

Key Parameters

V_{RRM}	2000~2600	V
$I_{T(AV)}$	400	A
I_{TSM}	11	kA
V_{TO}	0.96	V
r_T	0.5	mΩ

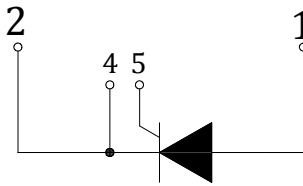
Applications

- Various rectifiers
- DC supply for PWM inverter
- Industry converter

- 3000 V_{RMS} isolating voltage with baseplate
- High power capability
- Industrial standard package

Voltage Ratings

Module Type	$V_{DRM}/V_{RRM}(V)$	Test Conditions
TMTO 400	2000 2200 2400 2600	$T_{vj} = 25, 125^{\circ}C$ $I_{DRM} = I_{RRM} = 100\text{ mA}$ $V_{DM} = V_{DRM}$ $V_{RM} = V_{RRM}$ $t_p = 10\text{ ms}$ $V_{DSM} = V_{DRM}$ $V_{RSM} = V_{RRM} + 100$


Thermal & Mechanical Data

Symb.	Parameter	Test Conditions	Min	Type	Max	Unit
R_{thJC}	Thermal Resistance Junction to Case	sine.180°,per module DC operation ,per per module	-	-	0.065 0.062	$^{\circ}C/W$
R_{thCH}	Thermal resistance case to heatsink	Mounting surface smooth flat and greased	-	-	0.02	$^{\circ}C/W$
T_{vj}	Maximum junction operating temperature range		-40	-	125	$^{\circ}C$
T_{stg}	Storage temperature		-40	-	125	$^{\circ}C$
F	Busbar to module M10 Module to heatsink M6	Mounting torque $\pm 10\%$	- -	12 5	- -	N·m N·m
W	Weight		-	900	-	g

Current Ratings

$I_{T(AV)}$	Mean on-state current	Half Sine Wave, $T_C=85^{\circ}C$	-	-	420	A
$I_{T(RMS)}$	RMS on-state current	$T_C=85^{\circ}C$	-	-	659	A
I_{TSM}	Surge on-state current	$t_p=10\text{ms}$, Half Sine Wave, $T_{vj}=125^{\circ}C$, $V_R = 0$	-	-	11.0	kA
I^2t	Limiting load integral	Sine Wave, $t_p=10\text{ms}$	-	-	60.5	$10^4 A^2s$

Characteristics

Symb.	Parameter	Test Conditions	Min	Type	Max	Unit
V_{TM}	Peak on-state voltage	$T_{vj} = 25\text{ }^{\circ}\text{C}$, $I_{TM} = 1500\text{ A}$	-	-	1.85	V
I_{DRM}	Forward leakage current	$T_{vj} = 25\text{ }^{\circ}\text{C}$, $125\text{ }^{\circ}\text{C}$, V_{DRM}/V_{RRM}	-	-	100	mA
I_{RRM}	Reverse leakage current	a.c.; 50 Hz; r.m.s. ; $t = 1\text{ min}$	-	3000	-	V
V_{TO}	Threshold voltage	$T_{vj} = 125\text{ }^{\circ}\text{C}$	-	-	0.96	V
r_T	Slope resistance	$T_{vj} = 125\text{ }^{\circ}\text{C}$	-	-	0.5	m Ω
I_H	Holding current	$T_{vj} = 25\text{ }^{\circ}\text{C}$	-	-	200	mA
I_L	Latching current	$T_{vj} = 25\text{ }^{\circ}\text{C}$	-	-	1000	mA

Dynamic Parameters

Symb.	Parameter	Test Conditions	Min	Type	Max	Unit
dv/dt	Critical rate of rise of off-state voltage	$T_{vj} = 125\text{ }^{\circ}\text{C}$, Exp. to $0.67 V_{DRM}$	1000	-	-	V/ μs
di/dt	Critical rate of rise of on-state current	$T_{vj} = 125\text{ }^{\circ}\text{C}$, $V_{DM} = 0.67 V_{DRM}$, $f = 50\text{ Hz}$ $I_{TM} = 1000\text{ A}$, $I_{FG} = 2\text{ A}$, $t_r = 0.5\text{ }\mu\text{s}$	-	-	150	A/ μs
t_q	Turn-off time	$T_{vj} = 125\text{ }^{\circ}\text{C}$, $V_{DM} = 0.67 V_{DRM}$, $I_T = 1000\text{ A}$ $dv/dt = 20\text{ V}/\mu\text{s}$, $V_R = 200\text{ V}$, $-di/dt = 10\text{ A}/\mu\text{s}$	-	150	-	μs
Q_{rr}	Reverse Recovery Charge	$T_{vj} = 125\text{ }^{\circ}\text{C}$, $-di/dt = 10\text{ A}/\mu\text{s}$, $I_T = 1000\text{ A}$, $V_R = 200\text{ V}$	-	1000	-	μC

Gate Parameters

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

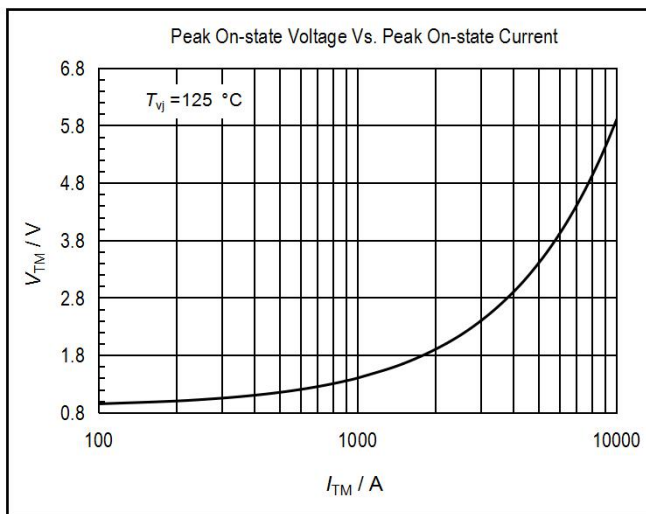


图1. 通态伏安特性曲线

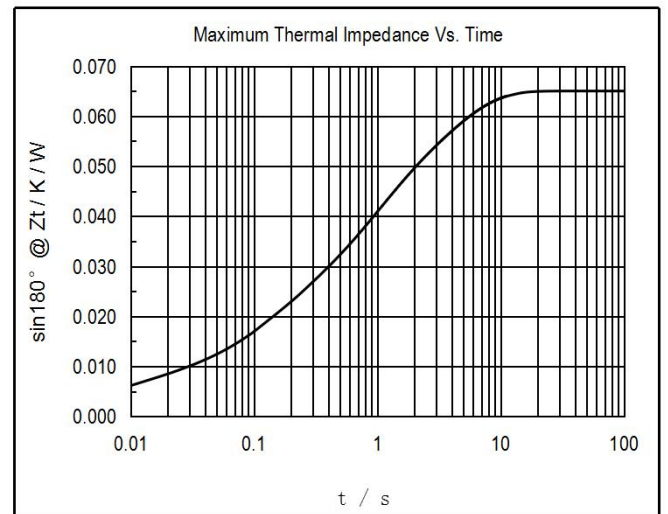


图2. 瞬态热阻抗曲线

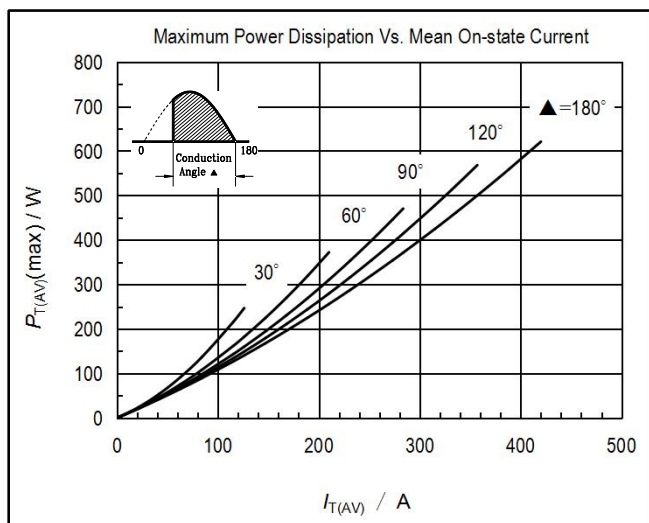


图3. 最大功耗与通态平均电流的关系曲线

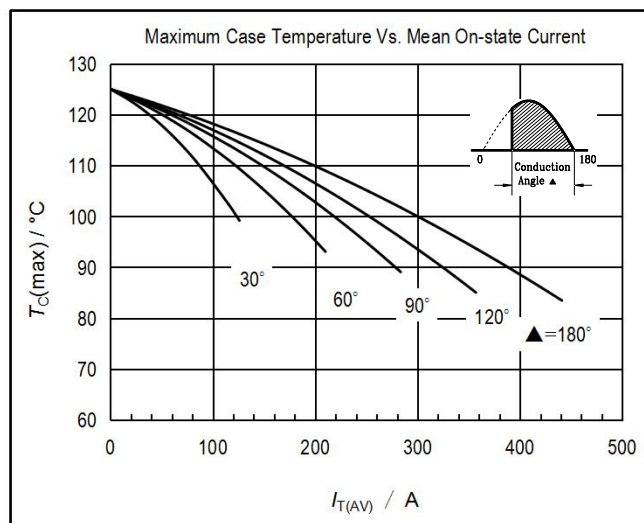


图4. 管壳温度与通态平均电流的关系曲线

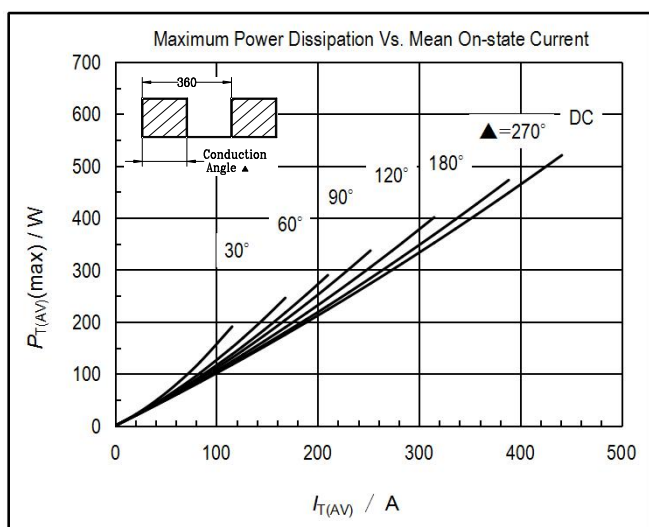


图5. 最大通态功耗与通态平均电流的关系曲线

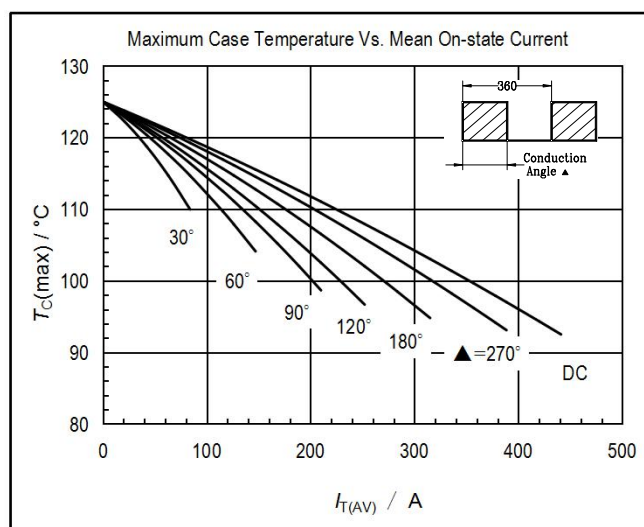


图6. 管壳温度与通态平均电流的关系曲线

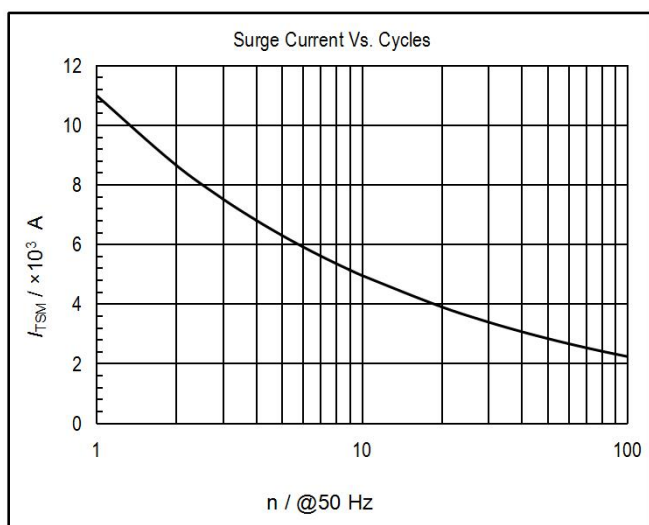


图7. 通态浪涌电流与周波数的关系曲线

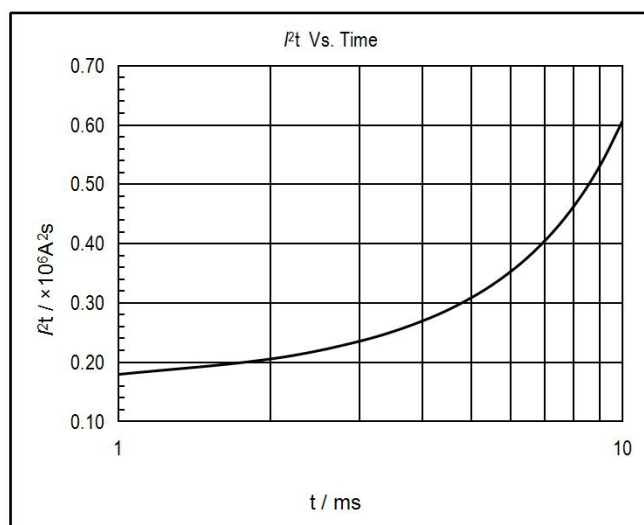


图8. I^2t 特性曲线

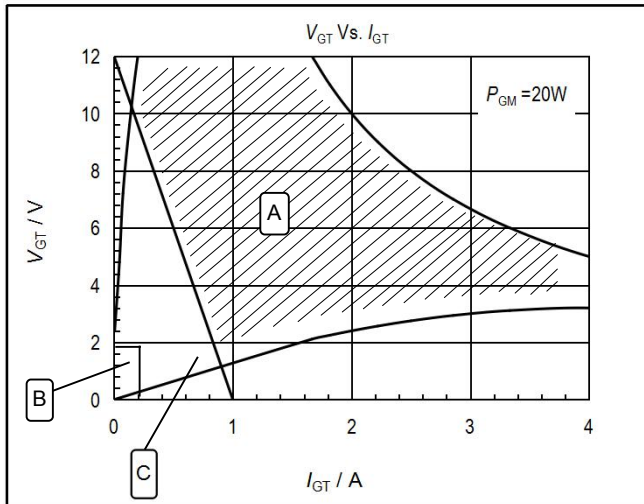


图9. 门极触发特性曲线

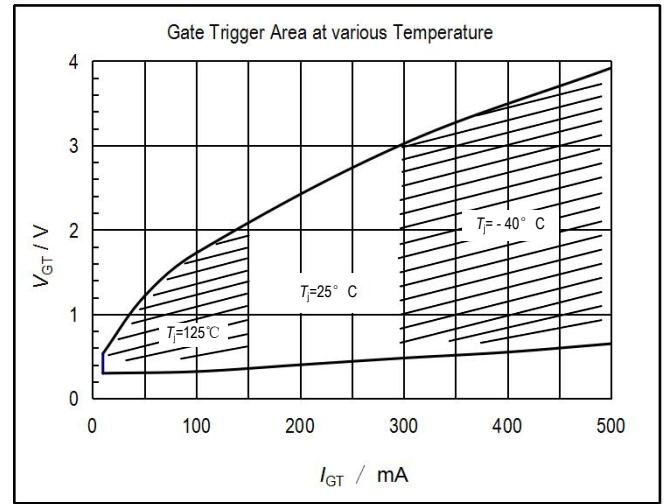


图10. 不同结温下的门极触发区

A为可靠触发区，
B为不可靠触发区。
C为建议采用的门极负载线。

A is Recommended Triggering Area.
B is Unreliable Triggering Area.
C is Recommended Gate Load Line.

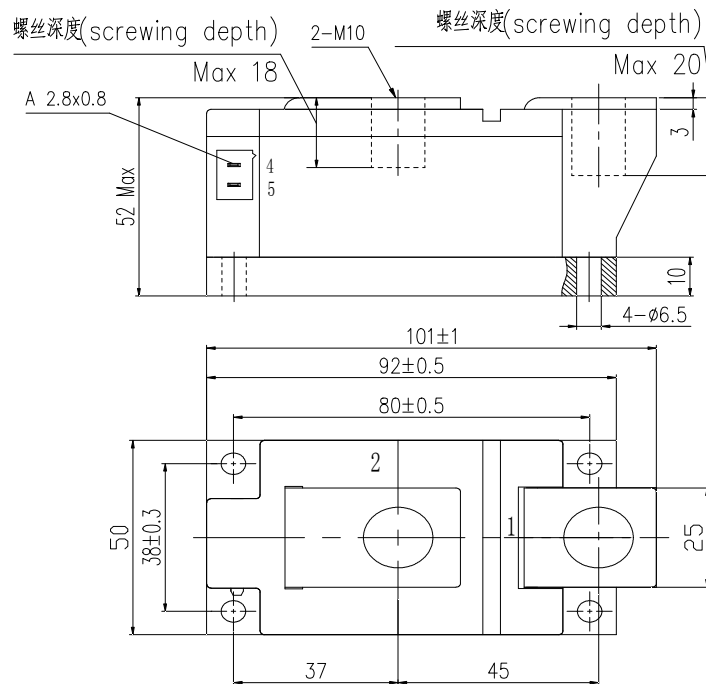


图11. 外形图 (outline)

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