



## A5N:350.XXH

### VOLTAGE RATINGS

Part Number	$V_{RRM}, V_R$ (V) Max. rep. peak reverse voltage		$V_{RSM}, V_R$ (V) Max. non-rep. peak reverse voltage
	$T_J = 0$ to $125^\circ\text{C}$	$T_J = -40$ to $0^\circ\text{C}$	$T_J = 25$ to $125^\circ\text{C}$
	A5N:350.02H	200	200
A5N:350.04H	400	400	500
A5N:350.06H	600	600	700
A5N:350.08H	800	800	900
A5N:350.10H	1000	1000	1100
A5N:350.12H	1200	1200	1300
A5N:350.14H	1400	1400	1500
A5N:350.16H	1600	1600	1700

### MAXIMUM ALLOWABLE RATINGS

PARAMETER	VALUE	UNITS	NOTES
$T_J$ Junction Temperature	-40 to 125	$^\circ\text{C}$	-
$T_{stg}$ Storage Temperature	-40 to 150	$^\circ\text{C}$	-
$I_{T(AV)}$ Max. Av. current @ Max. $T_C$	350	A	180° half sine wave
	75	$^\circ\text{C}$	
$I_{T(RMS)}$ Nom. RMS current	510	A	-
$I_{TSM}$ Max. Peak non-rep. surge current	5.35	kA	50 Hz half cycle sine wave Initial $T_J = 125^\circ\text{C}$ , rated $V_{RRM}$ applied after surge.
	5.83		60 Hz half cycle sine wave
	6.1		50 Hz half cycle sine wave Initial $T_J = 125^\circ\text{C}$ , no voltage applied after surge.
	6.65		60 Hz half cycle sine wave
$I^2t$ Max. $I^2t$ capability	149	$\text{kA}^2\text{s}$	$t = 10\text{ms}$ Initial $T_J = 125^\circ\text{C}$ , rated $V_{RRM}$ applied after surge.
	162		$t = 8.3\text{ms}$
	170		$t = 10\text{ms}$ Initial $T_J = 125^\circ\text{C}$ , no voltage applied after surge.
	185		$t = 8.3\text{ms}$
$I^2t^{1/2}$ Max. $I^2t^{1/2}$ capability	2000	$\text{kA}^2\text{s}^{1/2}$	Initial $T_J = 125^\circ\text{C}$ , no voltage applied after surge. $I^2t$ for time $t_x = I^2t^{1/2} * t_x^{1/2}$ . ( $0.1 < t_x < 10\text{ms}$ ).
di/dt Max. Non-repetitive rate-of-rise current	800	A/ s	$T_J = 125^\circ\text{C}$ , $V_D = V_{DRM}$ , $I_{TM} = 1600\text{A}$ . Gate pulse: 20V, 20 s, 0.5 s rise time, Max. repetitive di/dt is approximately 40% of non-repetitive value.
$P_{GM}$ Max. Peak gate power	10	W	$t_p < 5\text{ms}$
$P_{G(AV)}$ Max. Av. gate power	3	W	-
$+I_{GM}$ Max. Peak gate current	150	mA	$t_p < 5\text{ms}$
$-V_{GM}$ Max. Peak negative gate voltage	2	V	-
F Mounting Force	450	N.m	-



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### CHARACTERISTICS

PARAMETER	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
$V_{TM}$ peak on-state voltage	---	---	1.72	V	Initial $T_J = 25^\circ\text{C}$ , 50-60Hz half sine, $I_{peak} = 1100\text{A}$ .
$V_{T(TO)}$ Threshold voltage	---	---	0.875	V	$T_J = 125^\circ\text{C}$ Av. power = $V_{T(TO)} * I_{T(AV)} + r_T * [I_{T(RMS)}]^2$ , $180^\circ$ Half Sine.
$r_T$ Slope resistance	---	---	0.842	m	Use low values for $I_{TM} < \text{rated } I_{T(AV)}$
$I_L$ Latching current	---	---	400	mA	$T_C = 125^\circ\text{C}$ , 12V anode. Gate pulse: 10V, 20 , 100 s.
$I_H$ Holding current	---	---	500	mA	$T_C = 25^\circ\text{C}$ , 12V anode. Initial $I_T = 15\text{A}$ .
$t_d$ Delay time	---	0.7	1	s	$T_C = 25^\circ\text{C}$ , $V_D = V_{DRM}$ , 50A resistive load. Gate pulse: 10V, 20 , 10 s, 1 s rise time.
$t_q$ Turn-off time	---	---	100	s	$T_J = 125^\circ\text{C}$ , $I_{TM} = 550\text{A}$ , $di/dt = 40\text{A/s}$ , $V_R = 50\text{V}$ . $dv/dt = 20\text{V/s}$ lin. to rated $V_{DRM}$ . Gate: 0V, 100 .
$dv/dt$ Critical rate-of-rise of off-state voltage	---	---	1000	V/ s	$T_J = 125^\circ\text{C}$ , Exp. To 67% $V_{DRM}$ , gate open.
$I_{RM}$ , $I_{DM}$ Peak reverse and off-state current	---	15	30	mA	$T_J = 125^\circ\text{C}$ , Rated $V_{RRM}$ and $V_{DRM}$ , gate open.
$I_{GT}$ DC gate current to trigger	---	---	360	mA	$T_C = -40^\circ\text{C}$ $T_C = 25^\circ\text{C}$ +12V anode-to-cathode. For recommended gate drive see "Gate Characteristics" figure.
	---	---	180		
$V_{GT}$ DC gate voltage to trigger	6	---	---	V	$T_C = -40^\circ\text{C}$ $T_C = 25^\circ\text{C}$
	3	---	---		
$V_{GD}$ DC gate voltage not to trigger	---	---	0.3	V	$T_C = 25^\circ\text{C}$ , Max. Value which will not trigger with rated $V_{DRM}$ anode.
$R_{thJC}$ Thermal resistance, junction-to-case	---	---	0.085	$^\circ\text{C/W}$	DC operation, double side cooled.
	---	---	0.106	$^\circ\text{C/W}$	$180^\circ$ sine wave, double side cooled.
	---	---	0.109	$^\circ\text{C/W}$	$120^\circ$ rectangular wave, double side cooled.
$R_{thCS}$ Thermal resistance, case-to-sink	---	---	0.03	$^\circ\text{C/W}$	Mtg. Surface smooth, flat and greased. Double side cooled.
wt Weight	---	57(2.1)	---	g(oz.)	---
Case Style	TO-200AA			JEDEC	---

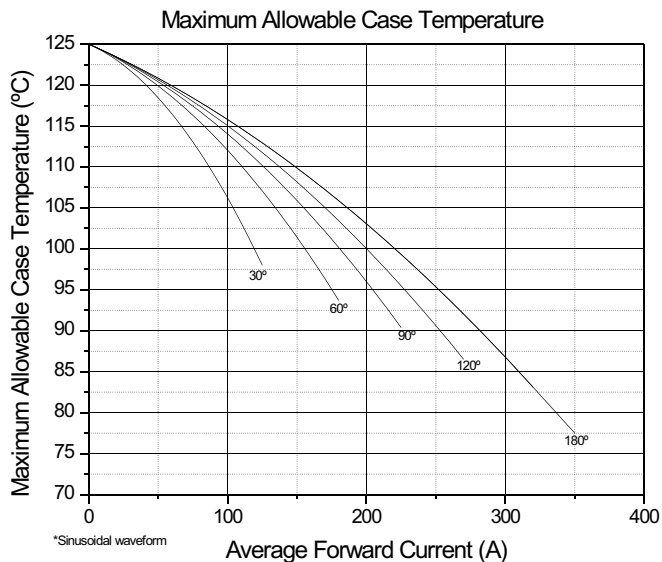


Fig. 1 - Current Ratings Characteristics

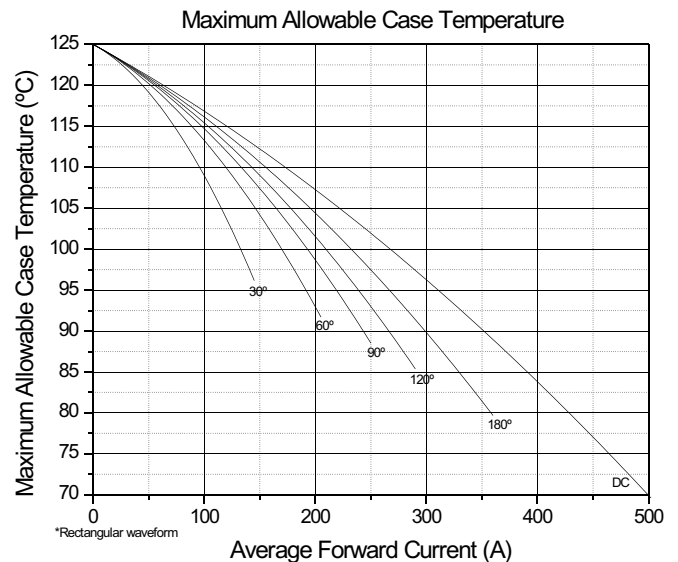


Fig. 2 - Current Ratings Characteristics



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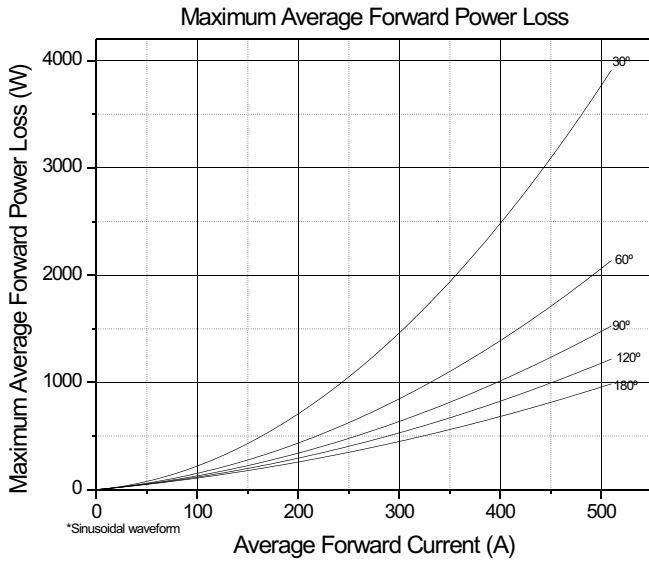


Fig. 3 - Forward Power Loss Characteristics

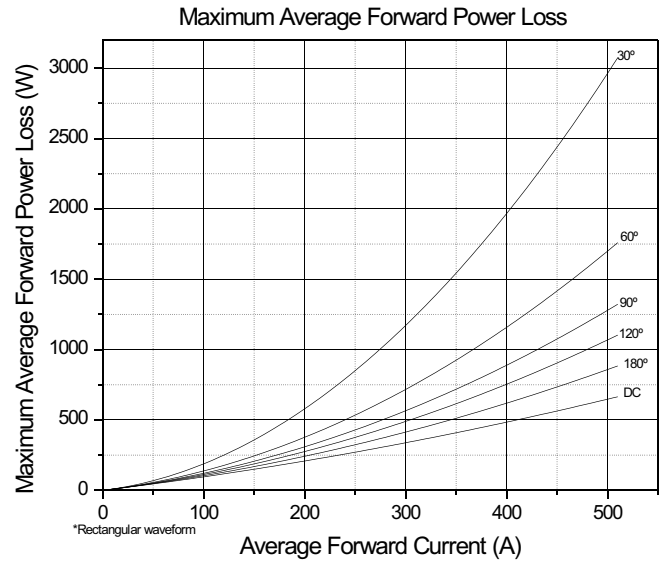


Fig. 4 - Forward Power Loss Characteristics

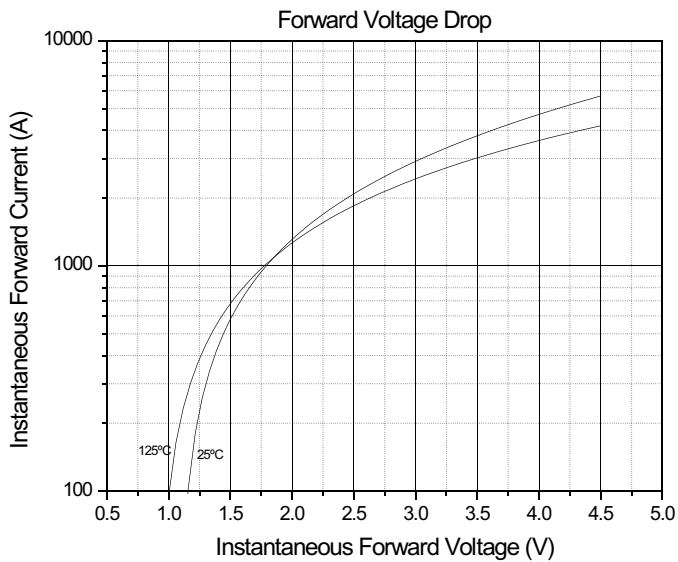


Fig. 5 - Forward Voltage Drop Characteristics

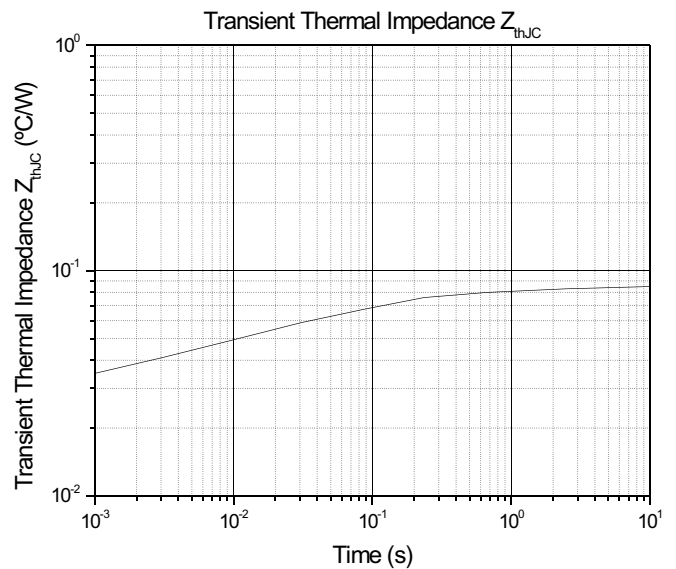
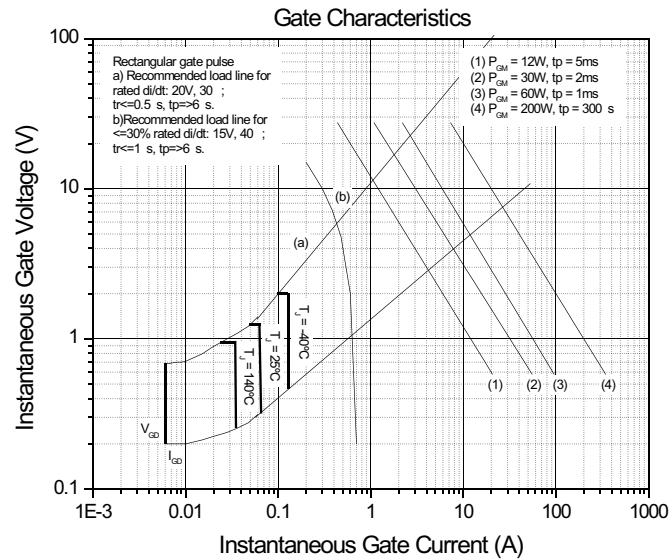


Fig. 6 - Transient Thermal Impedance Characteristics

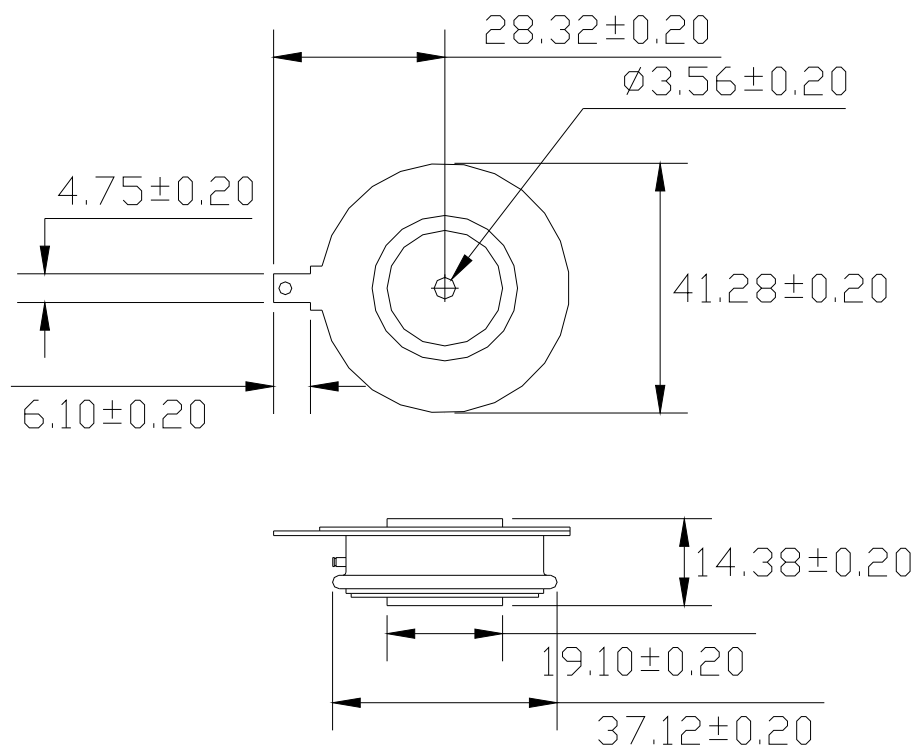


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**Fig. 7 - Gate Trigger Characteristics**

## TO-200AA



**Fig. 8 - Outline Characteristics**