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T811 1300-46-52

Key Parameters

V_{DSM}	4600~5200	V
$I_{T(AV)}$	1300	A
I_{TSM}	20.0	kA
V_{TO}	1.1	V
r_T	0.42	mΩ

Voltage Ratings

Device Type	V_{DSM}/V_{RSM}(V)	Test Conditions
T811 1300-46	4600	T_{vj} = 125 °C
T811 1300-48	4800	I_{DRM} = 400 mA
T811 1300-50	5000	I_{RRM} = 400 mA
T811 1300-52	5200	
		$V_{DM}=V_{DRM}$, $V_{RM}=V_{RRM}$
		t_p = 10 ms
		V_{DRM} = V_{DSM} - 600
		V_{RRM} = V_{RSM} - 600

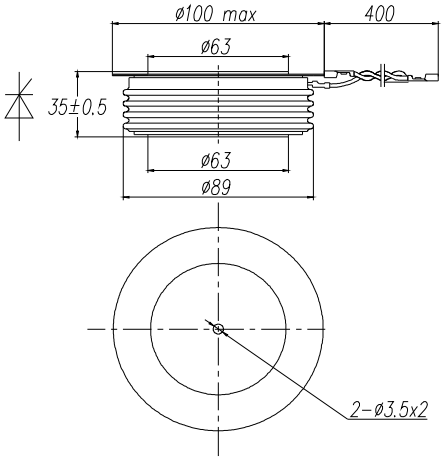
Applications

- SVC
- Motor drive
- Industry converter

Features

- Double-side cooling
- High power capability
- Low loss

Outline



Thermal & Mechanical Data

Symb.	Parameter	Min	Type	Max	Unit
$R_{th\,jc}$	Thermal Resistance Junction to Case	-	-	0.015	K / W
$R_{th\,cs}$	Thermal Resistance Case ro Heatsink	-	-	0.004	K / W
T_{vj}	Junction Temperature	-40	-	125	°C
T_{stg}	Storage Temperature	-40	-	140	°C
F	Mounting Force	-	40	-	kN
m	Weight	-	1	-	kg
HCRP	Creep distance	34	-	-	mm

Current Ratings

Symb.	Parameter	Test Conditions	Min	Type	Max	Unit
$I_{T(AV)}$	Mean On-State Current	Half Sine Wave T_C=70 °C	-	-	1300	A
$I_{T(RMS)}$	RMS On-State Current	T_C =70 °C	-	-	2041	A
I_{TSM}	Surge (non-repetitive) On-State Current	10ms, Half Sine Wave, T_C =125 °C, V_R = 0	-	-	20.0	kA
I^2t	Limiting load integral	Sine Wave, 10ms	-	-	200	10^4A^2s

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Characteristics

Symb.	Parameter	Test Conditions	Min	Type	Max	Unit
V_{TM}	Peak on-state voltage	T_{vj} = 125 °C, I_{TM} = 1500 A	-	-	1.73	V
I_{DRM}	Forward leakage current	T_{vj} = 125 °C, V_{DRM}	-	-	400	mA
I_{RRM}	Reverse leakage current	T_{vj} = 125 °C, V_{RRM}	-	-	400	mA
V_{TO}	Threshold voltage	T_{vj} = 125 °C	-	-	1.10	V
r_T	Slope resistance	T_{vj} = 125 °C	-	-	0.42	mΩ
I_H	Holding current	T_{vj} = 25 °C	-	-	200	mA
I_L	Latching current	T_{vj} = 25 °C	-	-	1000	mA

Dynamic Parameters

Symb.	Parameter	Test Conditions	Min	Type	Max	Unit
dv/dt	Critical rate of rise of off-state voltage	T_{vj} = 125 °C, 0.67V_{DRM}	2000	-	-	V/μs
di/dt	Critical rate of rise of on-state current	T_{vj} = 125 °C, V_{DM} = 0.67V_{DRM}, f = 50 Hz, I_{TM} = 2000 A I_{FG} = 2 A, t_r = 0.5 μs, t = 60 s	-	-	200	A/μs
t_q	Turn-off time	T_{vj} = 125 °C, t_p = 1000 μs, V_{DM} = 0.67 V_{DRM}, f = 1 Hz, dv/dt = 20V/μs, V_R = 200V, -di/dt = 1.5A/μs, I_T = 2000A	-	700	-	μs
Q_r	Recovery Charge	T_{vj} = 125°C, -di/dt = 1.5A/μs, t_p = 700 μs, I_T = 2000A, V_R = 200 V, trapezoid wave	-	-	3500	μC

Gate Parameters

Symb.	Parameter	Test Conditions	Min	Type	Max	Unit
I_{GT}	Gate trigger current	T_{vj} = 25 °C	-	-	300	mA
V_{GT}	Gate trigger voltage	T_{vj} = 25 °C	-	-	3	V
I_{GD}	Gate non-trigger current	T_{vj} = 125 °C, V_D = 0.4V_{DRM}	10	-	-	mA
V_{GD}	Gate non-trigger voltage	T_{vj} = 125 °C, V_D = 0.4V_{DRM}	0.3	-	-	V
V_{FGM}	Peak forward gate voltage		-	-	12	V
V_{RGM}	Peak reverse gate voltage		-	-	5	V
I_{FGM}	Peak forward gate current		-	-	4	A
P_{GM}	Gate power losses		-	-	20	W
$P_{G(AV)}$	Gate power losses (mean)		-	-	4	W

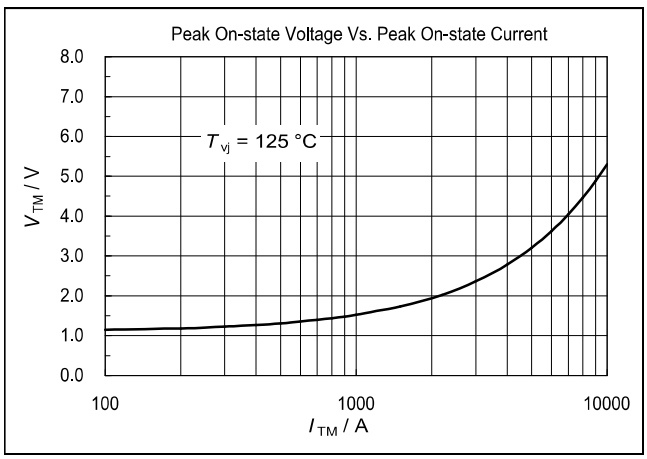

Fig1. Peak On-state Voltage Vs. Peak On-state Current

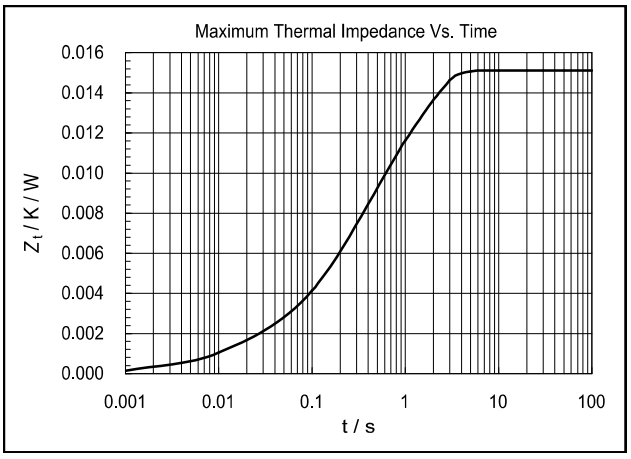

Fig2. Maximum Thermal Impedance Vs. Time

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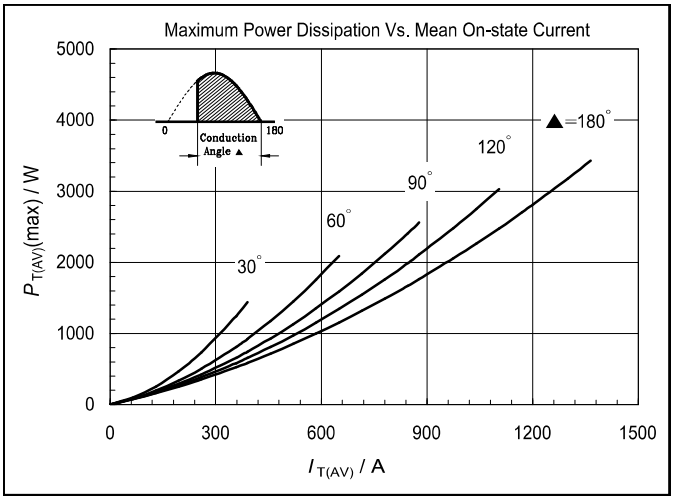

Fig3. Maximum Power Dissipation Vs. Mean On-state Current

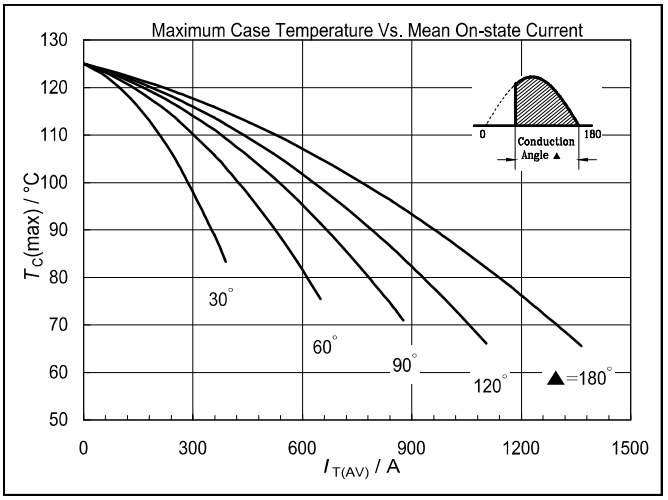

Fig4. Maximum Case Temperature Vs. Mean On-state Current

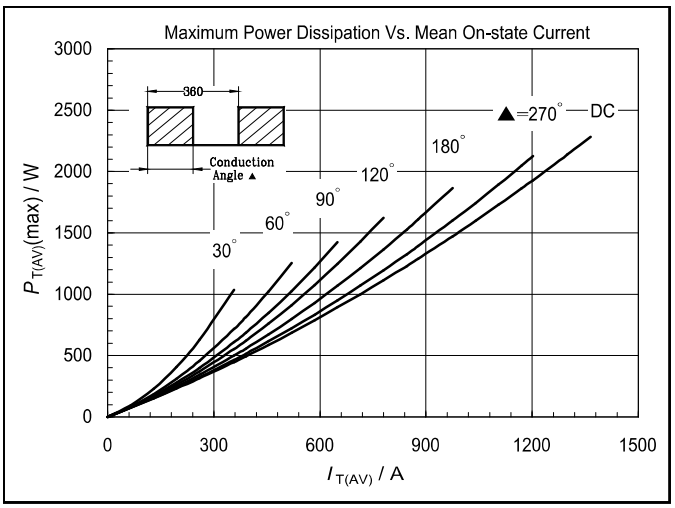

Fig5. Maximum Power Dissipation Vs. Mean On-state Current

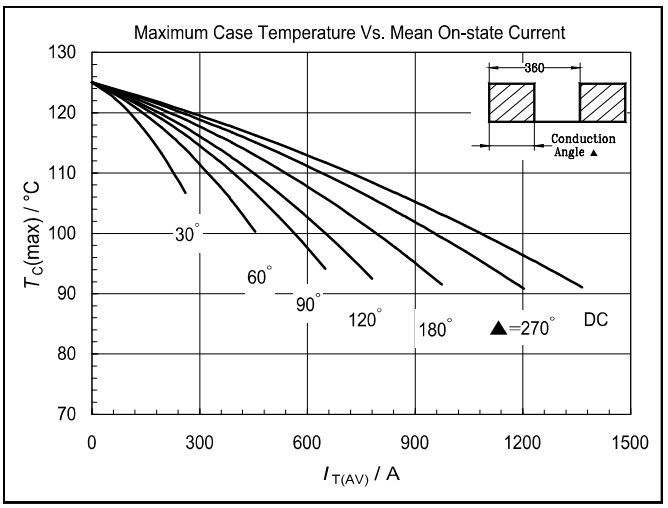

Fig6. Maximum Case Temperature Vs. Mean On-state Current

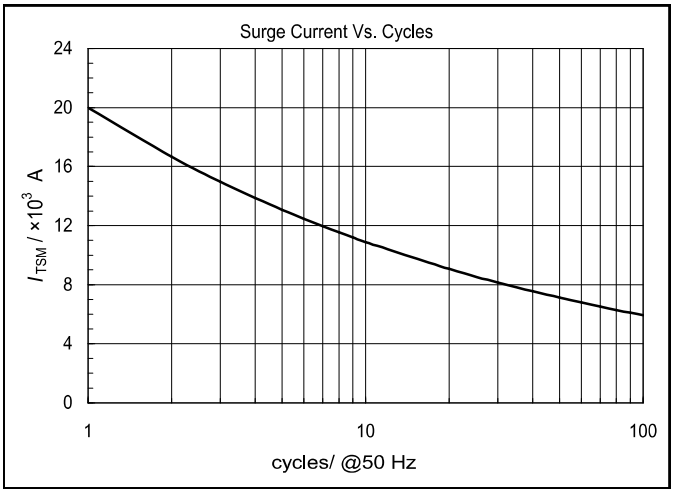

Fig7. Surge Current Vs. Cycles

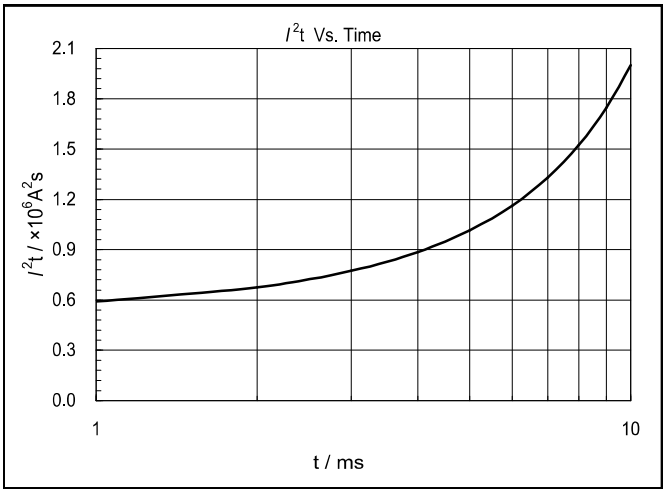

Fig8. I^2t Vs. Time

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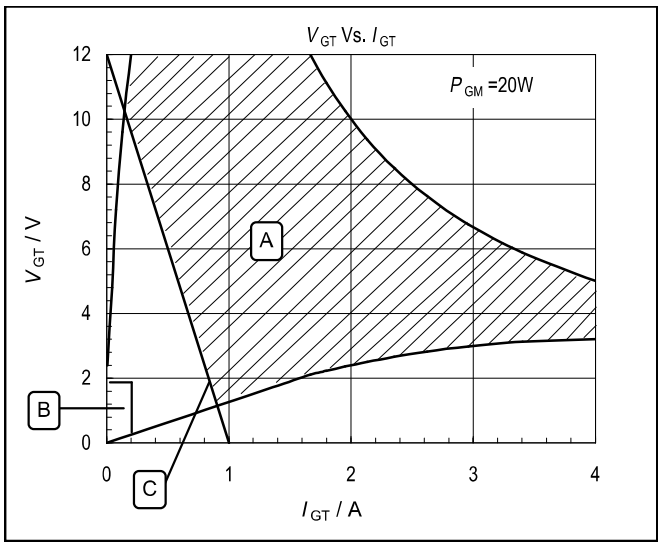

Fig9. V_{GT} Vs. I_{GT}

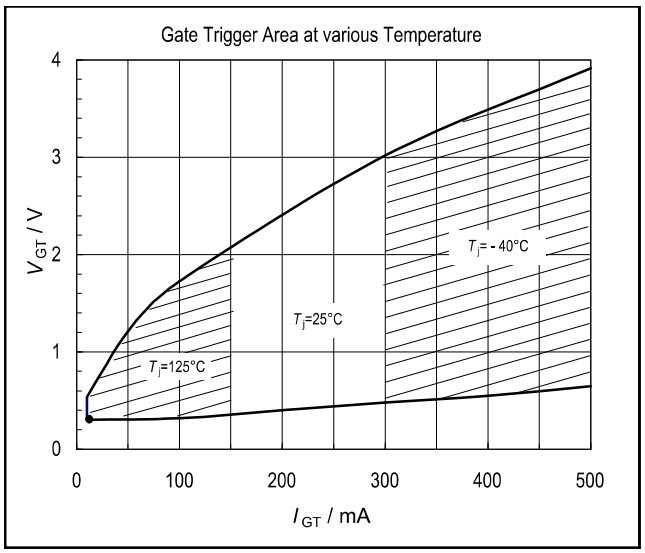

Fig10. Gate Trigger Area at various Temperature

A is Recommended Triggering Area.

B is Unreliable Triggering Area.

C is Recommended Gate Load Line.