SPECIFICATION

Device Name : Power MOSFET .

Type Name : 2SK3271-01 .

Spec. No. : .

	DATE	NAME	APPROVED
DRAWN	Sep. - 8 - '98		
CHECKED			

Fuji Electric Co.,Ltd.

DWG.NO.

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H04-004-05

1.Scope This specifies Fuji Power MOSFET 2SK3271-01

2.Construction N-Channel enhancement mode power MOSFET

3.Applications for Switching

4.Outview TO-3P Outview See to 5/13 page

5.Absolute Maximum Ratings at Tc=25℃ (unless otherwise specified)

Description	Symbol	Characteristics	Unit	Remarks
Drain-Source Voltage	V_{DS}	60	V	
	V_{DSX}	30	V	V_{GS}=-30V
Continuous Drain Current	I_D	±100	A	
Pulsed Drain Current	I_{DP}	±400	A	
Gate-Source Voltage	V_{GS}	±30	V	
Maximum Avalanche Energy	E_{AV}	490.4	mJ	*1
Maximum Power Dissipation	P_D	155	W	
Operating and Storage	T_{ch}	150	℃	
Temperature range	T_{stg}	-55 to +150	℃	

*1 L=65.4uH,Vcc=24V

6.Electrical Characteristics at Tc=25℃ (unless otherwise specified)

Static Ratings

Description	Symbol	Conditions		min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=1mA VGS=0V		60	-	-	V
	BV_{DSX}	I_D=1mA V_{GS}=-30V		30	-	-	V
Gate Threshold Voltage	V_{GS}(th)	I_D=10mA V_{DS}=V_{GS}		2.5	3.0	3.5	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V V_{GS}=0V	T_{ch}=25℃	-	1.0	100	μA
			T_{ch}=125℃	-	10	500	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±30V V_{DS}=0V		-	10	100	nA
Drain-Source On-State Resistance	R_{DS}(on)	I_D=50A V_{GS}=10V		-	5.0	6.5	mΩ

Dynamic Ratings

Description	Symbol	Conditions	min.	typ.	max.	Unit
Forward Transconductance	g_{fs}	I_D=50A V_{DS}=10V	25	50	-	S
Input Capacitance	Ciss	V_{DS}=25V	-	9000	-	pF
Output Capacitance	Coss	V_{GS}=0V	-	1250	-	pF
Reverse Transfer Capacitance	Crss	f=1MHz	-	700	-	pF
Turn-On Time	td(on)	V_{cc}=30V	-	50	-	ns
	tr	V_{GS}=10V	-	200	-	ns
Turn-Off Time	td(off)	I_D=100A	-	150	-	ns
	tf	R_G=10Ω	-	135	-	ns

Reverse Diode

Description	Symbol	Conditions	min.	typ.	max.	Unit
Avalanche Capability	I_{AV}	L=100μH Tch=25℃ See Fig.1 and Fig.2	100	-	-	A
Diode Forward On-Voltage	V_{SD}	I_F=100A V_{GS}=0V T_{ch}=25℃	-	1.0	1.5	V
Reverse Recovery Time	trr	I_F=50A V_{GS}=0V	-	85	-	ns
Reverse Recovery Charge	Qrr	-di/dt=100A/μs T_{ch}=25℃	-	0.25	-	μC

7.Thermal Resistance

Description	Symbol	min.	typ.	max.	Unit
Channel to Case	Rth(ch-c)	-	-	0.806	℃/W
Channel to Ambient	Rth(ch-a)	-	-	50.0	℃/W

Fig.1 Test circuit

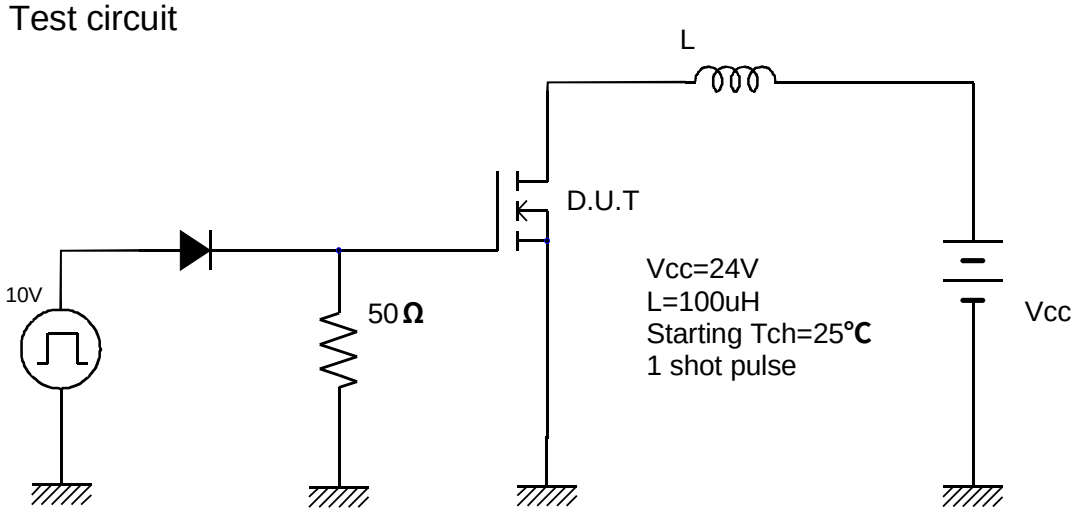
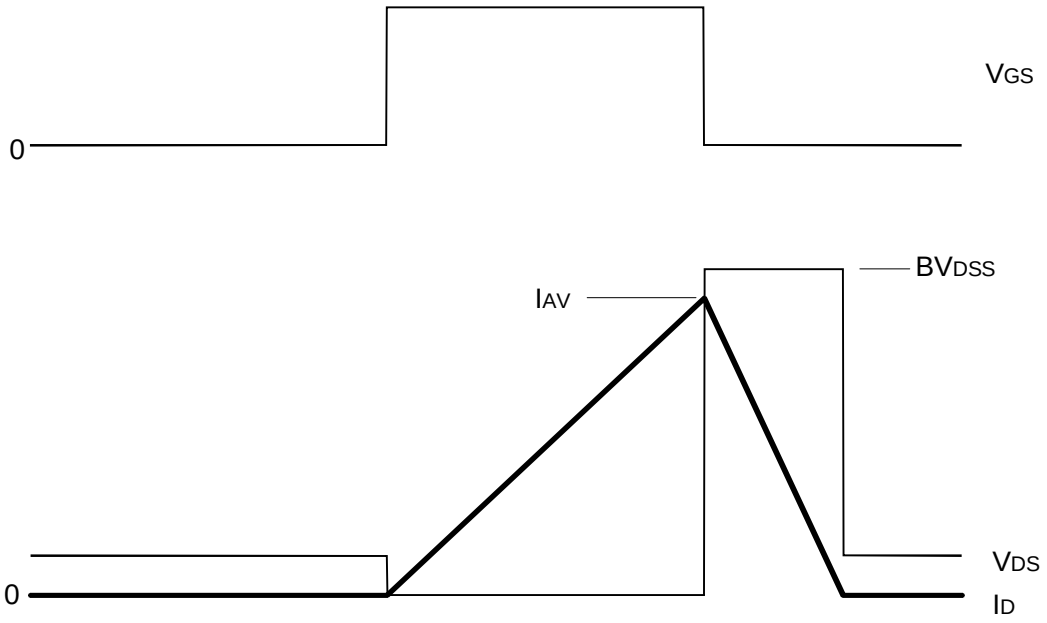
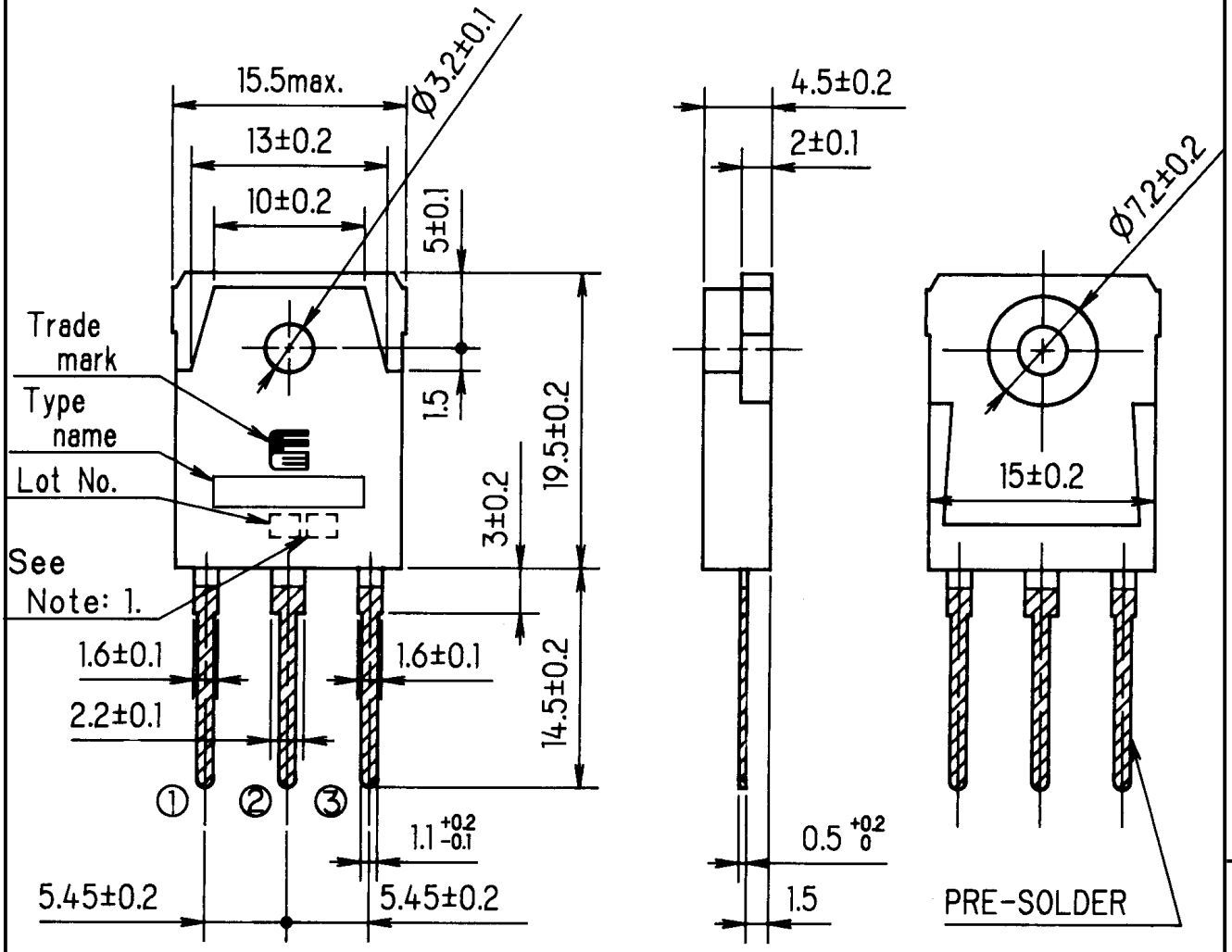
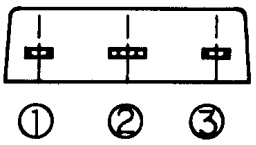


Fig.2 Operating waveforms





DIMENTIONS ARE IN MILLIMETERS.



CONNECTION

① GATE
② DRAIN
③ SOURCE

Note: 1. Guaranteed mark of avalanche ruggedness.

JEDEC : TO-247
EIAJ : SC-65

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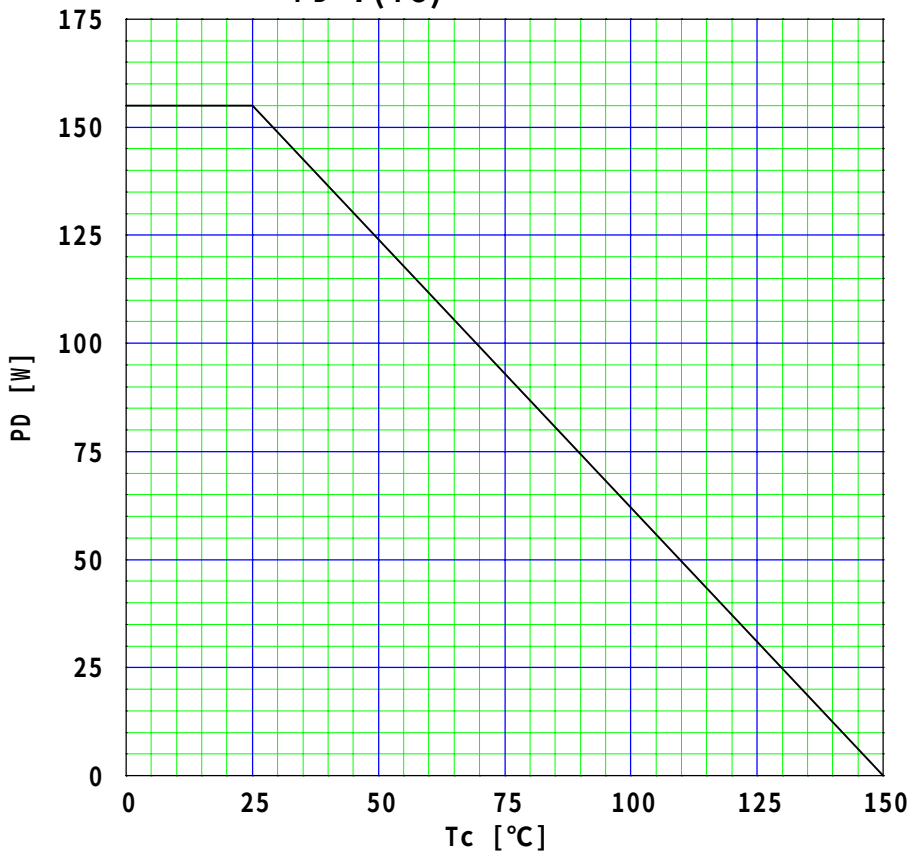
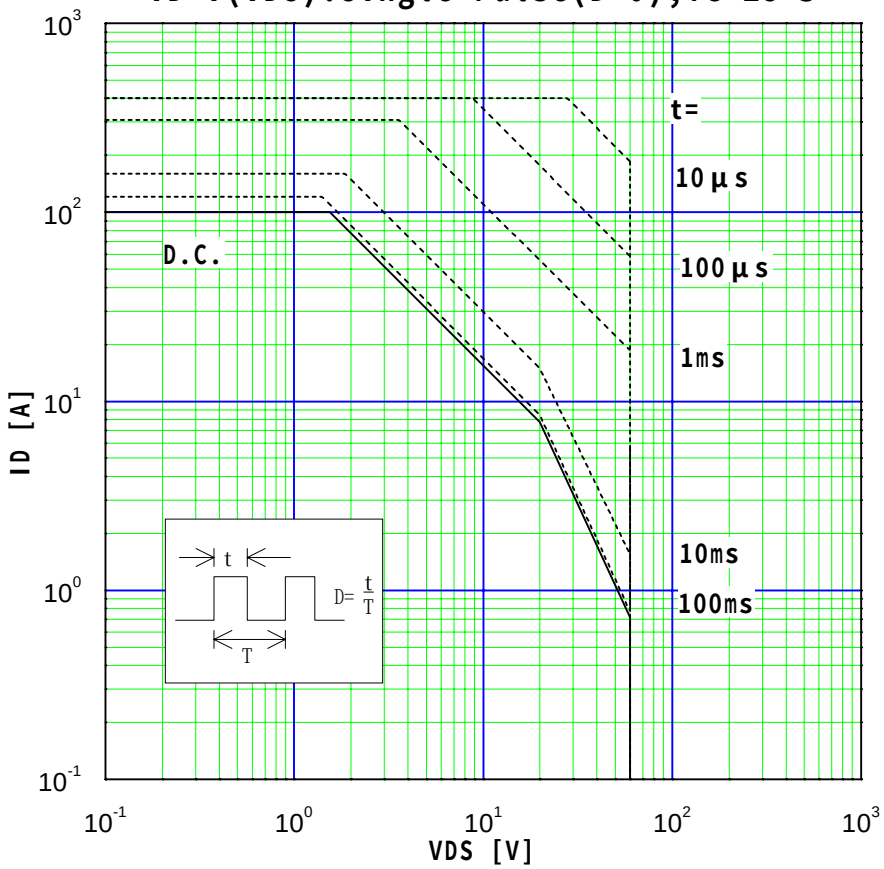
H04-004-03

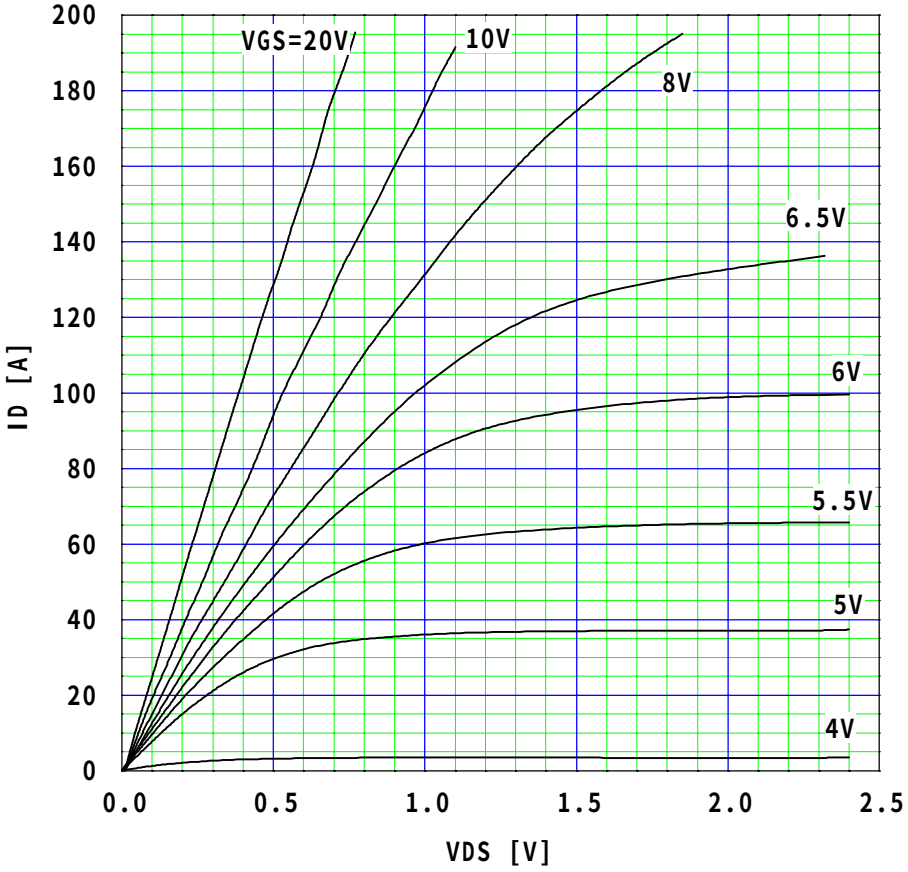
Power Dissipation
PD=f(Tc)



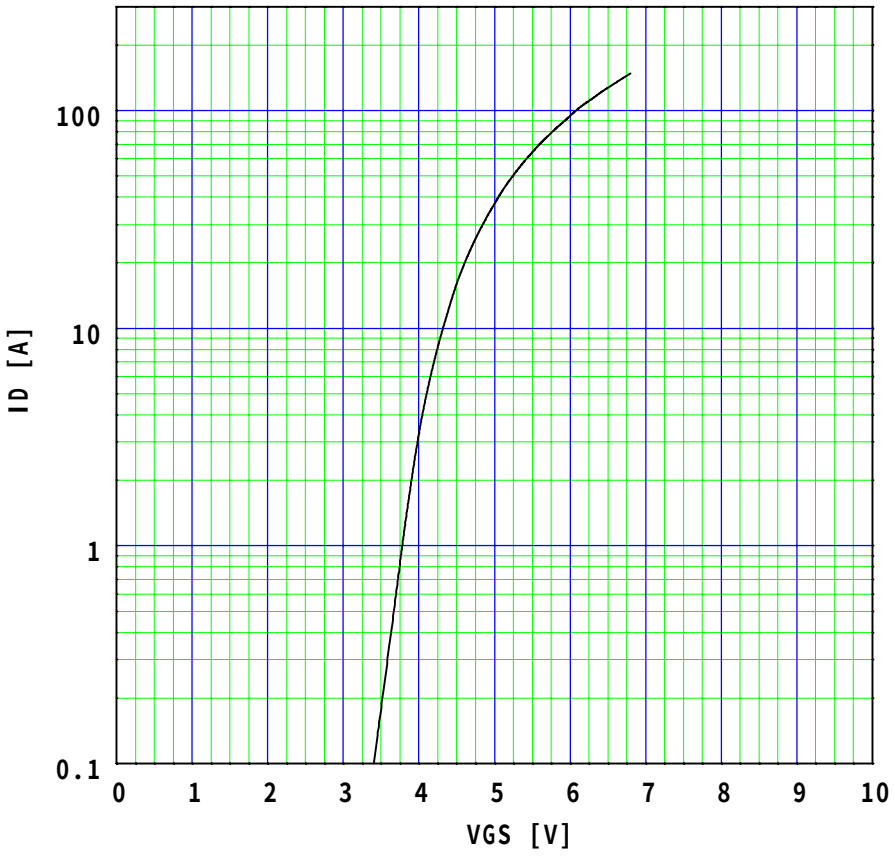
Safe operating area
ID=f(VDS):Single Pulse(D=0),Tc=25°C



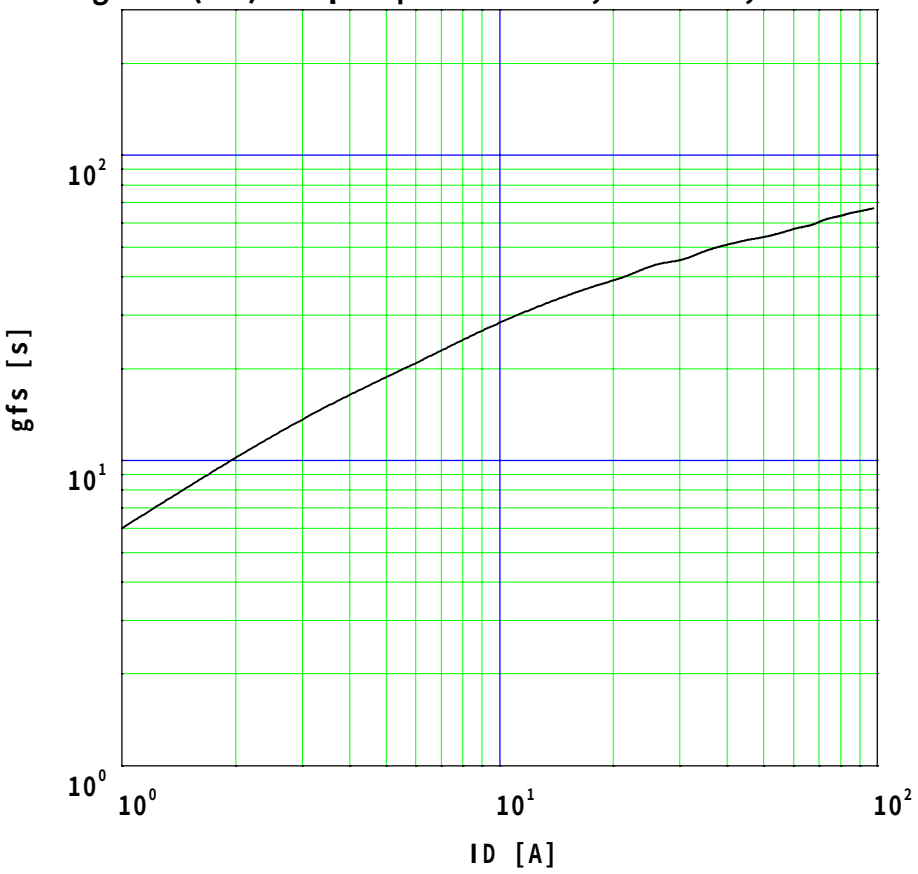
Typical output characteristics
ID=f(VDS):80μs pulse test,Tc=25℃



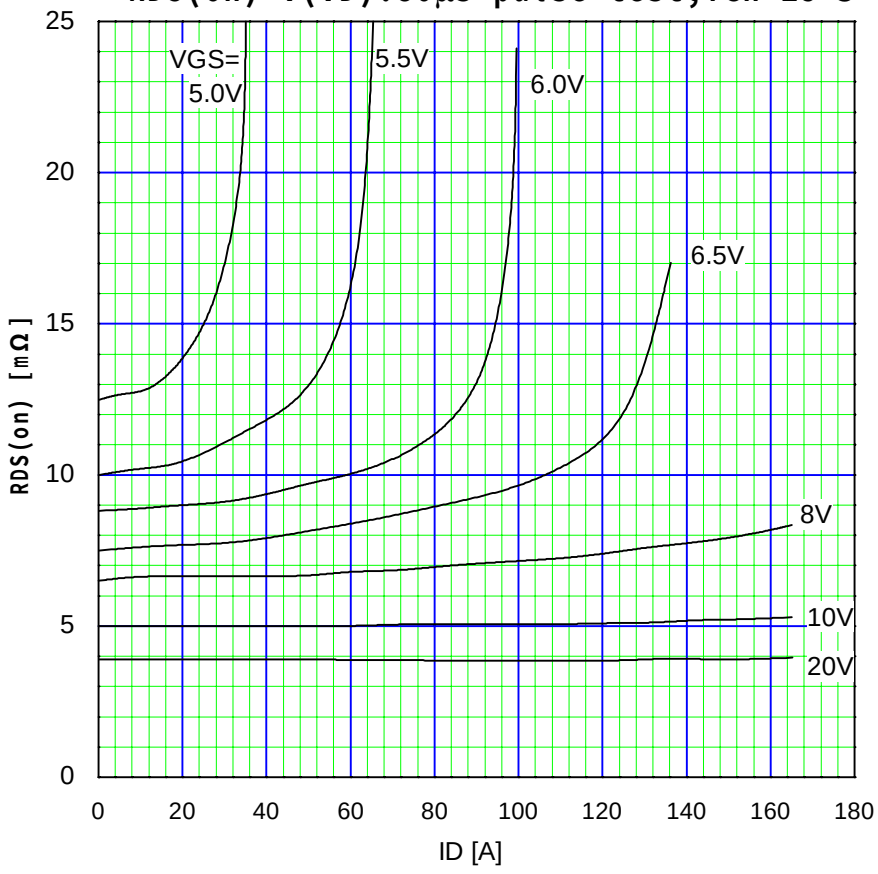
Typical transfer characteristics
ID=f(VGS):80μs pulse test,VDS=10V,Tch=25℃



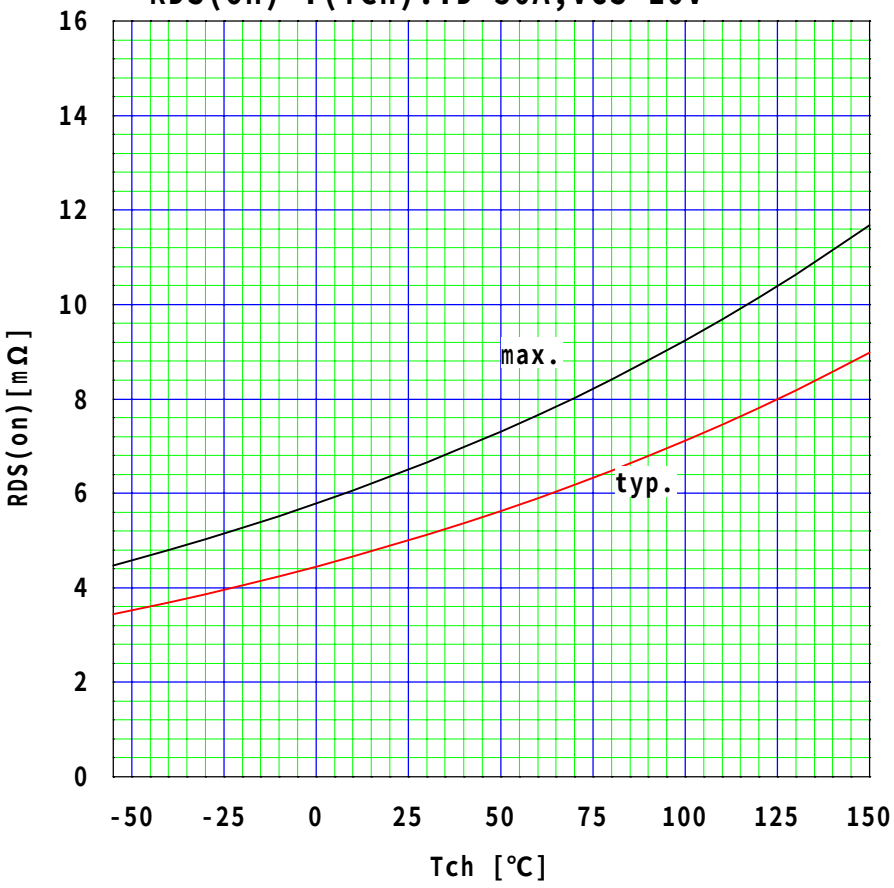
Typical forward transconductance
gfs=f(ID):80μs pulse test,VDS=10V,Tch=25℃



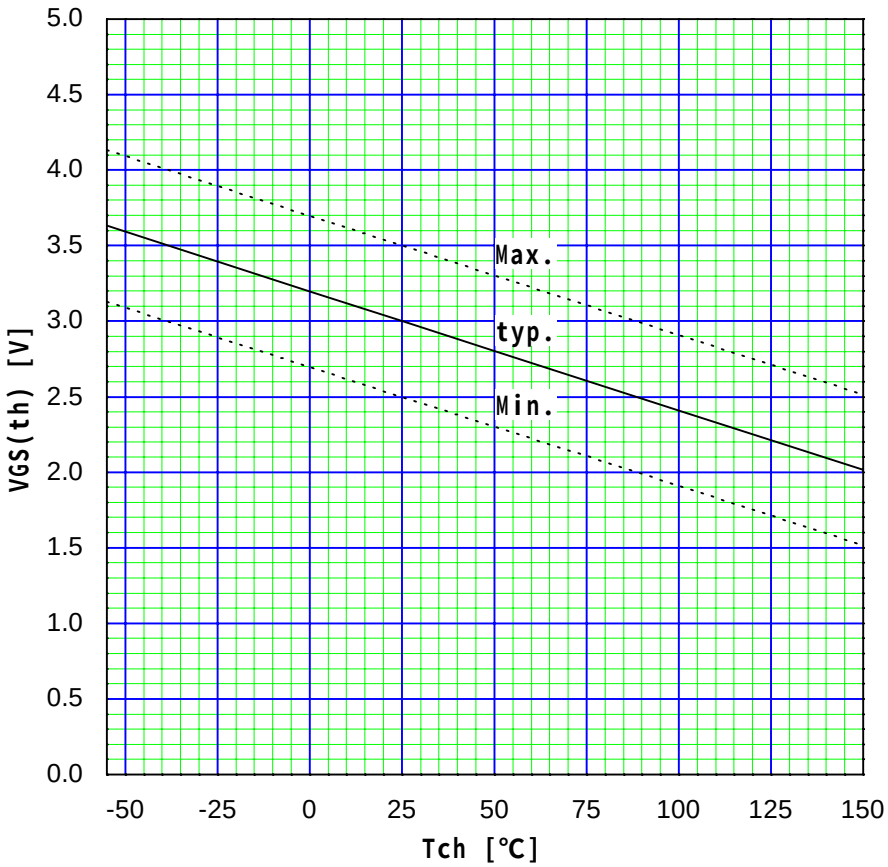
Typical Drain-Source on-State Resistance
RDS(on)=f(ID):80μs pulse test,Tch=25℃



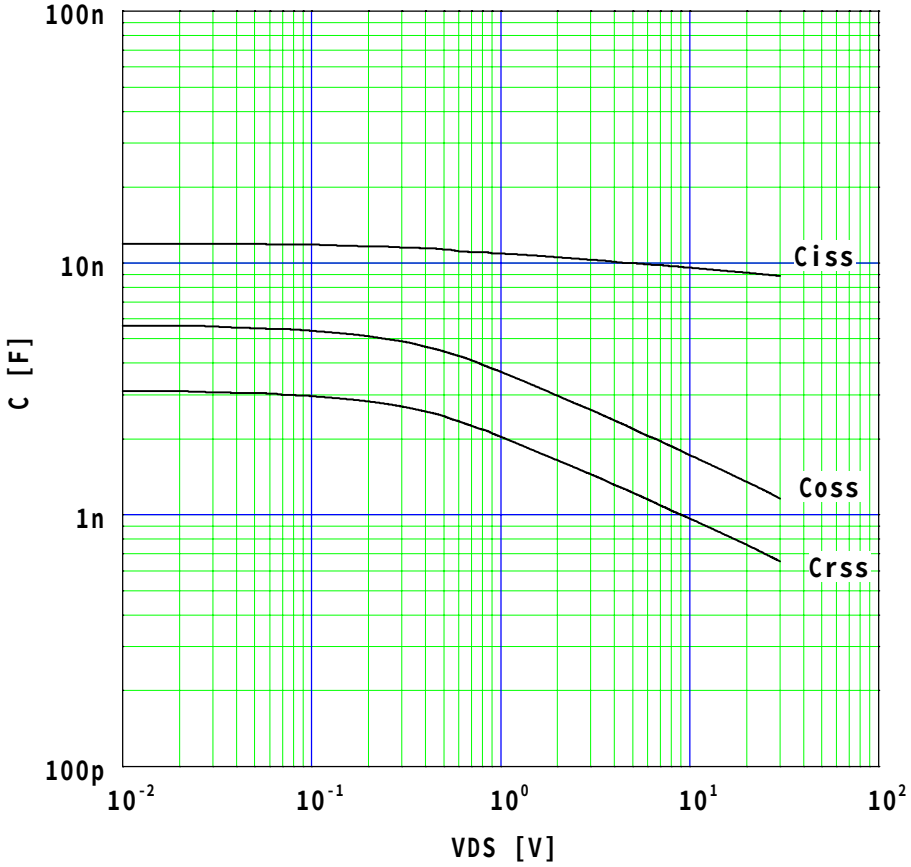
Drain-source on-state resistance
RDS(on)=f(Tch):ID=50A,VGS=10V



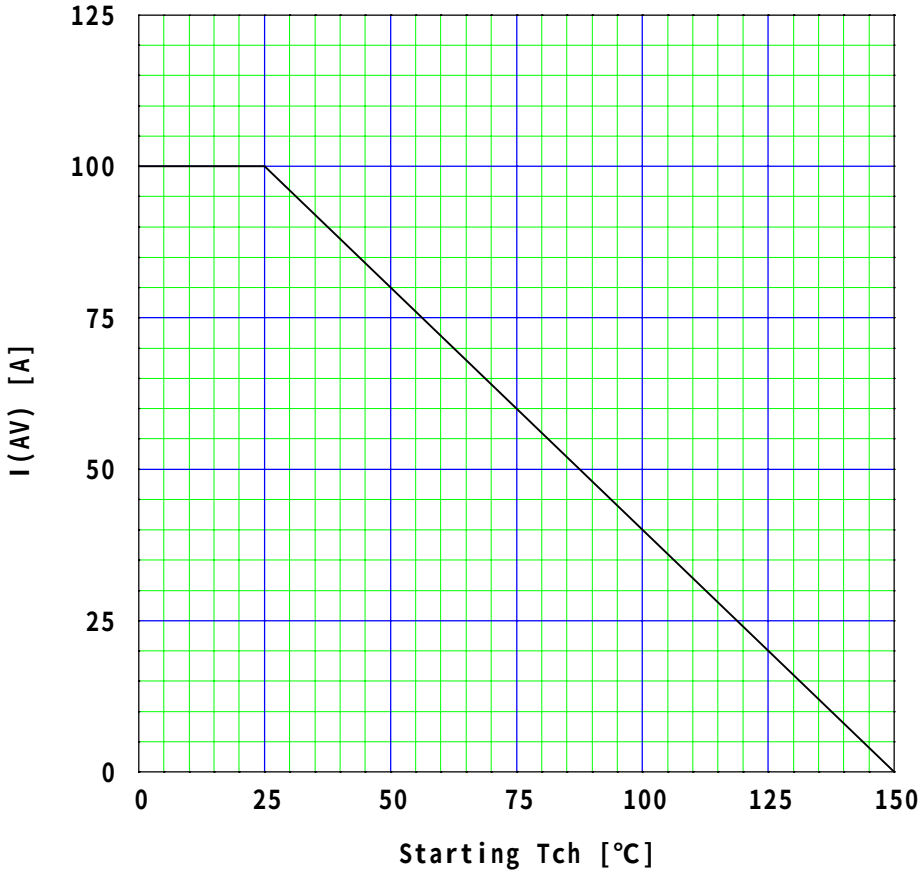
Gate Threshold Voltage vs. Tch
VGS(th)=f(Tch):VDS=VGS,ID=10mA



Typical capacitances
C=f(VDS):VGS=0V,f=1MHz

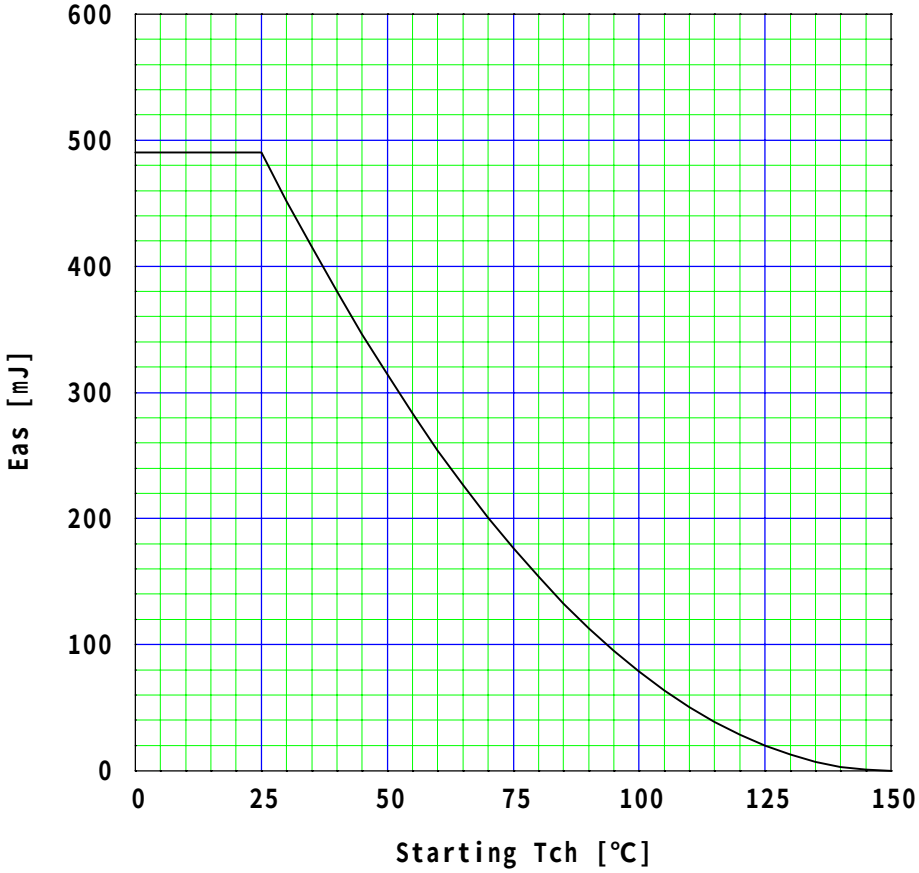


Maximum Avalanche Current vs. starting Tch
I(AV)=f(starting Tch) , single pulse



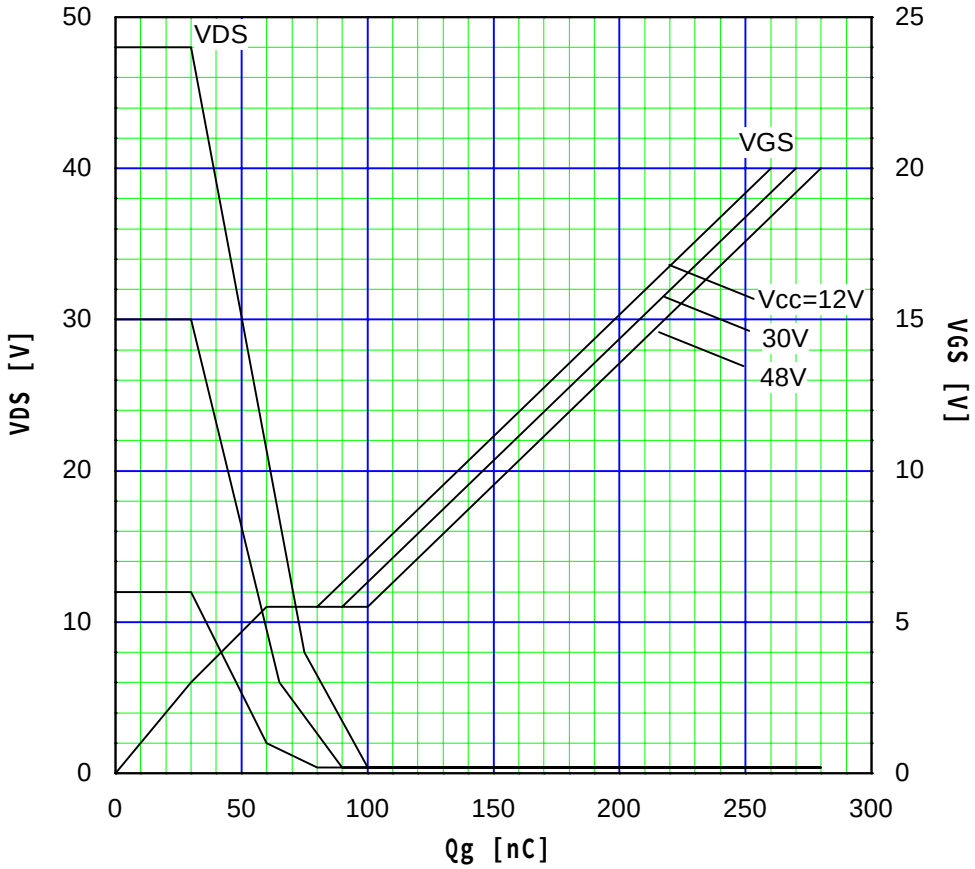
Maximum Avalanche energy vs. starting Tch

Eas=f(starting Tch):Vcc=24V, I_{AV}≦100A , single pulse

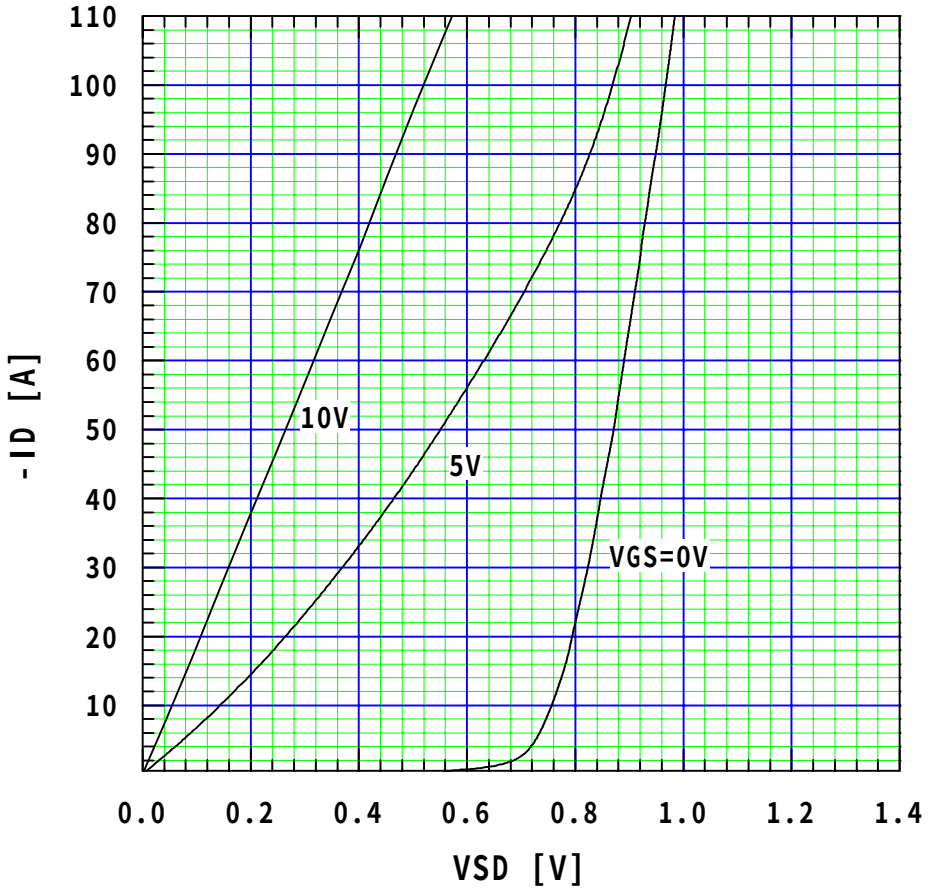


Typical Gate Charge Characteristics

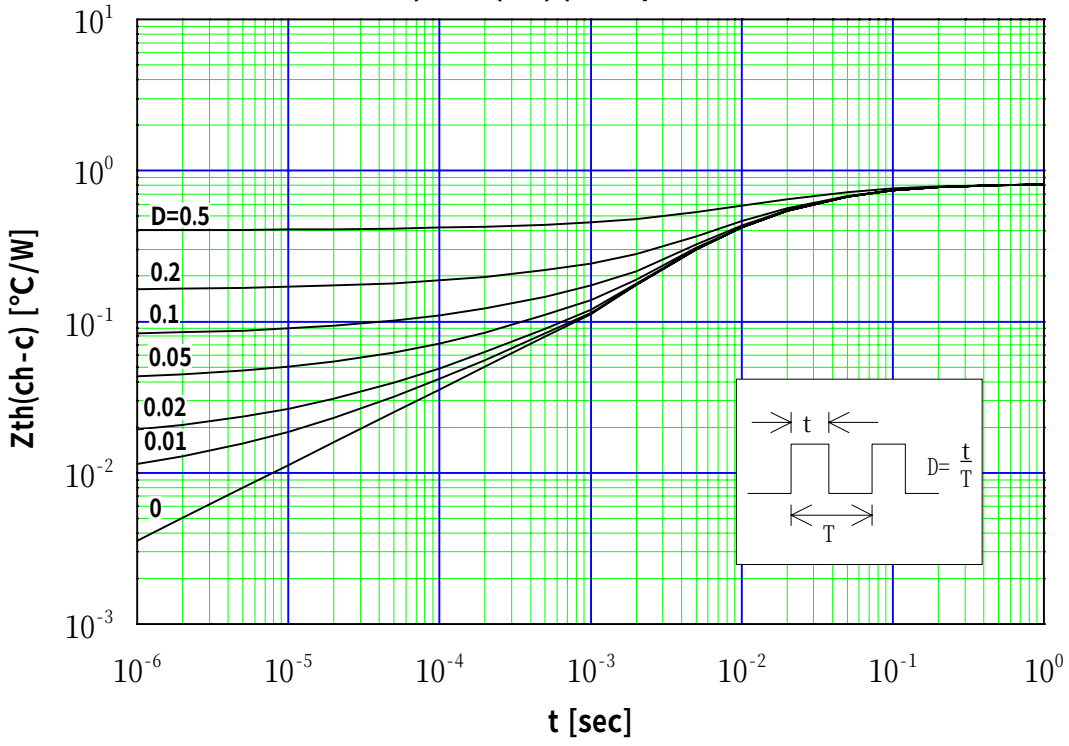
VGS=f(Qg):ID=100A,Tch=25℃



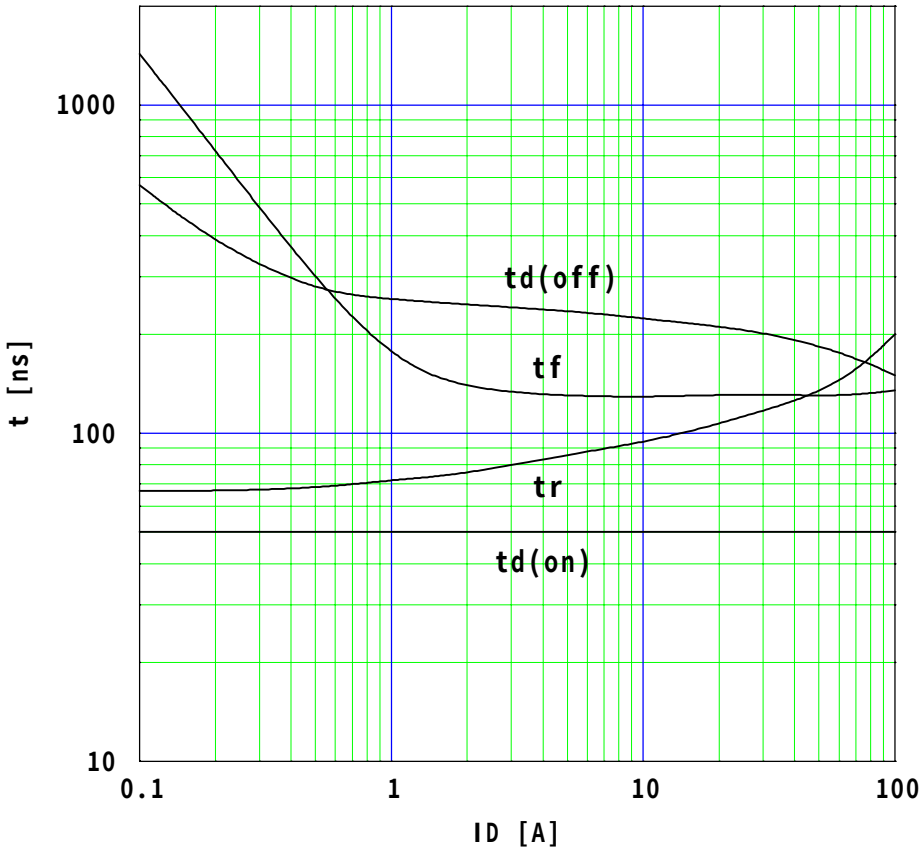
Typical Forward Characteristics of Reverse Diode
-ID=f(VSD):80μs pulse test,Tch=25℃



Transient Thermal Impedance
Zth(ch-c)=f(t):D=t/T



Typical Switching Characteristics vs. ID
t=f(ID):Vcc=30V,VGS=10V,RG=10Ω



Drain-Sourse Breakdown Voltage vs. Vgs
BVDSX=f(VGS):Tch=25℃