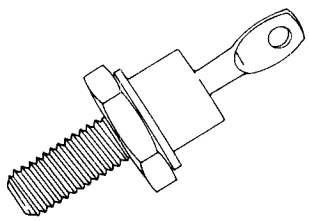
Silicon Rectifiers

FAST RECOVERY

IN3889-93,R

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)

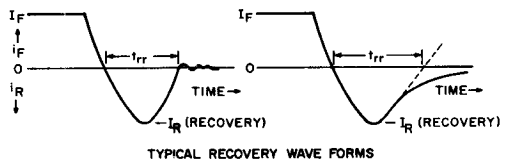
	1N3889,R	1N3890,R	1N3891,R	1N3892,R	1N3893,R	
*Maximum Repetitive Peak Reverse Voltage, T_J = −65°C to +150°C, V_{RM} (rep) (Note 1)	50	100	200	300	400	Volts
Maximum RMS Voltage, T_J = −65°C to +150°C, V_r (Note 1)	35	70	140	210	280	Volts
*Maximum DC Blocking Voltage, T_J = −65°C to +100°C, V_R (Note 1)	50	100	200	300	400	Volts
*Maximum Average Forward Current, Single Phase, T_C = +100°C, I_O	← 12 Amperes →					
*Maximum Peak One Cycle Surge Current, 60 Cycle, Non-Recurrent, T_J = −65°C to +150°C, I_{FM} (surge)	← 150 Amperes →					
*Maximum Peak Ten Cycle Surge Current, 60 cycle, Non-Recurrent, T_J = −65°C to +150°C, I_{FM} (surge)	← 70 Amperes →					
*Maximum Forward Voltage Drop, I_F = 12 ADC, T_C = +25°C, V_F	← 1.4 Volts →					
*Maximum Reverse Current at Full Load, Single Phase Full-Cyle Average, I_O = 12 Amp. at T_C = +100°C, $I_{R(AV)}$	← 5.0 mA →					
*Maximum DC Reverse Current at Rated DC Blocking Voltage, V_R, and T_C = +100°C, I_R	← 3.0 mA →					
*Maximum DC Reverse Current at Rated DC Blocking Voltage, V_R, and T_C = +25°C, I_R	← 25 μA →					
*Junction Operating Temperature Range, T_J	← −65°C to +150°C →					
*Storage Temperature Range, T_{stg}	← −65°C to +175°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.

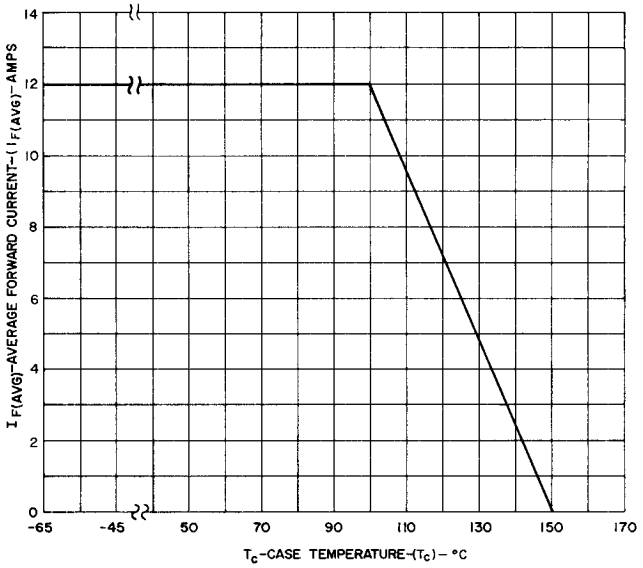
Recovery characteristic test conditions: I_{FM} = 5.0 amps; di/dt = 50 amps/μsec switching rate, and a reverse bias of 50% V_R for 200, 300 and 400 volt grades or 100% V_R for 50 and 100 volt grades; T_C = 25°C; t_{rr} = 150 nanoseconds; and I_R (recovery) = 5.0 amperes max.



TYPICAL RECOVERY WAVE FORMS

TYPICAL RECOVERY WAVE FORMS

NOTES:
1. Rating assumes rectifier heatsink ≦6°C/W at max. T_J.
2. Some manufacturers call this Overshoot Current and use the symbol I_{os}.

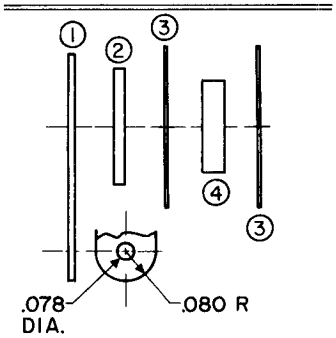


1. Forward Current Rating vs. Case Temperature

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

OUTLINE DRAWING

INSULATING HARDWARE KIT*



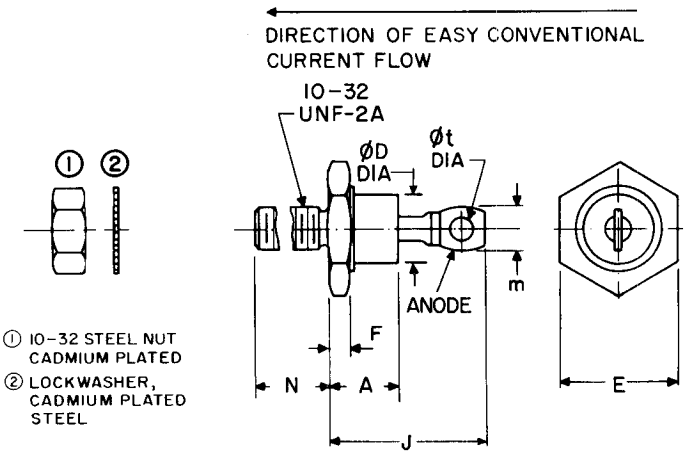
① COPPER TERMINAL, .016 THICK, TIN PLATED

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



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.