	
	Dec.	MM	Dec.	MM	Dec.	MM
A	1.87	47.5	1.87	47.5	1.87	47.5
B	2.25	57.2	2.25	57.2	2.25	57.2
C	1.75	44.45	1.75	44.45	1.75	44.45
D	0.93	23.62	0.92	20.83	.75	19.0
E	1.10	27.94	0.90	22.86	.875	22.2

RO-7



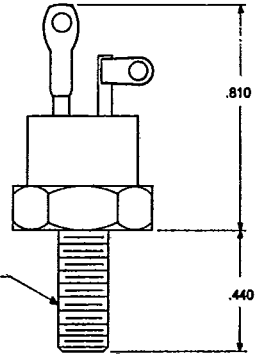
DIM	INCHES	MM
A	2.250	57.20
B	1.750	44.45
C	1.870	47.50
D	0.820	20.83
E	1.445	36.70
F	1.320	33.53

TO-48

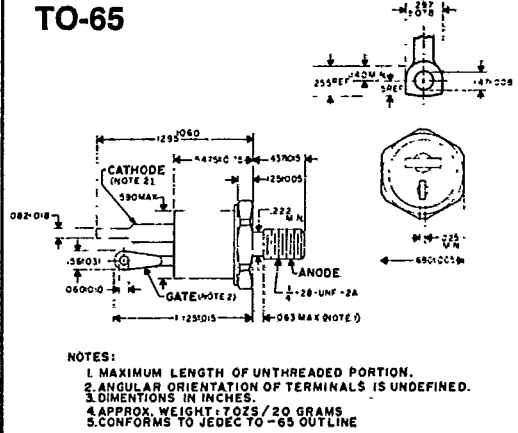


NOTE:
 1. TERMINALS NOT NECESSARILY ORIENTED TO HEX OR TO EACH OTHER IN MANNER SHOWN.
 2. COMPLETE THREADS TO EXTEND TO WITHIN 2 1/2 THREADS OF HEAD.
 3. DIMENSIONS IN INCHES.
 4. APPROX. WEIGHT 40ZS / 11 GRAMS.
 5. CONFORMS TO JEDEC TO-48 OUTLINE.

TO-64

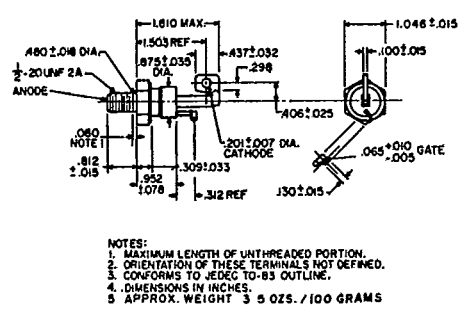


TO-65



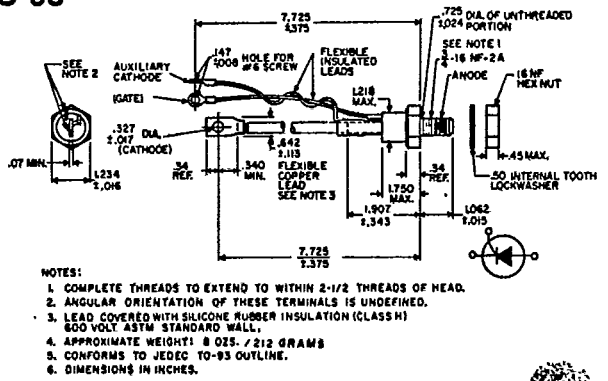
NOTES:
 1. MAXIMUM LENGTH OF UNTHREADED PORTION.
 2. ANGULAR ORIENTATION OF TERMINALS IS UNDEFINED.
 3. DIMENSIONS IN INCHES.
 4. APPROX. WEIGHT 7.0ZS / 20 GRAMS.
 5. CONFORMS TO JEDEC TO-65 OUTLINE.

TO-83



NOTES:
 1. MAXIMUM LENGTH OF UNTHREADED PORTION.
 2. ORIENTATION OF THESE TERMINALS NOT DEFINED.
 3. CONFORMS TO JEDEC TO-83 OUTLINE.
 4. DIMENSIONS IN INCHES.
 5. APPROX. WEIGHT 3.5 ZS. / 100 GRAMS

TO-93



NOTES:
 1. COMPLETE THREADS TO EXTEND TO WITHIN 2-1/2 THREADS OF HEAD.
 2. ANGULAR ORIENTATION OF THESE TERMINALS IS UNDEFINED.
 3. LEAD COVERED WITH SILICONE RUBBER INSULATION (CLASS H) 600 VOLT ASTM STANDARD WALL.
 4. APPROXIMATE WEIGHT: 8.0ZS. / 212 GRAMS
 5. CONFORMS TO JEDEC TO-93 OUTLINE.
 6. DIMENSIONS IN INCHES.

OUTLINE DRAWINGS

TO-94

Labels: SEE NOTE 2, AUXILIARY CATHODE (GATE), .145 HOLE FOR #6 SCREW, FLEXIBLE INSULATED LEADS, .875 ±.035, 2-20 UNF-2A ANODE, .266 DIA. ±.015 (CATHODE), .095, 1.046 ±.015, .300 ±.025, .378 ±.047, FLEXIBLE COPPER LEAD SEE NOTE 3, .952 ±.078, 1.562 ±.108, .812 ±.015, 6.358 ±.154, 7.100 ±.242 ±.100, 480 ±.018 DIA., .080 SEE NOTE 1, .450 ±.130.

NOTES:
 1. MAXIMUM LENGTH OF UNTHREADED PORTION.
 2. ORIENTATION OF THESE TERMINALS IS UNDEFINED.
 3. LEAD COVERED WITH SILICONE RUBBER INSULATION (CLASS H) 600 VOLT ASTM STANDARD WALL.
 4. CONFORMS TO JEDEC TO-94 OUTLINE.
 5. DIMENSIONS IN INCHES.
 6. APPROX. WEIGHT - 3.3 OZS. / 100 GRAMS

TO-118

Labels: .413 DIA., 3/16-16 UNF-2A, 2.441, 9.055, 1.100.

TO-200AB

Labels: F-DIA, G-DEPTH, CATHODE, ANODE, 30° ± 10°, AUXILIARY CATHODE (SEE NOTE 1), GATE (SEE NOTE 2).

DIM	DECIMAL (INCHES)		METRIC (MM)	
	MIN	MAX	MIN	MAX
A	.525	.575	13.335	14.605
B	.746	.754	18.948	19.152
C	.030	.060	.762	1.524
D	.030	.060	.762	1.524
E	1.580	1.655	40.132	42.037
F	.135	.145	3.420	3.680
G	.068	.082	1.727	2.083
H	1.380	1.460	35.052	37.084
J	.155	.175	3.937	4.445
K	—	1.150	—	29.210

NOTES:
 1. USES AMP #42801-2 FAST-ON OR EQUIVALENT
 2. USES AMP #60354-2 CONNECTOR OR EQUIVALENT
 3. APPROX WEIGHT 1.8 OZ / 50 GRAMS

TO-200AB-2

Labels: J-OIA, K-DEPTH BOTH ENDS, CATHODE, ANODE, 20° ± 5°, AUXILIARY CATHODE (SEE NOTE 1), GATE (SEE NOTE 2).

DIM	DECIMAL (INCHES)		METRIC (MM)	
	MIN	MAX	MIN	MAX
A	.560	.605	14.224	15.367
B	.985	.995	25.019	25.273
C	—	1.585	—	40.259
D	.040	—	1.016	—
E	.030	—	.762	—
F	1.600	1.650	40.640	41.910
G	—	1.120	—	28.448
H	.130	.170	3.302	4.318
J	.135	.145	3.429	3.683
K	.070	.100	1.778	2.540
L	—	.875	—	22.225

NOTES:
 1. USES AMP #42801-2 FAST-ON OR EQUIVALENT
 2. USES AMP #60598-1 CONNECTOR OR EQUIVALENT
 3. UNLESS SPECIFIED ALL DEVICES WILL BE SHIPPED WITH 12" LEADS WITH RING TERMINALS

TO-200AC

Labels: J-OIA, K-DEPTH, CATHODE, ANODE, 20° ± 5°, AUXILIARY CATHODE (SEE NOTE 1), GATE (SEE NOTE 2).

DIM	DECIMAL (INCHES)		METRIC (MM)	
	MIN	MAX	MIN	MAX
A	1.000	1.065	25.400	27.051
B	1.336	1.350	33.934	34.290
C	—	2.100	—	53.340
D	.020	.105	.508	2.667
E	.030	.080	.762	2.032
F	2.246	2.251	57.040	57.170
G	1.399	1.409	35.530	35.780
H	.165	.185	4.190	4.690
J	.135	.145	3.420	3.680
K	.062	.072	1.570	1.820

NOTES:
 1. USES AMP #42801-2 FAST-ON OR EQUIVALENT
 2. USES AMP #60598-1 CONNECTOR OR EQUIVALENT
 3. UNLESS SPECIFIED ALL DEVICES WILL BE SHIPPED WITH 12" LEADS WITH RING TERMINALS
 4. APPROX WEIGHT 8 OZ / 230 GRAMS

TO-240AA

Labels: A, B, C, D, E, F, G, H, I.

DIM	DEC	MM	DIM	DEC	MM
A	1.181	30	F	.984	25
B	.787	20	G	.433	11
C	3.150	80	H	.252	6.4
D	2.559	65	I	3.622	92
E	1.772	45			