ChunZheng

高端电力电子器件和装置制造商

CSDGT304SE

门极可关断晶闸管

应 用

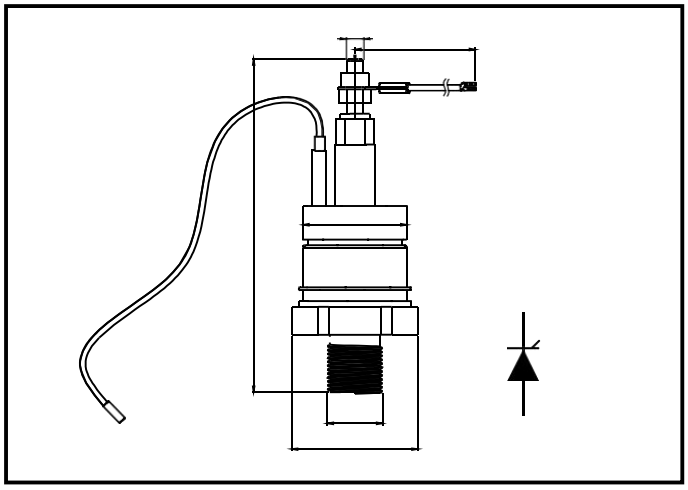
- 变速交流电机驱动逆变器(VSD-AC)
- 不间断电源
- 高电压转换器
- 斩波器
- 电焊机
- 感应加热
- DC / DC 转换器

关键参数

I_{TCM}	700A
V_{DRM}	1300V
$I_{T(AV)}$	250A
dV_D/dt	500V/μs
di_T/dt	500A/μs

特 性

- 双面散热
- 可靠性高
- 高压性能
- 无快熔故障保护
- 大浪涌电流性能
- 关断性能可减少设备尺寸和重量，环保低噪音



Outline type code: 03T
See Package Details for further information.

电压等级

型号	断态重复峰值电压 V_{DRM} V	反向重复峰值电压 V_{RRM} V	测试条件
CSDGT304SE	1300	1300	T_{vj} = 125℃, I_{DM} = 50mA, I_{RRM} = 50mA, V_{RG} = 2V

电流等级

符号	参数	测试条件	Max.	单位
I_{TCM}	Repetitive peak controllable on-state current	V_D = 60%V_{DRM}, T_j = 125°C, di_{GQ}/dt = 15A/μs, Cs = 2.0μF	700	A
$I_{T(AV)}$	Mean on-state current	T_{HS} = 80℃. Double side cooled. Half sine 50Hz.	250	A
$I_{T(RMS)}$	RMS on-state current	T_{HS} = 80℃. Double side cooled. Half sine 50Hz.	390	A

浪涌等级

符号	参数	测试条件	Max.	单位
I_{TSM}	Surge (non-repetitive) on-state current	10ms half sine. T_j = 125°C	4.0	kA
I^2t	I^2t for fusing	10ms half sine. T_j =125°C	80000	A^2s
di_T/dt	Critical rate of rise of on-state current	V_D = 60% V_{DRM}, I_T = 700A, T_j = 125℃, I_{FG} > 20A, Rise time < 1.0μs	500	A/μs
dV_D/dt	Rate of rise of off-state voltage	To 80% V_{DRM}; $R_{GK} \leq 1.5\Omega$, T_j = 125℃	500	V/μs

门极等级

符号	参数	测试条件	Min.	Max.	单位
V_{RGM}	Peak reverse gate voltage	This value maybe exceeded during turn-off	-	16	V
I_{FGM}	Peak forward gate current		-	50	A
$P_{FG(AV)}$	Average forward gate power		-	10	W
P_{RGM}	Peak reverse gate power		-	6	kW
di_{GQ}/dt	Rate of rise of reverse gate current		10	50	A/μs
$t_{ON(min)}$	Minimum permissable on time		20	-	μs
$t_{OFF(min)}$	Minimum permissable off time		40	-	μs

热学参数

符号	参数	测试条件		Min.	Max.	单位
$R_{th(j-hs)}$	DC thermal resistance - junction to heatsink surface	Double side cooled		-	0.075	°C/W
		Anode side cooled		-	0.12	°C/W
		Cathode side cooled		-	0.20	°C/W
$R_{th(c-hs)}$	Contact thermal resistance	Clamping force 5.5kN With mounting compound	per contact	-	0.018	°C/W
T_{vj}	Virtual junction temperature			-	125	°C
T_{OP}/T_{stg}	Operating junction/storage temperature range			-40	125	°C
-	Clamping force			5.0	6.0	kN

特 性

T_j = 125 °C unless stated otherwise

符号	参数	测试条件	Min.	Max.	单位
V_{TM}	On-state voltage	At 600A peak, $I_{G(ON)}$ = 2A d.c.	-	2.2	V
I_{DM}	Peak off-state current	At = V_{DRM}, V_{RG} = 2V	-	25	mA
I_{RRM}	Peak reverse current	At V_{RRM}	-	50	mA
V_{GT}	Gate trigger voltage	V_D = 24V, I_T = 100A, T_j = 25°C	-	0.9	V
I_{GT}	Gate trigger current	V_D = 24V, I_T = 100A, T_j = 25°C	-	1.0	A
I_{RGM}	Reverse gate cathode current	V_{RGM} = 16V, No gate/cathode resistor	-	50	mA
E_{ON}	Turn-on energy	V_D = 900V, I_T = 600A, dI_T/dt = 300A/μs I_{FG} = 20A, rise time < 1.0μs R_L = (Residual inductance 3μH)	-	130	mJ
t_d	Delay time		-	1.5	μs
t_r	Rise time		-	3.0	μs
E_{OFF}	Turn-off energy	I_T =600A, V_{DM} = 750V Snubber Cap Cs = 1.5μF, di_{GQ}/dt = 15A/μs R_L = (Residual inductance 3μH)	-	350	mJ
t_{tail}	Tail time		-	10	μs
t_{gs}	Storage time		-	11	μs
t_{gf}	Fall time		-	0.9	μs
t_{gq}	Gate controlled turn-off time		-	11.9	μs
Q_{GQ}	Turn-off gate charge		-	700	μC
Q_{GQT}	Total turn-off gate charge		-	1400	μC

曲 线

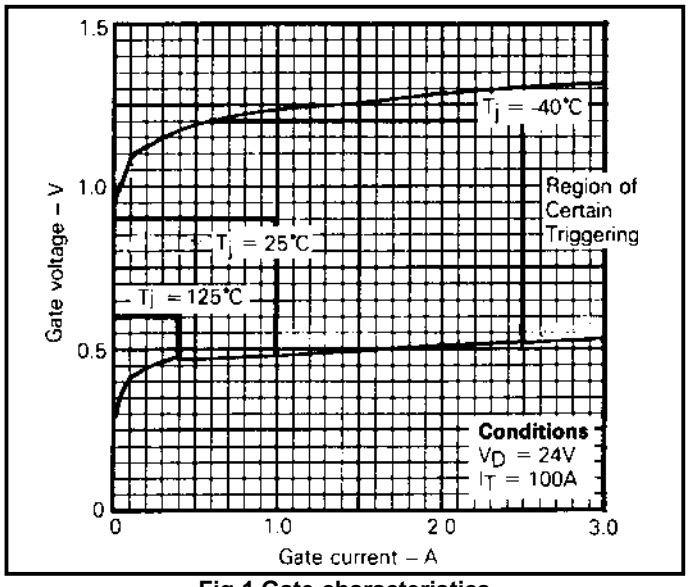


Fig.1 Gate characteristics

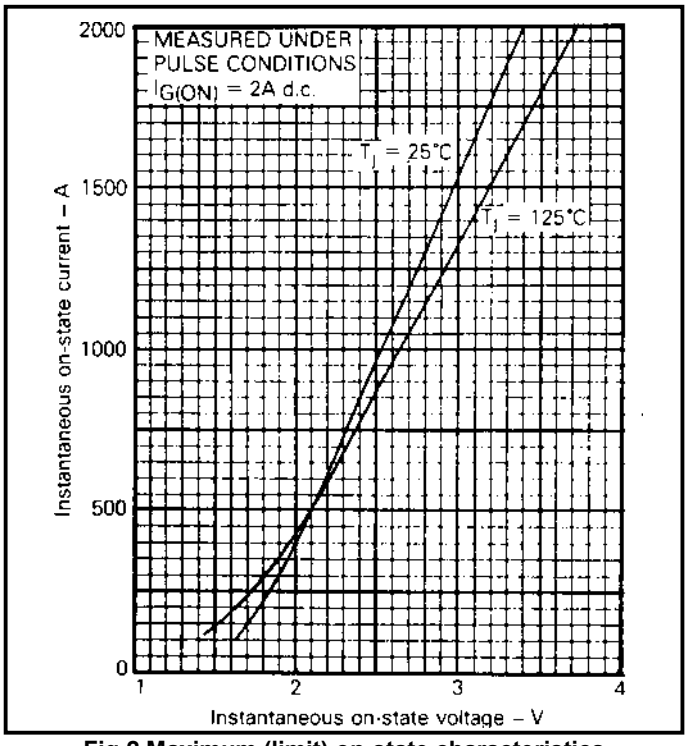


Fig.2 Maximum (limit) on-state characteristics

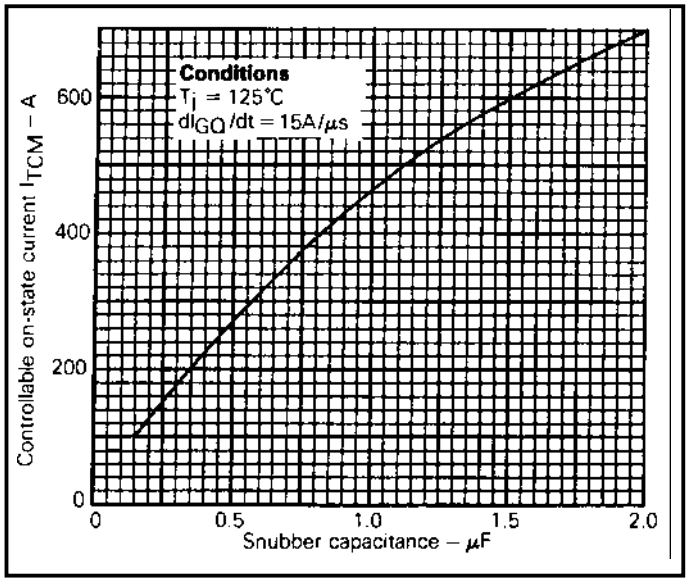


Fig.3 Dependence of I_{TCM} on C_S

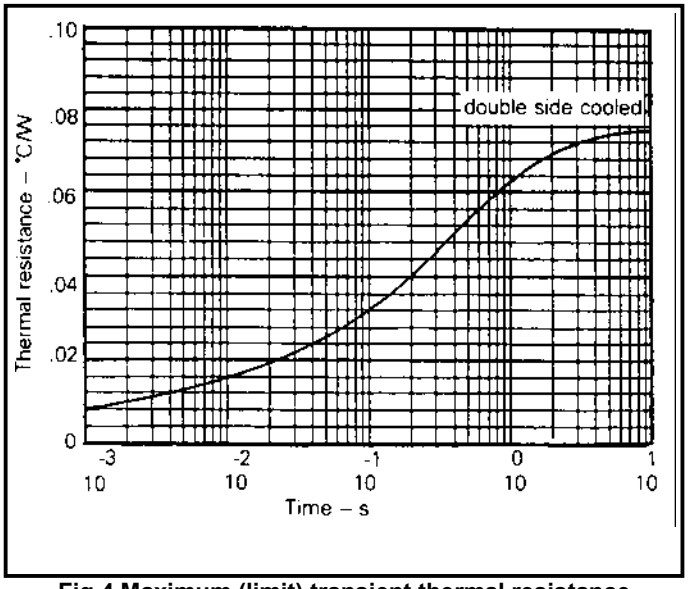


Fig.4 Maximum (limit) transient thermal resistance

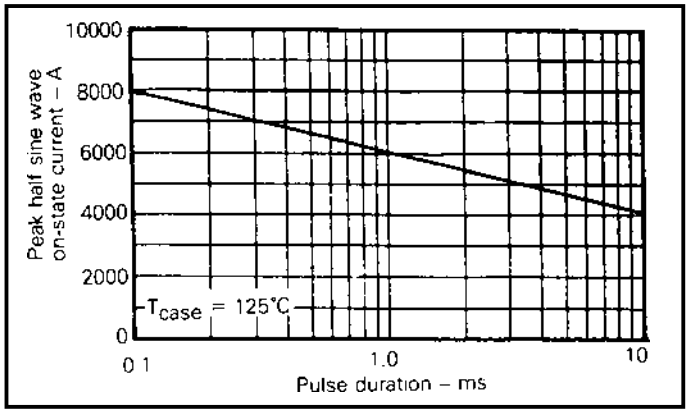


Fig.5 Surge (non-repetitive) on-state current vs time

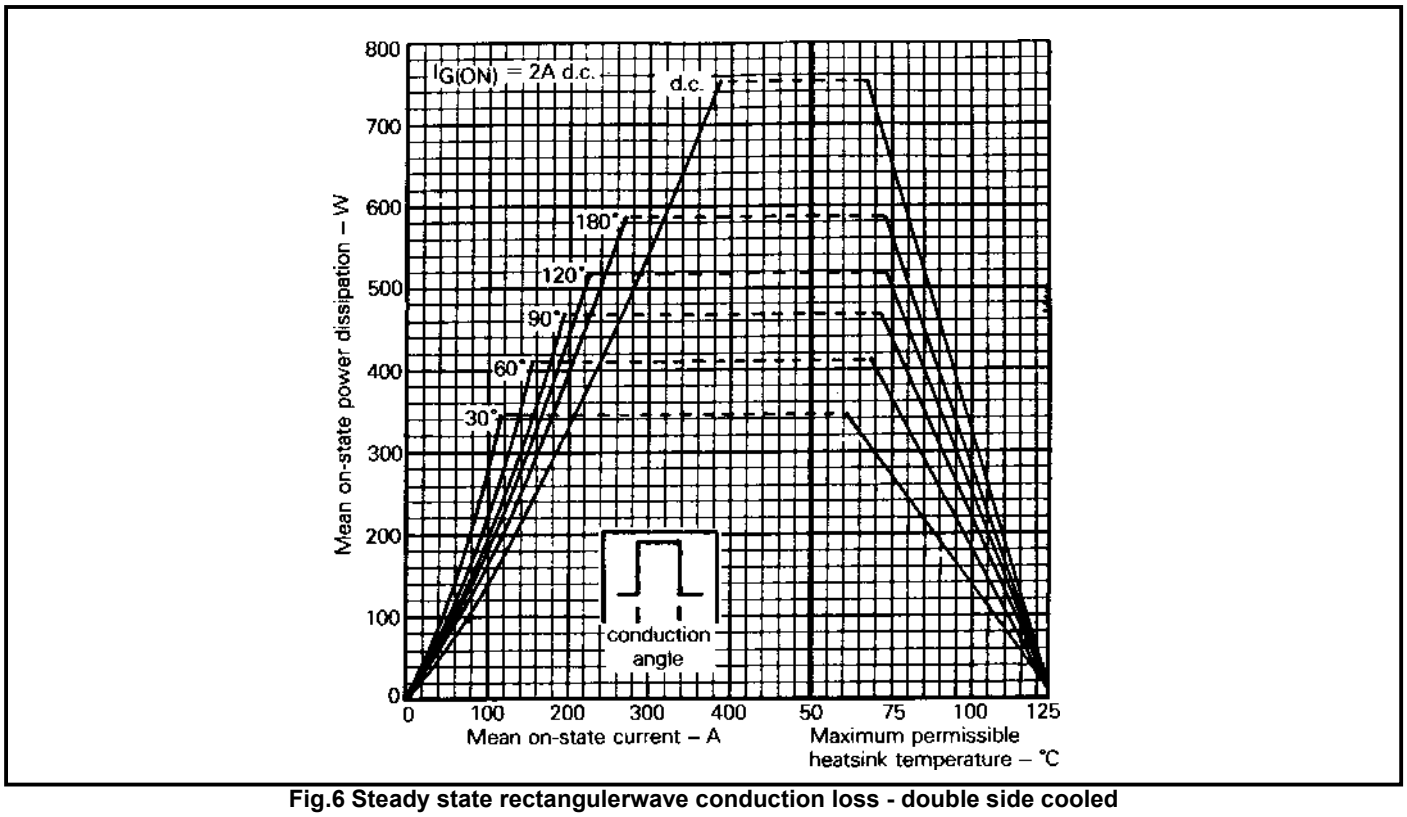


Fig.6 Steady state rectangularwave conduction loss - double side cooled

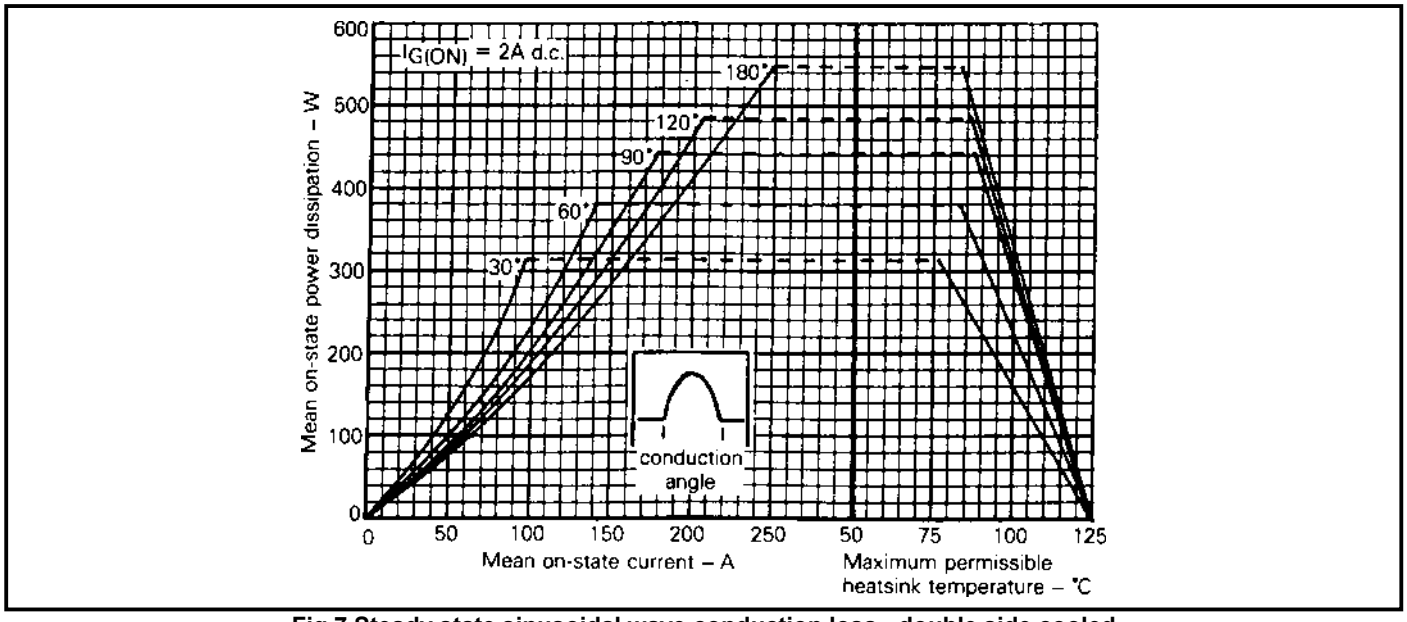


Fig.7 Steady state sinusoidal wave conduction loss - double side cooled

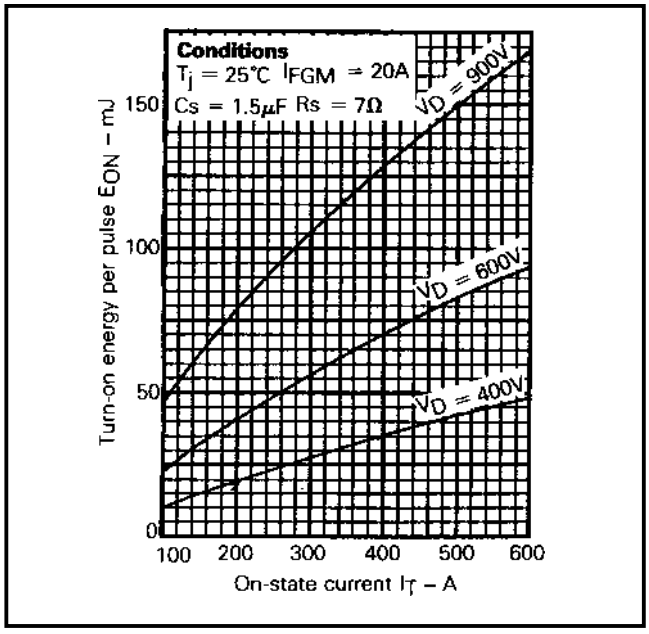


Fig.8 Turn-on energy vs on-state current

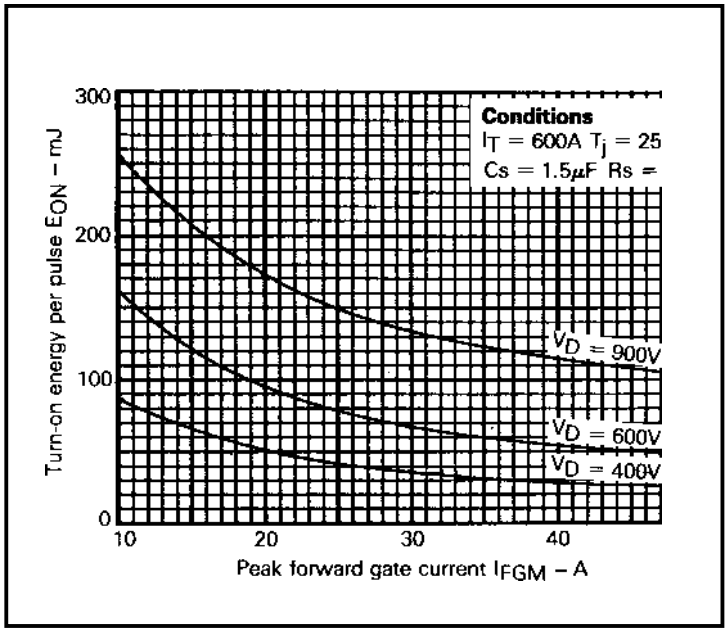


Fig.9 Turn-on energy vs peak forward gate current

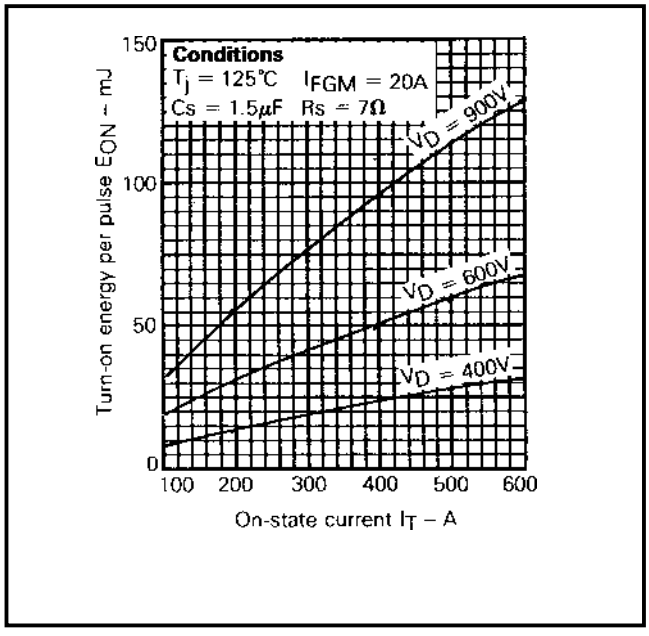


Fig.10 Turn-on energy vs on-state current

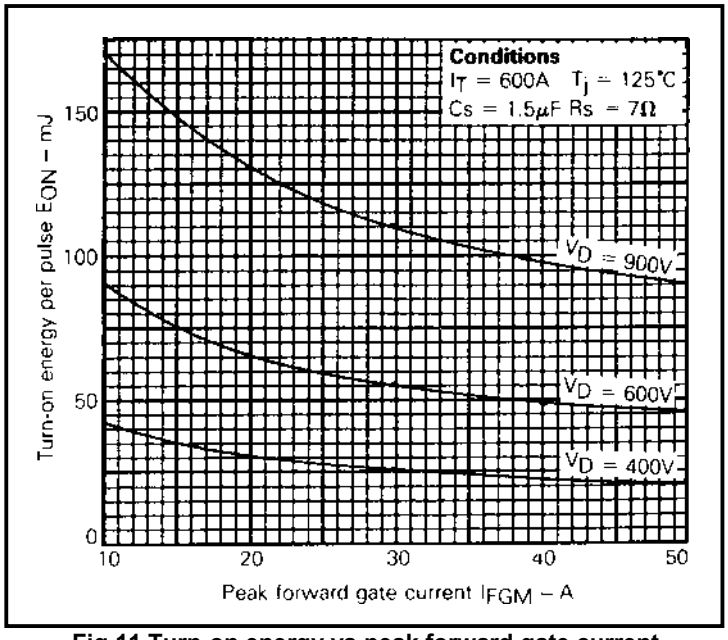


Fig.11 Turn-on energy vs peak forward gate current

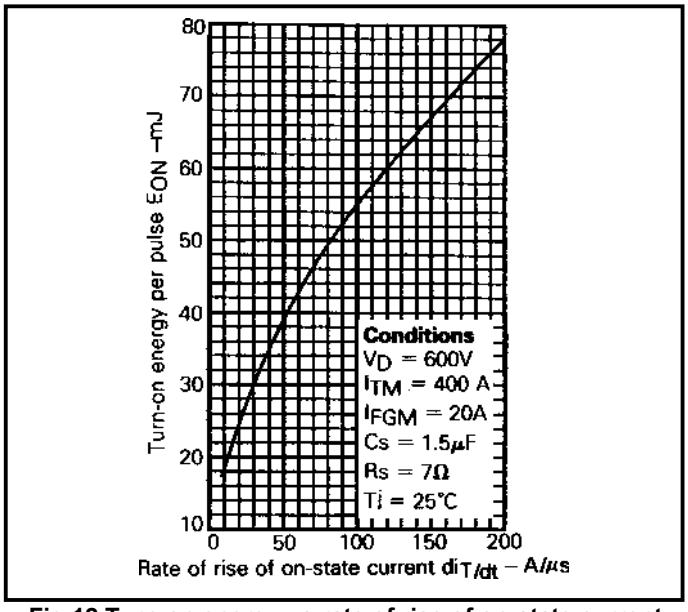


Fig.12 Turn-on energy vs rate of rise of on-state current

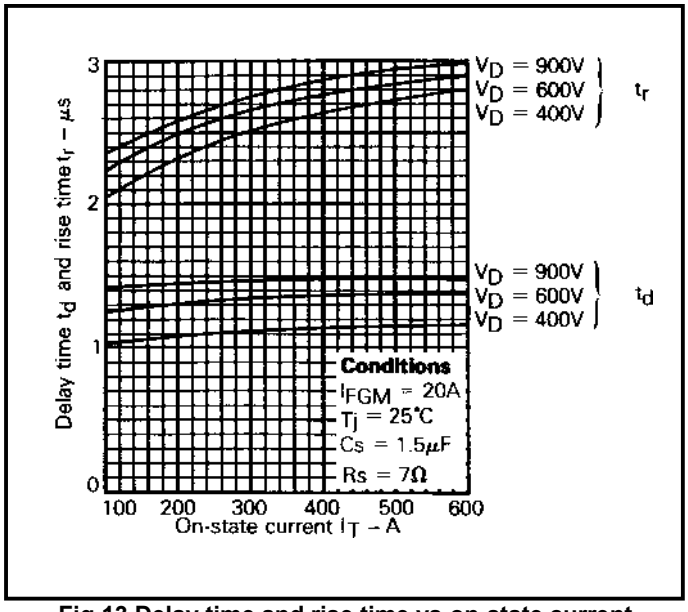


Fig.13 Delay time and rise time vs on-state current

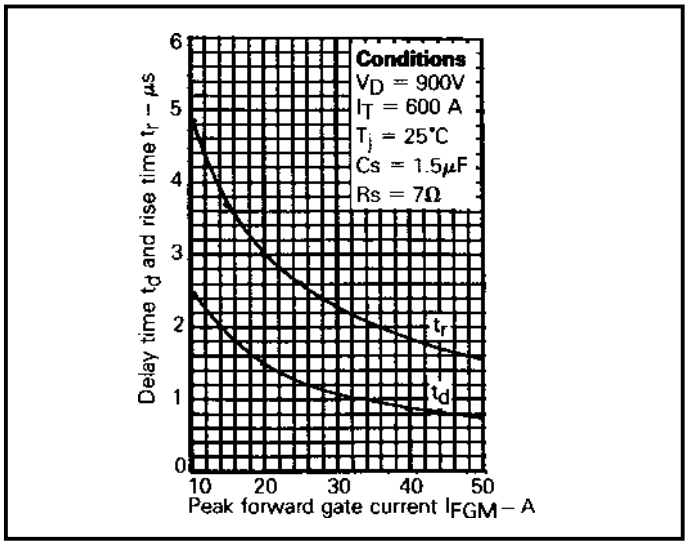


Fig.14 Delay time and rise time vs peak forward gate current

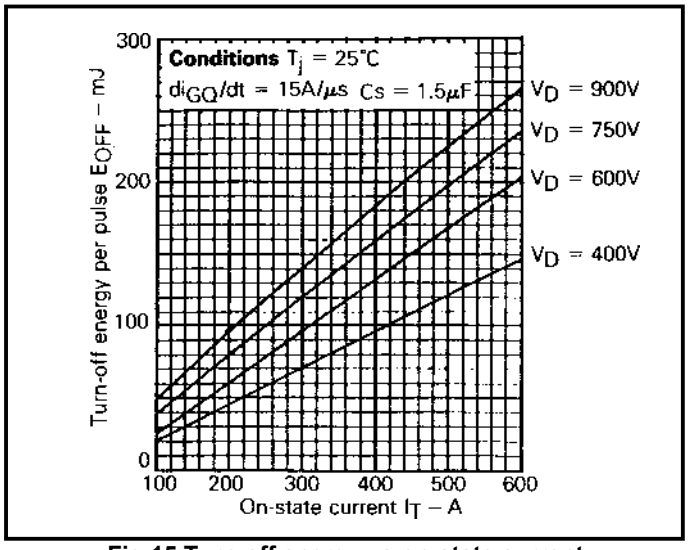


Fig.15 Turn-off energy vs on-state current

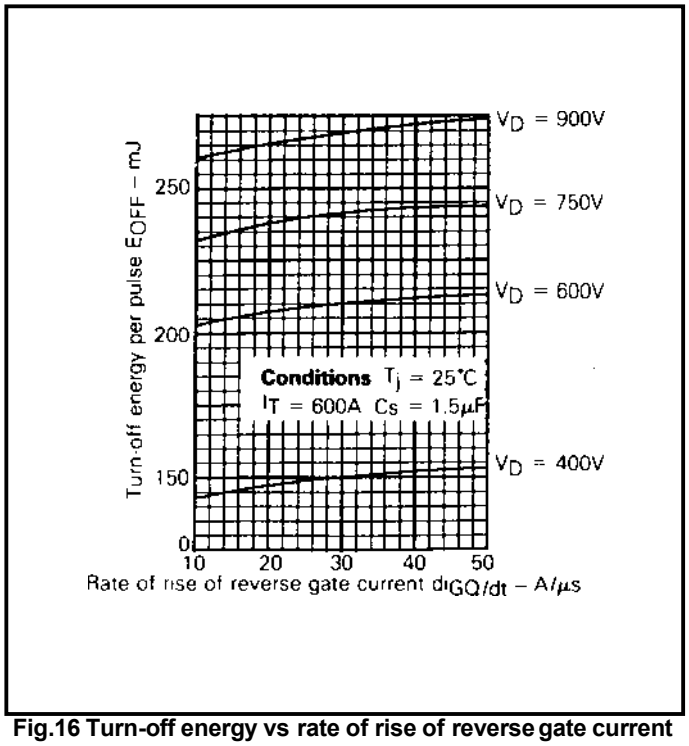


Fig.16 Turn-off energy vs rate of rise of reverse gate current

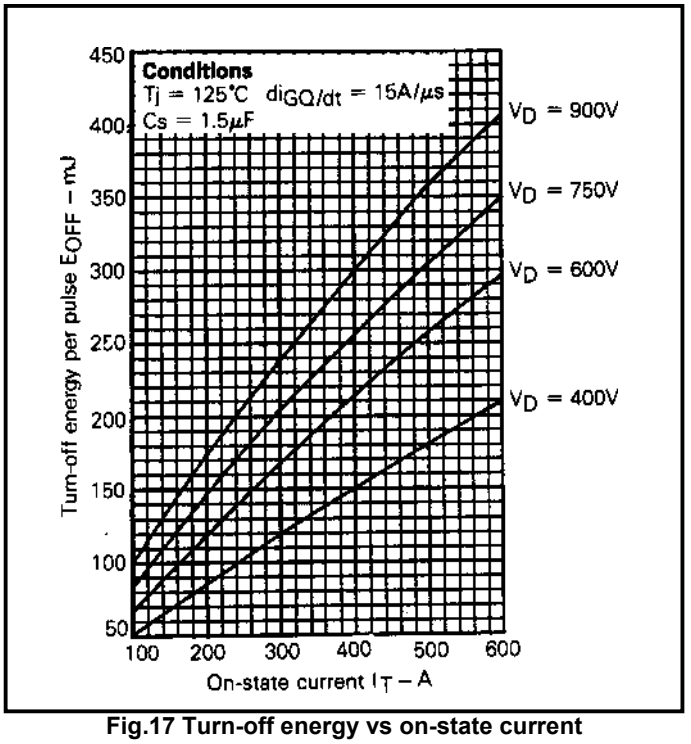


Fig.17 Turn-off energy vs on-state current

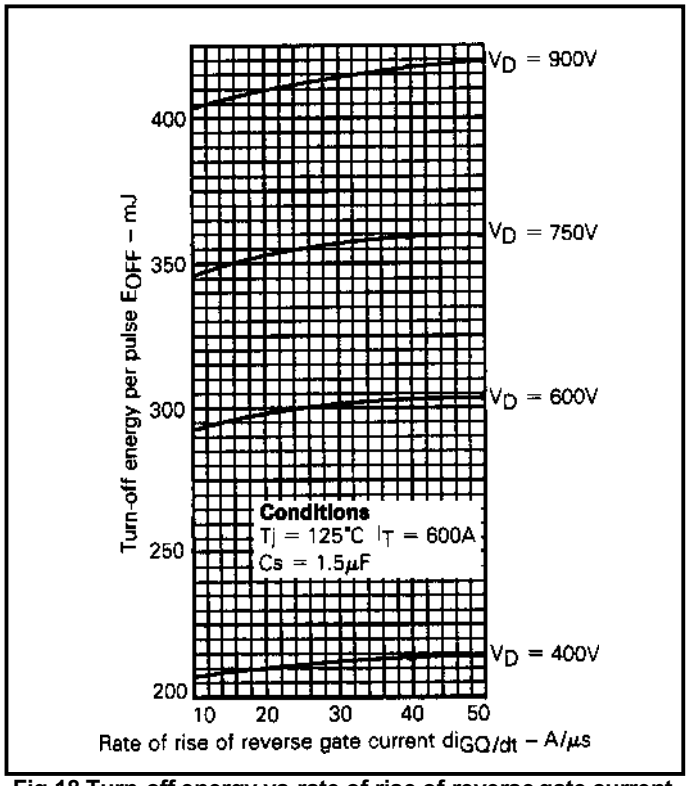


Fig.18 Turn-off energy vs rate of rise of reverse gate current

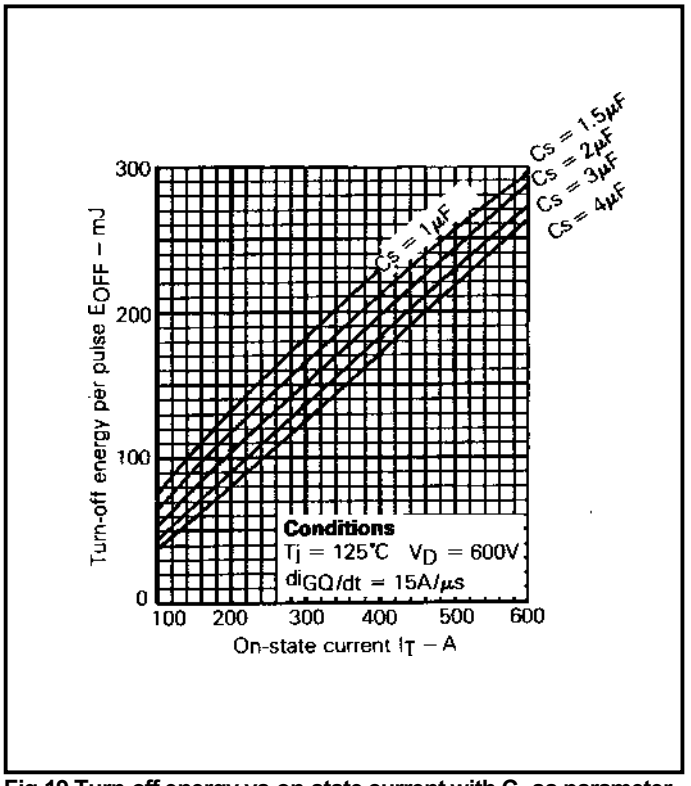


Fig.19 Turn-off energy vs on-state current with C_S as parameter

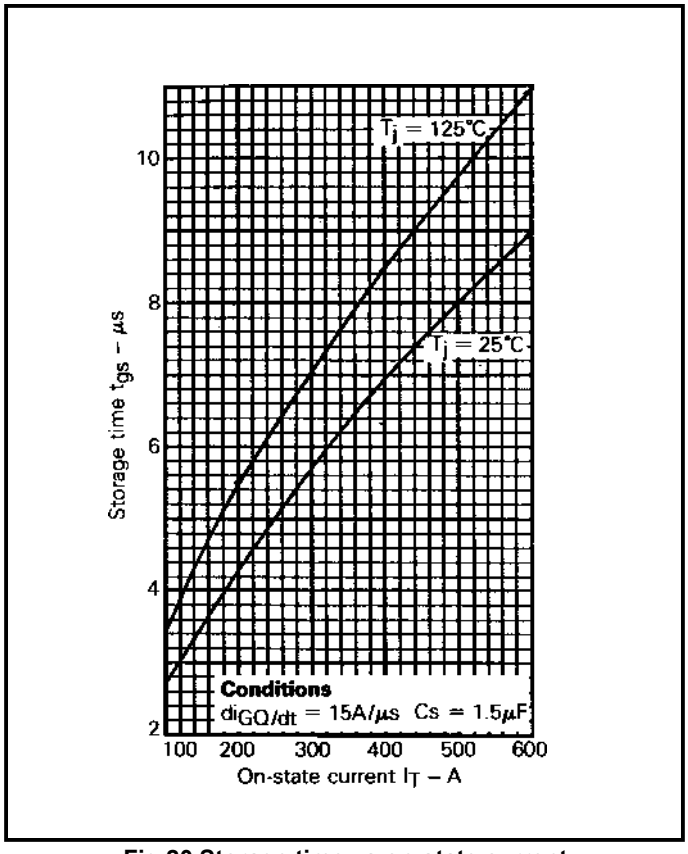


Fig.20 Storage time vs on-state current

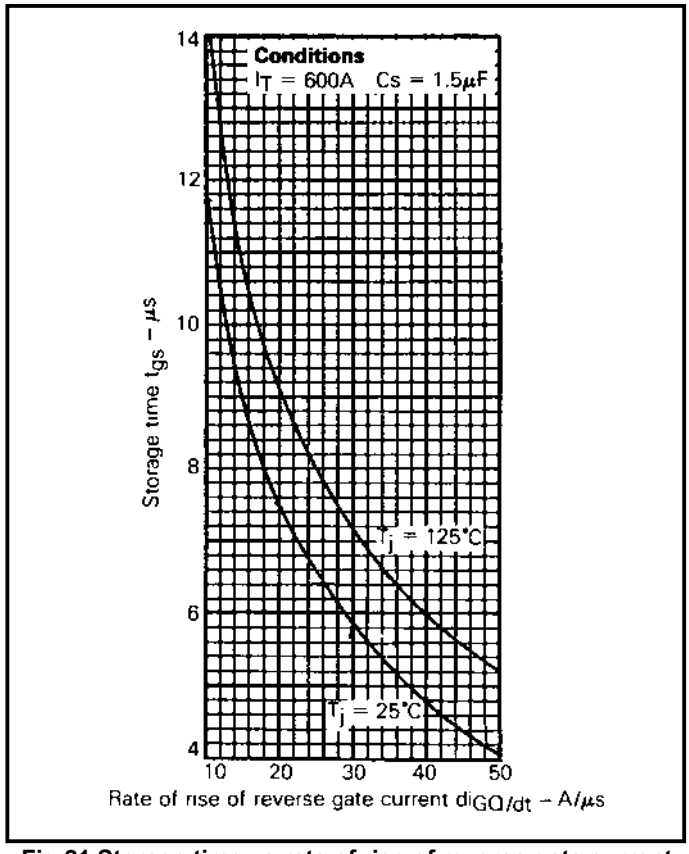


Fig.21 Storage time vs rate of rise of reverse gate current

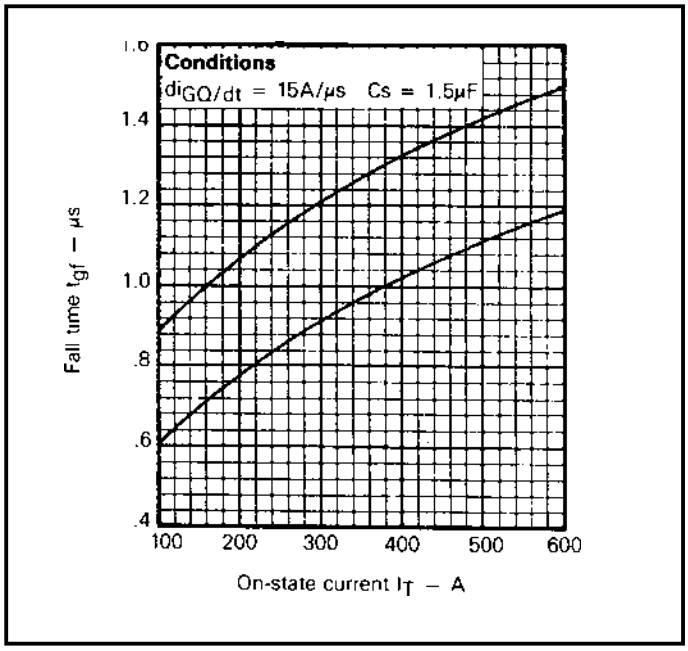


Fig.22 Fall time vs on-state current

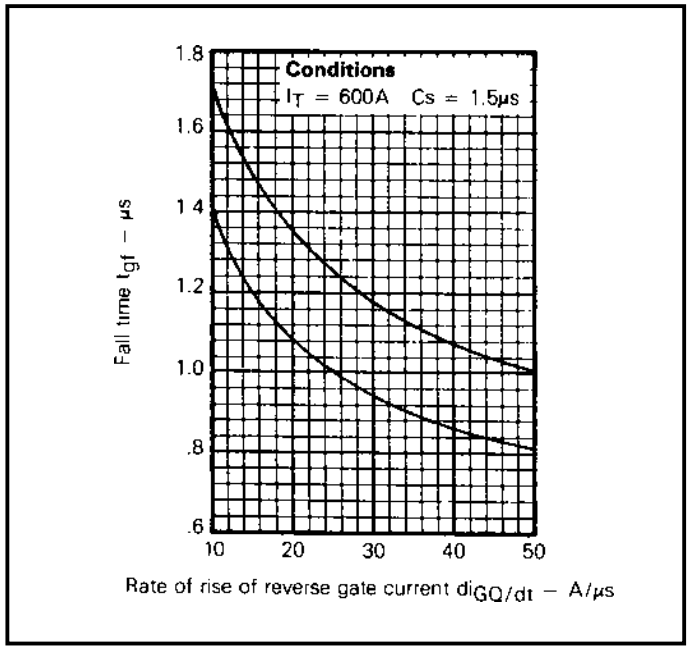


Fig.23 Fall time vs rate of rise of reverse gate current

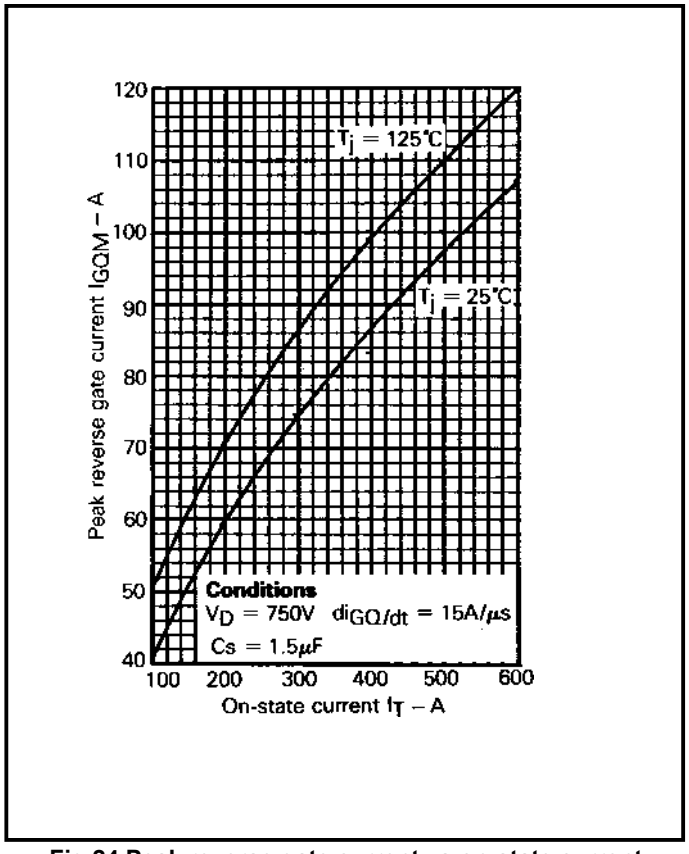


Fig.24 Peak reverse gate current vs on-state current

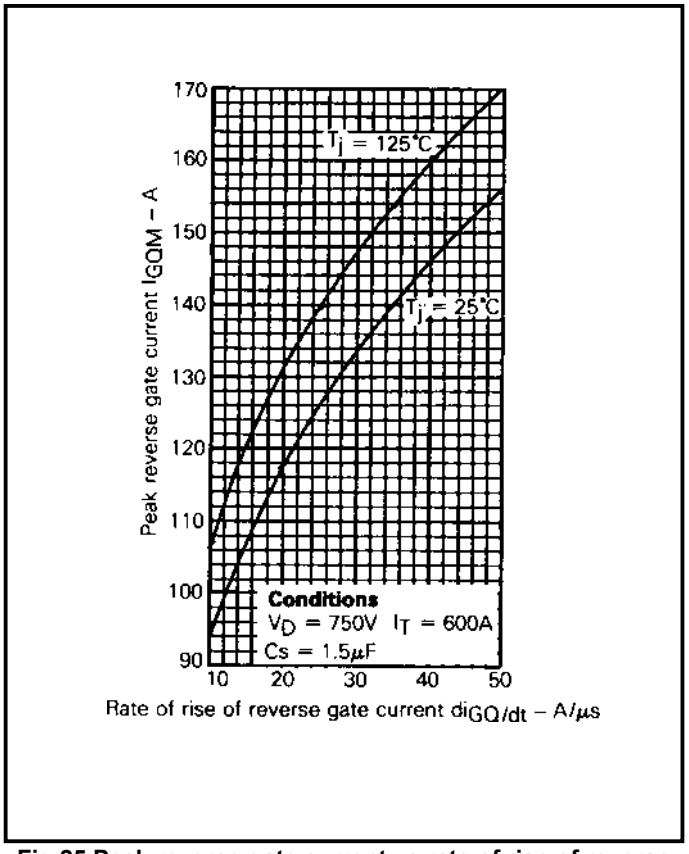


Fig.25 Peak reverse gate current vs rate of rise of reverse gate current

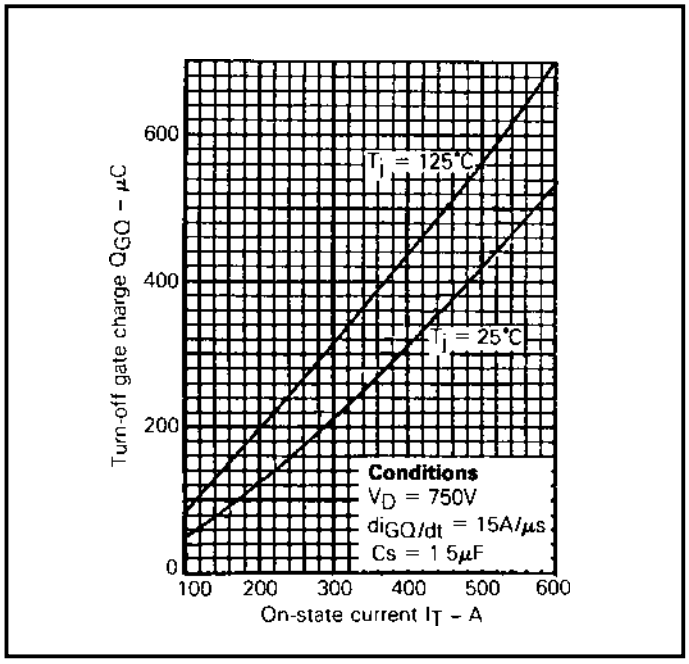


Fig.26 Turn-off gate charge vs on-state current

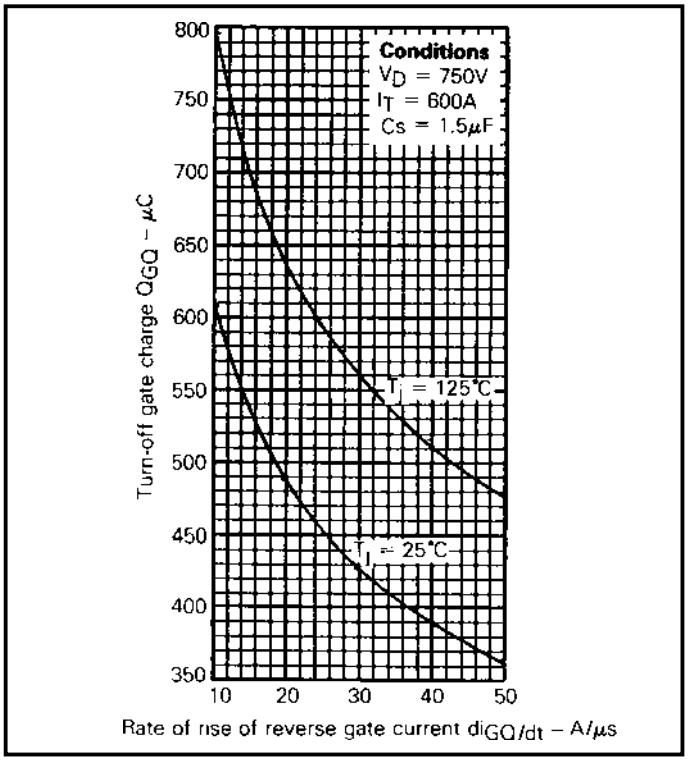


Fig.27 Turn-off gate charge vs rate of rise of reverse gate current

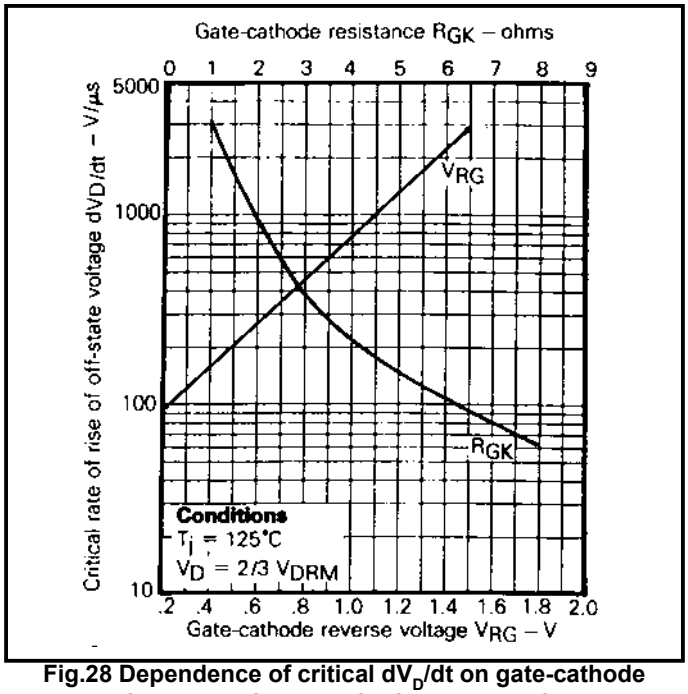


Fig.28 Dependence of critical dV_D/dt on gate-cathode resistance and gate-cathode reverse voltage

Snubber Capacitor Cs (μF)	Snubber Resistor Rs (Ω)	Minimum Reset Time (μs)
2	7	35
	5	30
1.5	7	26
	5	22
1	7	17
	5	15

Table of snubber discharge time variation with snubber capacitor value.

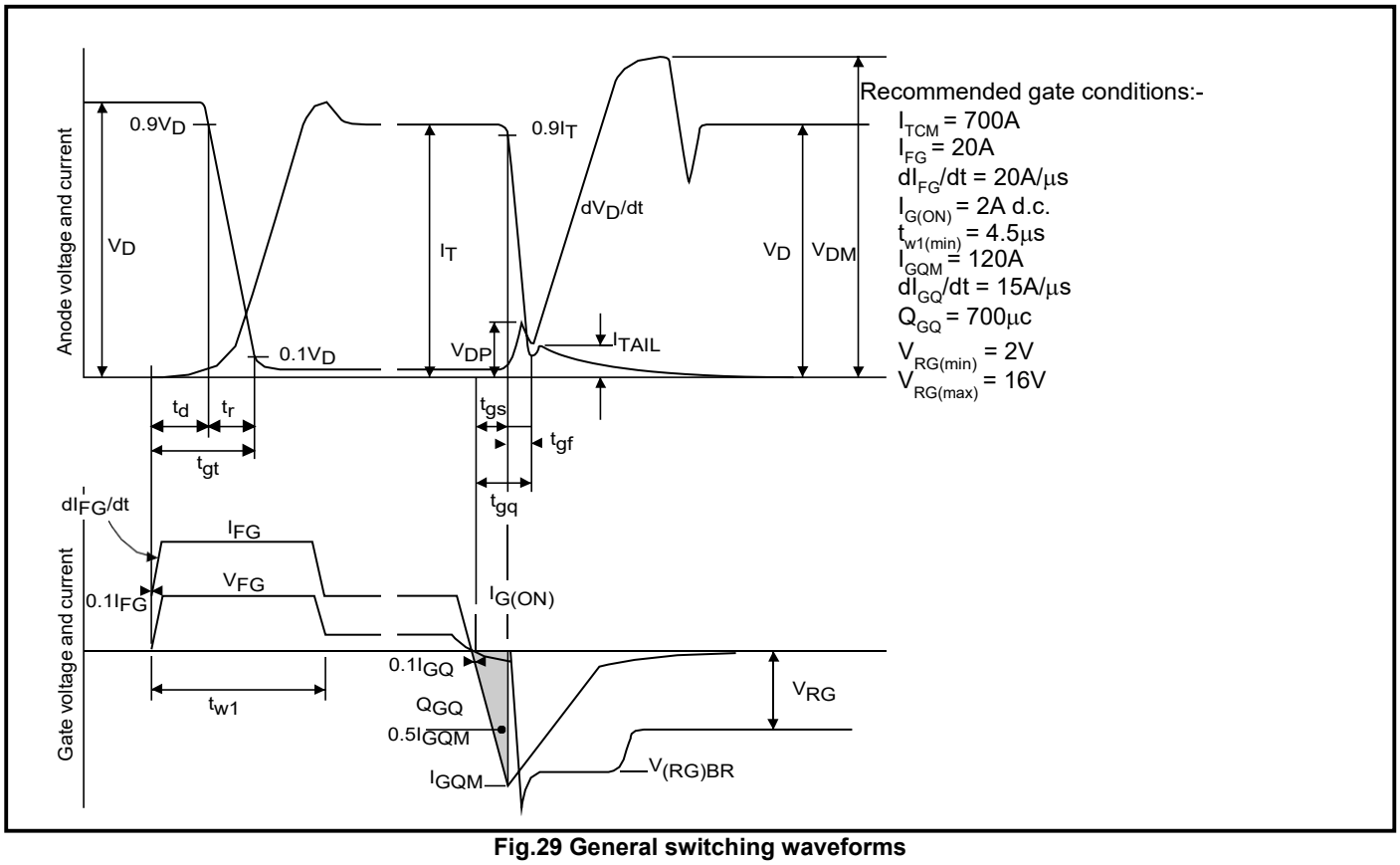
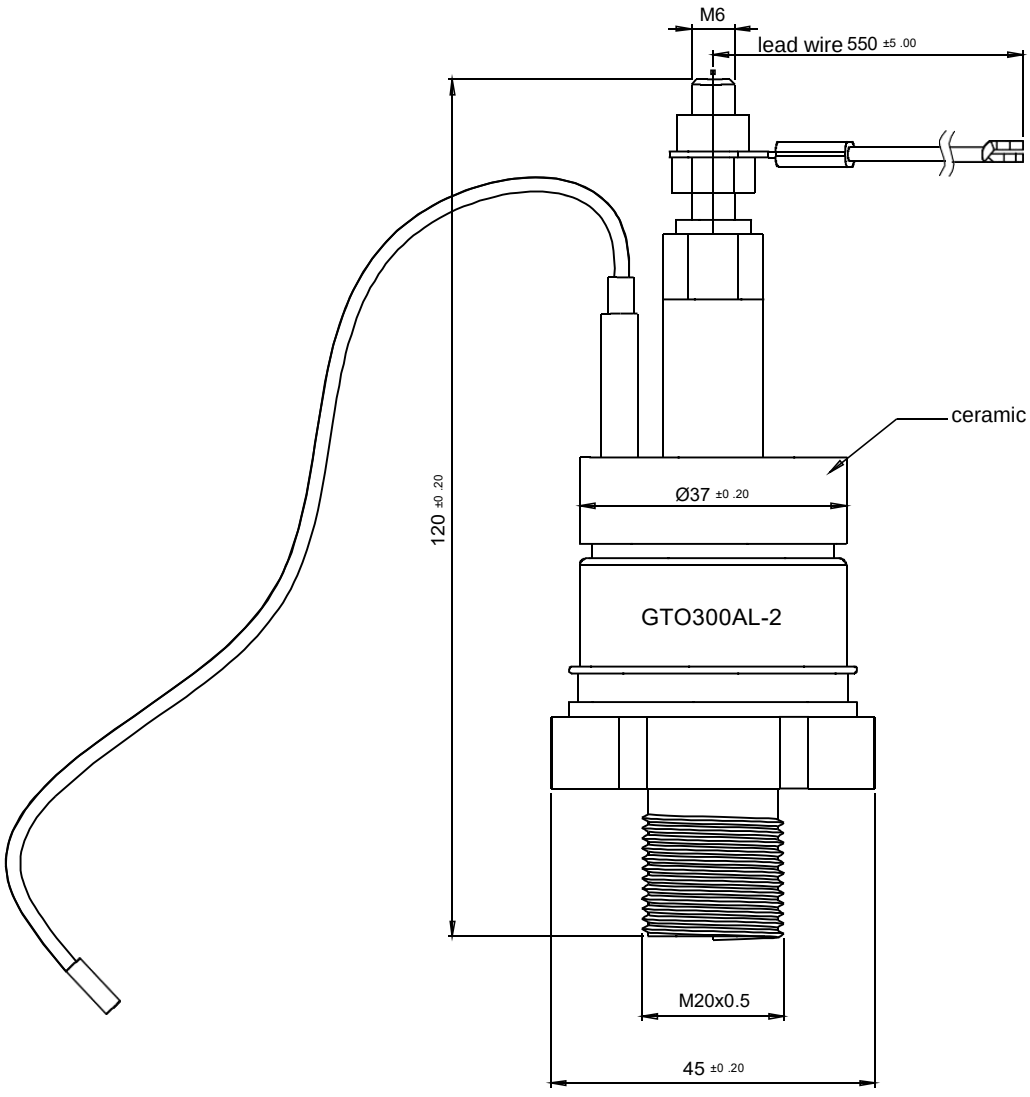


Fig.29 General switching waveforms

产品外形尺寸

For further package information, please contact Customer Services. All dimensions in mm, unless stated otherwise. DO NOT SCALE.



Package outline type code: 03T

