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SEMICONDUTORES LTDA.

A5N:1400.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 125ºC	T_J = -40 to 0ºC	T_J = 25 to 125ºC
A5N:1400.16	1600	1600	1700
A5N:1400.18	1800	1800	1900
A5N:1400.20	2000	2000	2100
A5N:1400.22	2200	2200	2300

MAXIMUM ALLOWABLE RATINGS

PARAMETER	VALUE	UNITS	NOTES
T_J Junction Temperature	-40 to 125	ºC	-
T_{stg} Storage Temperature	-40 to 150	ºC	-
$I_{F(AV)}$ Max. Av. current	1400	A	180º half sine wave
@ Max. T_C	70	ºC	
$I_{F(RMS)}$ Nom. RMS current	3080	A	-
I_{FSM} Max. Peak non-rep. surge current	25.7	KA	50 Hz half cycle sine wave; Initial T_J = 125ºC, rated V_{RRM} applied after surge.
	26.9		60 Hz half cycle sine wave; Initial T_J = 125ºC, rated V_{RRM} applied after surge.
	30.5		50 Hz half cycle sine wave; Initial T_J = 125ºC, no voltage applied after surge.
	32		60 Hz half cycle sine wave; Initial T_J = 125ºC, no voltage applied after surge.
I^2t Max. I^2t capability	3300	kA^2s	t = 10ms; Initial T_J = 125ºC, rated V_{RRM} applied after surge.
	3000		t = 8.3 ms; Initial T_J = 125ºC, rated V_{RRM} applied after surge.
	4651		t = 10ms; Initial T_J = 125ºC, no voltage applied after surge.
	4250		t = 8.3 ms; Initial T_J = 125ºC, no voltage applied after surge.
$I^2t^{1/2}$ Max. $I^2t^{1/2}$ capability	46510	$kA^2s^{1/2}$	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	1000	A/µs	T_J = 125ºC, $V_D = V_{DRM}$, I_{TM} = 1600A. Gate pulse: 20V, 20Ω, 10µs, 0.5µs 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	3.0	W	-
$+I_{GM}$ Max. Peak gate current	3	A	tp < 5 ms
$-V_{GM}$ Max. Peak negative gate voltage	5	V	-
F Mounting Force	2500	N	Non lubricated threads

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CHARACTERISTICS

PARAMETER	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
V_{TM} peak on-state voltage	---	1.38	1.73	V	Initial T_J = 25ºC, 50-60Hz half sine, I_{peak} = 4398A.
$VT_{(TO)1}$ Low-level threshold	---	---	0.91	V	T_J = 125ºC
$VT_{(TO)2}$ High-level threshold	---	---	1.01		Av. power = $V_{T(TO)} * I_{T(AV)} + r_T * [I_{T(RMS)}]^2$
r_{T1} Low-level resistance	---	---	0.21	mΩ	Use low values for $I_{TM} < \pi$ rated $I_{T(AV)}$
r_{T2} High-level resistance	---	---	0.19		
I_L Latching current	---	1000	---	mA	T_C = 25ºC, 12V anode. Gate pulse: 10V, 20Ω, 100µs.
I_H Holding current	---	100	600	mA	T_C = 25ºC, 12V anode. Initial IT = 10A.
t_d Delay time	---	0.5	1.9	µs	T_C = 25ºC, V_D = rated V_{DRM}, 50A resistive load. Gate pulse: 10V, 20Ω, 10µs, 1µs rise time.
t_q Turn-off time	---	---	200	µs	T_J = 125ºC, I_{TM} = 500A, di/dt = 25A/µs, V_R = 50V. dv/dt = 200 V/µs lin. To 80% rated V_{DRM}. Gate: 0V, 100Ω.
dv/dt Critical rate-of-rise of off-state voltage	300	500	---	V/µs	T_J = 125ºC. Exp. to 100% or lin. To 80% V_{DRM}, gate open. Higher dv/dt values avaliable.
	600	---	---		T_J = 125ºC, Exp. To 67% V_{DRM}, gate open.
I_{RM}, I_{DM} Peak reverse and off-state current	---	40	100	mA	T_J = 125ºC, Rated V_{RRM} and V_{DRM}, gate open.
I_{GT} DC gate current to trigger	---	200	---	mA	T_C = -40ºC
	75	100	200		T_C = 25ºC +12V anode-to-cathode. For recommended gate drive see "Gate Characteristics" figure.
V_{GT} DC gate voltage to trigger	---	1.4	---	V	T_C = -40ºC
	---	1.1	3		T_C = 25ºC
V_{GD} DC gate voltage not to trigger	---	---	0.25	V	T_C = 25ºC, Max. Value which will not trigger with rated V_{DRM} anode-to-cathode.
R_{thJC} Thermal resistance, junction-to-case	---	---	0.023	ºC/W	DC operation.
	---	---	0.025	ºC/W	180º sine wave, double side coolde.
	---	---	0.025	ºC/W	120º rectangular wave, double side cooled.
R_{thCS} Thermal resistance, case-to-sink	---	---	0.01	ºC/W	Mtg. Surface smooth, flat and greased.
wt Weight	---	425 (15)	---	g(oz.)	---
Case Style	TO-200AD			JEDEC	---

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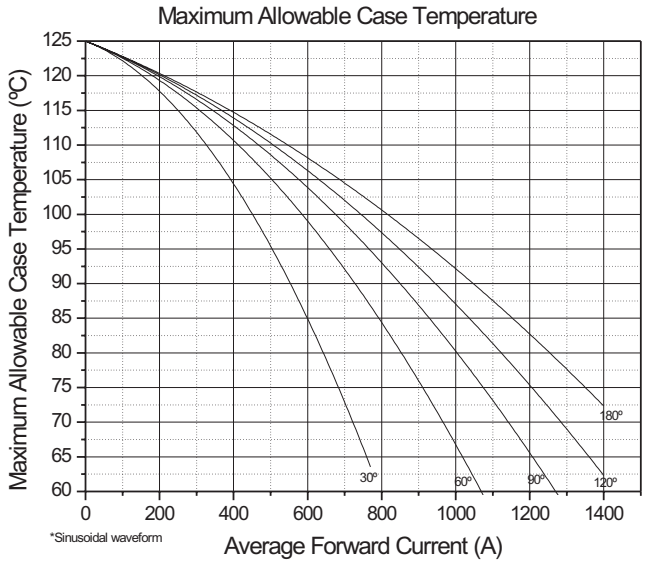

Fig. 1 - Current Ratings Characteristics

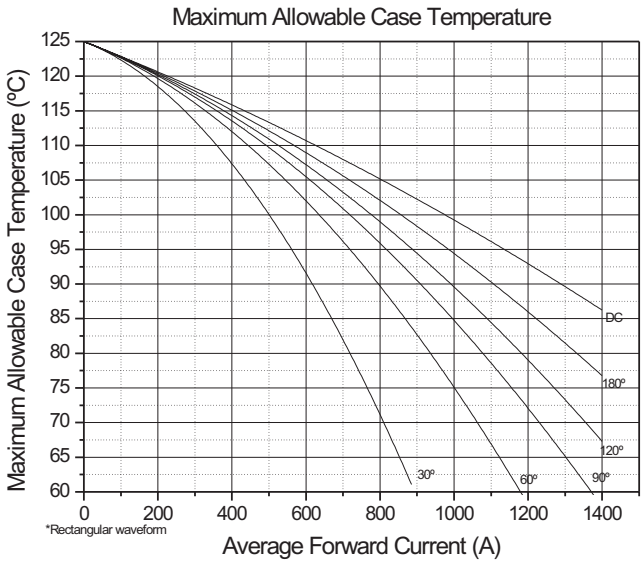

Fig. 2 - Current Ratings Characteristics

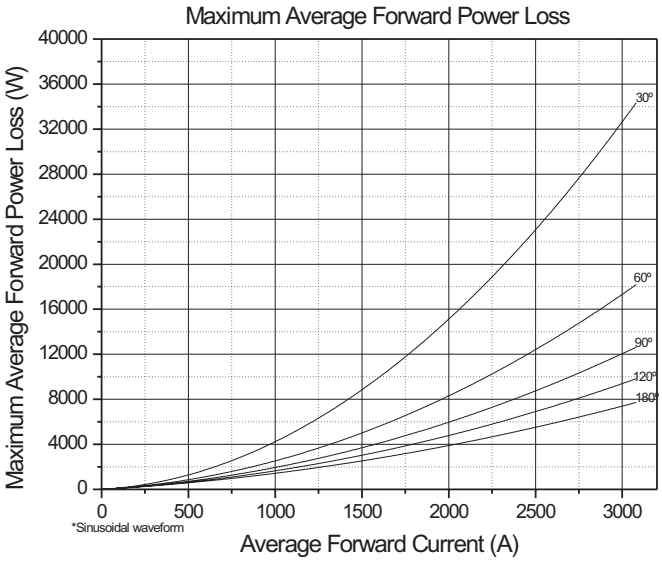

Fig. 3 - On-state Power Loss Characteristics

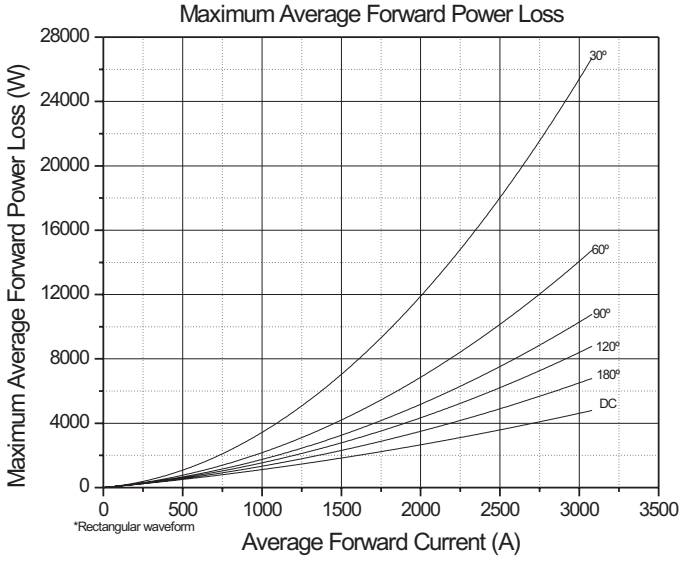

Fig. 4 - On-state Power Loss Characteristics

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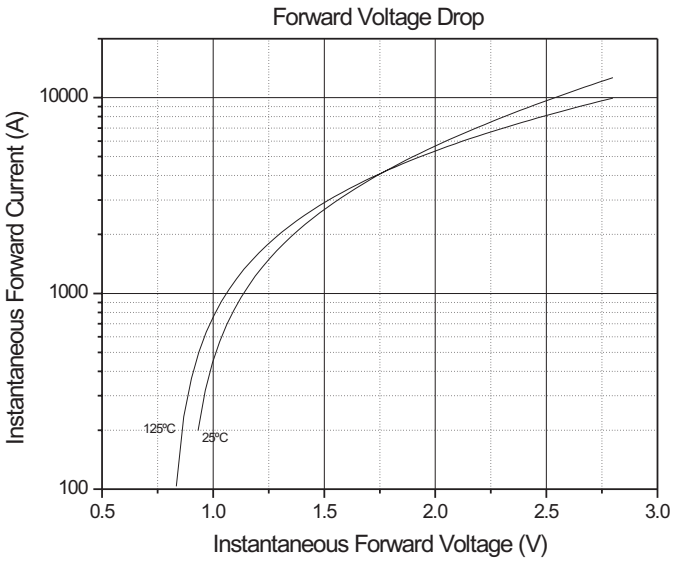

Fig. 5 - Forward Voltage Drop Characteristics

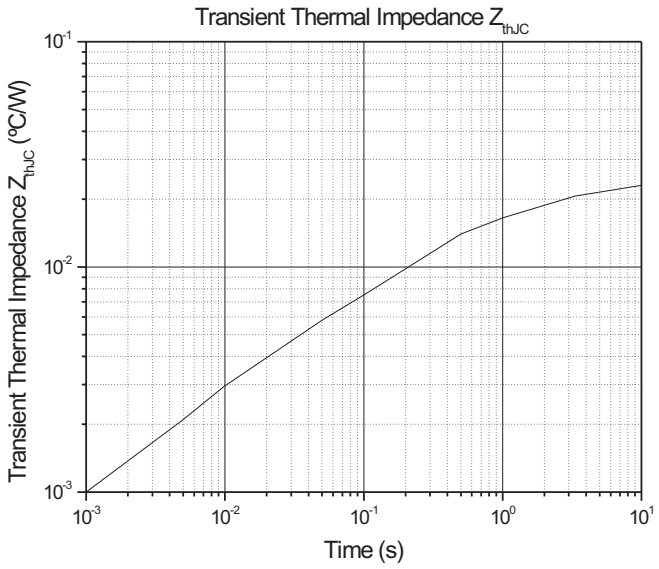

Fig. 6 - Transient Thermal Impedance Z_{thJC} Characteristics

TO-200AD