SPECIFICATION

Device Name	:	Power MOSFET
Type Name	:	2SK3102-01R
Spec. No.	:	MS5F4207

Fuji Electric Co.,Ltd.
Matsumoto Factory

	DATE	NAME	APPROVED
DRAWN	Feb.-13-'98	C. Ota	
CHECKED	Feb.-13-'98		

Fuji Electric Co.,Ltd.

DWG.NO. MS5F4207 1/12

A

1.Scope This specifies Fuji Power MOSFET 2SK3102-01R

2.Construction N-Channel enhancement mode power MOSFET

3.Applications for Switching

4.Outview TO-3PF Outview See to 5/12 page

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

Description	Symbol	Characteristics	Unit	Remarks
Drain-Source Voltage	V_{DS}	600	V	
Continuous Drain Current	I_D	±10	A	
Pulsed Drain Current	I_{DP}	±36	A	
Gate-Source Voltage	V_{GS}	±35	V	
Repetitive or non-repetitive	I_{AR}	10	A	Tch≦150℃
Avalanche energy	E_{AS}	433.7	mj	
Maximum Power Dissipation	P_D	80	W	
Operating and Storage	T_{ch}	150	℃	
Temperature range	T_{stg}	-55 to +150	℃	

*L=7.95mH,Vcc=60V

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		600			V
Gate Threshold Voltage	$V_{GS}(th)$	I_D=1mA V_{DS}=V_{GS}		3.5	4.0	4.5	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=600V 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}=±30V V_{DS}=0V			10	100	nA
Drain-Source On-State Resistance	$R_{DS}(on)$	ID=5A VGS=10V			0.85	1	Ω

Dynamic Ratings

Description	Symbol	Conditions	min.	typ.	max.	Unit
Forward Transconductance	g_{fs}	I_D=5A V_{DS}=25V	3.0	6.0		S
Input Capacitance	Ciss	V_{DS}=25V		1100	1700	pF
Output Capacitance	Coss	V_{GS}=0V		170	260	
Reverse Transfer Capacitance	Crss	f=1MHz		75	120	
Turn-On Time	td(on)	V_{cc}=300V		25	40	ns
	tr	V_{GS}=10V		70	110	
Turn-Off Time	td(off)	I_D=10A		75	120	
	tf	R_{GS}=10Ω		40	60	

Reverse Diode

Description	Symbol	Conditions	min.	typ.	max.	Unit
Avalanche Capability	I_{AV}	L=1.19mH Tch=25℃ See Fig.1 and Fig.2	10			A
Diode Forward On-Voltage	V_{SD}	I_F=2×I_{DR} V_{GS}=0V T_{ch}=25℃		1.0	1.5	V
Reverse Recovery Time	trr	I_F=I_{DR} V_{GS}=0V		500		ns
Reverse Recovery Charge	Qrr	-di/dt=100A/μs T_{ch}=25℃		6.5		μc

7.Thermal Resistance

Description	Symbol	min.	typ.	max.	Unit
Channel to Case	Rth(ch-c)			1.56	℃/W
Channel to Ambient	Rth(ch-a)			30.0	℃/W

Fig.1 Test circuit

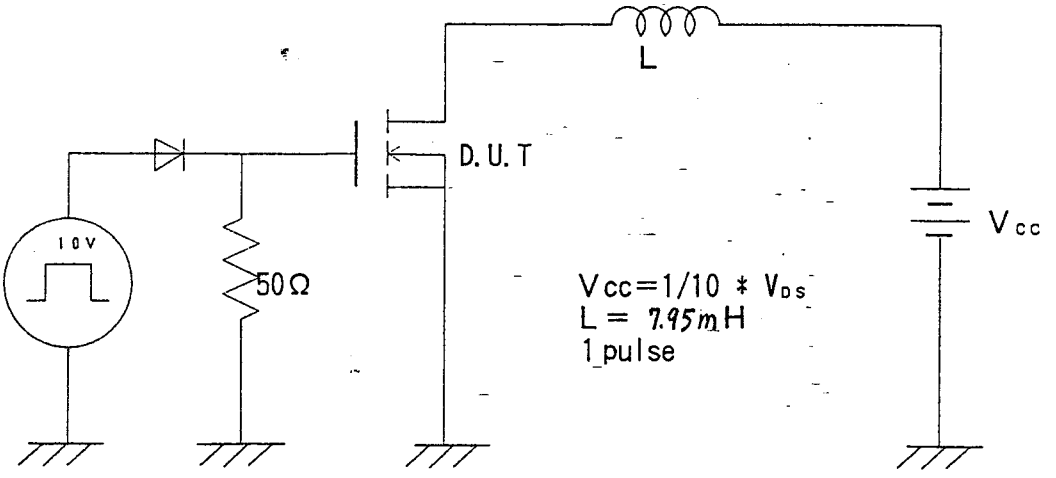
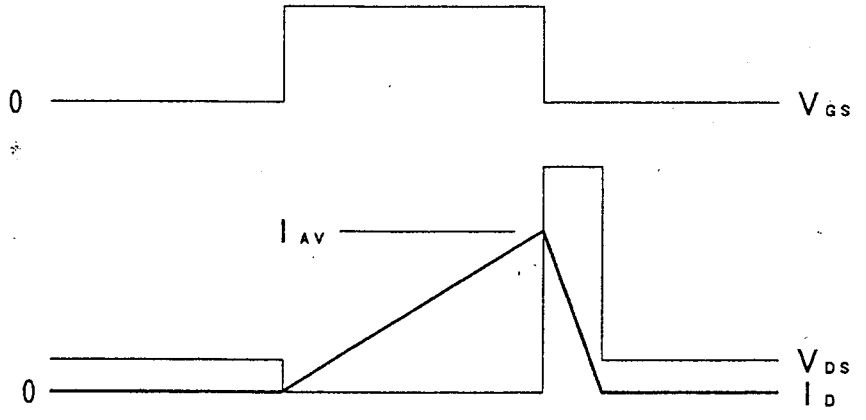
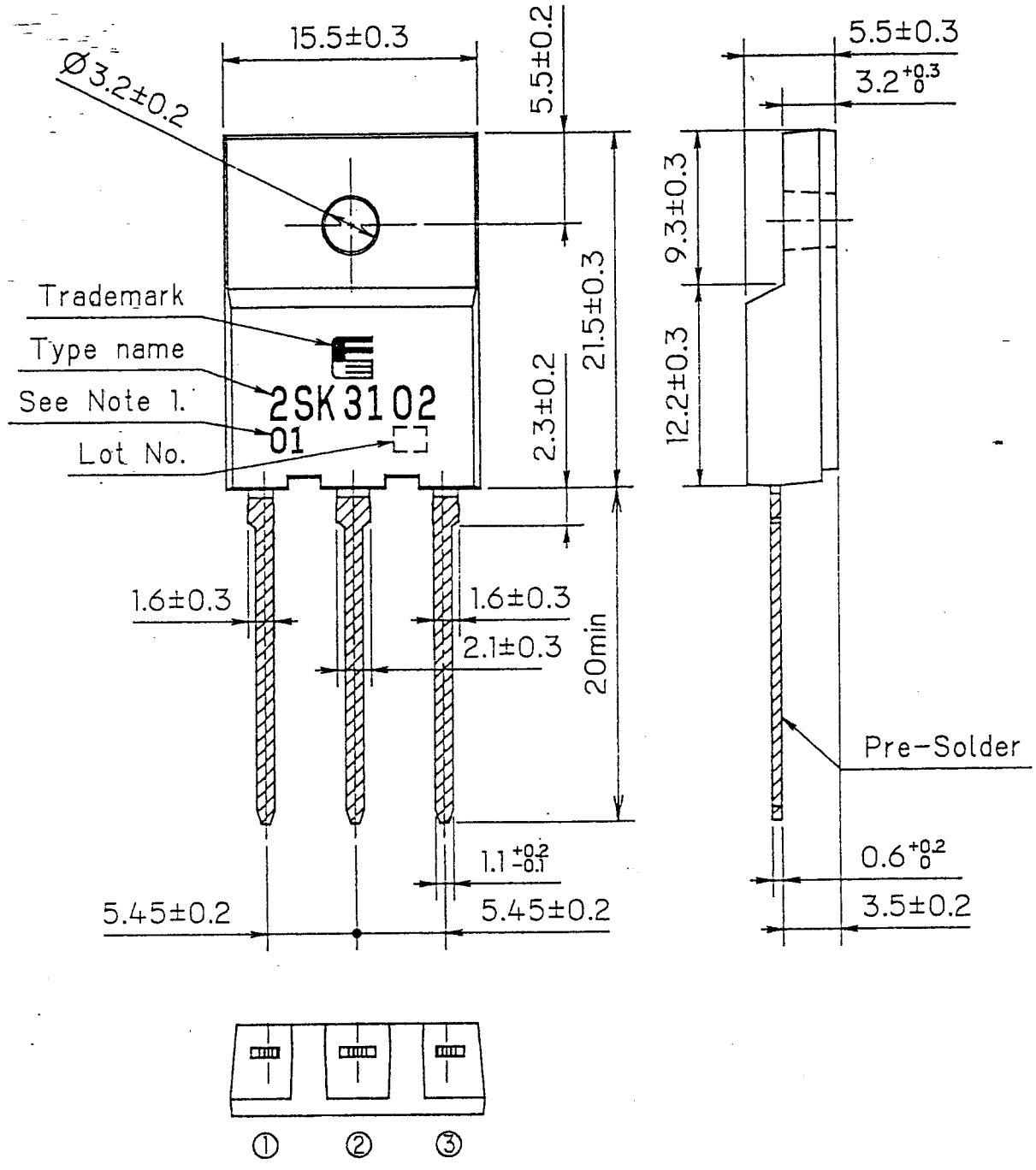


Fig.2 Operating waveforms



FUJI POWER MOSFET

TYPE : 2SK3102-01R



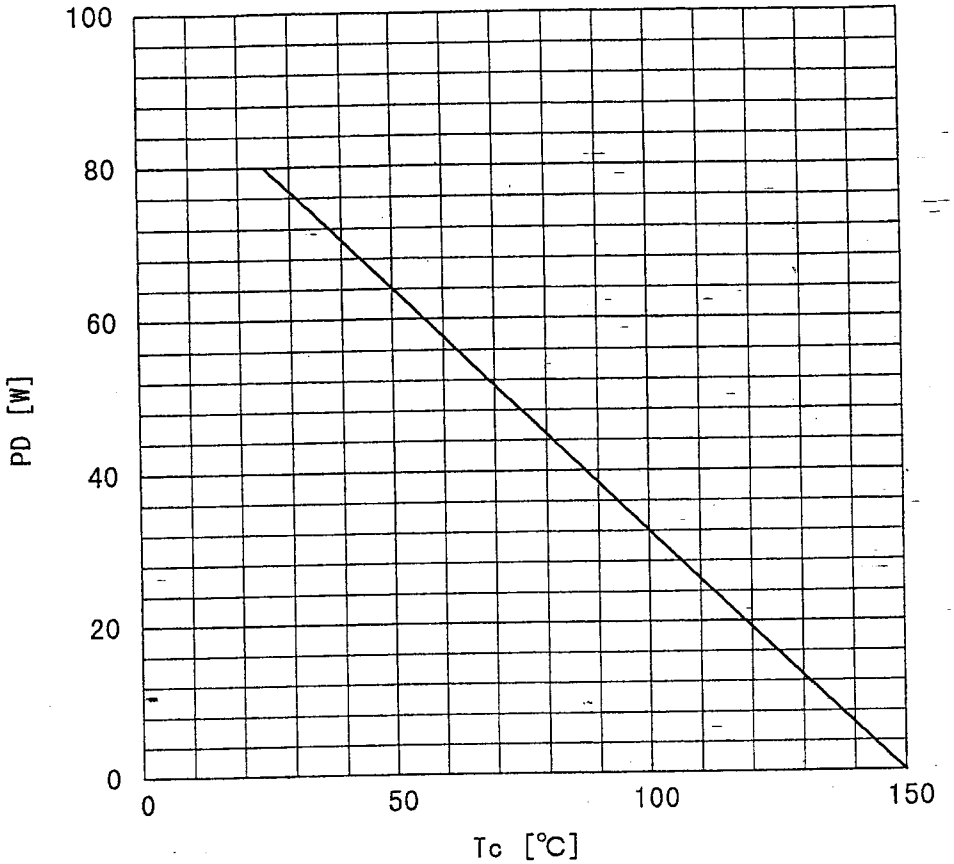
CONNECTION

① GATE
② DRAIN
③ SOURCE

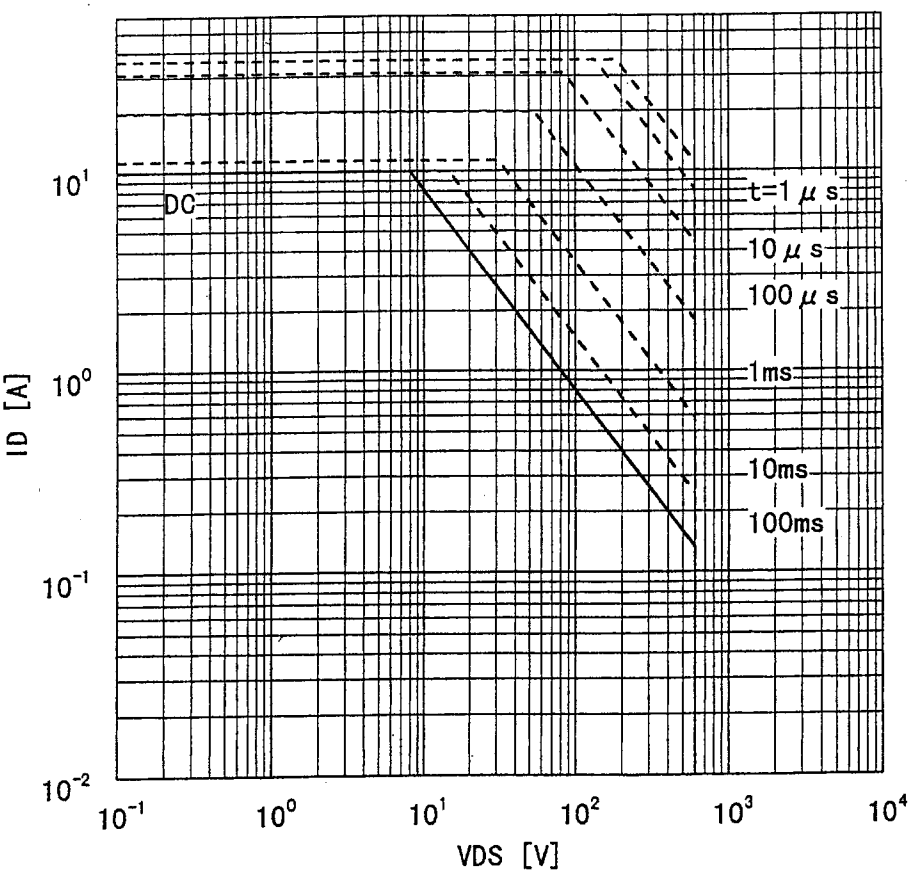
Note 1. Guaranteed mark of avalanche ruggedness.

DIMENSIONS ARE IN MILLIMETERS.

Power Dissipation
PD=f(Tc)

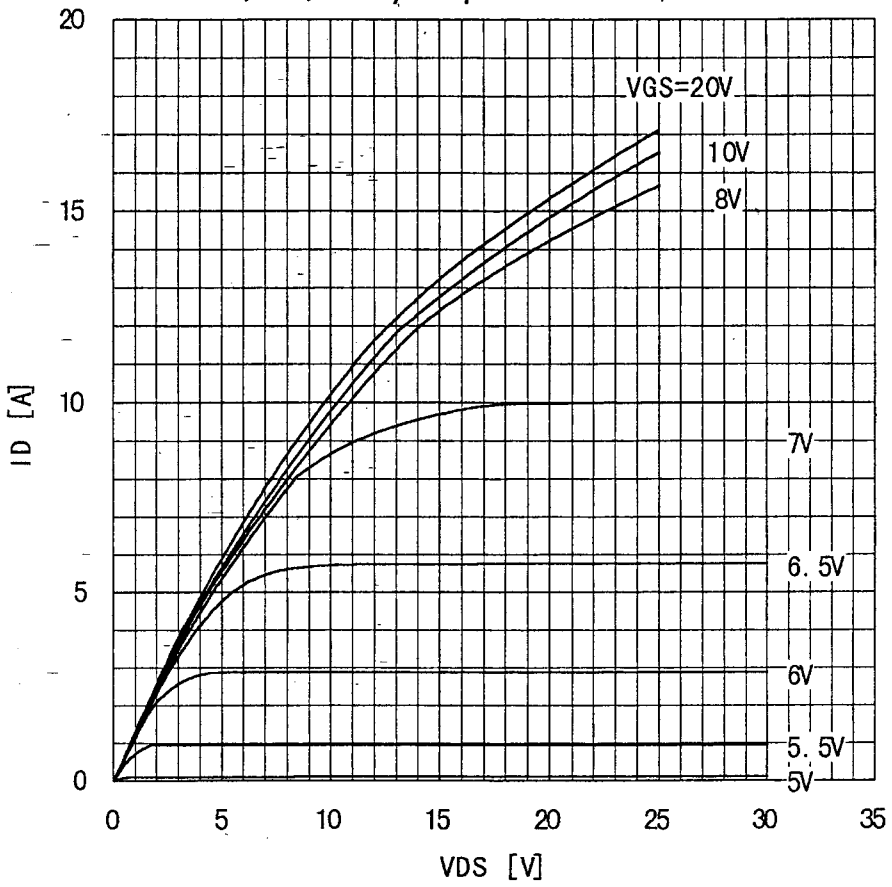


Safe operating area
ID=f(VDS) : D=0.01, Tc=25°C



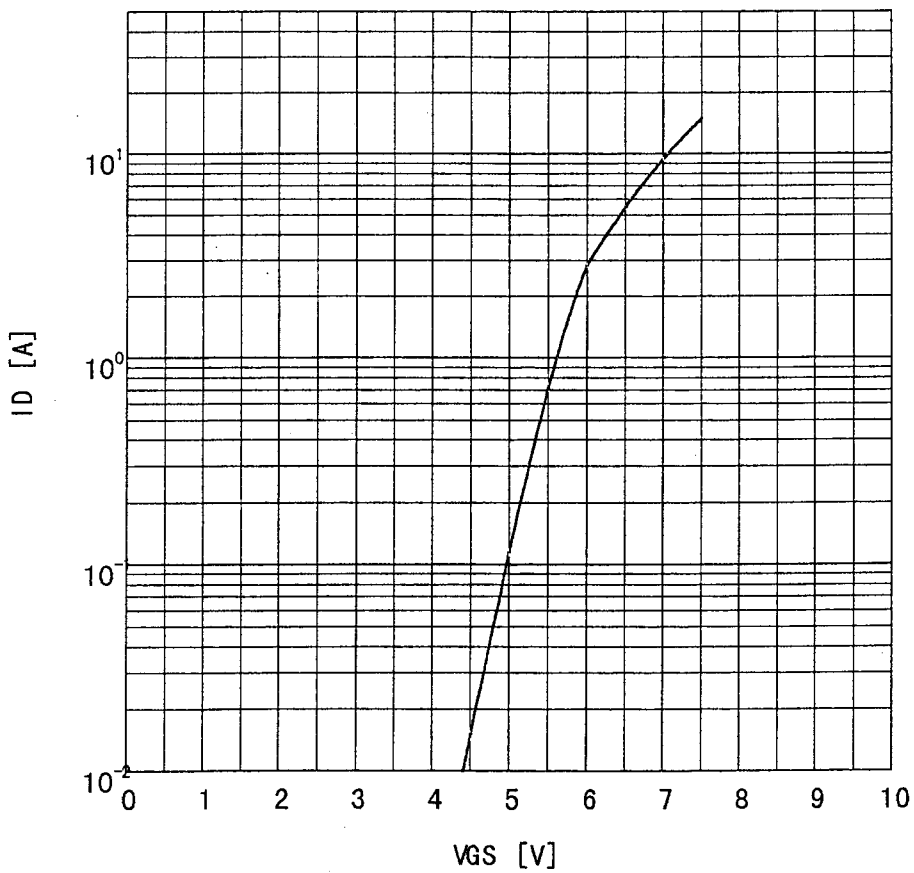
Typical output characteristics

ID=f(VDS) :80μs pulse test, Tc=25°C

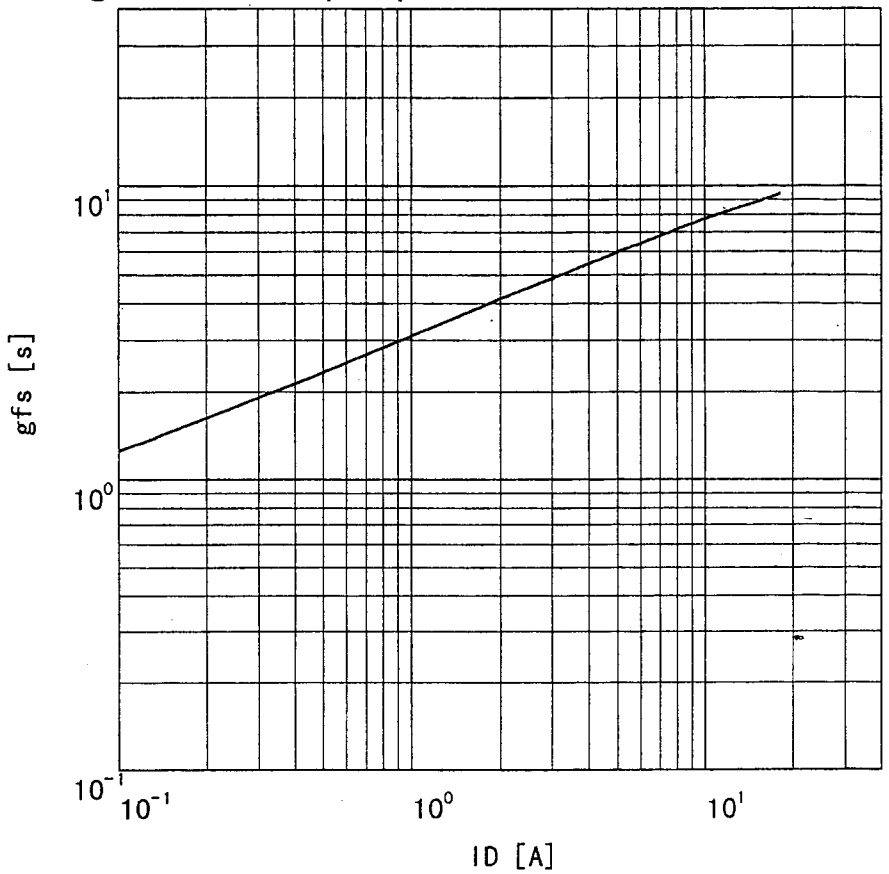


Typical transfer characteristic

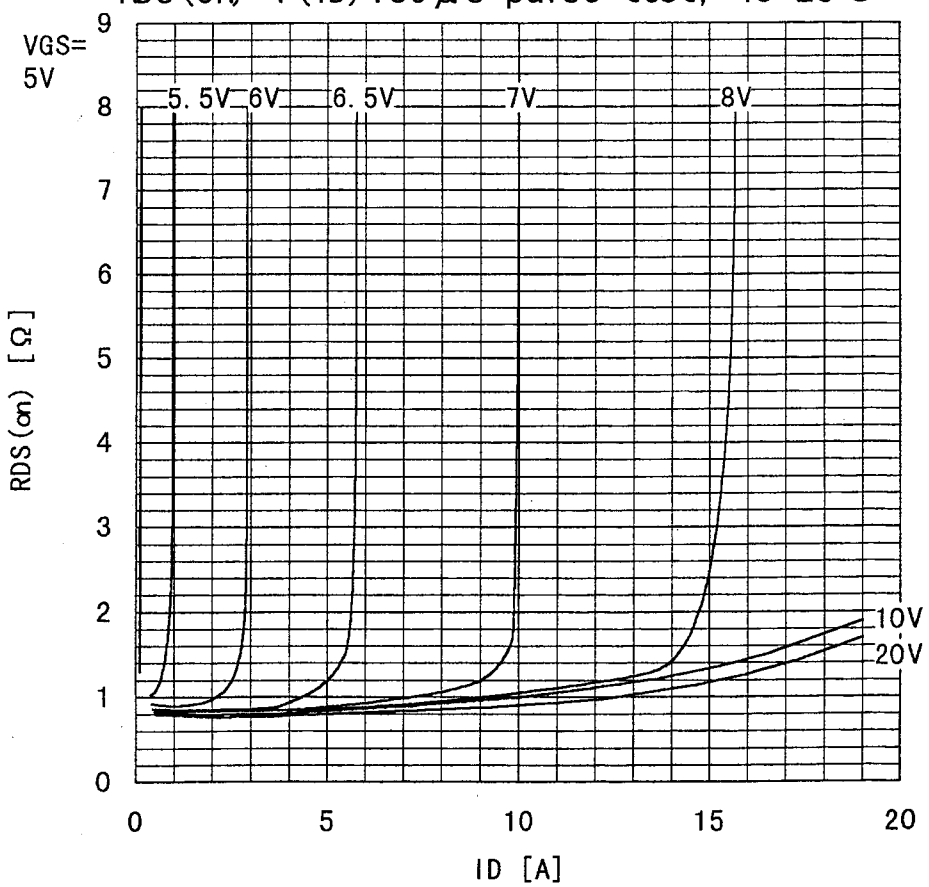
ID=f(VGS) :80μs pulse test, VDS=25V, Tch=25°C



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

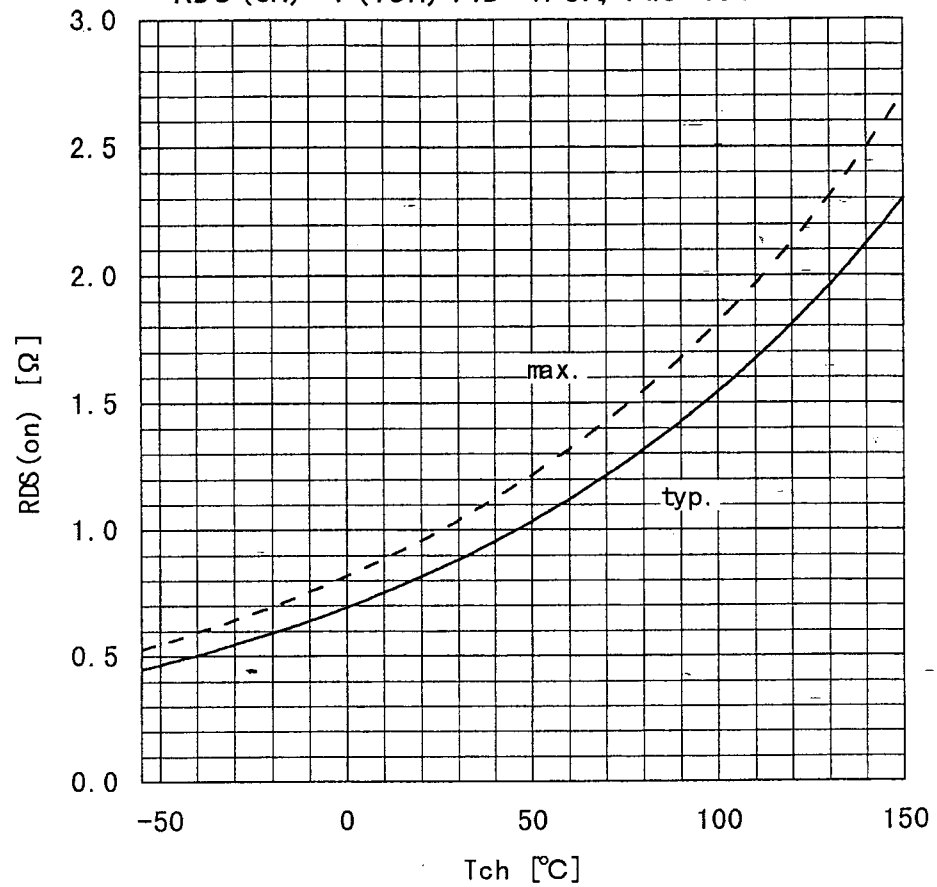


Typical drain-source on-state resistance
RDS(on)=f(ID) : 80 μs pulse test, Tc=25°C



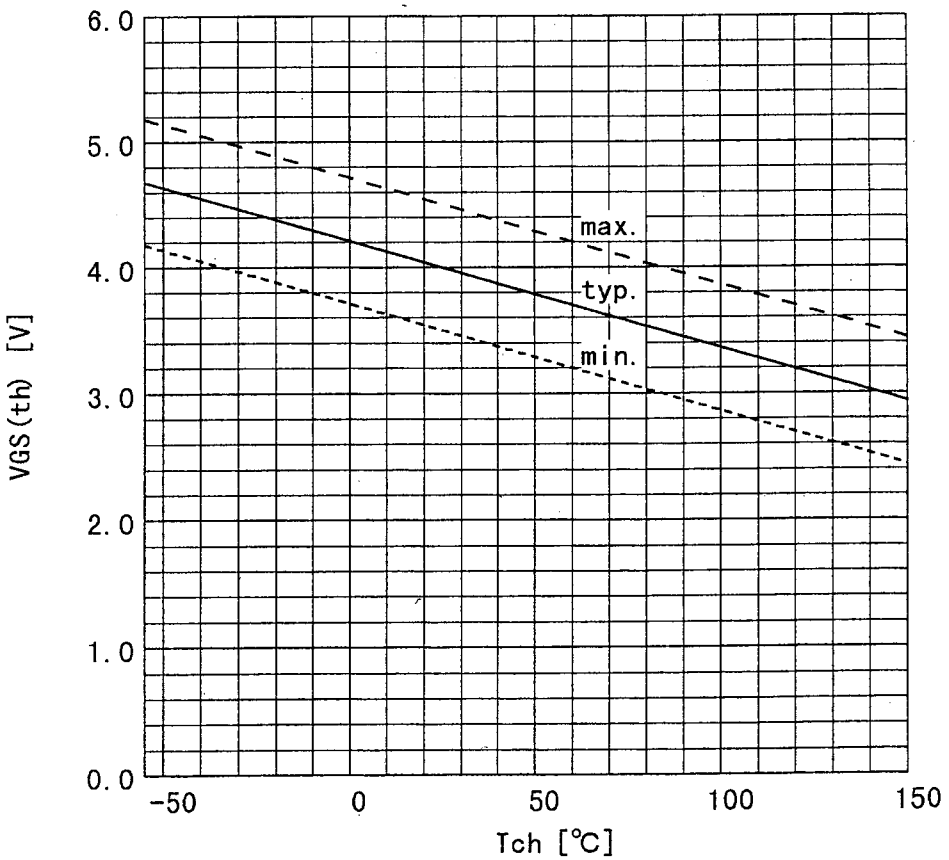
Drain-source on-state resistance

RDS(on)=f(Tch) : ID=4.5A, VGS=10V



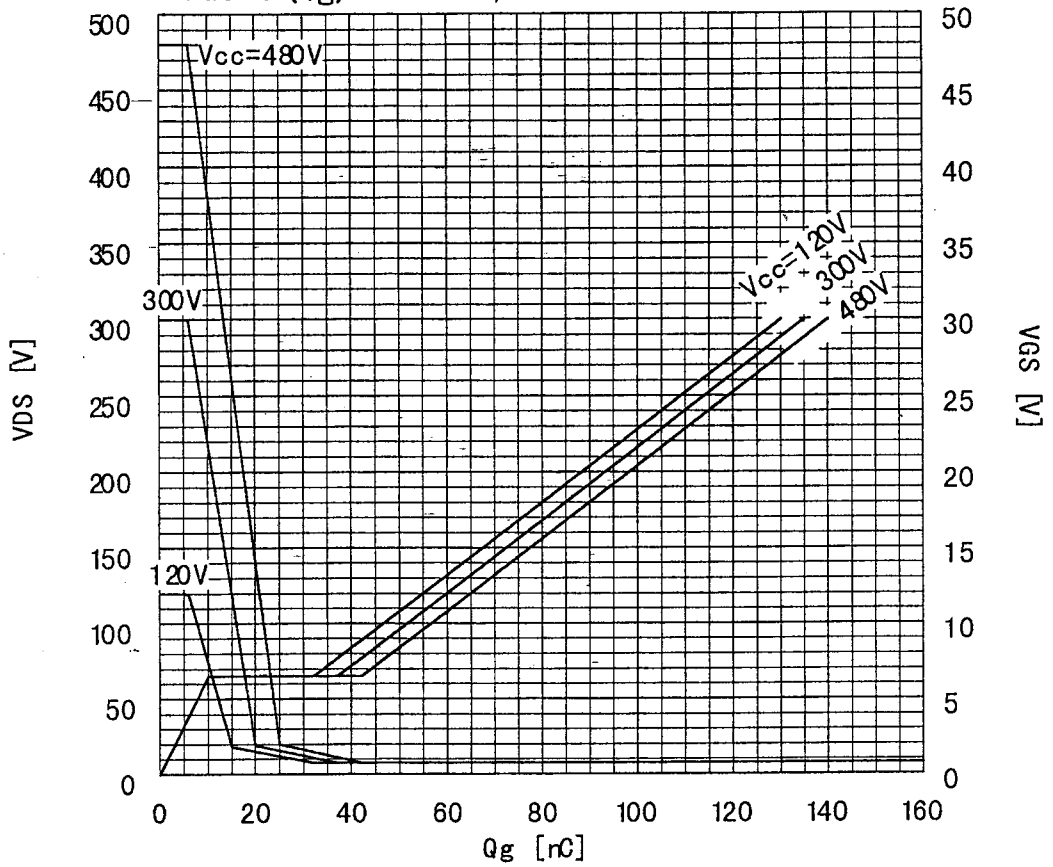
Gate threshold voltage

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



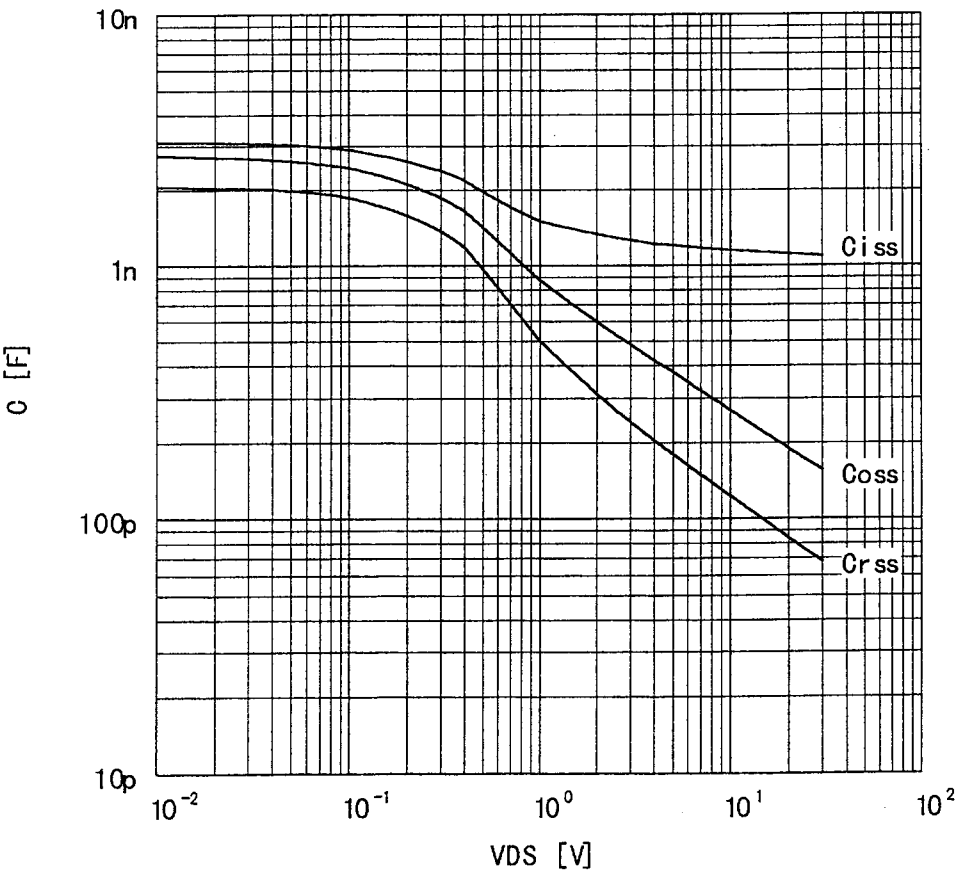
Typical gate charge characteristic

VGS=f (Qg) : ID=10A, Tc=25°C



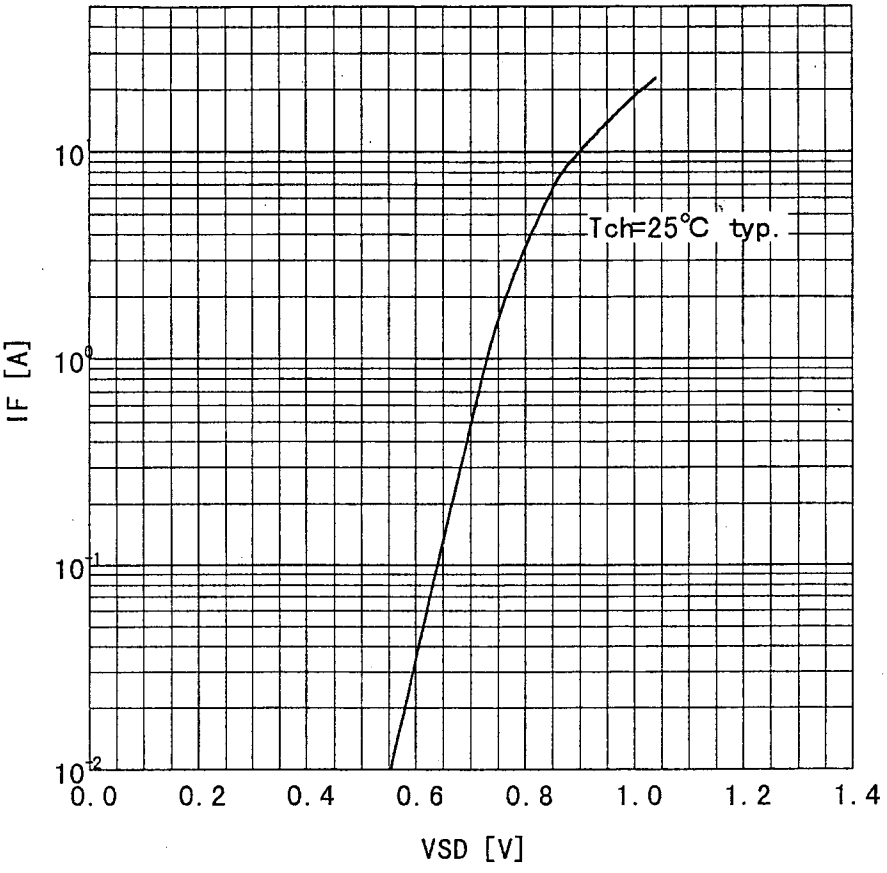
Typical capacitances

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



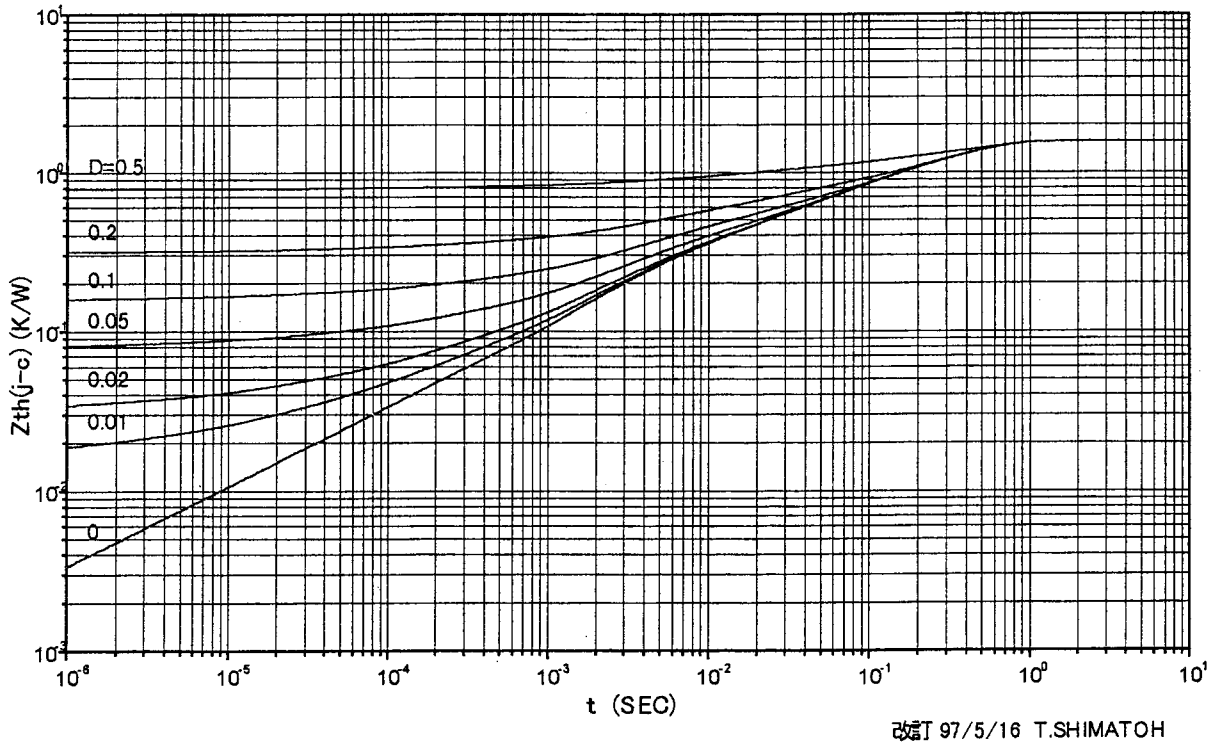
Forward characteristic of reverse of diode

IF=f(VSD) : 80 μs pules test, VGS=0V



TO-3PF/80W Transient Thermal Impedance

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



改訂 97/5/16 T.SHIMATOH

Avalanche energy derating

Eas=f(starting Tch) : Vcc=60V, I_{AV}=10A