

Provisional Data

# Anode Shorted Gate Turn-Off Thyristor Types G2000HF450

## Absolute Maximum Ratings

	VOLTAGE RATINGS	MAXIMUM LIMITS	UNITS
$V_{DRM}$	Repetitive peak off-state voltage, (note 1)	4500	V
$V_{RSM}$	Non-repetitive peak off-state voltage, (note 1)	4500	V
$V_{DC-link}$	Maximum continuous DC-link voltage	2800	V
$V_{RRM}$	Repetitive peak reverse voltage	18	V
$V_{RSM}$	Non-repetitive peak reverse voltage	18	V

	RATINGS	MAXIMUM LIMITS	UNITS
$I_{TGQ}$	Peak turn-off current, (note 2)	2000	A
$L_s$	Snubber loop inductance, $I_{TM}=I_{TGQ}$ , (note 2)	200	nH
$I_{T(AV)M}$	Mean on-state current, $T_{sink}=55^{\circ}C$ (note 3)	890	A
$I_{T(RMS)}$	Nominal RMS on-state current, $25^{\circ}C$ (note 3)	1765	A
$I_{TSM}$	Peak non-repetitive surge current $t_p=10ms$ , (Note 4)	13.7	kA
$I_{TSM2}$	Peak non-repetitive surge current $t_p=2ms$ , (Note 4)	24.0	kA
$I^2t$	$I^2t$ capacity for fusing $t_p=10ms$	$938 \times 10^3$	$A^2s$
$di/dt_{cr}$	Critical rate of rise of on-state current, (note 5)	500	$A/\mu s$
$P_{FGM}$	Peak forward gate power	120	W
$P_{RGM}$	Peak reverse gate power	12	kW
$I_{FGM}$	Peak forward gate current	60	A
$V_{RGM}$	Peak reverse gate voltage (note 6).	18	V
$T_{j op}$	Operating temperature range	-40 to +125	$^{\circ}C$
$T_{stg}$	Storage temperature range	-40 to +125	$^{\circ}C$

Notes:-

- 1)  $V_{GK}=-2Volts$ .
- 2)  $T_j=125^{\circ}C$ ,  $V_D=2800V$ ,  $V_{DM} \leq 4500V$   $di_{GQ}/dt=30A/\mu s$ ,  $I_{TGQ}=2000A$  and  $C_S=4\mu F$ .
- 3) Double-side cooled, single phase; 50Hz,  $180^{\circ}$  half-sinewave.
- 4)  $T_{j(initial)}=125^{\circ}C$ , single phase,  $180^{\circ}$  sinewave, re-applied voltage  $V_D=V_R \leq 10V$ .
- 5)  $I_T=2000A$  repetitive,  $I_{GM}=25A$ ,  $di_{GM}/dt=20A/\mu s$ . For  $di/dt > 500A/\mu s$  please consult the factory.
- 6) May exceed this value during turn-off avalanche period.

**Characteristics**

	Parameter	MIN	TYP	MAX	TEST CONDITIONS	UNITS
$V_{TM}$	Maximum peak on-state voltage	-	-	3.5	$I_G=5A, I_T=2000A$	V
$I_L$	Latching current	-	40	-	$T_j=25^\circ C$	A
$I_H$	Holding current.	-	40	-	$T_j=25^\circ C$	A
$dv/dt_{cr}$	Critical rate of rise of off-state voltage	1000	-	-	$V_D=3000V, V_{GR}=-2V$	V/ $\mu s$
$I_{DRM}$	Peak off state current	-	-	60	Rated $V_{DRM}, V_{GR}=-2V$	mA
$I_{RRM}$	Peak reverse current	-	-	20	$V_{RR}=18V$	mA
$I_{GKM}$	Peak negative gate leakage current	-	-	20	$V_{GR}=-18V$	mA
$V_{GT}$	Gate trigger voltage	-	1.0	-	$T_j=-40^\circ C$	V
		-	0.8	1.0	$T_j=25^\circ C, V_D=25V, R_L=25m\Omega$	V
		-	0.6	-	$T_j=125^\circ C$	V
$I_{GT}$	Gate trigger current	-	8	-	$T_j=-40^\circ C$	A
		-	-	5	$T_j=25^\circ C, V_D=25V, R_L=25m\Omega$	A
		0.05	-	1	$T_j=125^\circ C$	A
$t_d$	Delay time	-	1.5	3	$V_D=2800V, I_{TQG}=2000A, di_T/dt=200A/\mu s, I_{GM}=30A, di_G/dt=20A/\mu s, C_S=4\mu F, R_s=5\Omega$	$\mu s$
$t_{gt}$	Turn-on time	-	4.0	10		$\mu s$
$E_{on}$	Turn-on energy	-	-	1.3		J
$t_f$	Fall time	-	2	-	$V_{DM}=2800V, I_{TQG}=2000A, di_{GQ}/dt=30A/\mu s, V_{GR}=-16V, C_S=4\mu F$	$\mu s$
$t_s$	Storage time	-	-	25		$\mu s$
$t_{gq}$	Turn-off time	-	-	30		$\mu s$
$I_{GQM}$	Peak turn-off gate current	-	600	-		A
$Q_{GQ}$	Turn-off gate charge	-	7	-		mC
$t_{tail}$	Tail time	-	8.5	-		$\mu s$
$E_{off}$	Turn-off energy	-	-	7		J
$R_{thJK}$	Thermal resistance junction to sink	-	-	22		Double side cooled
		-	-	48	Cathode side cooled	K/kW
		-	-	42	Anode side cooled	K/kW
F	Mounting force	21	-	26	(see note 2)	kN
$W_t$	Weight	-	0.8	-		kg

Notes:-

- 1) Unless otherwise indicated  $T_j=125^\circ C$ .
- 2) For other clamping forces, consult factory.

**Curves**

Figure 1 - On-state characteristics of Limit device

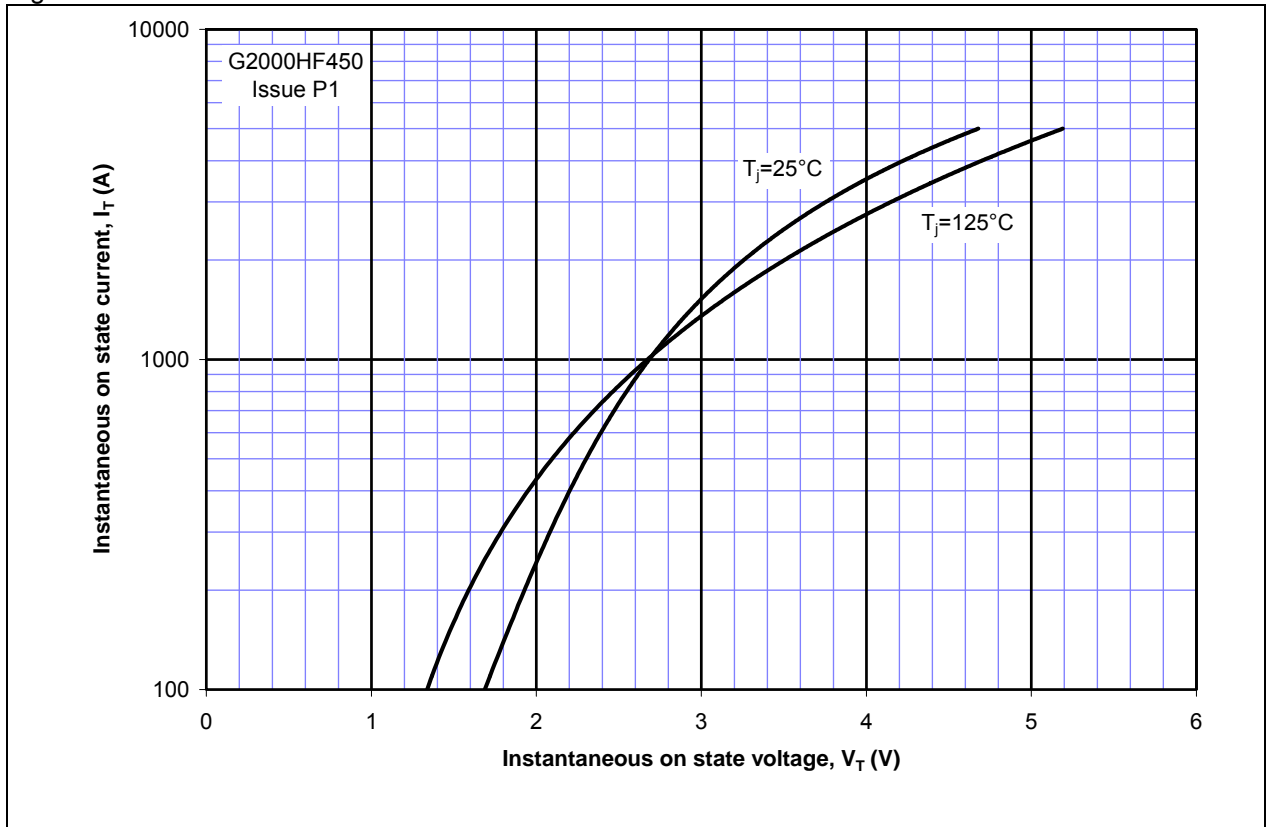


Figure 2 - Maximum surge and  $I^2t$  Ratings

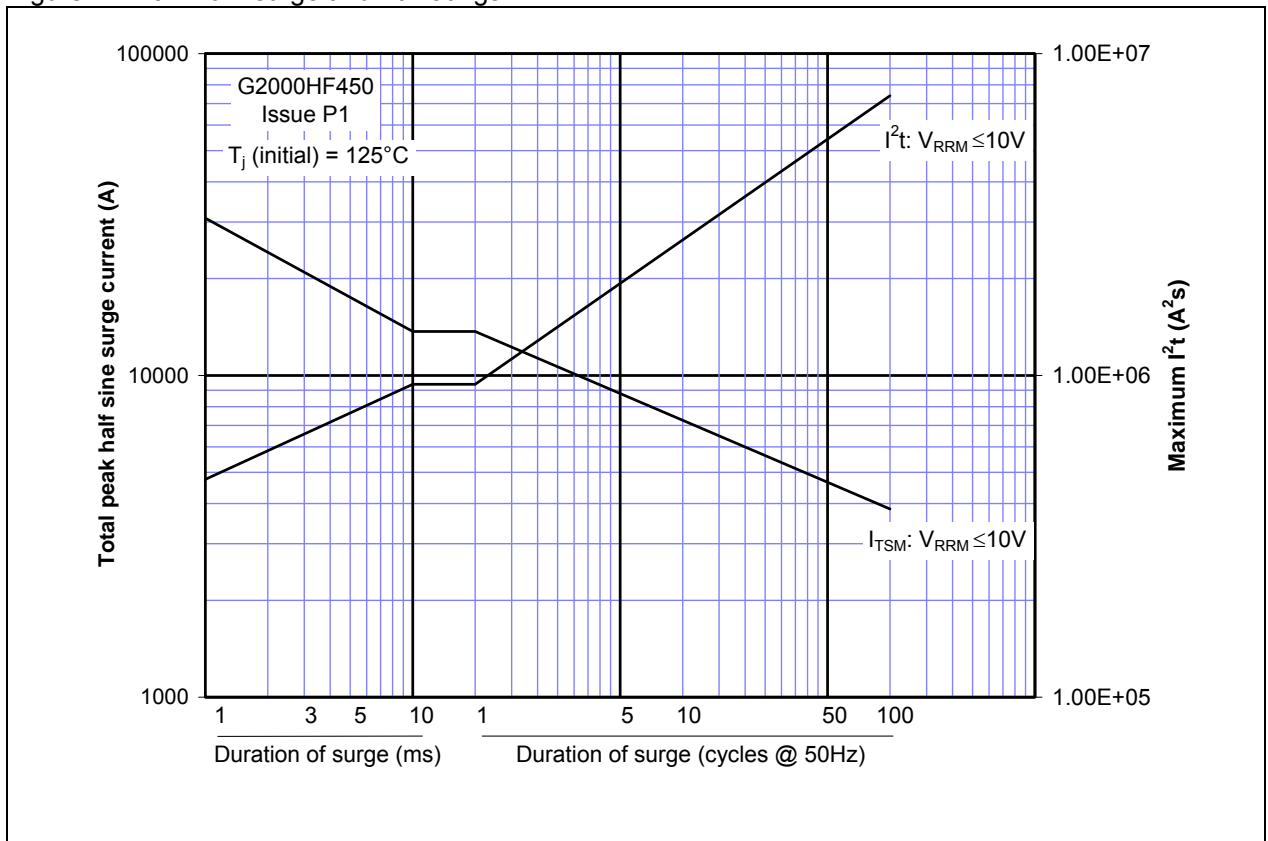
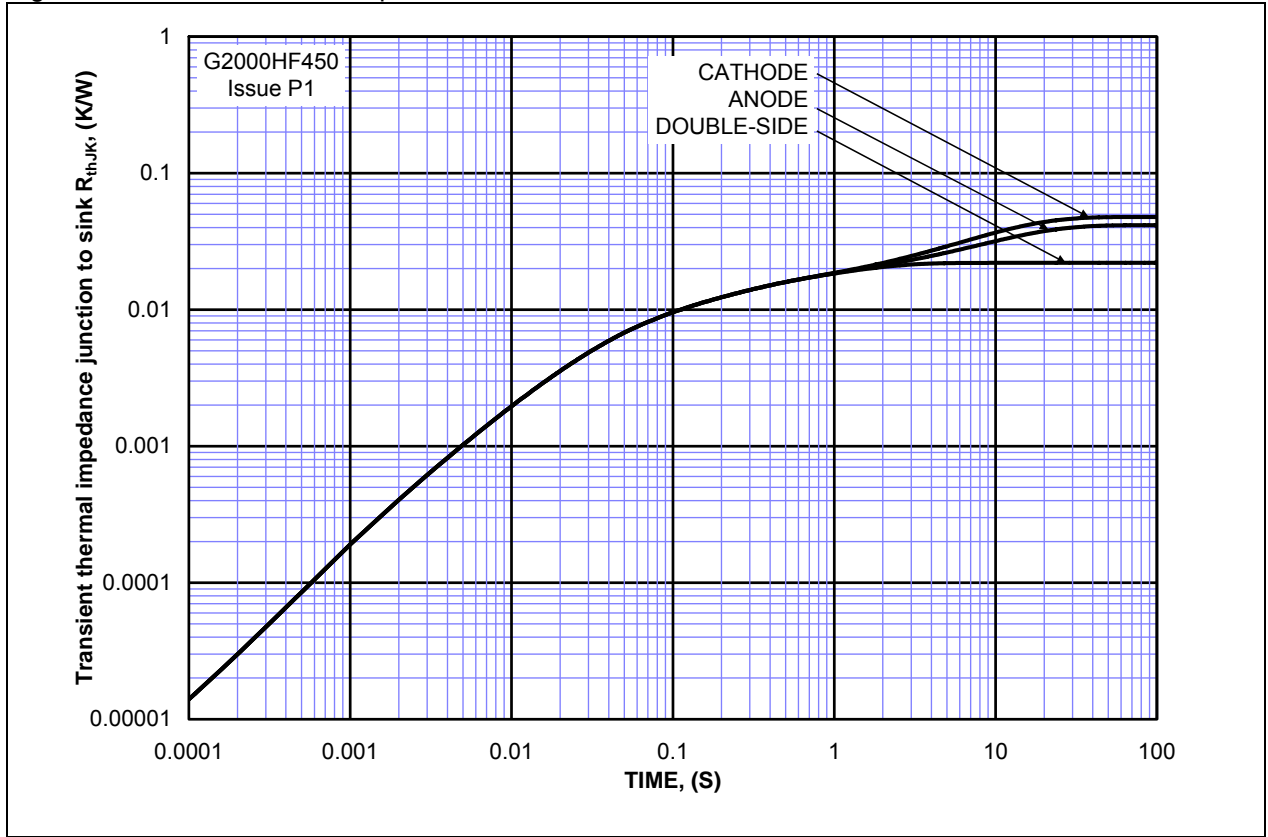
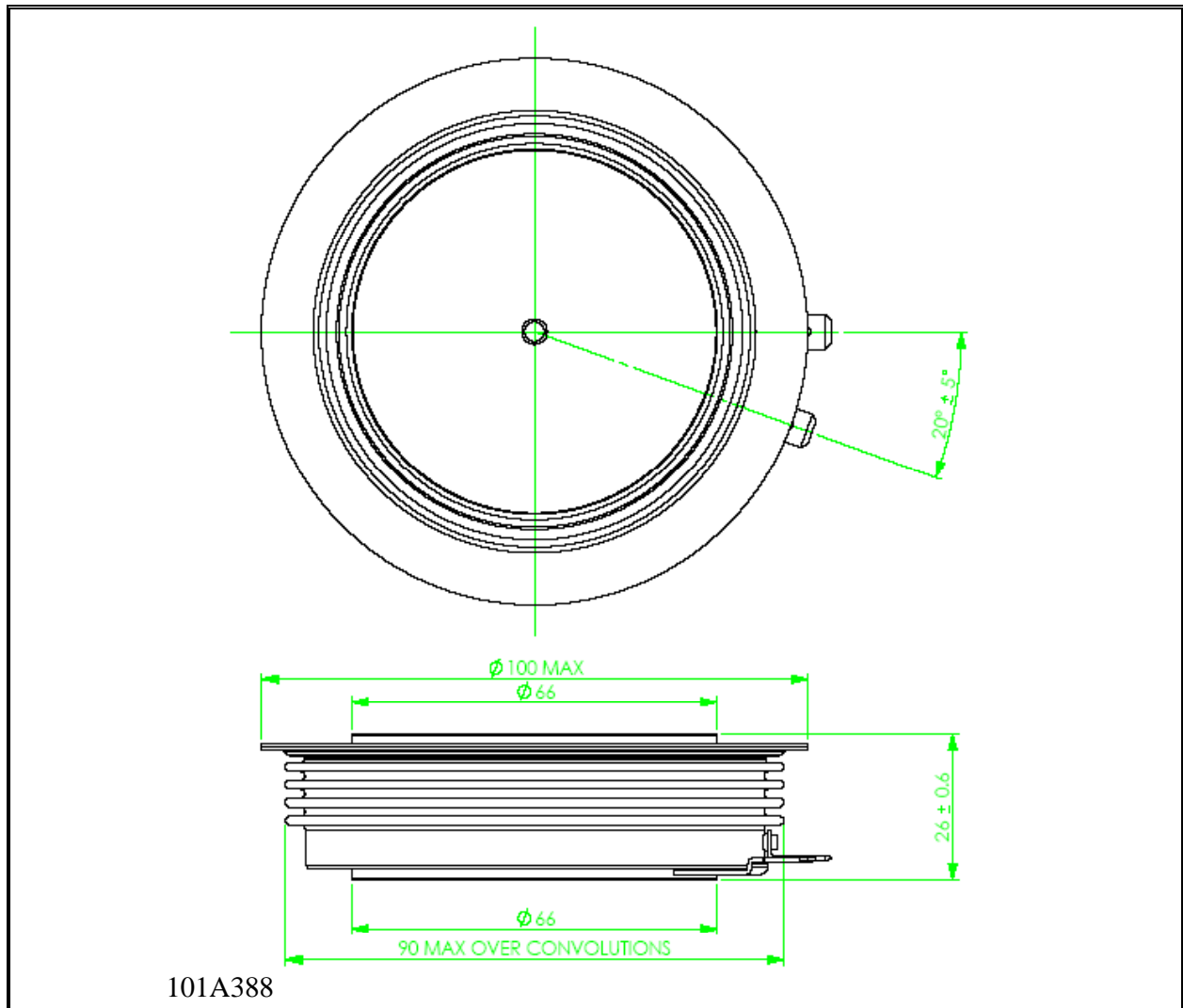


Figure 3 – Transient thermal impedance



**Outline Drawing & Ordering Information**



**ORDERING INFORMATION**

(Please quote 10 digit code as below)

<b>G2000</b>	<b>HF</b>	<b>45</b>	<b>0</b>
Fixed Type code	Outline code	Voltage code $V_{DRM}/100$	Fixed code

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