

Silicon Rectifier

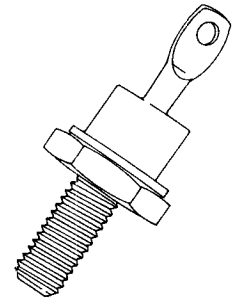
IN1612-16R
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MEDIUM CURRENT 5A

These popular stud mounted 5 ampere rectifiers are the commercial version of the MIL-19500/162 rectifiers. They were designed specifically to meet this military specification. Hermetic seals, one piece terminals, and all-hard-solder construction are the major features of this design. The all-hard-solder or welded construction is an important feature for the designer to consider. Temperature excursions caused by heating and cooling when the rectifier is used intermittently at maximum rating will cause thermal fatigue in a soft-solder construction. The hard-solder and welded construction provides freedom from thermal fatigue failures.

The major features of this design are:

- Hard-Solder, Thermal Fatigue Free
- Solid One-Piece Terminal
- Low Thermal Impedance
- Transient PRV Ratings



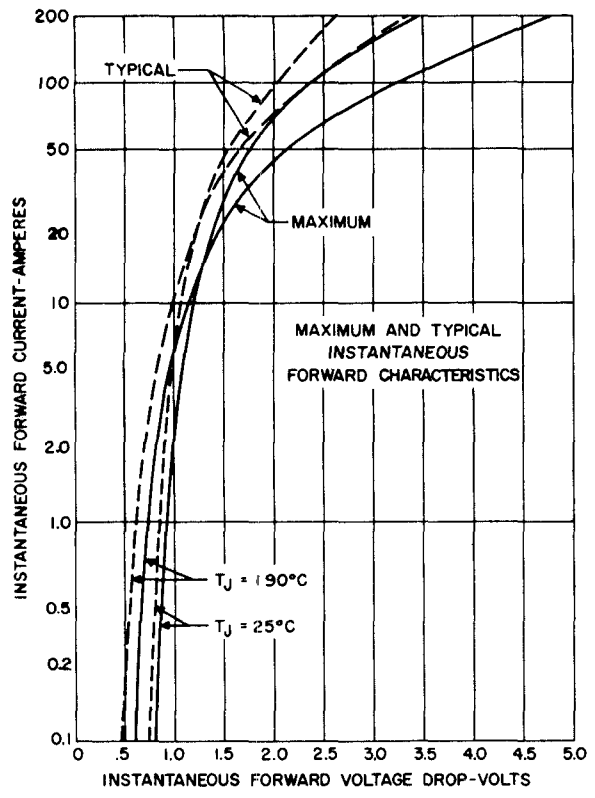
electrical ratings and specifications (60 cps, Resistive or Inductive Load)

	IN1612 IN1612R	IN1613 IN1613R	IN1614‡ IN1614R	IN1615‡ IN1615R	IN1616‡ IN1616R	
Max. Allow. Transient Peak Reverse Voltage (Non-recurrent, 5 millisecc. max. duration, T _J = 0 to 190°C)	100	200	350	600	800	Volts
Max. Allow. Peak Reverse Voltage (Repetitive)*	50	100	200	400	600	Volts
Max. Allow. RMS Voltage	35	70	140	280	420	Volts
Max. Allow. DC Blocking Voltage**	50	100	200	400	600	Volts
Max. Allow. Forward Current (Single Phase +150°C stud temp.)	←————— 5 amperes —————→					
Max. Allow. Peak One Cycle Surge Current (non-recurrent)	←————— 150 amperes —————→					
I ² t Rating [for t greater than .0008 sec. and less than .0083 sec. (non-recurrent)]	←————— 25 ampere ² sec. — min. rating —————→ (T _J = -65°C to +190°C)					
Max. Full Load Voltage Drop (Single Phase, Full Cycle Average +150°C stud temp.)	←————— .64 Volts —————→					
Max. Leakage Current at Full Load (Single Phase, Full Cycle Average 150°C stud temp.)	1.0	1.0	1.0	1.0	1.0	ma
Max. Thermal Resistance (junction to stud)	←————— 7.0°C/Watt —————→					
Junction Operating and Storage Temp. Range	←————— -65°C to +190°C —————→					
Stud Torque	Minimum 12 in.-lbs.; Maximum 15 in.-lbs.					

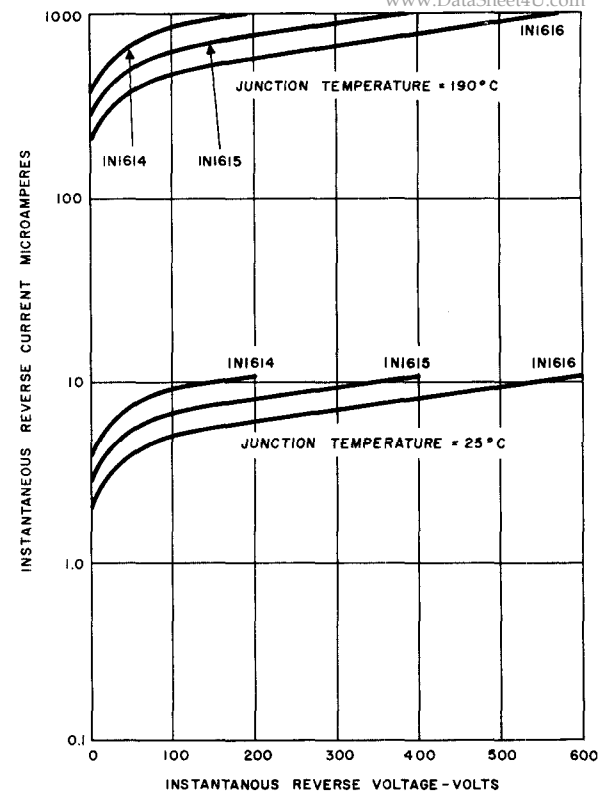
*Maximum voltages apply with a heat sink thermal resistance of 22°C/Watt or less at maximum rated junction temperature.

**Maximum voltages apply with a heat sink thermal resistance of 7°C/Watt or less at maximum rated junction temperature.

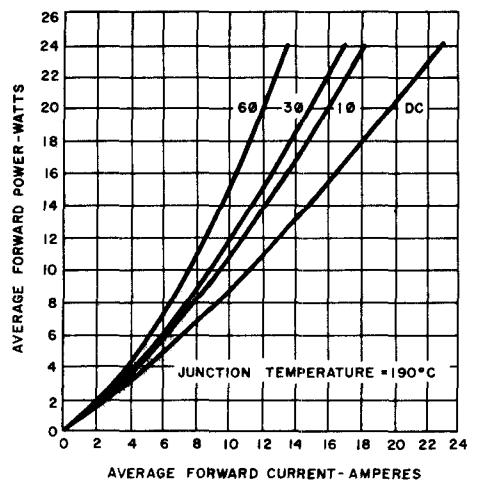
‡Available as MIL-S-19500/162 devices.



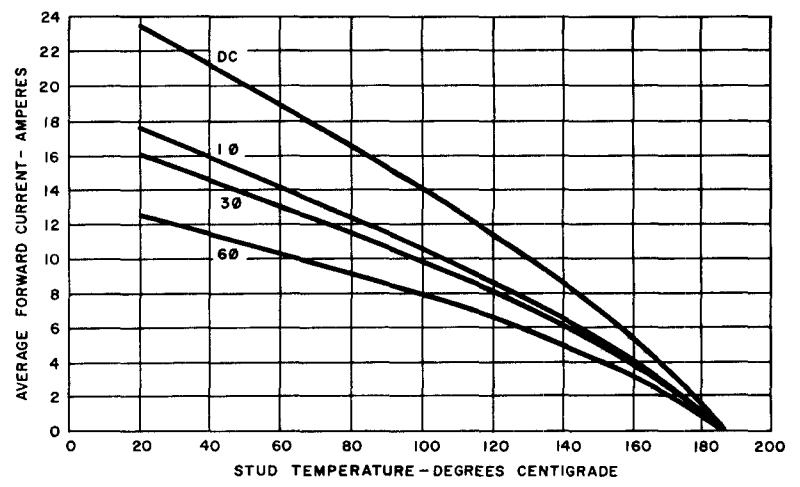
1. MAXIMUM AND TYPICAL FORWARD CHARACTERISTICS



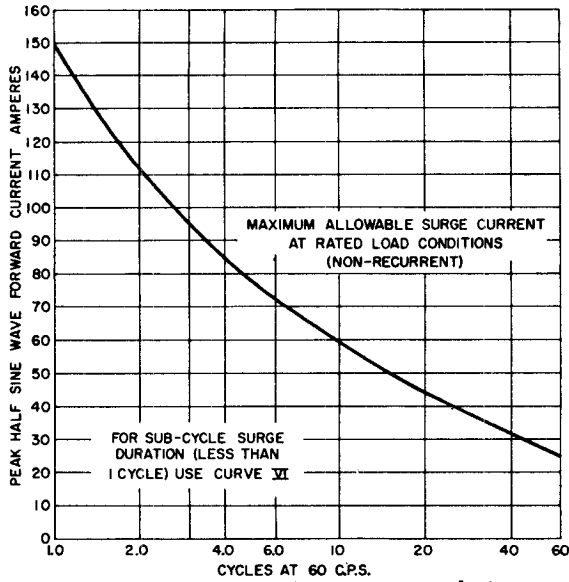
2. REVERSE CHARACTERISTICS



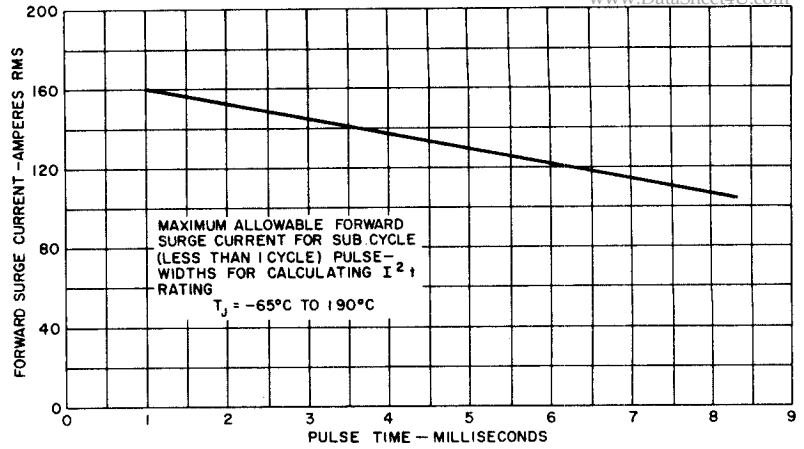
3. FORWARD POWER DISSIPATION



4. MAXIMUM ALLOWABLE STUD TEMPERATURE



5. SURGE RATING (1-60 cycles)



6. SUB-CYCLE SURGE RATING

* TO USE GRAPHS 7, 8, 9

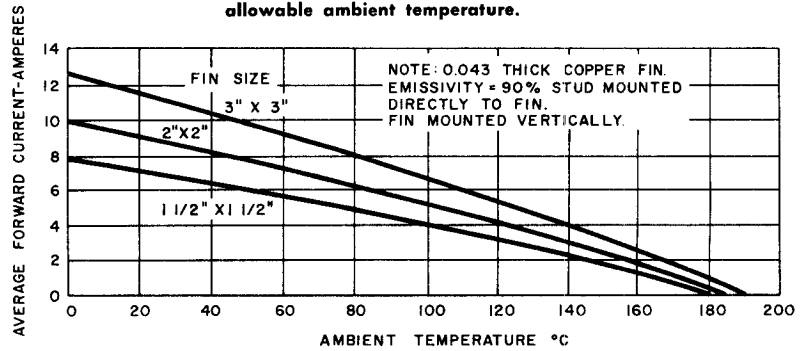
1. Enter graph at vertical axis with desired current multiplied by proper current factor:

DC-0.80	3φ-1.15
1φ-1.00	6φ-1.40

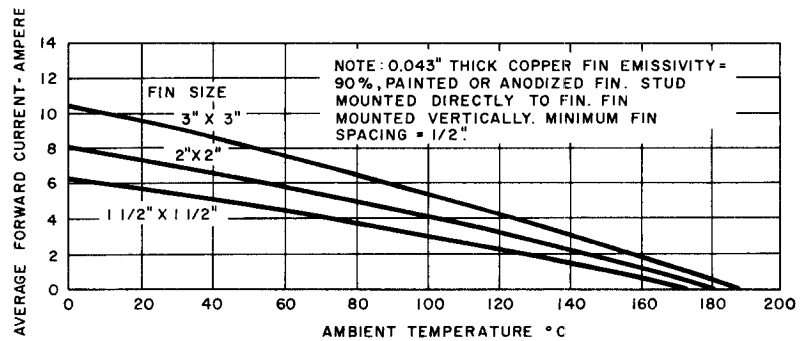
2. Intercept desired fin curve

3. Read on horizontal axis the maximum allowable ambient temperature.

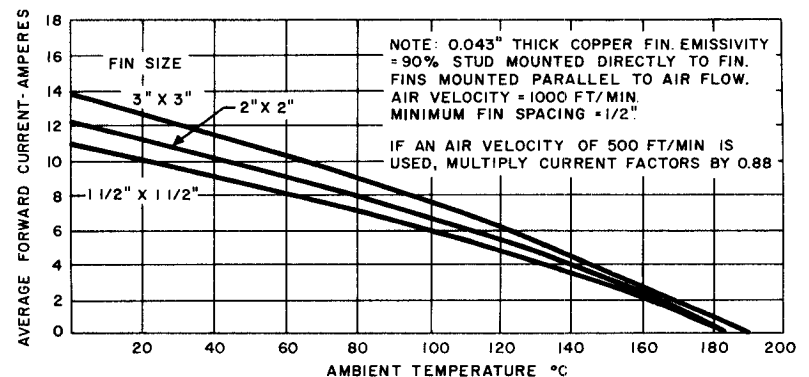
*7. REQUIRED FIN SIZE—FREE CONVECTION, SINGLE FIN, UNIMPEDED RADIATION

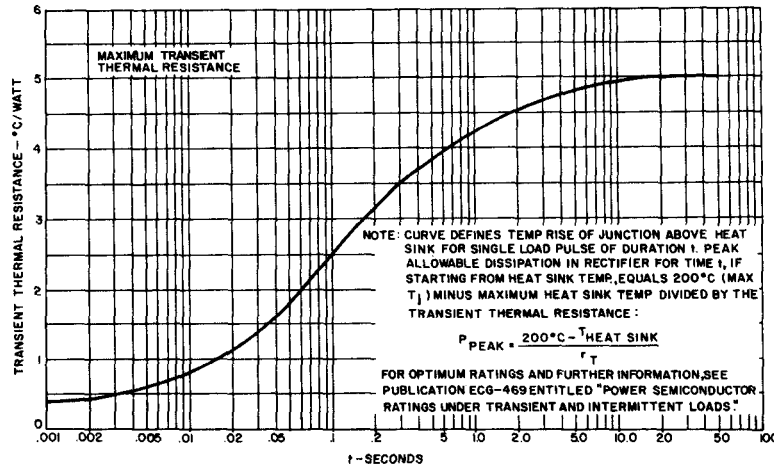


*8. REQUIRED FIN SIZE—FREE CONVECTION, IMPEDED RADIATION



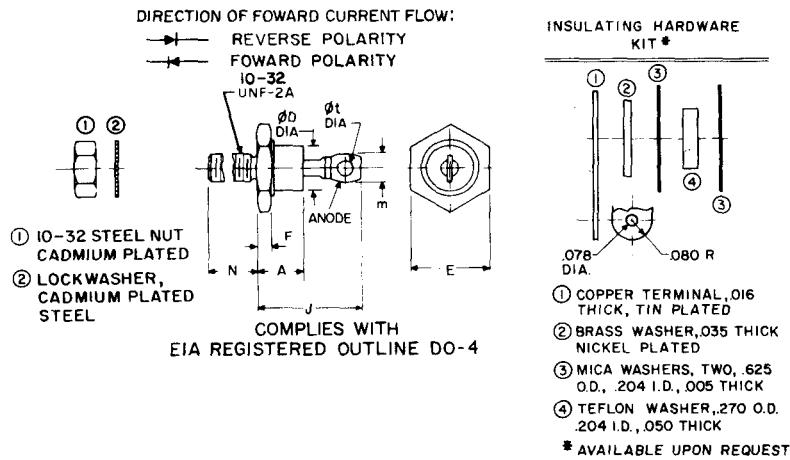
*9. REQUIRED FIN SIZE—FORCED CONVECTION, IMPEDED RADIATION





10. MAXIMUM TRANSIENT THERMAL RESISTANCE

OUTLINE DRAWING



SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN.	MAX.	MIN.	MAX.	
A		.405		10.29	
φ D		.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	
φ t	.060		1.52		
W					2

NOTES:

- Angular orientation of this terminal is undefined.
- 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