

FEATURES

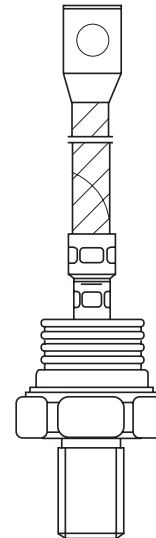
- 1). Wide current range
- 2). High voltage ratings up to 2400V
- 3). High surge current capabilities
- 4). Stud cathode and stud anode version
- 5). Standard JEDEC types

TYPICAL APPLICATIONS

- 1). Converters
- 2). Power supplies
- 3). High power drives
- 4). Auxiliary system supplies for traction applications

MAJOR RATINGS AND CHARACTERISTICS

Parameters		SD500N(R)	UNIT
$I_{F(AV)}$		475	A
	@ TC	55	°C
$I_{F(RMS)}$		745	A
I_{FSM}	@ 50Hz	7500	A
	@ 60Hz	7850	A
I^2t	@ 50Hz	281	A ² s
	@ 60Hz	257	A ² s
V_{RRM}	range	3000 to 4500	V
T_J	range	- 40 to 150	°C



ELECTRICAL SPECIFICATIONS

1). Voltage Ratings

Type number	Voltage Code	V_{RRM} , maximum repetitive peak reverse voltage	V_{RSM} , maximum non-repetitive peak reverse voltage	I_{RRM} max. @ $T_J = T_J$ max.
		V	V	mA
SD500N(R)	30	3000	3100	50
	36	3600	3700	
	40	4000	4100	
	45	4500	4600	

2). Forward Conduction

Parameters		SD500N(R)	Unit	Conditions		
$I_{F(AV)}$	Max. average forward current @ Case temperature	475	A	180° conduction, half sine wave		
		55	°C			
$I_{F(AV)}$	Max. average forward current @ Case temperature	300	A	180° conduction, half sine wave		
		100	°C			
$I_{F(RMS)}$	Max. RMS forward current	745	A	DC @ 40° C case temperature		
I_{FSM}	Max. peak, one-cycle forward, non-repetitive surge current	7500	A	t = 10ms	No voltage	Sinusoidal half wave, Initial $T_J = T_J$ max.
		7850		t = 8.3ms	reapplied	
		6310		t = 10ms	100% V_{RRM}	
		6600		t = 8.3ms	reapplied	
I^2t	Maximum I^2t for fusing	281	KA ² s	t = 10ms	No voltage	
		257		t = 8.3ms	reapplied	
		199		t = 10ms	100% V_{RRM}	
		182		t = 8.3ms	reapplied	
$I^2\sqrt{t}$	Maximum $I^2\sqrt{t}$ for fusing	2810	KA ² √s	t = 0.1 to 10ms, no voltage reapplied		
$V_{F(TO)1}$	Low level value of threshold voltage	0.88	V	(16.7% × π × $I_{F(AV)}$ < I < π × $I_{F(AV)}$), $T_J = T_J$ max.		
$V_{F(TO)2}$	High level value of threshold voltage	0.97		(I > π × $I_{F(AV)}$), $T_J = T_J$ max.		
r_{f1}	Low level value of forward slope resistance	0.78	mΩ	(16.7% × π × $I_{F(AV)}$ < I < π × $I_{F(AV)}$), $T_J = T_J$ max.		
r_{f2}	High level value of forward slope resistance	0.72		(I > π × $I_{F(AV)}$), $T_J = T_J$ max.		
V_{FM}	Max. forward voltage drop	1.66	V	$I_{pk} = 1000A$, $T_J = 25^\circ C$, $t_p = 10ms$ sinusoidal wave		
T_J	Max. junction operating temperature range	-40 to 150	°C			
T_{stg}	Max. storage temperature range	-55 to 200				
R_{thJC}	Max. thermal resistance, junction to case	0.1	K/W	DC operation		
R_{thCS}	Max. thermal resistance, case to heatsink	50		Mounting surface, smooth, flat and greased		
T	Max. allowed mounting torque ± 10%	454	Nm	Not lubricated threads		
wt	Approximate weight	0.04	g	unleaded device		
	Case style	B-8		See Outline Table		

ΔR_{thJC} Conduction

(The following table shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC)

Conduction angle	Sinusoidal conduction	Rectangular conduction	Units	Conditions
180°	0.012	0.008	K/W	$T_J = T_J$ max.
120°	0.014	0.014		
90°	0.017	0.019		
60°	0.025	0.026		
30°	0.042	0.042		

PERFORMANCE CURVES FIGURE

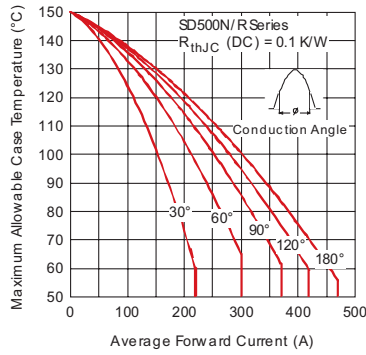


Fig. 1 - Current Ratings Characteristics

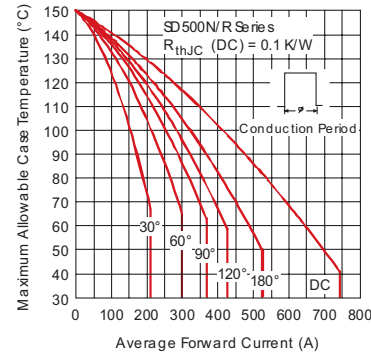


Fig. 2 - Current Ratings Characteristics

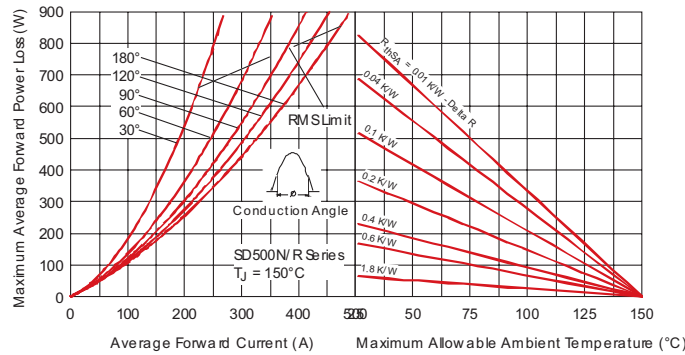


Fig. 3 - Forward Power Loss Characteristics

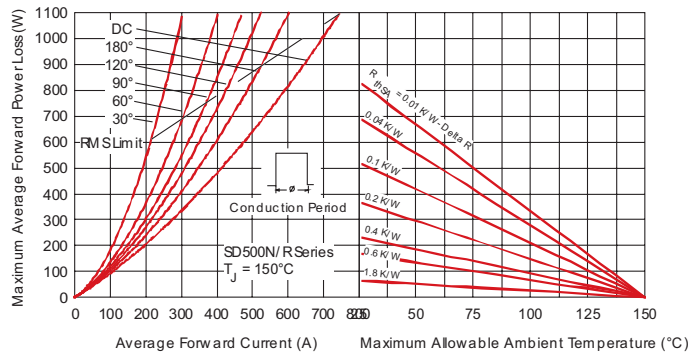


Fig. 4 - Forward Power Loss Characteristics

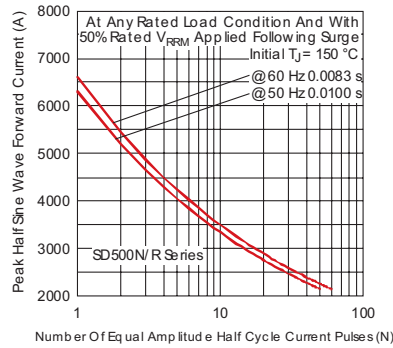


Fig. 5 - Maximum Non-Repetitive Surge Current

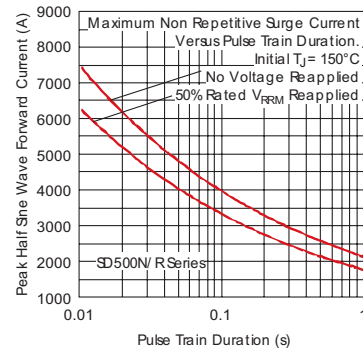


Fig. 6 - Maximum Non-Repetitive Surge Current

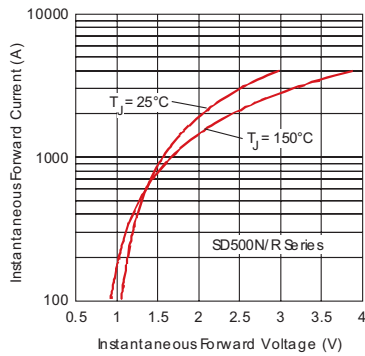


Fig. 7 - Forward Voltage Drop Characteristics

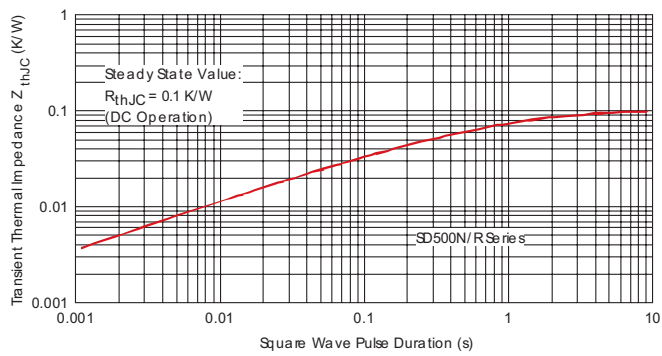
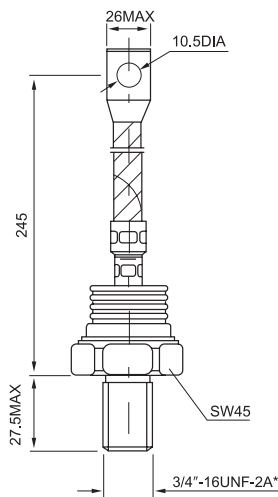


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

OUTLINE



*FOR METRIC DEVICE: M20 × 1.5/M24 × 1.5

Case Style B-8

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