Fast Recovery Rectifier

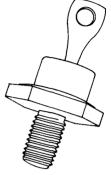
The General Electric Type A139 Series of power rectifier diodes is designed for use in applications where a fast recovery rectifier diode is a necessity. The A139 is rated up to 10,000 Hertz. It is available in both forward and reverse polarity versions.

FEATURES:

- High Voltage up to 1000 V
- Fast Recovery Time 500 Nanoseconds Maximum
- The Fast Recovery Characteristics of the A139 Match the High Frequency Capability of General Electric High-Speed SCR's such as the C140, C141, C138, C139, and C144.
- For Use in:

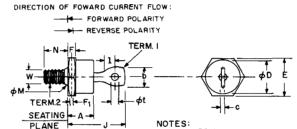
Inverters Choppers Sonar Power Supplies Ultrasonic Systems DC-DC Power Supplies

Low RFI Applications DC-DC Po Free-Wheeling Rectifier Applications



OUTLINE DRAWING

SYMBOL	INC	HES	MILLIN		
	MIN.	MAX.	MIN.	MAX.	NOTES
Α		.450		11.43	
ь		.375		9.53	2
С		.080		2.03	
φD		.667		16.94	
Е	.667	.687	16.94	17.45	_
F	.115	.200	2.92	5.08	
F ₁	.060		1.52		
J		1.000		25.40	
1	.156		3.96	,	4
φМ	.220	.249	5.59	6.32	1
N	.422	.453	10.72	11.51	
φt	.140	.175	3.56	4.45	
W					1,3



NOTES: I.COMPLETE THREADS TO EXTEND TO WITHIN 2-1/2 THREADS OF SEATING PLANE.

I HREADS OF SEATING PLANE.

2. ANGULAR ORIENTATION OF 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 PI.

4. MINIMUM FLAT.
EIA -NEMA STANDARD OUTLINE, NEMA SK-51 - EIA RS-241.
INSULATING HARDWARE IS AVAILABLE UPON REQUEST.

COMPLIES WITH EIA REGISTERED OUTLINE DO-5

The fast recovery, A139, medium-current rectifier diode provides a superior combination of speed and blocking voltage capability. This high performance rectifier diode has been designed specifically for demanding, medium-current, high voltage applications.

ratings and specifications (Resistive or Inductive Load)

	Forward Polarity: Reverse Polarity:	A139E A139ER	A139M A139MR	A139N A139NR	A139P A139PR	
	able Repetitive Peak Reverse (rep) & V _{RM}	500	600	800	1000	Volts
Maximum Allowa	able RMS Volt-	355	424	565	710	Volts
Maximum Allowa Voltage, V _R (1		500	600	800	1000	Volts
Maximum Allowa tive Reverse	ble Non-Repeti- Voltage, V _{RSM}	600	720	960	1200	Volts
angle, 60 cps,	ble Average For- 180° conduction half sine wave C = 75°C), I _o	•		– 25 Amperes —		
	able Peak One Current (non- _M (surge)	4		– 400 Amperes —		

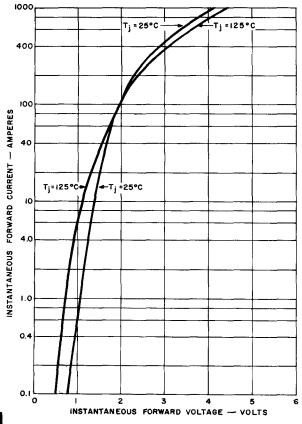
A139

ratings and specifications (cont'd)

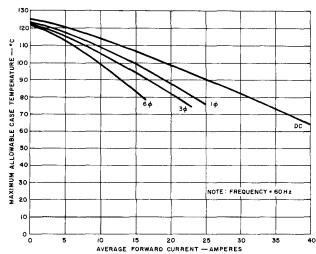
Forward Polarity: Reverse Polarity:	A139E A139ER	A139M A139MR	A139N A139NR	A139P A139PR
I2t Rating (for t greater than .001 sec. and less than .0083 sec., non-recurrent)			— 500 Ampere ² .	seconds
Maximum Peak Forward Voltage Drop (I _O = 25 Adc at T _C = 75°C), V _{FM}			1.85 Volts Pea	k
Maximum Average Reverse Current (I _o = 25 Adc at T _C = 75° C), I _{R(AV)}	_		3.0 mA	
Maximum Reverse Recovery Time t _{rr} (2)	-		500 Nanoseco	nds
Maximum Effective Thermal Resistance Junction to Case, $R_{\theta JC}$			1.0 deg. C per	watt
Junction Operating Temperature Range, T _J			40°C to +125	°C
Storage Temperature Range, T _{stq}			−40°C to +200	°C
Stud Torque	4		30 Lb-in (35 K	(g-cm)

Voltage Type :	500	600	800	1000	Volts
Sinusoidal Voltage:	14.0	12.0	9.0	7.0	°C per watt
DC Voltage :	3.7	3.0	2.0	1.4	°C per watt

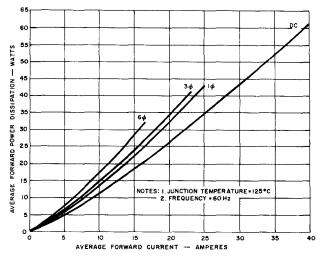
- Reverse recovery time measured at $T_C = 25^{\circ}C$ with $I_{FM} = 5.0$ Amp., commutating di/dt = 50 Amp/ μ sec, max. reverse recovery current = 15 Amp. peak.
- (3) To prevent possible device damage during reverse recovery, it is recommended that the rate of rise of reverse voltage be limited to 1200 volts per micro second maximum. An RC Snubber connected across the rectifier diode may be used to limit the rate of rise of reverse voltage.



MAXIMUM FORWARD CHARACTERISTICS



AVERAGE CURRENT RATING VS. CASE TEMPERATURE



MAXIMUM AVERAGE FORWARD POWER DISSIPATION 570