SPECIFICATION

DEVICE NAME : Power MOSFET .

TYPE NAME : 2SK2689-01MR .

SPEC. NO. : .

Fuji Electric Co.,Ltd.

This Specification is subject to change without notice.

	DATE	NAME	APPROVED		Fuji Electric Co.,Ltd.
DRAWN					
CHECKED				DWG. NO.	1/8

1.Scope This specifies Fuji Power MOSFET 2SK2689-01MR

2.Construction N-Channel enhancement mode power MOSFET

3.Applications for Switching

4.Outview TO-220F 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}	30	V	
Continuous Drain Current	I_D	±50	A	
Pulsed Drain Current	I_{DP}	±200	A	
Gate-Source Voltage	V_{GS}	±16	V	
Maximum Avalanche Energy	E_{AV}	520	mJ	*1
Maximum Power Dissipation	P_D	40	W	
Operating and Storage	T_{ch}	150	℃	
Temperature range	T_{stg}	-55 to +150	℃	

*1 L=0.277mH,Vcc=12V

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 V_{GS}=0V		30			V
Gate Threshold Voltage	$V_{GS(th)}$	I_D=1mA V_{DS}=V_{GS}		1.0	1.5	2.0	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V V_{GS}=0V	T_{ch}=25℃		10	500	μA
			T_{ch}=125℃		0.2	1.0	mA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=16V V_{DS}=0V			10	100	nA
Drain-Source On-State Resistance	$R_{DS(on)}$	I_D=25A	V_{GS}=4V		12	17	mΩ
			V_{GS}=10V		7.5	10	

Dynamic Ratings

Description	Symbol	Conditions	min.	typ.	max.	Unit
Forward Transconductance	g_{fs}	I_D=25A V_{DS}=25V	22	45		S
Input Capacitance	Ciss	V_{DS}=25V		2750	4130	pF
Output Capacitance	Coss	V_{GS}=0V		1300	1950	
Reverse Transfer Capacitance	Crss	f=1MHz		600	900	
Turn-On Time	td(on)	V_{cc}=15V		13	20	ns
	tr	V_{GS}=10V		55	83	
Turn-Off Time	td(off)	I_D=50A		180	270	
	tf	R_{GS}=10Ω		150	230	

Reverse Diode

Description	Symbol	Conditions	min.	typ.	max.	Unit
Avalanche Capability	I_{AV}	L=100μH Tch=25°C See Fig.1 and Fig.2	50			A
Diode Forward On-Voltage	V_{SD}	I_F=2×I_{DR} V_{GS}=0V T_{ch}=25°C		1.14	1.71	V
Reverse Recovery Time	trr	I_F=2×I_{DR} -di/dt=100A/μs T_{ch}=25°C		85	130	ns
Reverse Recovery Charge	Qrr			0.17		μc

7.Thermal Resistance

Description	Symbol	min.	typ.	max.	Unit
Channel to Case	Rth(ch-c)			3.125	°C/W
Channel to Ambient	Rth(ch-a)			62.5	°C/W

Fig. 1 Test Circuit

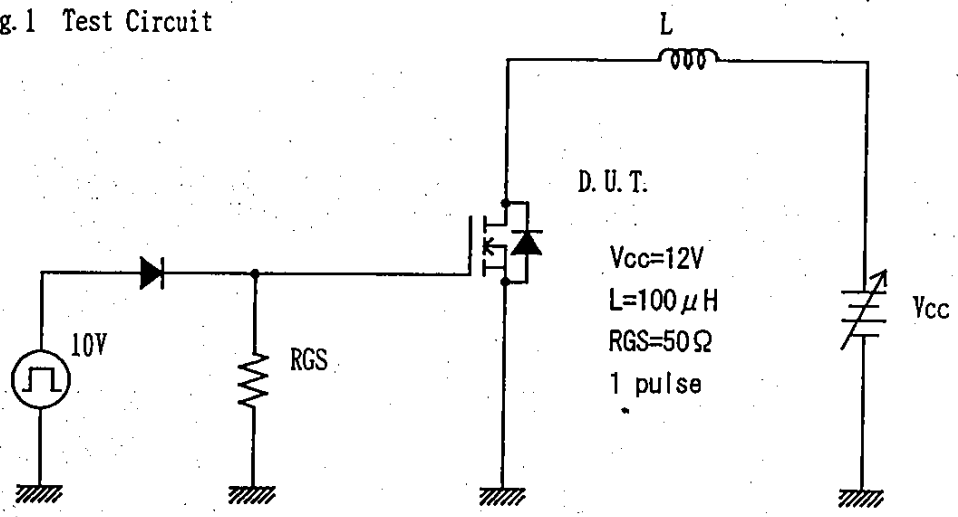
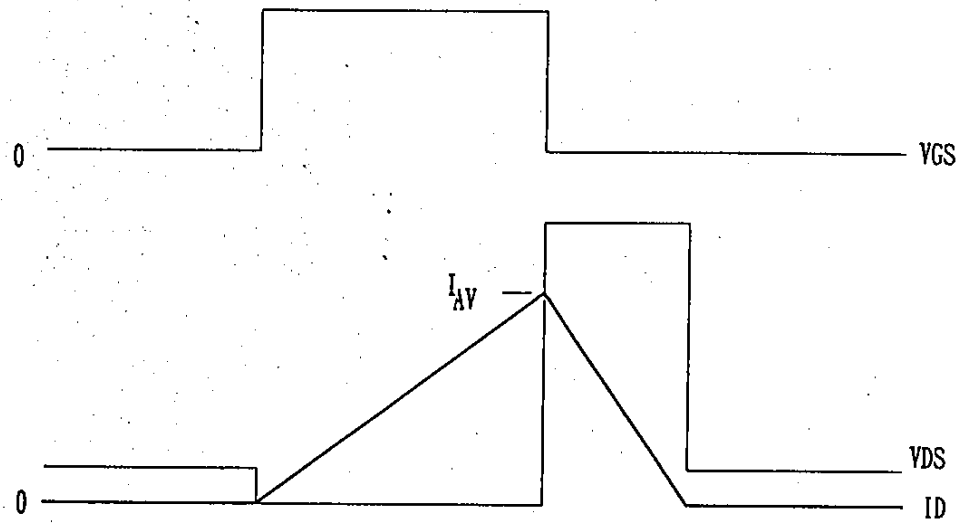
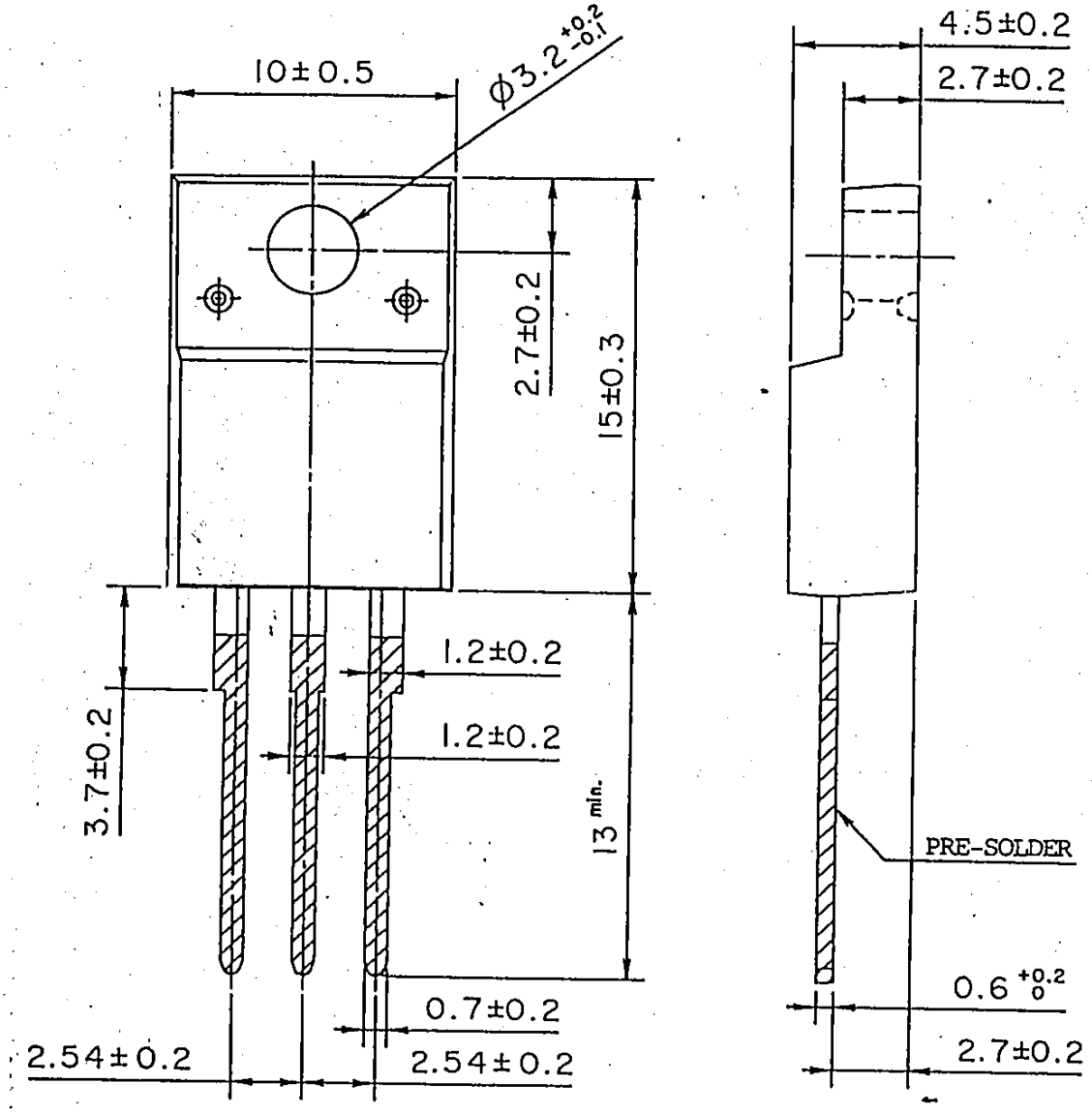
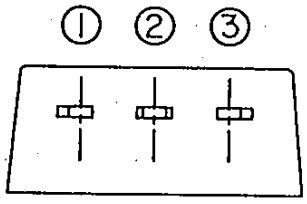


Fig. 2 Operating waveforms





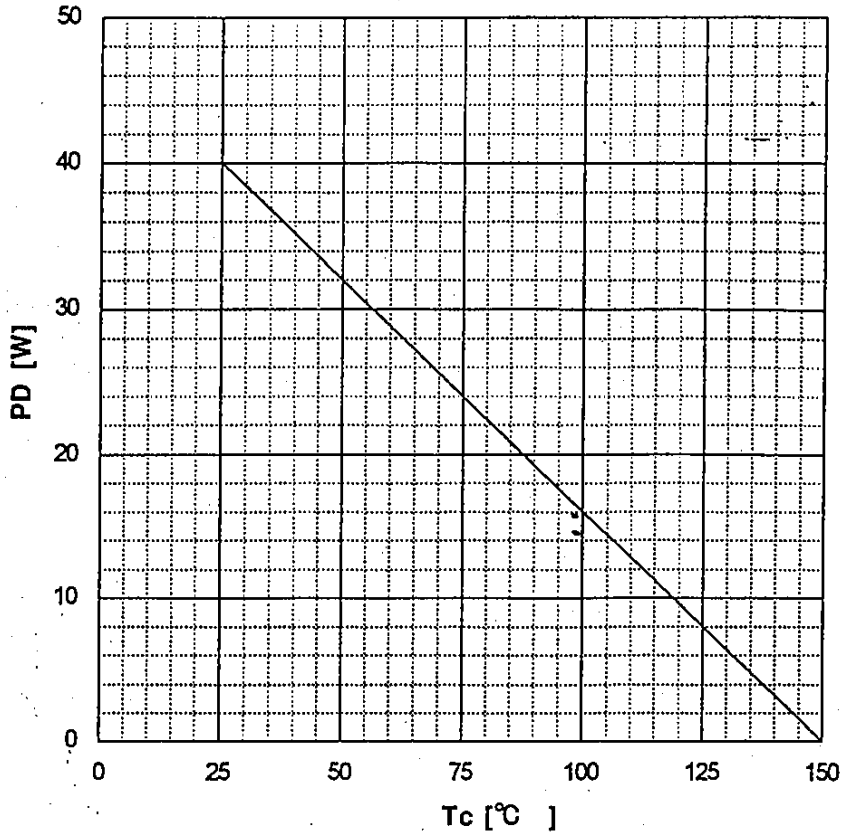


CONNECTION

1:GATE
2:DRAIN
3:SOURCE

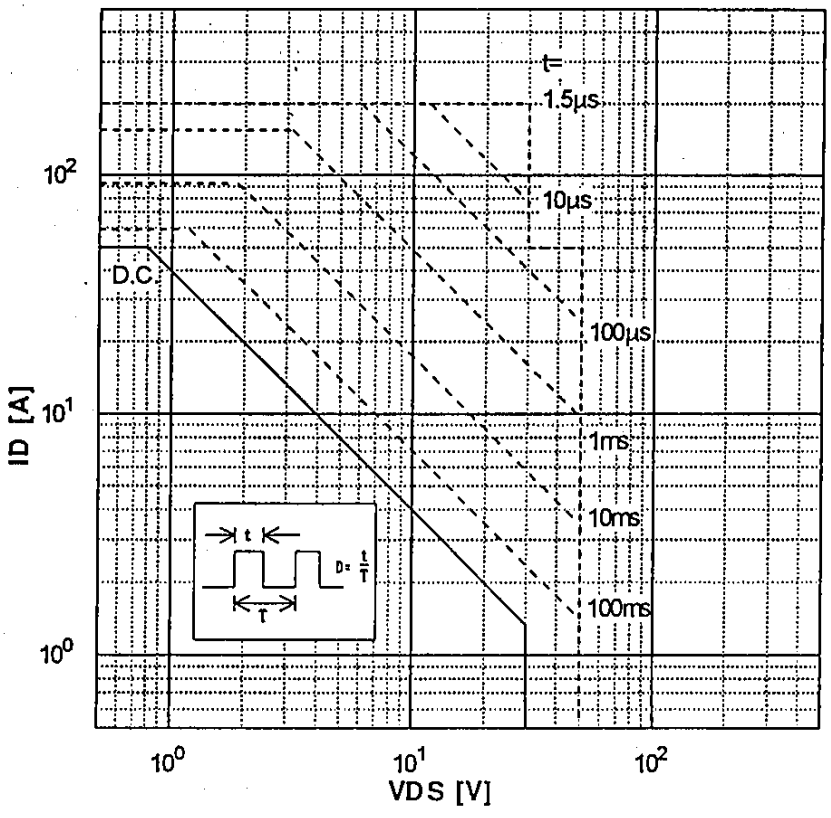
Power Dissipation

PD=f(Tc)



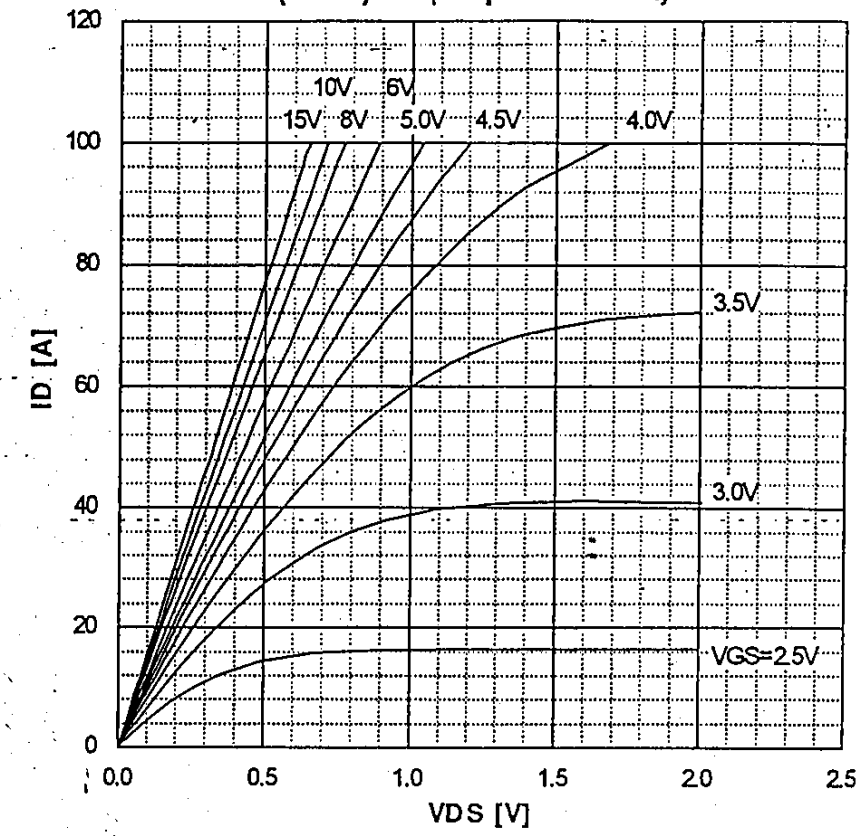
Safe operating area

ID=f(VDS):D=0.01,Tc=25℃



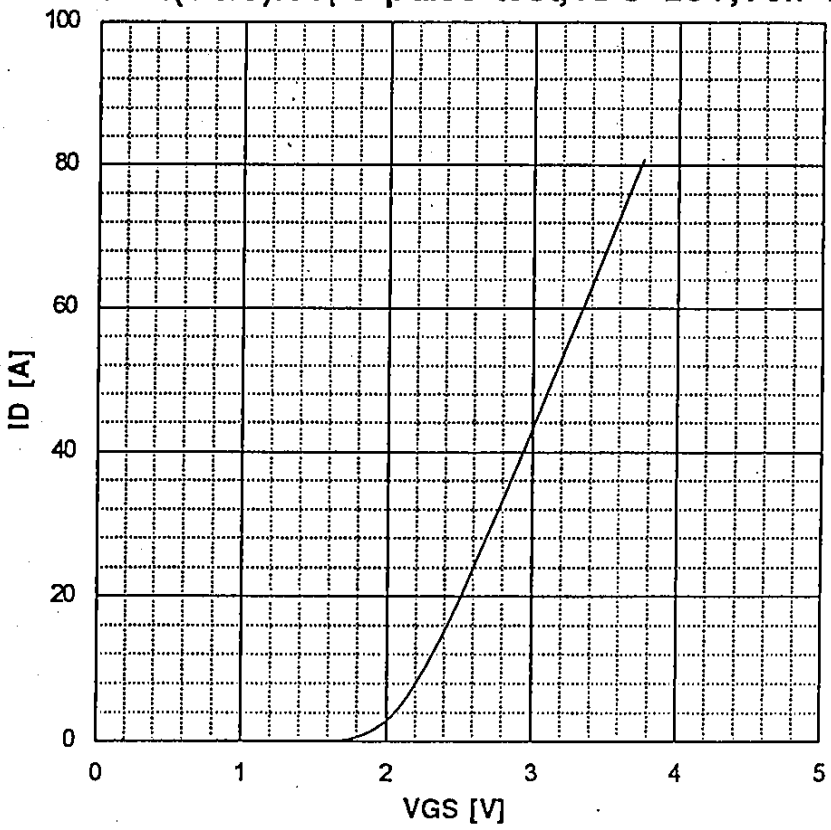
Typical Output Characteristics

ID=f(VDS):80μs pulse test,Tch=25℃



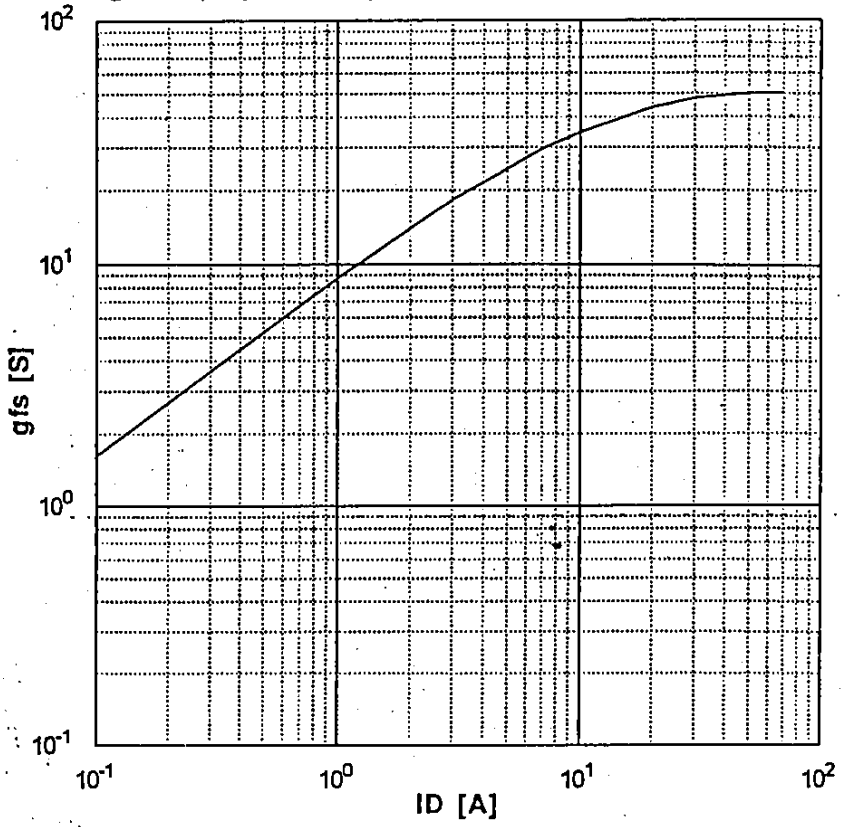
Typical Transfer Characteristic

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



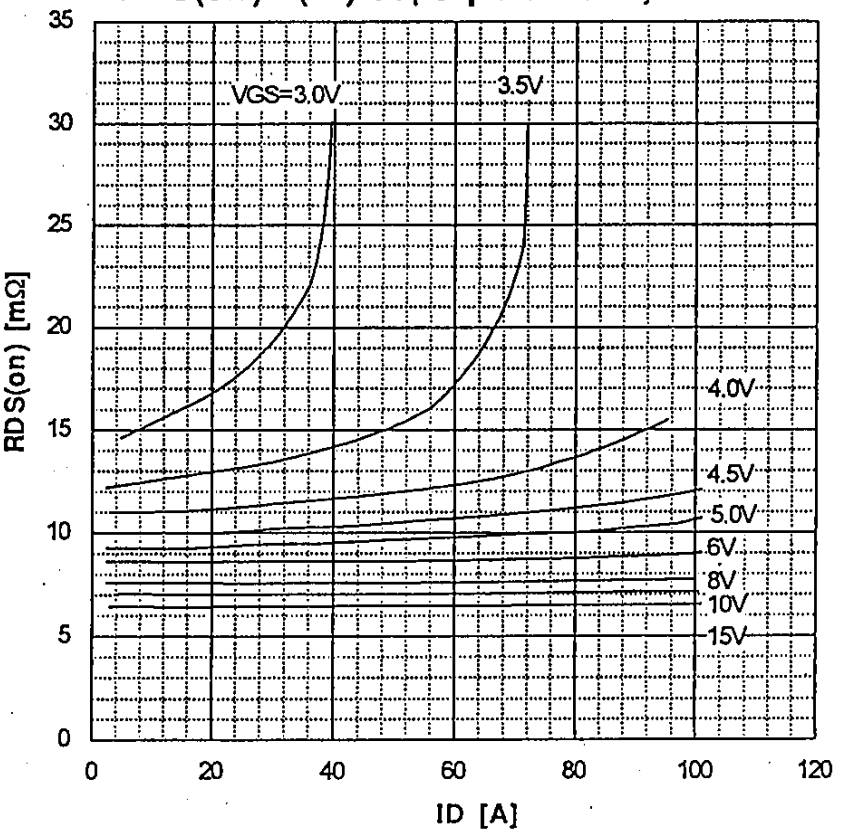
Typical Transconductance

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



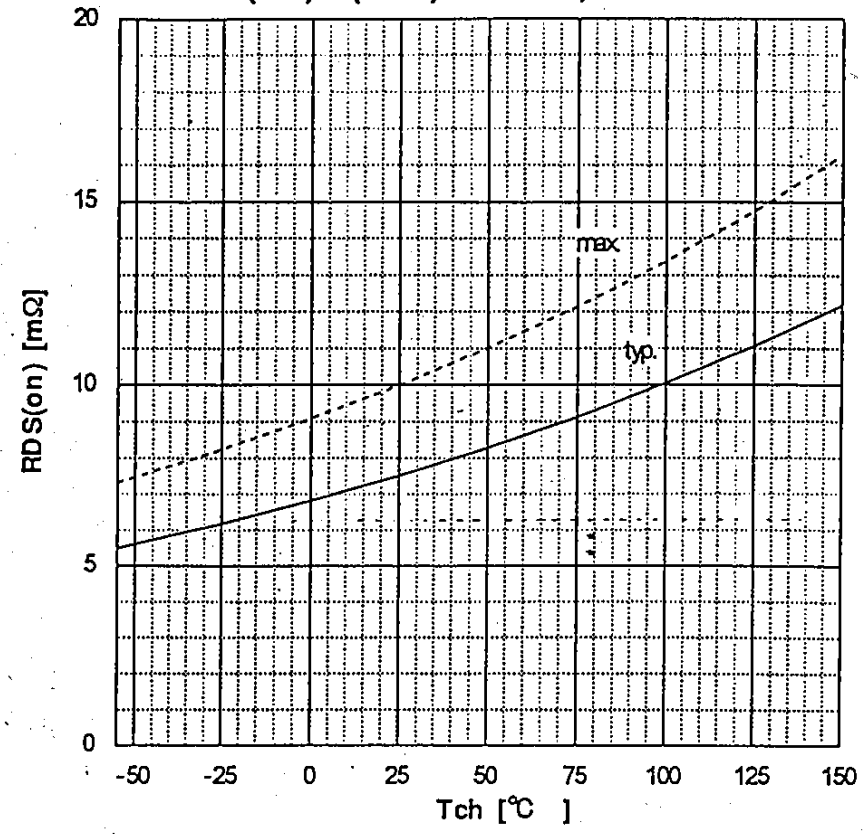
Typical Drain-Source on-state Resistance

RDS(on)=f(ID):80μs pulse test,Tch=25℃



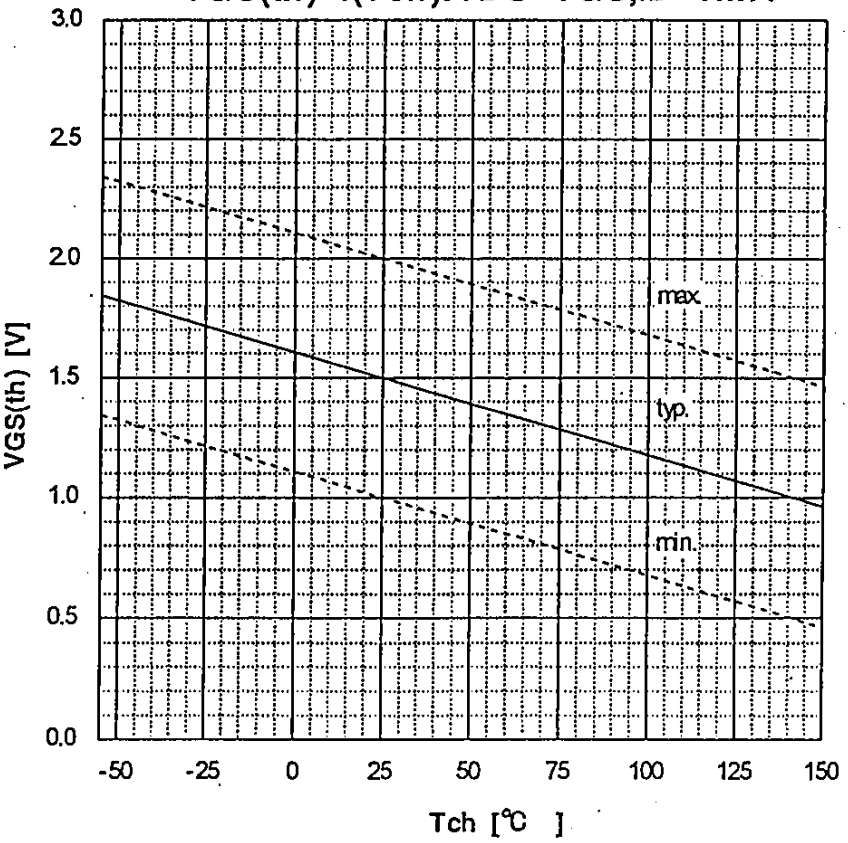
Drain-Source On-state Resistance

RDS(on)=f(Tch):ID=25A,VGS=10V

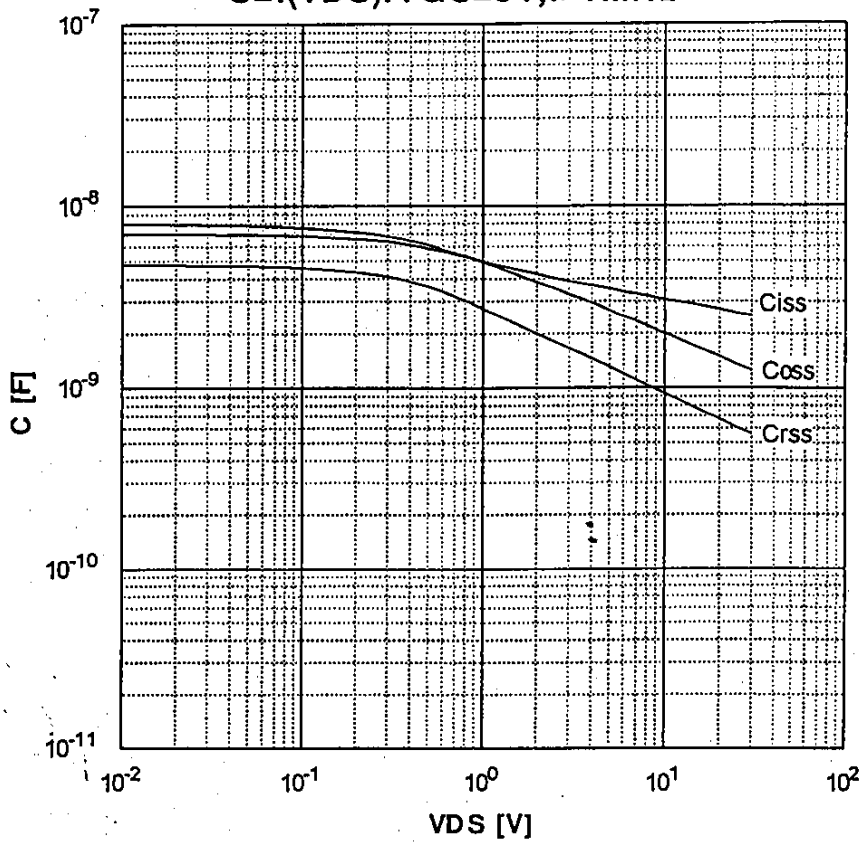


Gate Threshold Voltage

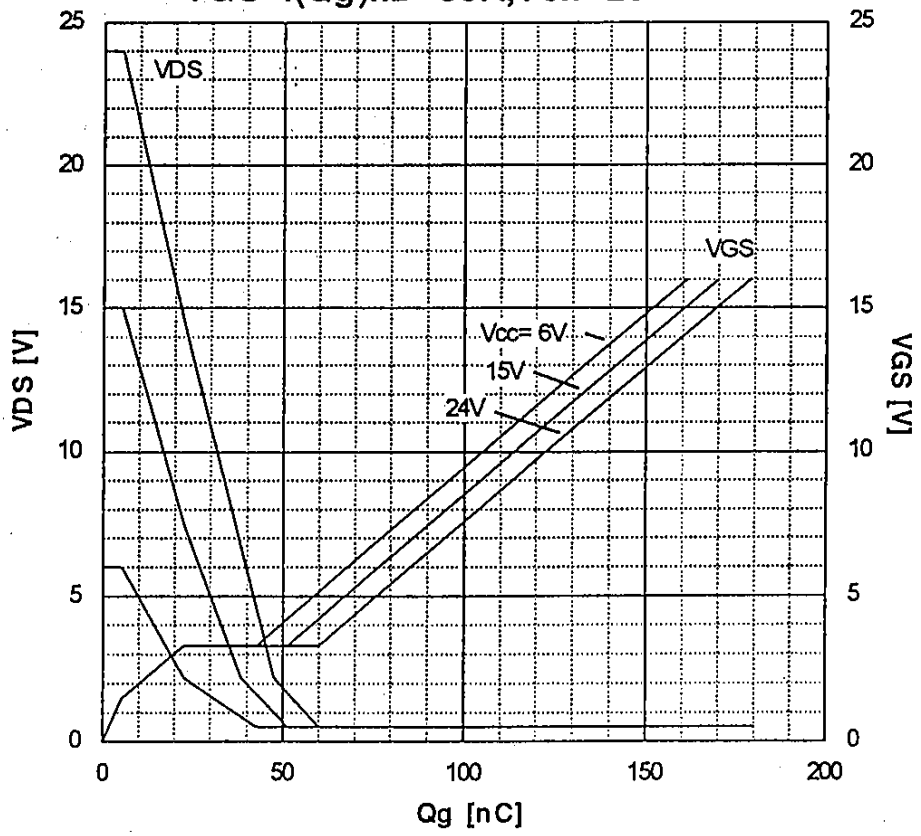
VGS(th)=f(Tch):VDS=VGS,ID=1mA



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

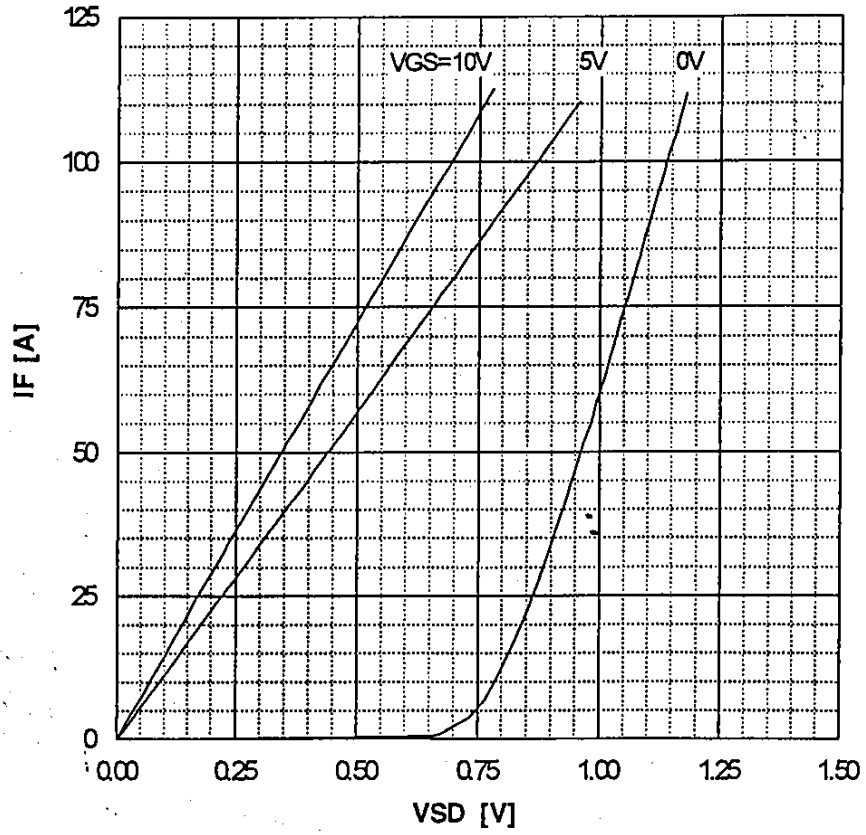


Typical Gate Charge Characteristics
VGS=f(Qg):ID=50A,Tch=25℃



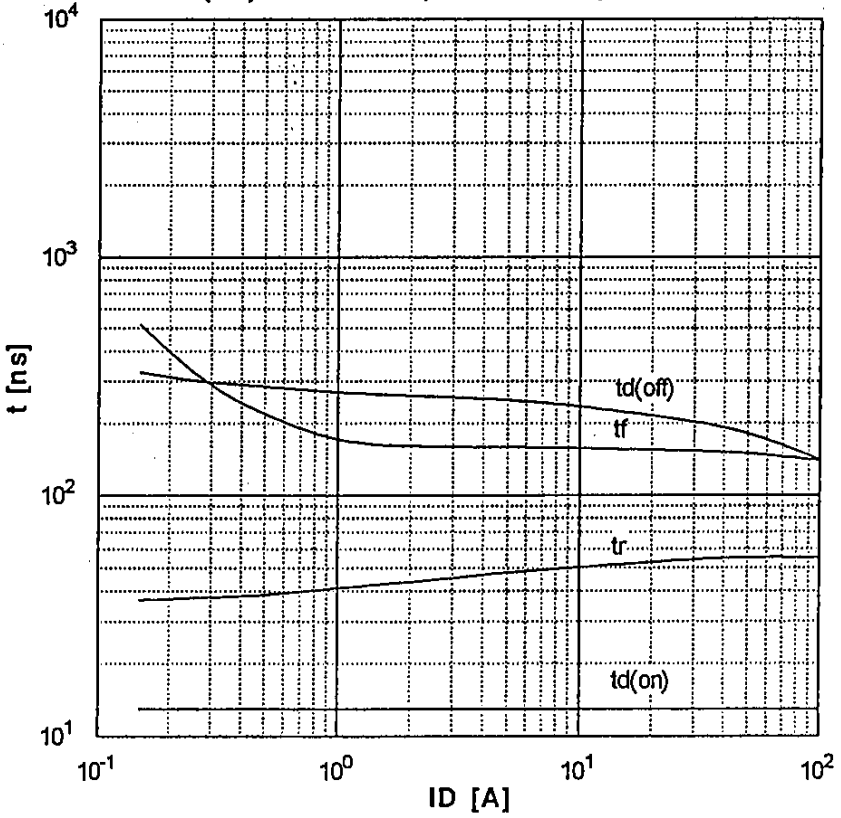
Typical Forward Characteristics of Reverse Diode

IF=f(VSD):80μs pulse test,Tch=25℃



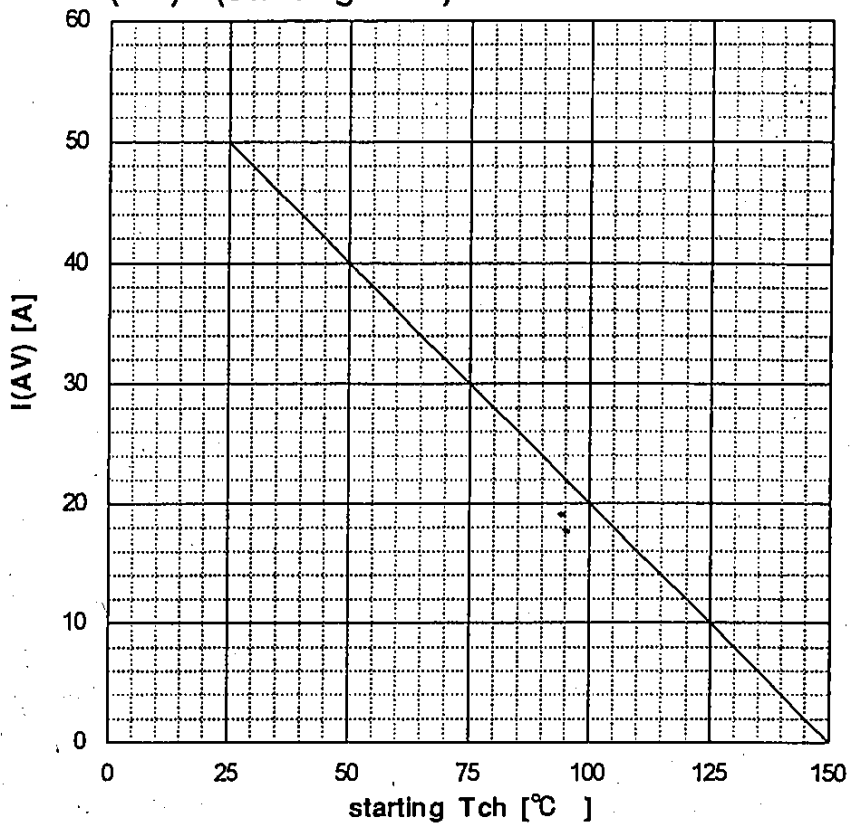
Typical Switching Characteristics vs. ID

t=f(ID):Vcc=15V,VGS=10V,RG=10Ω



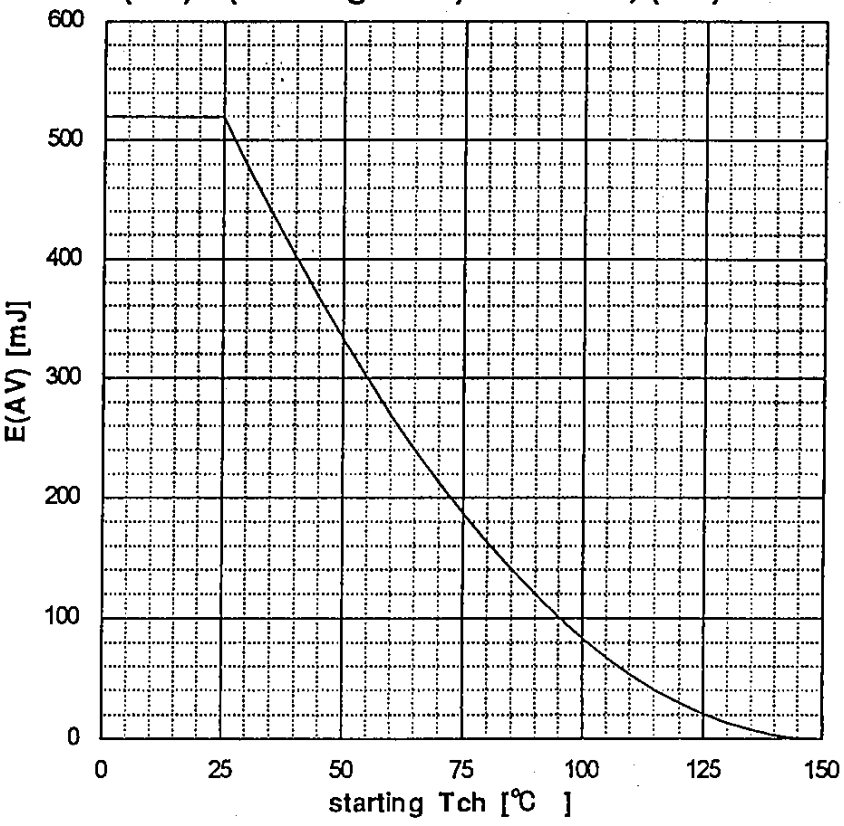
Maximum Avalanche Current vs. starting Tch

I(AV)=f(starting Tch)

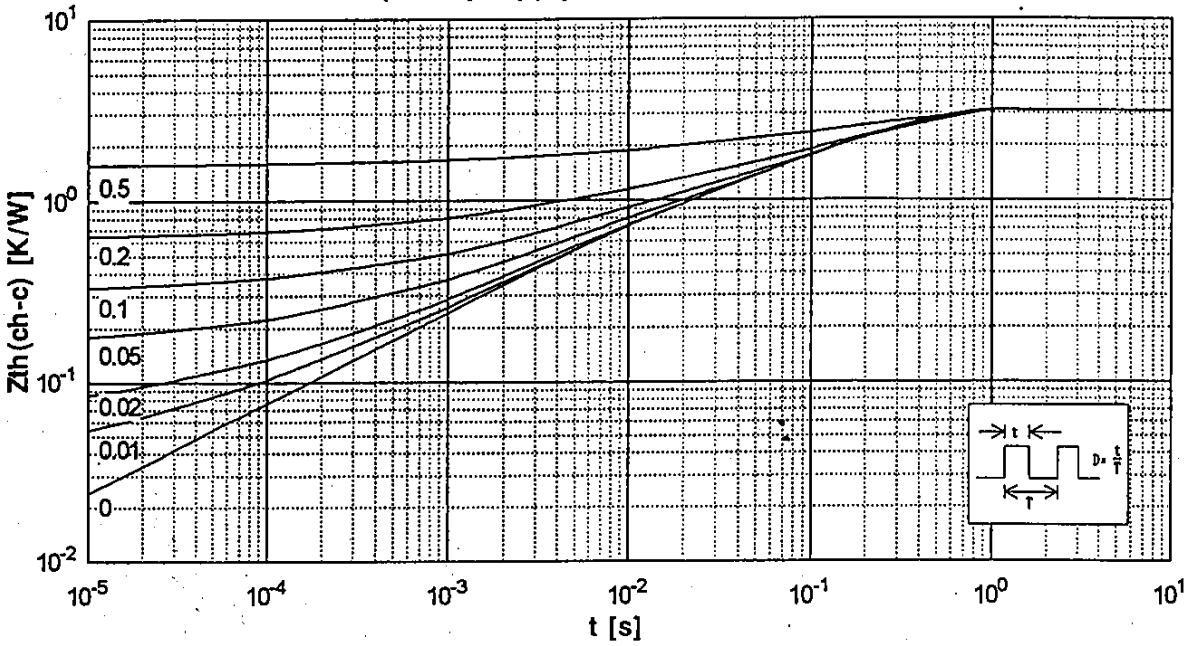


Maximum Avalanche Energy vs. starting Tch

E(AV)=f(starting Tch):Vcc=12V,I(AV)≦ 50A



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



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