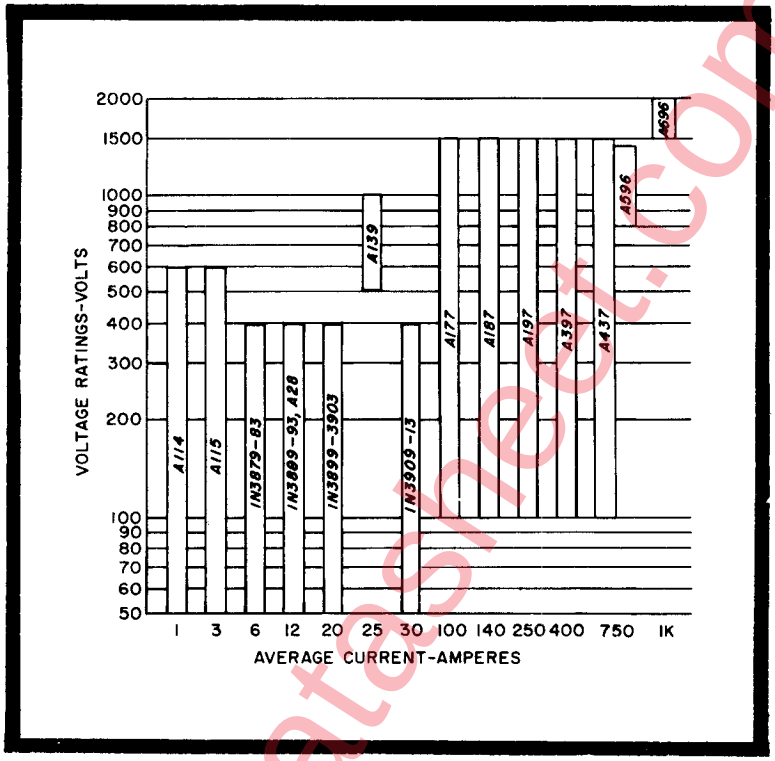
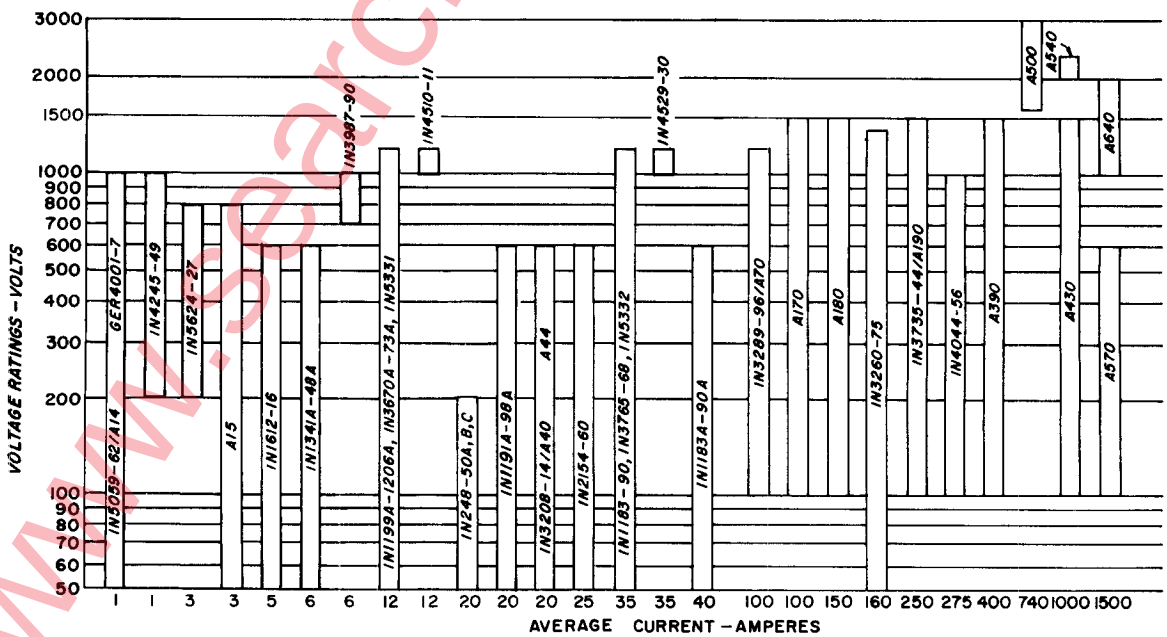
FAST RECOVERY RECTIFIERS SELECTOR GUIDE

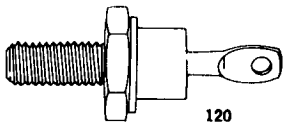


STANDARD RECTIFIERS SELECTOR GUIDE



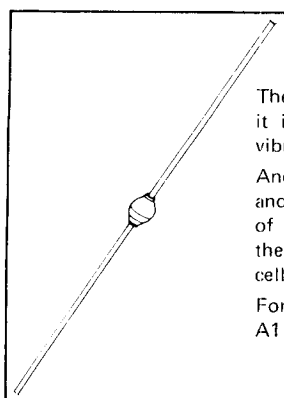
www.searchdatasheet.com

RECTIFIERS
5 TO 12 AMPERES


120

JEDEC		1N1612-16	1N1341A-48A	1N3987-90	1N3879-83	1N1199A-1206A 1N3670A-73A 1N5331	1N3889-93		1N4510-11
GE TYPES		–	–	–	–	–	–	A28**	–
SPECIFICATIONS									
$I_{FM(AV)}$	(A)	6	6	6	6	12	12	12	12
	@ T_C = (°C)	150	150	150	100	150	100	135	135
$V_{RM(rep)}$	Max. repetitive peak reverse voltage (V)	–	–	–	–	–	–	–	–
	50	1N1612	1N1341A	–	1N3879	1N1199A	1N3889	A28F	–
	100	1N1613	1N1342A	–	1N3880	1N1200A	1N3890*	A28A	–
	150	–	1N1343A	–	–	1N1201A	–	–	–
	200	1N1614*	1N1344A	–	1N3881	1N1202A*	1N3891*	A28B	–
	300	–	1N1345A	–	1N3882	1N1203A	1N3892	A28C	–
	400	1N1615*	1N1346A	–	1N3883	1N1204A*	1N3893*	A28D	–
	500	–	1N1347A	–	–	1N1205A	–	–	–
	600	1N1616*	1N1348A	–	–	1N1206A*	–	–	–
	700	–	–	1N3987	–	1N3670A	–	–	–
	800	–	–	1N3988	–	1N3671A*	–	–	–
	900	–	–	1N3989	–	1N3672A	–	–	–
	1000	–	–	1N3990	–	1N3673A*	–	–	1N4510
	1200	–	–	–	–	1N5331	–	–	1N4511
$I_{FM\ (surge)}$	Max. peak one-cycle, non-recurrent surge current (60 Hz sine wave, 1/ phase operation) @ max. rated load conditions (A)	150	150	150	75	240	150	240	240
I^2t	Max. non-repetitive for 1.0 msec (A^2 sec)	25	25	25	–	60	–	67	67
T_J	Operating junction temperature range (°C)	–65 to +190	–65 to +200	–65 to +200	–65 to +150	–65 to +200	–65 to +150	–65 to +175	–65 to +175
T_{stg}	Storage temperature range (°C)	–65 to +200	–65 to +200	–65 to +200	–65 to +175	–65 to +200	–65 to +200	–65 to +175	–65 to +200
$R\theta_{JC}$	Max. thermal resistance, junction-to-case (°C/W)	7.0	4.25	4.25	2.5	2.5	2.0	2.0	2.0
V_{FM}	Max. peak forward voltage drop @ rated $I_{F(AV)}$ (1 phase operation) (V)	1.1	1.1	1.1	1.4	1.1	1.4	1.1	1.4
	@ T_C = (°C)	150	25	25	25	25	25	25	135
T_{rr}	Max. reverse recovery time (nsec)	–	–	–	200	–	200	100	–
PACKAGE OUTLINE NO.		120	120	120	120	120	120	120	120

*JAN & JANTX types available.
**A28 reverse polarity is an A29.



The best way to assure reliability in a low-current rectifier pellet is to put it in a package that really protects it. Protects it from shock, humidity, vibration and temperature.

And that's just what we do with General Electric's glassivated 1-amp (A14) and 3-amp (A15) rectifiers. Solid glass provides passivation and protection of the silicon pellet's P-N junction – no organic material is present within the hermetically sealed package. In addition, rigid mechanical support and excellent thermal characteristics are provided by the dual heat sink construction.

For high-frequency applications, GE offers a fast-recovery rectifier, the 1-amp A114, with a 200 nsec. max. reverse recovery.

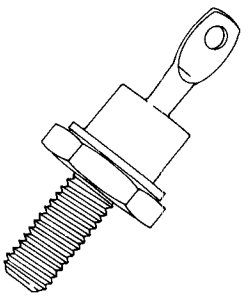
1N1195 SEE PAGE 203

Silicon Rectifiers

1N1199A-1N1206A
1N1199RA-1N1206RA
1N3670A-1N3673A
1N5331

These diffused junction rectifiers are designed specifically to provide high performance for applications up to 22 amperes Average Forward Current in single-phase applications with repetitive peak reverse voltages of 50 through 1200 volts. High junction temperature rating plus low forward drop and thermal impedance permit high current operation with minimum space requirements.

General Electric research, advance development and product design have resulted in a highly efficient rectifying junction. This feature, plus a mechanical design employing high-temperature hard solders and welds for all internal and external joints and seals, which eliminates common sources of thermal fatigue failure, have produced a silicon rectifier with outstanding reliability under all operating conditions.



FEATURES:

- High Voltage
- Ratings up to 200°C Junction Temperature
- Popular DO-4 Outline
- Uses Hard Solders for Thermal Fatigue Protection
- Transient Voltage Ratings 200 Volts Above PRV Ratings

MAXIMUM ALLOWABLE RATINGS

Types	Repetitive Peak Reverse Voltage, $V_{RM(rep)}$ (1)	RMS Voltage	DC Blocking Voltage (2)	Non-Repetitive Peak Reverse Voltage, $V_{RM(non\text{-}rep)}$	Full-Load Reverse Current (full-cycle avg., 150°C T_C, 1 ϕ), $I_{R(AV)}$
	Volts*	Volts*	Volts*	Volts*	Milliamperes*
1N1199A, RA	50	35	50	100	3.0
1N1200A, RA	100	70	100	200	2.5
1N1201A, RA	150	105	150	300	2.25
1N1202A, RA	200	140	200	350	2.0
1N1203A, RA	300	210	300	450	1.75
1N1204A, RA	400	280	400	600	1.5
1N1205A, RA	500	350	500	700	1.25
1N1206A, RA	600	420	600	800	1.0
1N3670A, RA	700	490	700	900	0.9
1N3671A, RA	800	560	800	1000	0.8
1N3672A, RA	900	650	900	1100	0.7
1N3673A, RA	1000	700	1000	1200	0.6
1N5331, R	1200	840	1200	1400	0.5

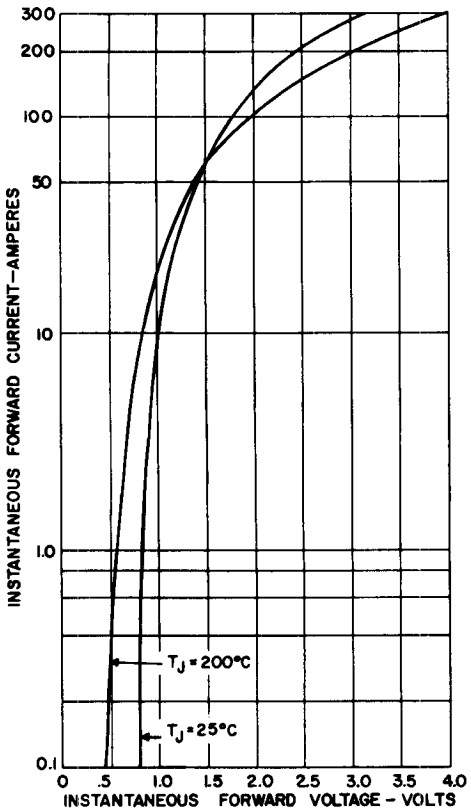
Average Forward Current (T_C = 150°C, single-phase) ..... 12 Amperes*
Peak One-Cycle Surge Current (non-repetitive), I_{FM} (surge) ..... 240 Amperes*
Minimum I^2t Rating (for times > .0008 sec. and < .0083 sec., non-recurrent) ..... 60 Ampere^2 seconds
Maximum Full-Load Voltage Drop (T_C = 150°C, single-phase, full-cycle avg.) ..... 0.55 Volts*
Maximum Thermal Resistance, $\theta_{J\text{-}C}$ ..... 2.5°C/Watt
Storage and Operating Junction Temperature, T_J ..... −65°C to +200°C*
Stud Torque ..... 12 Lb-in (Min), 15 Lb-in (Max)*
14 Kg-cm (Min), 17.5 Kg-cm (Max)*

NOTES:

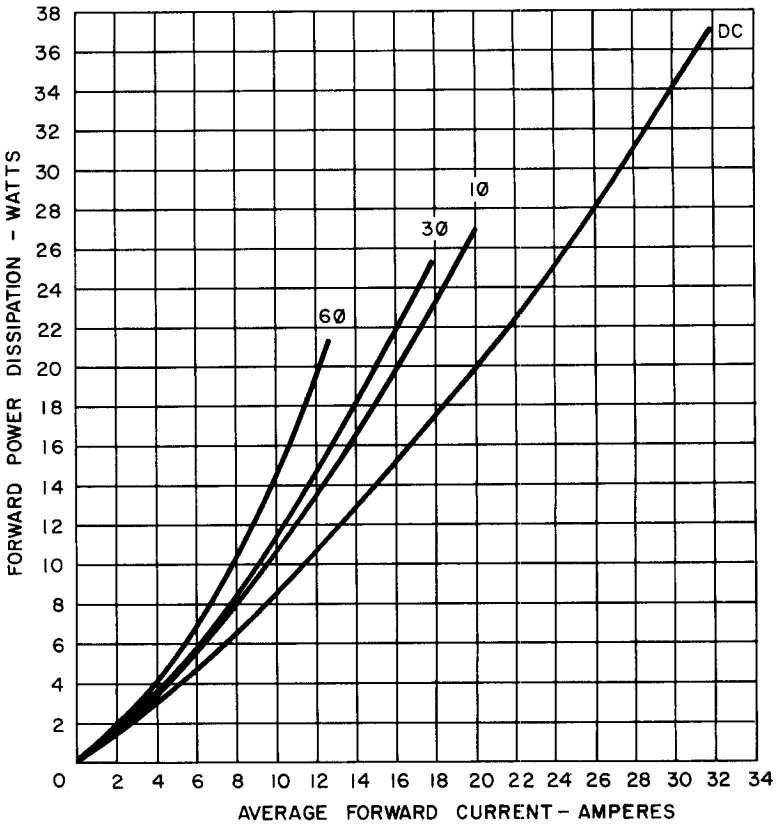
(1) Maximum voltages apply with a heatsink thermal resistance of 22°C/watt, or less, at maximum rated junction temperature.
(2) Maximum voltages apply with a heatsink thermal resistance 7°C/watt, or less, at maximum rated junction temperature.
(3) Case temperature, T_C, is measured at the center of any one of the hex flats.

*Indicates values included in JEDEC Type Number Registration.

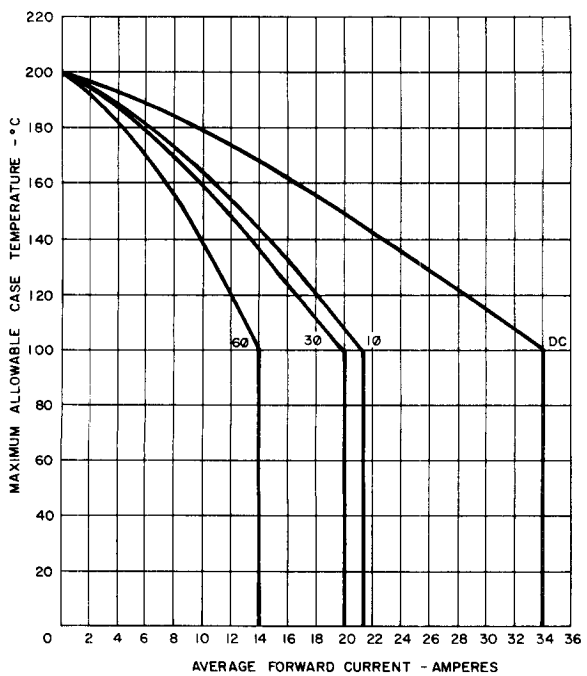
1N1199A-1N1206A
1N1199RA-1N1206RA
1N3670A-1N3673A
1N5331



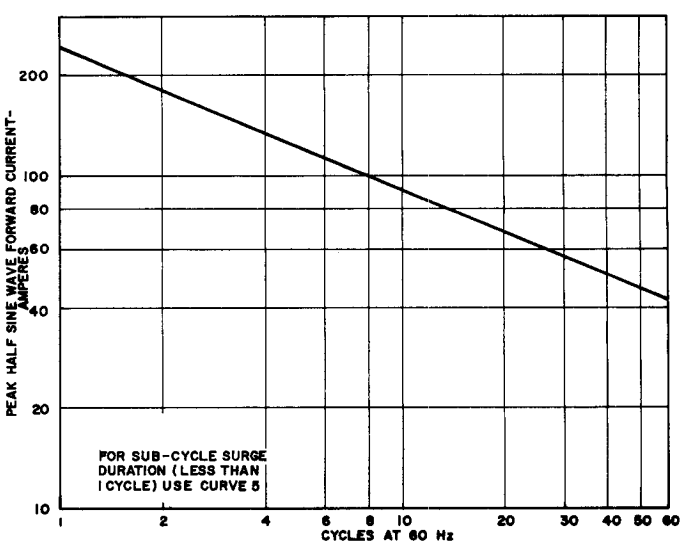
1. MAXIMUM FORWARD CHARACTERISTICS



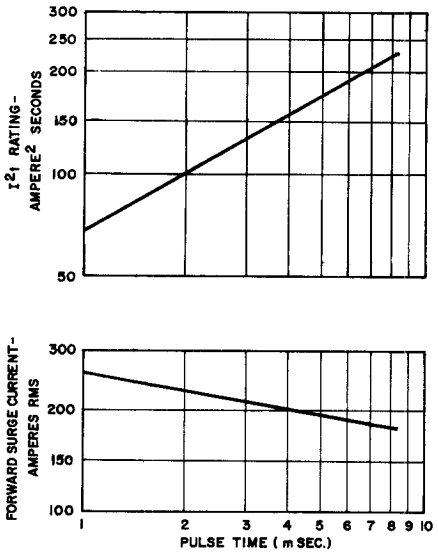
2. FORWARD POWER AS A FUNCTION OF AVERAGE FORWARD CURRENT (T_J = +200°C)



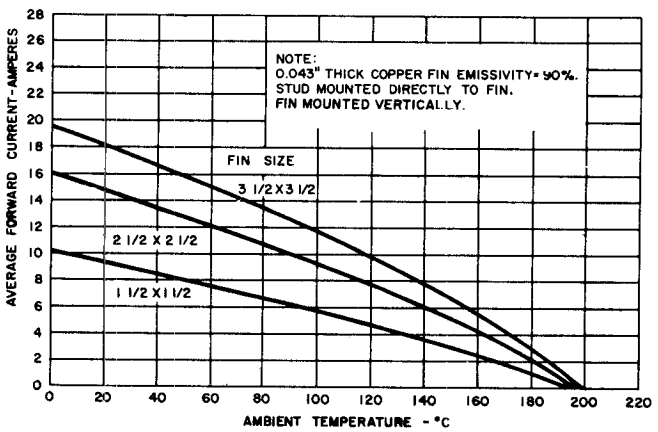
3. MAXIMUM CASE TEMPERATURE VS. AVERAGE FORWARD CURRENT



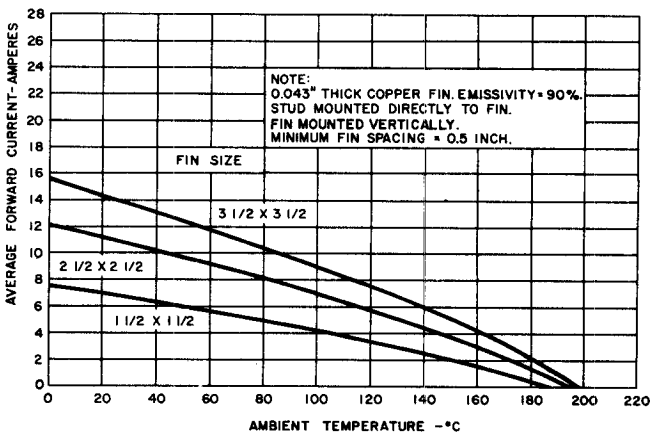
4. MAXIMUM SURGE CURRENT FOLLOWING RATED LOAD CONDITIONS



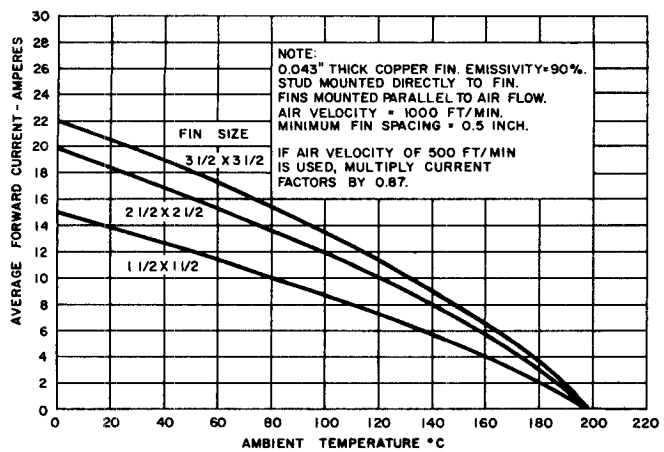
5. SUBCYCLE SURGE FORWARD CURRENT AND I^2t RATING FOLLOWING RATED LOAD CONDITIONS



6. REQUIRED FIN SIZE — FREE CONVECTION, SINGLE FIN, UNIMPEDED RADIATION



7. REQUIRED FIN SIZE — FREE CONVECTION, IMPEDED RADIATION



8. REQUIRED FIN SIZE — FORCED CONVECTION, IMPEDED RADIATION

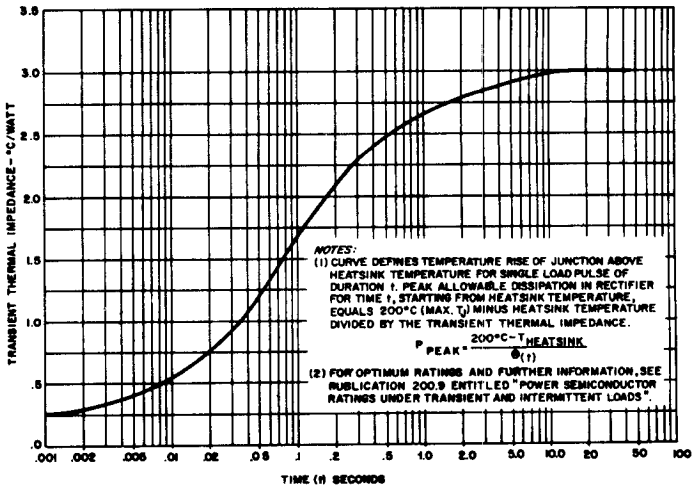
TO USE GRAPHS 6, 7 AND 8

1. Enter graph at vertical axis with desired current multiplied by proper current factor:

DC-0.80	3ϕ-1.15
1ϕ-1.00	6ϕ-1.40

2. Intercept desired fin curve
3. Read on horizontal axis the maximum allowable ambient temperature

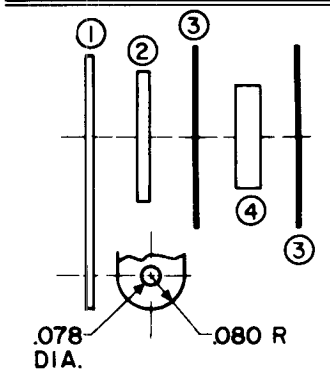
1N1199A-1N1206A
1N1199RA-1N1206RA
1N3670A-1N3673A
1N5331



9. MAXIMUM TRANSIENT THERMAL IMPEDANCE — JUNCTION TO HEATSINK

OUTLINE DRAWING

INSULATING HARDWARE KIT *



① COPPER TERMINAL, .016 THICK, TIN PLATED

② BRASS WASHER, .035 THICK NICKEL PLATED

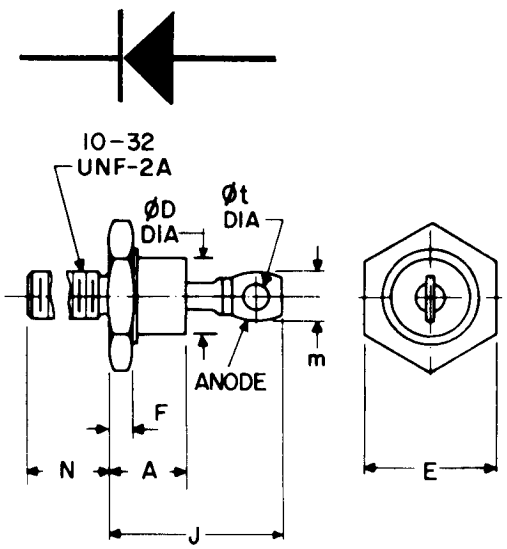
③ MICA WASHERS, TWO, .625 O.D., .204 I.D., .005 THICK

④ TEFLON WASHER, .270 O.D. .204 I.D., .050 THICK

* AVAILABLE UPON REQUEST

① 10-32 STEEL NUT CADMIUM PLATED

② LOCKWASHER, CADMIUM PLATED STEEL



COMPLIES WITH EIA REGISTERED OUTLINE DO-4

SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN.	MAX.	MIN.	MAX.	
A		.405		10.29	
ϕD		.424		10.77	
E	.424	.437	10.77	11.10	
F	.075	.175	1.91	4.45	
J		.800		20.32	
m		.250		6.35	1
N	.422	.453	10.72	11.51	
ϕt	.060		1.52		
W					2

NOTES:

1. Angular orientation of this terminal is undefined.
2. 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.