

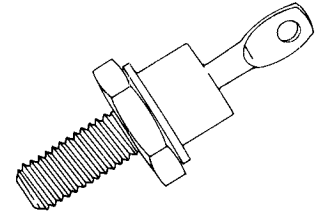
# Silicon Rectifiers

**IN3889-93,R**

## FAST RECOVERY

### Features:

- Fast Recovery Time . . . 200 Nanoseconds Maximum
- Diffused Construction
- For Use in :
  - Inverters
  - Choppers
  - Low RF Interference Applications
  - Free-Wheeling Rectifier Applications
  - Sonar Power Supplies
  - Ultrasonic Systems
  - DC-DC Power Supplies



maximum allowable ratings (Resistive or Inductive Load)

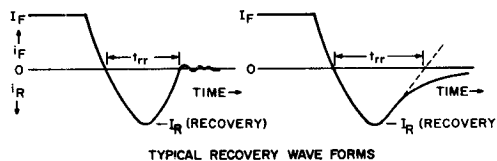
	1N3889,R	1N3890,R	1N3891,R	1N3892,R	1N3893,R
*Maximum Repetitive Peak Reverse Voltage, $T_J = -65^{\circ}\text{C}$ to $+150^{\circ}\text{C}$ , $V_{RM}$ (rep) (Note 1) . . . . .	50	100	200	300	400 Volts
Maximum RMS Voltage, $T_J = -65^{\circ}\text{C}$ to $+150^{\circ}\text{C}$ , $V_r$ (Note 1) . . . . .	35	70	140	210	280 Volts
*Maximum DC Blocking Voltage, $T_J = -65^{\circ}\text{C}$ to $+100^{\circ}\text{C}$ , $V_R$ (Note 1) . . . . .	50	100	200	300	400 Volts
*Maximum Average Forward Current, Single Phase, $T_C = +100^{\circ}\text{C}$ , $I_o$ . . . . .	←————— 12 Amperes —————→				
*Maximum Peak One Cycle Surge Current, 60 Cycle, Non-Recurrent, $T_J = -65^{\circ}\text{C}$ to $+150^{\circ}\text{C}$ , $I_{FM}$ (surge) . . . . .	←————— 150 Amperes —————→				
*Maximum Peak Ten Cycle Surge Current, 60 cycle, Non-Recurrent, $T_J = -65^{\circ}\text{C}$ to $+150^{\circ}\text{C}$ , $I_{FM}$ (surge) . . . . .	←————— 70 Amperes —————→				
*Maximum Forward Voltage Drop, $I_F = 12$ ADC, $T_C = +25^{\circ}\text{C}$ , $V_F$ . . . . .	←————— 1.4 Volts —————→				
*Maximum Reverse Current at Full Load, Single Phase Full-Cycle Average, $I_o = 12$ Amp. at $T_C = +100^{\circ}\text{C}$ , $I_{R(AV)}$ . . . . .	←————— 5.0 mA —————→				
*Maximum DC Reverse Current at Rated DC Blocking Voltage, $V_R$ , and $T_C = +100^{\circ}\text{C}$ , $I_R$ . . . . .	←————— 3.0 mA —————→				
*Maximum DC Reverse Current at Rated DC Blocking Voltage, $V_R$ , and $T_C = +25^{\circ}\text{C}$ , $I_R$ . . . . .	←————— 25 $\mu\text{A}$ —————→				
*Junction Operating Temperature Range, $T_J$ . . . . .	←————— $65^{\circ}\text{C}$ to $+150^{\circ}\text{C}$ —————→				
*Storage Temperature Range, $T_{stg}$ . . . . .	←————— $65^{\circ}\text{C}$ to $+175^{\circ}\text{C}$ —————→				
*Stud Torque . . . . .	←————— 15 in.-lbs. Maximum —————→				
*Maximum Reverse Recovery Characteristics: (See figure below) Recovery Time, $t_{rr}$ . . . . .	←————— 200 Nanoseconds Maximum —————→				
Peak Recovery Current, $I_R$ (recovery) (Note 2) . . . . .	←————— 2.0 Amperes Maximum —————→				

\*The asterisk denotes JEDEC (EIA) registered information.

### test conditions

These rectifiers are factory tested to reverse recovery limits which correlate with EIA registered values. This testing is in accordance with NEMA-EIA recommendations for silicon rectifier diodes and stacks.

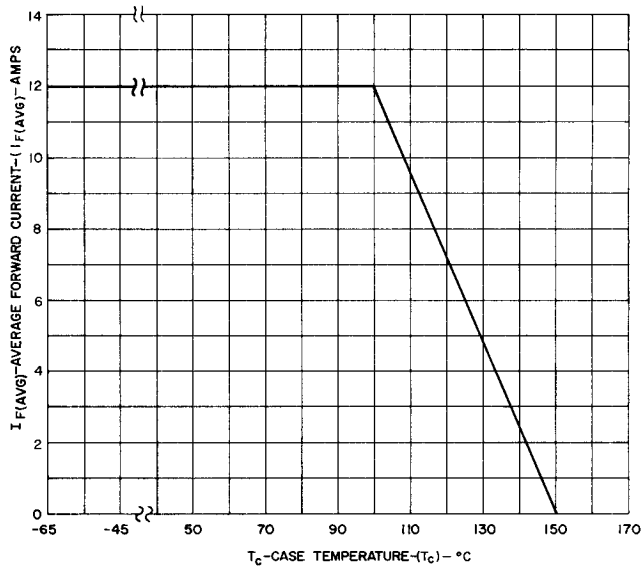
Recovery characteristic test conditions:  $I_{FM} = 5.0$  amps;  $di/dt = 50$  amps/ $\mu\text{sec}$  switching rate, and a reverse bias of 50%  $V_R$  for 200, 300 and 400 volt grades or 100%  $V_R$  for 50 and 100 volt grades;  $T_c = 25^{\circ}\text{C}$ ;  $t_{rr} = 150$  nanoseconds; and  $I_R$  (recovery) = 5.0 amperes max.



### TYPICAL RECOVERY WAVE FORMS

#### NOTES:

1. Rating assumes rectifier heatsink  $\leq 6^{\circ}\text{C}/\text{W}$  at max.  $T_J$ .
2. Some manufacturers call this Overshoot Current and use the symbol  $I_{os}$ .

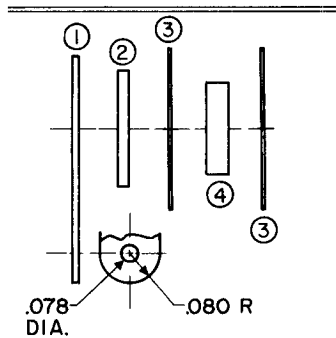


1. Forward Current Rating vs. Case Temperature

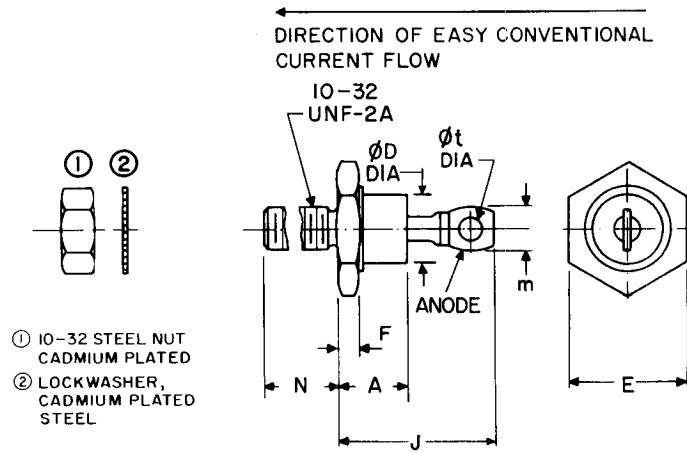
NOTE: Case temperature is measured at the center of any flat on the hex base.

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 1957 P1.