

T804 1800-06-14

Key Parameters

V_{DRM}	600~1400	V
$I_{\text{T(AV)}}$	1850	A
I_{TSM}	29.0	kA
V_{TO}	0.84	V
r_{T}	0.13	mΩ

Applications

- Traction drive
- Motor drive
- Industry converter

Features

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

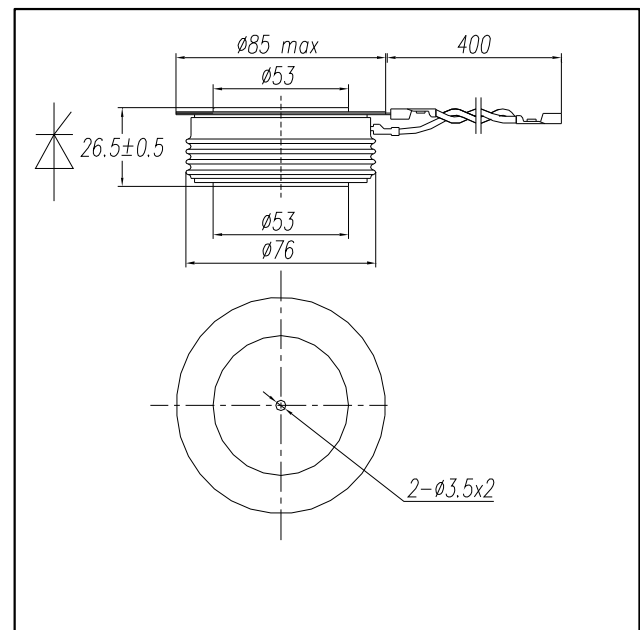
Thermal & Mechanical Data

Symb.	Parameter	Min	Type	Max	Unit
R_{thjc}	Thermal Resistance Junction to Case	-	-	0.018	K / W
R_{thcs}	Thermal Resistance Case to Heatsink	-	-	0.005	K / W
T_{vj}	Junction Temperature	-40	-	125	°C
T_{stg}	Storage Temperature	-40	-	140	°C
F	Mounting Force	-	30	-	kN
m	Weight	-	0.6	-	kg

Voltage Ratings

Device Type	$V_{\text{DRM}}/V_{\text{RRM}}(\text{V})$	Test Conditions
T804 1800-06	600	$T_{\text{vj}} = 125\text{ °C}$
T804 1800-08	800	$I_{\text{DRM}} = 150\text{ mA}$
T804 1800-10	1000	$I_{\text{RRM}} = 150\text{ mA}$
T804 1800-12	1200	
T804 1800-14	1400	$V_{\text{DM}} = V_{\text{DRM}}, V_{\text{RM}} = V_{\text{RRM}}$ $t_{\text{p}} = 10\text{ ms}$
		$V_{\text{DSM}} = V_{\text{DRM}}$ $V_{\text{RSM}} = V_{\text{RRM}} + 100$

Outline



Current Ratings

Symb.	Parameter	Test Conditions	Min	Type	Max	Unit
$I_{\text{T(AV)}}$	Mean On-State Current	Half Sine Wave, $T_{\text{C}} = 70\text{ °C}$	-	-	1850	A
$I_{\text{T(RMS)}}$	RMS On-State Current	$T_{\text{C}} = 70\text{ °C}$	-	-	2905	A
I_{TSM}	Surge (non-repetitive) On-State Current	10ms, Half Sine Wave, $T_{\text{C}} = 125\text{ °C}, V_{\text{R}} = 0$	-	-	29.0	kA
I^2t	Limiting load integral	Sine Wave, 10ms	-	-	421	$10^4\text{ A}^2\text{s}$

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Characteristics

Symb.	Parameter	Test Conditions	Min	Type	Max	Unit
V_{TM}	Peak on-state voltage	$T_{vj} = 125\text{ }^{\circ}\text{C}$, $I_{TM} = 3000\text{ A}$	-	-	1.23	V
I_{DRM}	Forward leakage current	$T_{vj} = 125\text{ }^{\circ}\text{C}$, V_{DRM}	-	-	150	mA
I_{RRM}	Reverse leakage current	$T_{vj} = 125\text{ }^{\circ}\text{C}$, V_{RRM}	-	-	150	mA
V_{TO}	Threshold voltage	$T_{vj} = 125\text{ }^{\circ}\text{C}$	-	-	0.84	V
r_T	Slope resistance	$T_{vj} = 125\text{ }^{\circ}\text{C}$	-	-	0.13	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/ $\mu\text{ s}$
di/dt	Critical rate of rise of on-state current	$T_{vj} = 125\text{ }^{\circ}\text{C}$, $V_{DM} \leq 0.67 V_{DRM}$, $f = 50\text{ Hz}$, $I_{TRM} = 2000\text{ A}$ $I_{FG} = 2\text{ A}$, $t_r = 0.5\text{ }\mu\text{ s}$	-	-	200	A/ $\mu\text{ s}$

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	$T_{vj} = 25\text{ }^{\circ}\text{C}$	-	-	3.0	V
I_{GD}	Gate non-trigger current	$T_{vj} = 125\text{ }^{\circ}\text{C}$, $V_D = 0.4 V_{DRM}$	10	-	-	mA
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
I_{FGM}	Peak forward gate current		-	-	4	A
P_{GM}	Gate power losses		-	-	20	W
$P_{G(AV)}$	Gate power losses (mean)		-	-	4	W

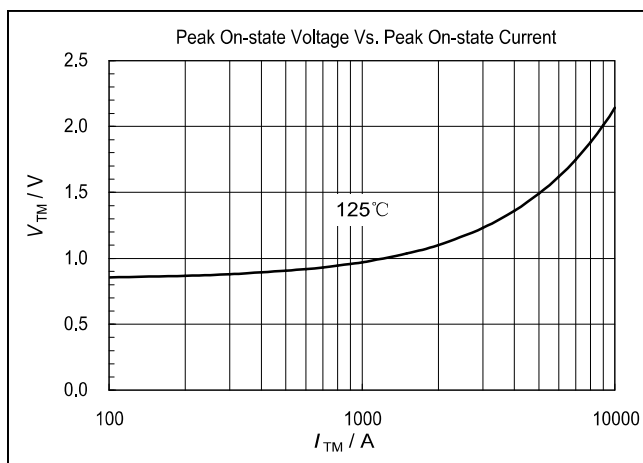


Fig1. Peak On-state Voltage Vs. Peak On-state Current

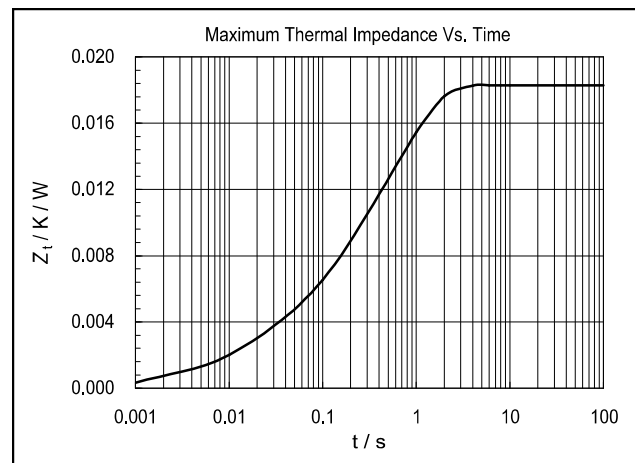


Fig2. Maximum Thermal Impedance Vs. Time

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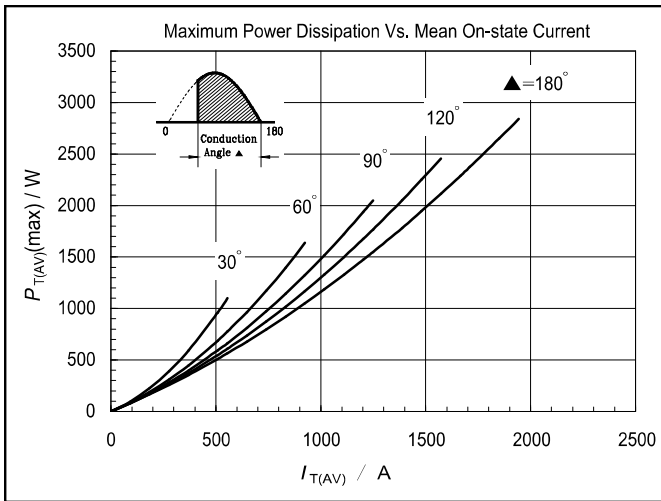


Fig3. Maximum Power Dissipation Vs. Mean On-state Current

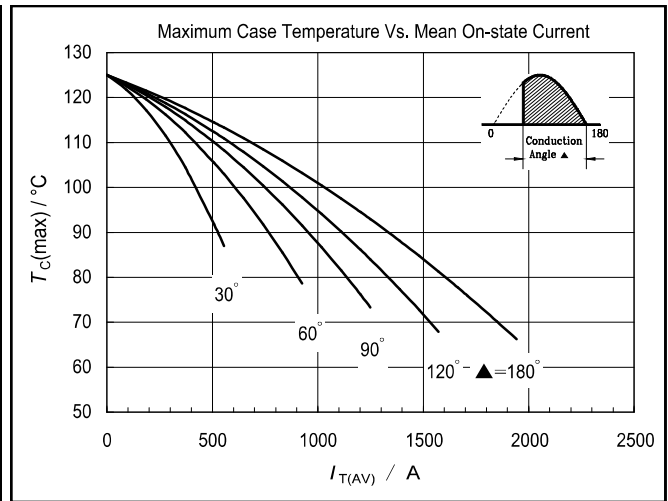


Fig4. Maximum Case Temperature Vs. Mean On-state Current

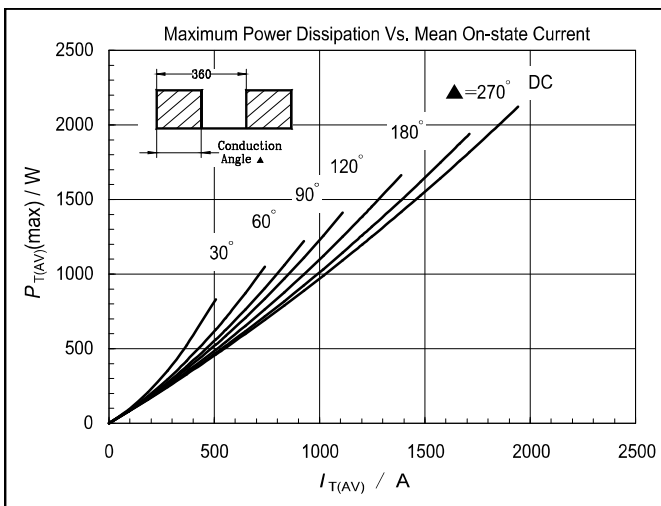


Fig5. Maximum Power Dissipation Vs. Mean On-state Current

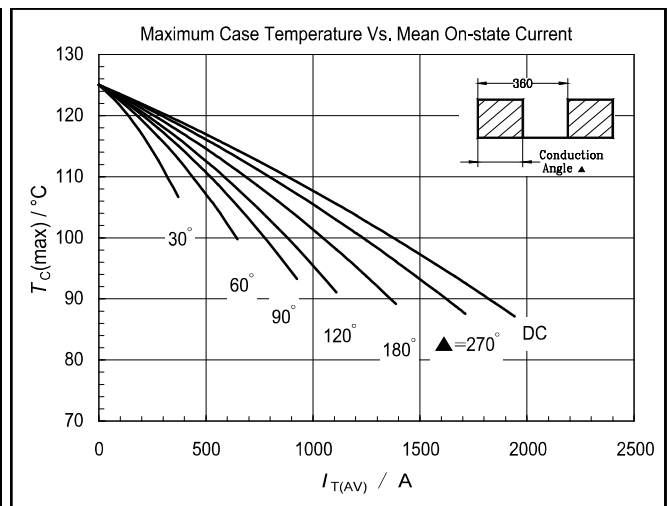


Fig6. Maximum Case Temperature Vs. Mean On-state Current

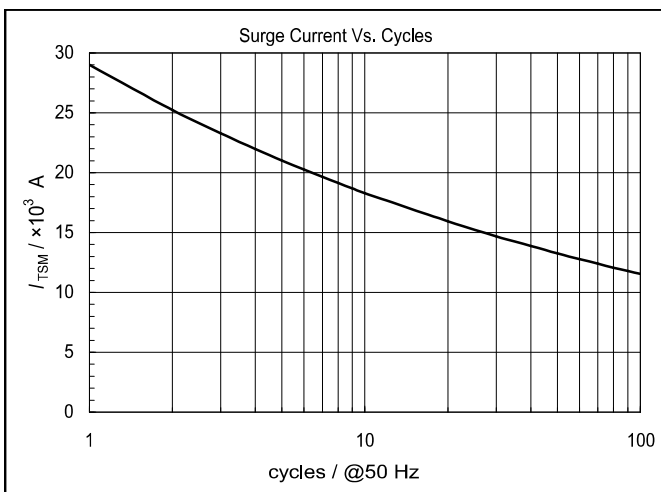


Fig7. Surge Current Vs. Cycles

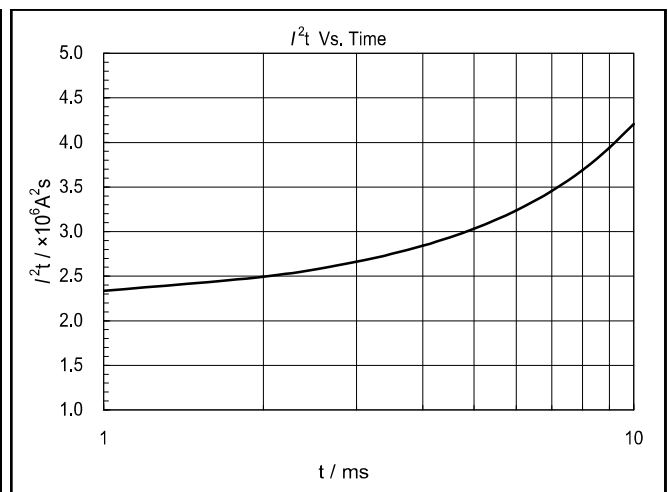


Fig8. I^2t Vs. Time

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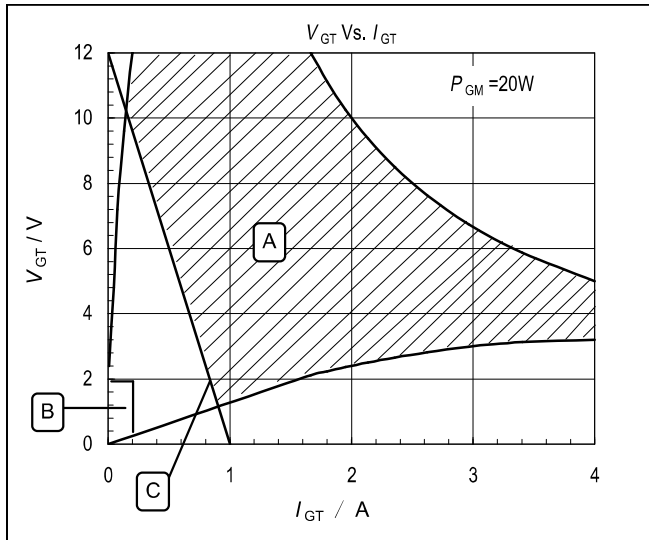


Fig9. V_{GT} Vs. I_{GT}

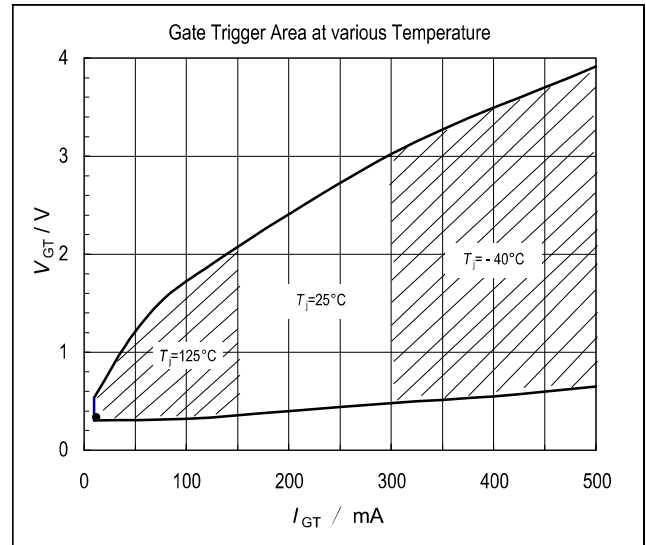
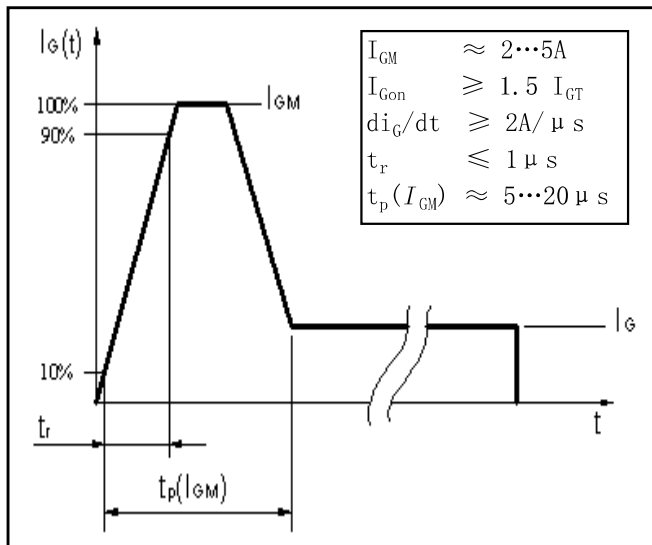


Fig10. Gate Trigger Area at various Temperature



A is Recommended Triggering Area.

B is Unreliable Triggering Area.

C is Recommended Gate Load Line.