



SOLID STATE INC.

46 FARRAND STREET
BLOOMFIELD, NEW JERSEY 07003

www.solidstateinc.com

150K-A

SERIES

**150 Amp Power Silicon
Rectifier Diodes**

Major Ratings and Characteristics

	150K-A	Units
$I_F(AV)$	150	A
@ Max. T_C	150	$^{\circ}C$
I_{FSM} @ 50 Hz	3000	A
@ 60 Hz	3143	
I^2t @ 50 Hz	45 000	A^2s
@ 60 Hz	41 000	
$I^2\sqrt{t}$	636 500	$A^2\sqrt{s}$
V_{RRM} Range *	50 to 1200	V

Description

This series of high power general purpose rectifier diodes is designed for applications in power supplies, battery chargers, welders, motor controls, general industrial current rectification.

Features

- Excellent surge capabilities.
- Stud cathode or stud anode versions.
- Case style options.

- Types up to 1200V V_{RRM} .

VOLTAGE RATINGS

PART NUMBER ^①		V _{RRM} Max. repetitive peak reverse voltage (V)	V _{RSM} Max. non-repetitive peak reverse voltage (V)	V _R Max. average reverse voltage (V)	I _{RM} Max. peak reverse current at rated V _{RRM} (mA)
	DO-8				
		T _J = -65°C to 200°C	T _J = -65°C to 200°C	T _J = -65°C to 200°C	T _J = 175°C
	150K5A	50	100	50	35
	150K10A	100	200	100	35
	150K20A	200	300	200	35
	150K30A	300	400	300	35
	150K40A	400	500	400	35
	150K60A	600	720	600	35
	150K80A	800	960	800	32
	150K100A	1000	1200	1000	24
	150K120A	1200	1440	1200	20

① Basic part number indicates cathode-to-case. For anode-to-case, add "R" to part number

150KR10A

ELECTRICAL SPECIFICATIONS

		150K-A	Units	Conditions
I _{F(AV)}	Max. average forward current @ Max. T _C	150	A	1-phase operation, 180° conduction
		150	°C	
I _{FSM}	Max. peak one-cycle non-repetitive surge current	3000	A	Half cycle 50 Hz sine wave or 6 ms rectangular pulse Following any rated load condition and with rated V _{RRM} applied.
		3143		
		3568	A	Half cycle 50 Hz sine wave or 6 ms rectangular pulse Following any rated load condition and with V _{RRM} applied following surge = 0.
		3738		
I ² t	Max. I ² t for fusing	45 000	A ² s	t = 10 ms With rated V _{RRM} applied following surge, initial T _J = T _J Max.
		41 000		
	Max. I ² t for individual device fusing	63 650		t = 10 ms With V _{RRM} = 0 following surge, initial T _J = T _J max.
		57 990		
I ² √t	Max. I ² √t for individual device fusing	636 500	A ² √s	t = 0.1 to 10 ms, V _{RRM} = 0 following surge. ③
V _{FM}	Max. peak forward voltage	1.33	V	T _J = 25°C, I _{FM} = π x rated I _{F(AV)} (471 A peak)
V _{F(TO)}	Max. value of threshold voltage	0.67	V	T _J = 200°C
r _F	Max. value of forward slope resistance	1.416	mΩ	

THERMAL-MECHANICAL SPECIFICATIONS

T _J	Max. operating junction temperature range	-65 to 200	°C	
T _{stg}	Max. storage temperature range	-65 to 200	°C	
R _{thJC}	Max. internal thermal resistance, junction-to-case	0.25	K/W	DC operation
R _{thCS}	Thermal resistance, case-to-sink	0.10	K/W	Mounting surface flat, smooth, and greased.
T	Mounting torque	Min.	11.3 (100)	Nm (lbf.in)
		Max.	14.1 (125)	
wt	Approximate weight	100 (3.5)	g (oz)	
	Case style	DO-205AA (DO-8)		JEDEC

③ I²t for time t_x = I²√t · √t_x

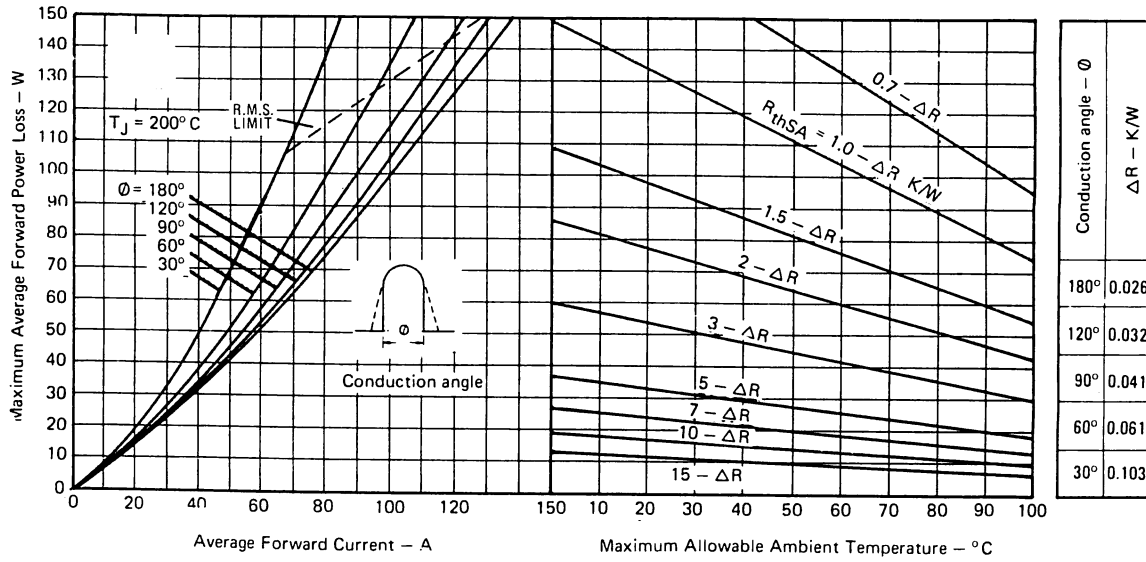


Fig. 1 - Current Rating Nomogram (Sinusoidal Waveforms)

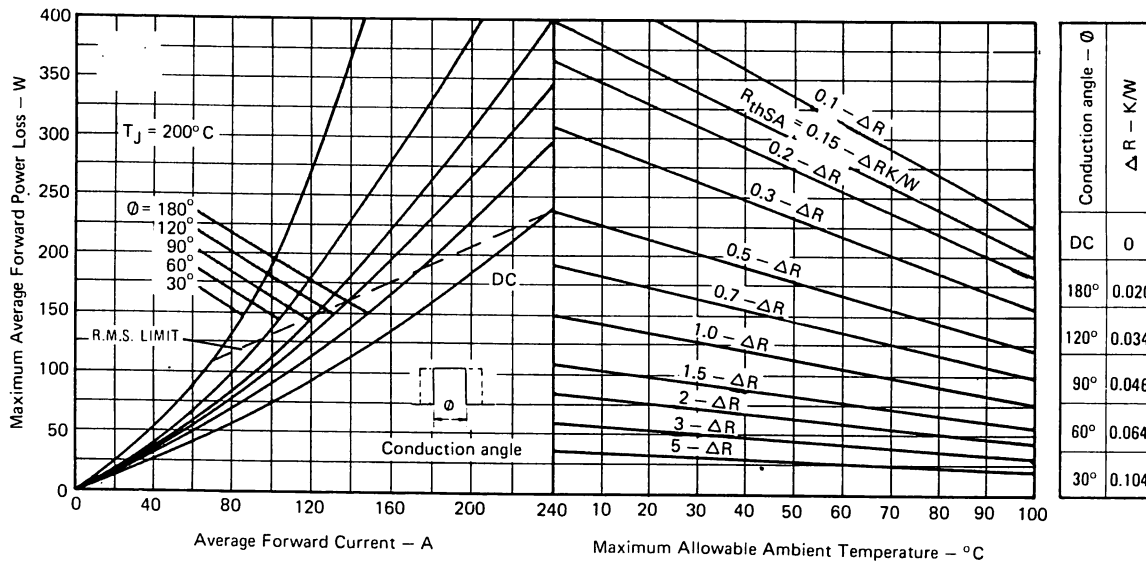


Fig. 2 - Current Rating Nomogram (Rectangular Waveforms)

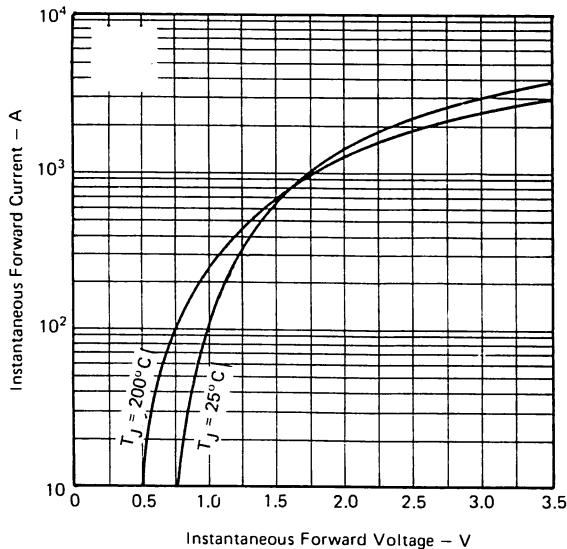


Fig. 3 - Maximum Forward Voltage Vs. Forward Current

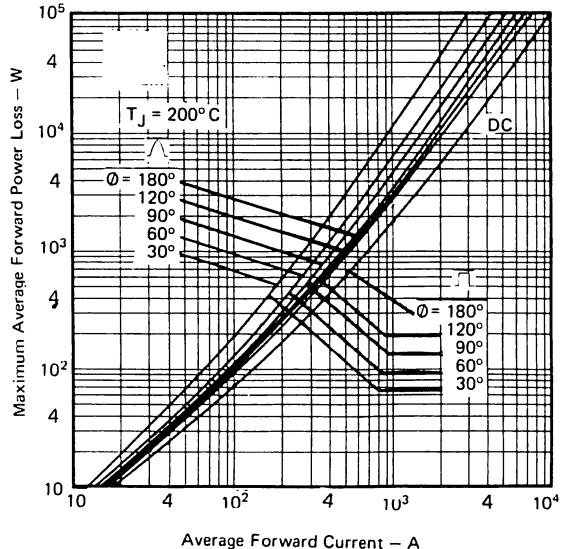


Fig. 4 - Maximum High Level Forward Power Loss Vs. Average Forward Current

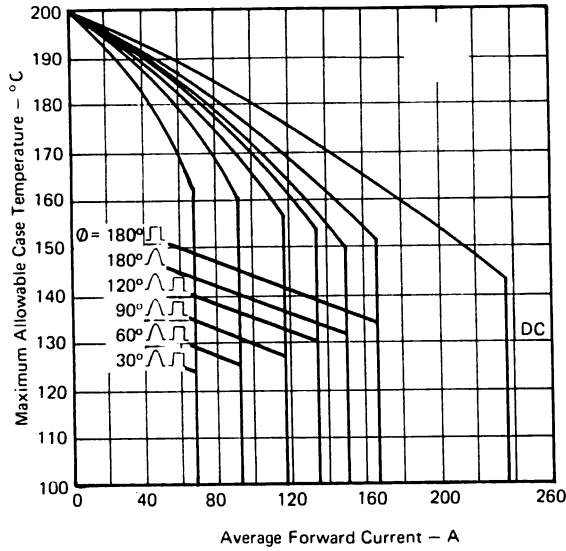


Fig. 5 – Average Forward Current Vs. Maximum Allowable Case Temperature

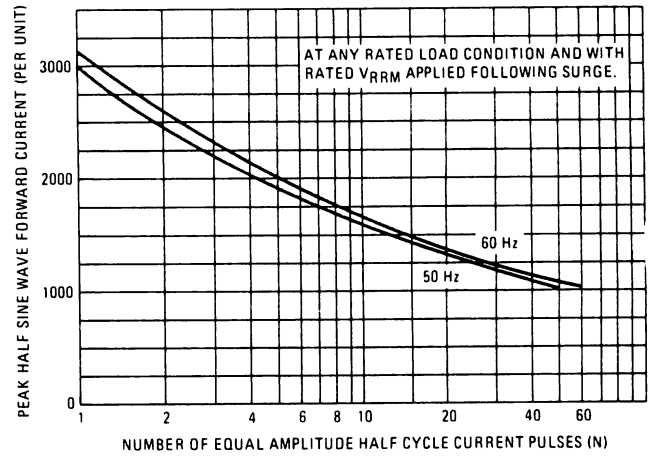


Fig. 6 – Maximum Non-Repetitive Surge Current Vs. Number of Current Pulses

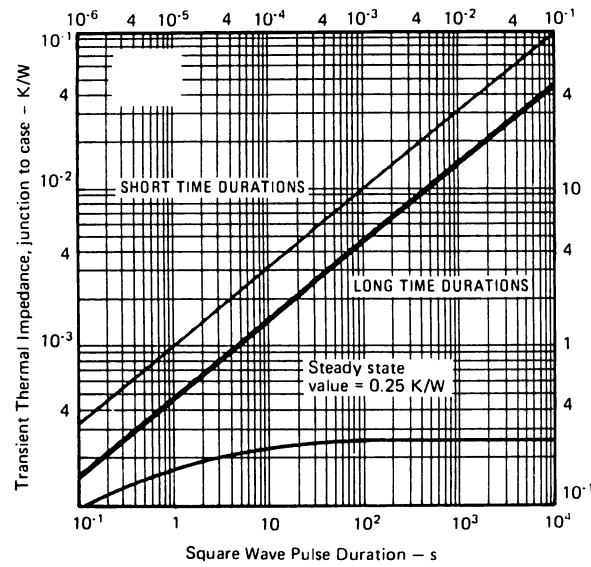


Fig. 7 – Maximum Transient Thermal Impedance, Junction-to-Case Vs. Pulse Duration

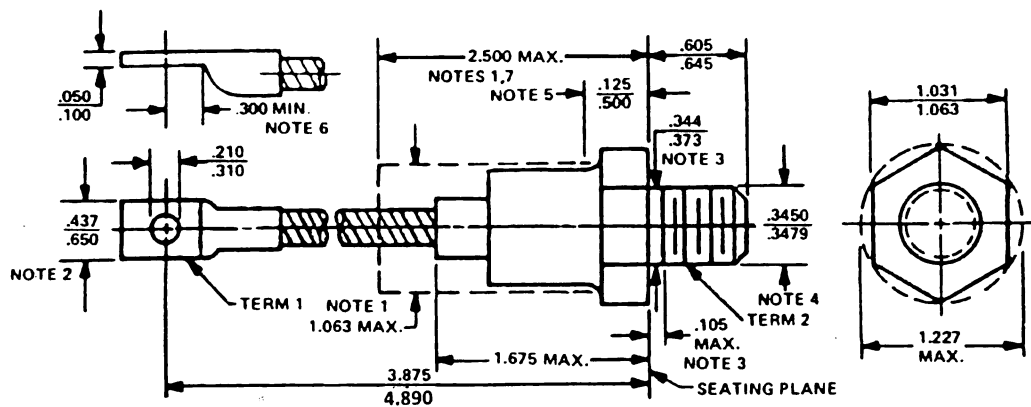


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NOTES:

1. The device with exception of the hexagon, thread and flexible lead extension lies within the cylinder defined by Dim. 1.063 Max. and length 2.500 Max.
2. Angular orientation of terminal with respect to hexagonal portion is undefined. Square or radius on end of terminal is optional.
3. Length of incomplete or undercut threads of Dim. .344 Min. and .373 Max.
4. Pitch diameter of 3/8 -24 UNF-2A (coated) threads (ASA B1.1-1960).
5. A chamfer (or undercut) on one or both ends of the hexagonal portion is optional.
6. Minimum flat.
7. Seated height with lead bent at right angle.