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VOLTAGE RATINGS

Part Number	V_{RRM} , VR (V) Max. rep. peak reverse voltage		V_{RSM} , V_R (V) Max. non-rep. peak reverse voltage
	T_J = 0 to 125℃	T_J = -40 to 0℃	TJ = 25 to 125℃
A5N:600.12H	1200	1200	1300
A5N:600.14H	1400	1400	1500
A5N:600.16H	1600	1600	1700
A5N:600.18H	1800	1800	1900
A5N:600.20H	2000	2000	2100

MAXIMUM ALLOWABLE RATINGS

PARAMETER		VALUE	UNITS	NOTES	
T_J Junction Temperature		-40 to 125	ºC	-	
T_{stg} Storage Temperature		-40 to 150	ºC	-	
$I_{T(AV)}$	Max. Av. current	600	A	180º half sine wave	
	@ Max. T_C	75	ºC		
$I_{T(RMS)}$ Nom. RMS current		945	A	-	
I_{TSM} Max. Peak non-rep. surge current		9.09	kA	50 Hz half cycle sine wave	Initial T_J = 125ºC, rated V_{RRM} applied after surge.
		9.9		60 Hz half cycle sine wave	
		10.37		50 Hz half cycle sine wave	Initial T_J = 125ºC, no voltage applied after surge.
		11.30		60 Hz half cycle sine wave	
I^2t Max. I^2t capability		428	kA^2s	t = 10ms	Initial T_J = 125ºC, rated V_{RRM} applied after surge.
		466		t = 8.3 ms	
		488		t = 10ms	Initial T_J = 125ºC, no voltage applied after surge.
		532		t = 8.3 ms	
$I^2t^{1/2}$ Max. $I^2t^{1/2}$ capability		5820	$kA^2s^{1/2}$	Initial T_J = 125ºC, no voltage applied after surge. I^2t for time t_x = $I^2t^{1/2}$ * $t_x^{1/2}$. (0.1 < tx < 10ms).	
di/dt Max. Non-repetitive rate-of-rise current		800	A/ s	T_J = 125ºC, V_D = V_{DRM}, I_{TM} = 1600A. Gate pulse: 20V, 20 , 10 s, 0.5 s rise time, Max. repetitive di/dt is aproximately 40% of non-repetitive value.	
P_GM Max. Peak gate power		16	W	tp < 5 ms	
$P_{G(AV)}$ Max. Av. gate power		3	W	-	
+I_{GM} Max. Peak gate current		150	mA	tp < 5 ms	
-V_{GM} Max. Peak negative gate voltage		2	V	-	
F Mounting Force		900	N.m	-	

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CHARACTERISTICS

PARAMETER	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
V_{TM} peak on-state voltage	---	---	1.93	V	Initial T_J = 25°C, 50-60Hz half sine, I_{peak} = 1885A.
$V_{T(TO)}$ Threshold voltage	---	---	0.884	V	T_J = 125°C
r_T Slope resistance	---	---	0.617	m	Av. power = $V_{T(TO)} * I_{T(AV)} + r_T * [I_{T(RMS)}]^2$, 180° Half Sine. Use low values for I_{TM} < rated $I_{T(AV)}$
I_L Latching current	---	---	400	mA	T_C = 125°C, 12V anode. Gate pulse: 10V, 20, 100 s.
I_H Holding current	---	---	500	mA	T_C = 25°C, 12V anode. Initial I_T = 15A.
t_d Delay time	---	0.7	1	s	T_C = 25°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°C, I_{TM} = 550A, di/dt = 40A/ s, V_R = 50V. dv/dt = 20 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°C, Exp. To 67% V_{DRM}, gate open.
I_{RM}, I_{DM} Peak reverse and off-state current	---	20	40	mA	T_J = 125°C, Rated V_{RRM} and V_{DRM}, gate open.
I_{GT} DC gate current to trigger	---	---	360	mA	T_C = -40°C
	---	---	180		T_C = 25°C
V_{GT} DC gate voltage to trigger	6	---	---	V	T_C = -40°C +12V anode-to-cathode. For recommended gate drive see "Gate Characteristics" figure.
	3	---	---		T_C = 25°C
V_{GD} DC gate voltage not to trigger	---	---	0.3	V	T_C = 25°C, Max. Value which will not trigger with rated V_{DRM} anode.
R_{thJC} Thermal resistance, junction-to-case	---	---	0.04	°C/W	DC operation, double side cooled.
	---	---	0.052	°C/W	180° sine wave, double side cooled.
	---	---	0.053	°C/W	120° rectangular wave, double side cooled.
R_{thCS} Thermal resistance, case-to-sink	---	---	0.02	°C/W	Mtg. Surface smooth, flat and greased. Double side cooled.
wt Weight	---	85(3.1)	---	g(oz.)	---
Case Style		TO-200AB		JEDEC	---
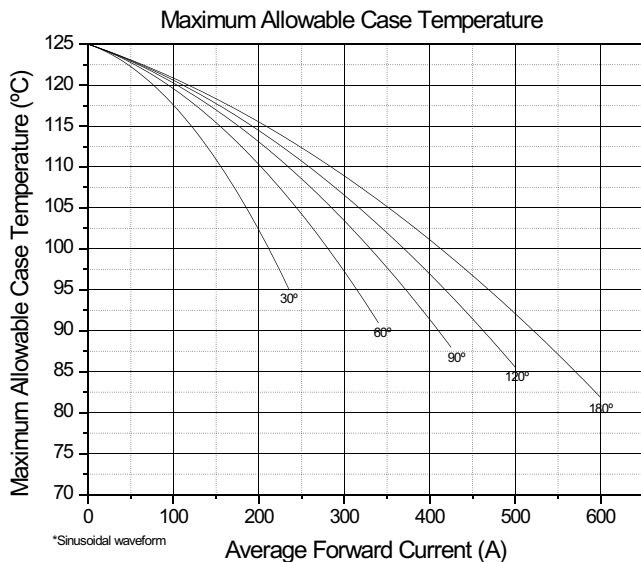
Fig. 1 - Current Ratings Characteristics
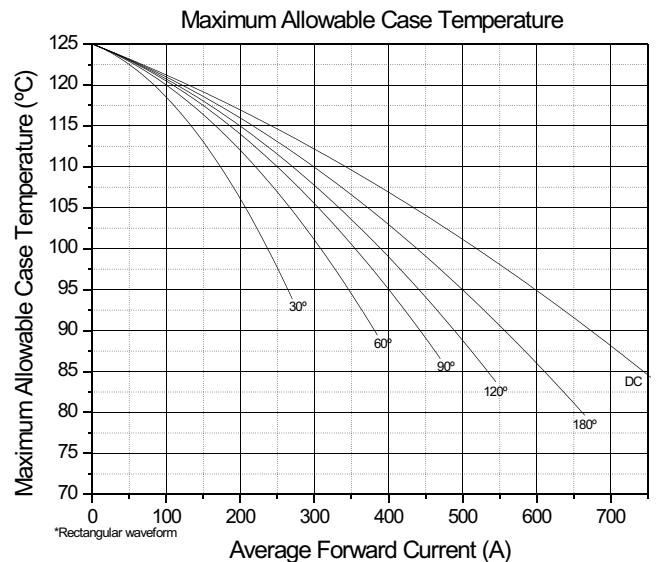
Fig. 2 - Current Ratings Characteristics

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Maximum Average Forward Power Loss

*Sinusoidal waveform

Fig. 3 - Forward Power Loss Characteristics

Maximum Average Forward Power Loss

*Rectangular waveform
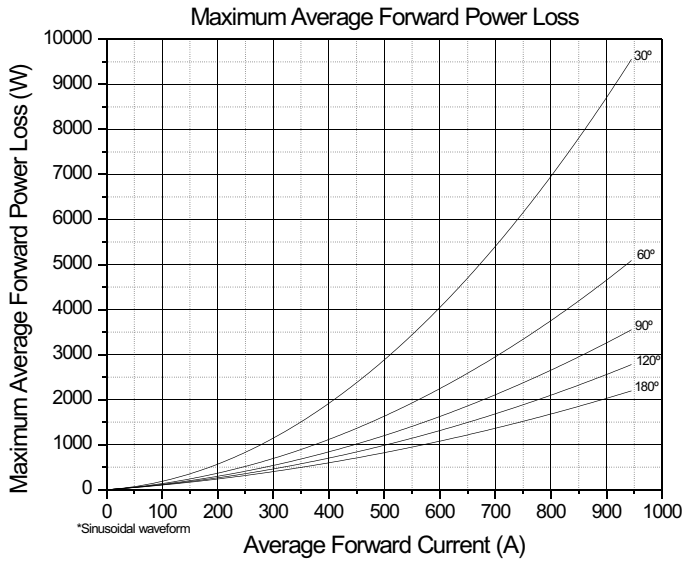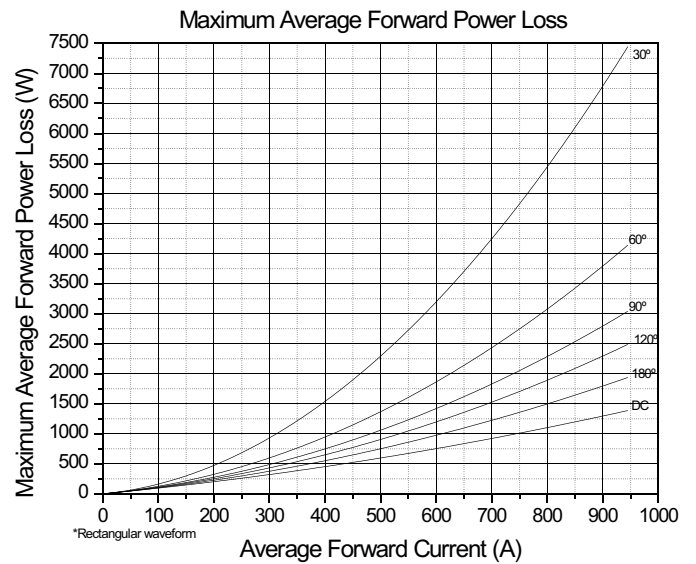
Fig. 4 - Forward Power Loss Characteristics

Forward Voltage Drop
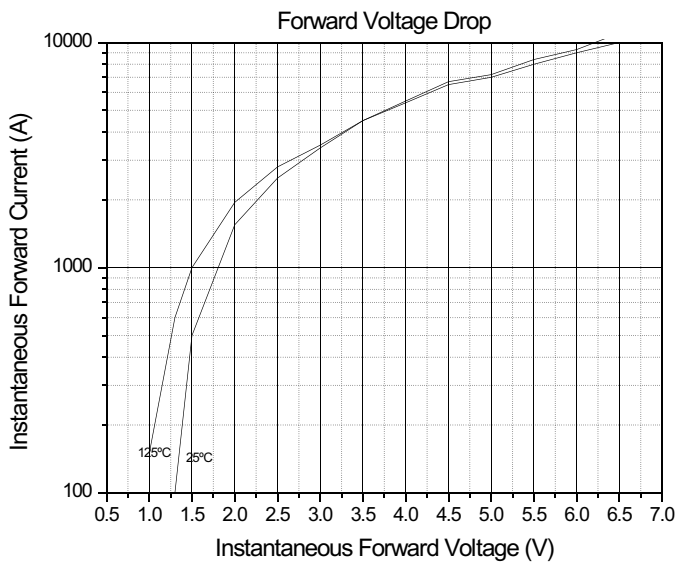
Fig. 5 - Forward Voltage Drop Characteristics

Transient Thermal Impedance Z_{thJC}
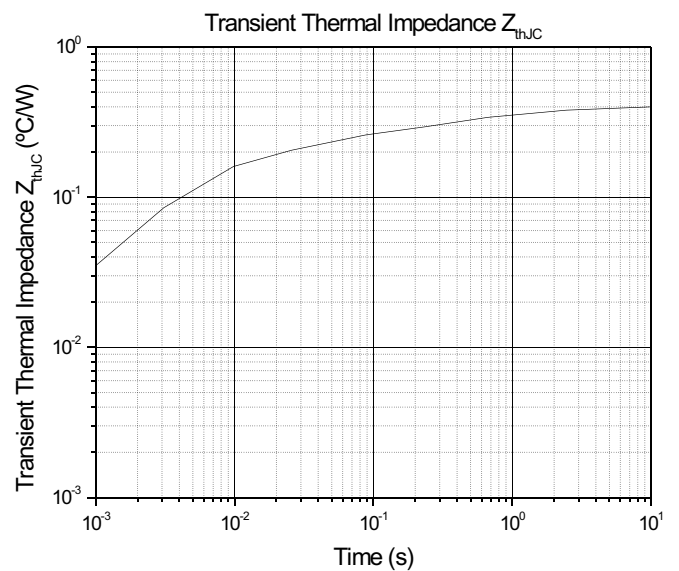
Fig. 6 - Transient Thermal Impedance Characteristics
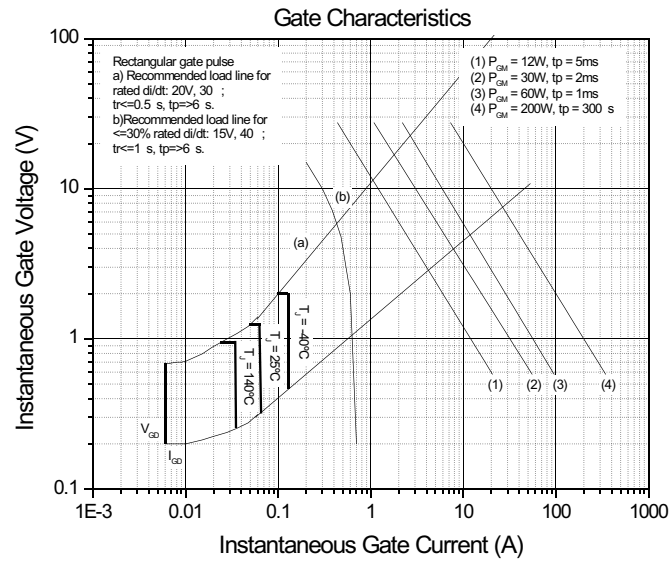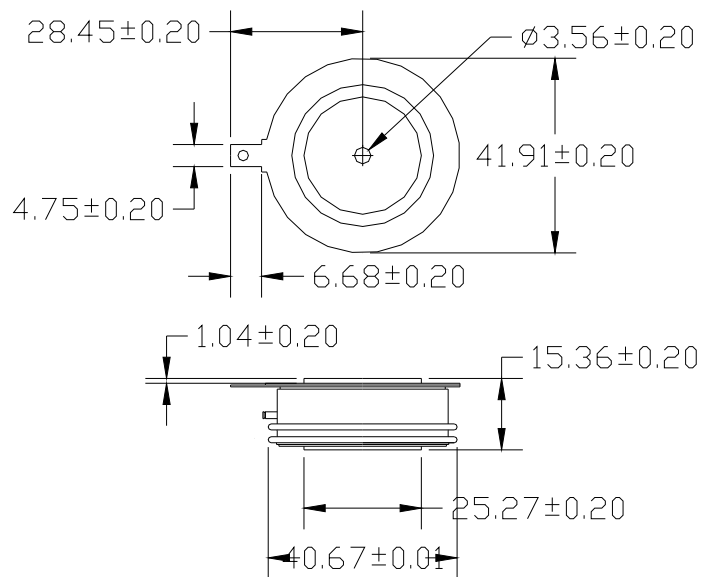
Gate Characteristics

Fig. 7 - Gate Trigger Characteristics

TO-200AB

Fig. 8 - Outline Characteristics