SPECIFICATION

(TENTATIVE)

Device Name : **Power MOSFET**

Type Name : **2SK3272-01L,S,SJ**

Spec. No. : **MS5F4394**

Fuji Electric Co.,Ltd.
Matsumoto Factory

	DATE	NAME	APPROVED
DRAWN	Aug. - 24 - '98	T. Shimatoh	
CHECKED	Aug. - 24 - '98	T. Yamada.	

Fuji Electric Co.,Ltd.

DWG.NO. MS5F4394 1/15

H04-004-05

1.Scope This specifies Fuji Power MOSFET 2SK3272-01L,S,SJ

2.Construction N-Channel enhancement mode power MOSFET

3.Applications for Switching

4.Outview T−pack L-Type Outview See to 5/15 page
S-Type Outview See to 6/15 page
SJ-Type Outview See to 7/15 page

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

Description	Symbol	Characteristics	Unit	Remarks
Drain-Source Voltage	V_{DS}	60	V	
	V_{DSX}	40	V	V_{GS}=-20V
Continuous Drain Current	I_D	±80	A	
Pulsed Drain Current	I_{DP}	±320	A	
Gate-Source Voltage	V_{GS}	+30/-20	V	
Maximum Avalanche Energy	E_{AV}	613	mJ	*1
Maximum Power Dissipation	P_D	135	W	
Operating and Storage Temperature range	T_{ch}	150	°C	
	T_{stg}	-55 to +150	°C	

*1 L=0.13mH,Vcc=24V

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

Static Ratings

Description	Symbol	Conditions		min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=1mA V_{GS}=0V		60	-	-	V
	BV_{DSX}	I_D=1mA V_{GS}=-20V		40	-	-	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°C	-	1.0	100	μA
			T_{ch}=125°C	-	10	500.0	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=+30V、−20V V_{DS}=0V		-	10	100	nA
Drain-Source On-State Resistance	R_{DS}(on)	I_D=40A V_{GS}=10V		-	5.0	6.5	mΩ

Dynamic Ratings

Description	Symbol	Conditions	min.	typ.	max.	Unit
Forward Transconductance	g_{fs}	I_D=40A 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=80A	-	150	-	ns
	tf	R_G=10Ω	-	135	-	ns
Total Gate Charge	Qg	V_{cc}=30V	-	145	-	ns
Gate - Source Charge	Qgs	I_D=80A	-	60	-	ns
Gate - Drain Charge	Qgd	V_{GS}=10V	-	40	-	ns

Reverse Diode

Description	Symbol	Conditions	min.	typ.	max.	Unit
Avalanche Capability	I_{AV}	L=100μH Tch=25°C See Fig.1 and Fig.2	80	-	-	A
Diode Forward On-Voltage	V_{SD}	I_F=80A V_{GS}=0V T_{ch}=25°C	-	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°C	-	0.25	-	μC

7.Thermal Resistance

Description	Symbol	min.	typ.	max.	Unit
Channel to Case	Rth(ch-c)	-	-	0.926	°C/W
Channel to Ambient	Rth(ch-a)	-	-	75.0	°C/W

Fig.1 Test circuit

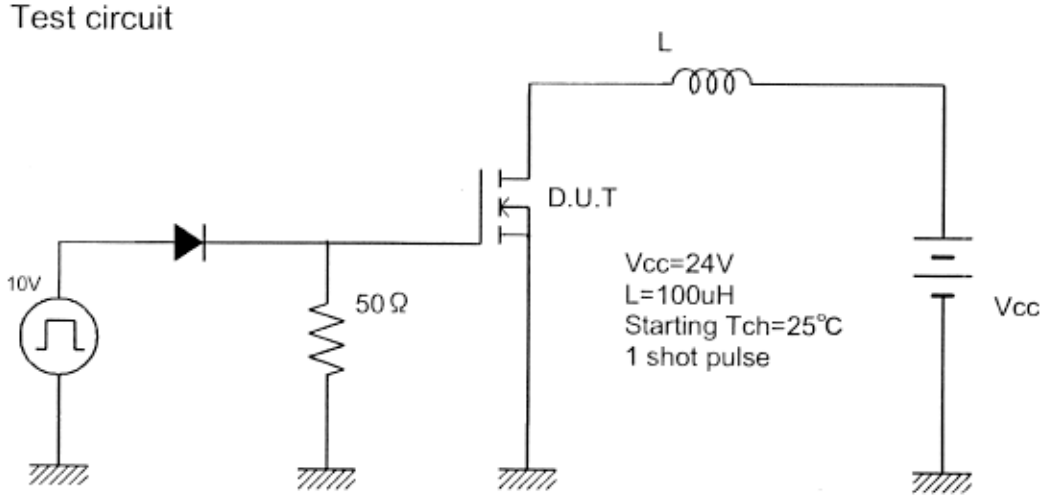
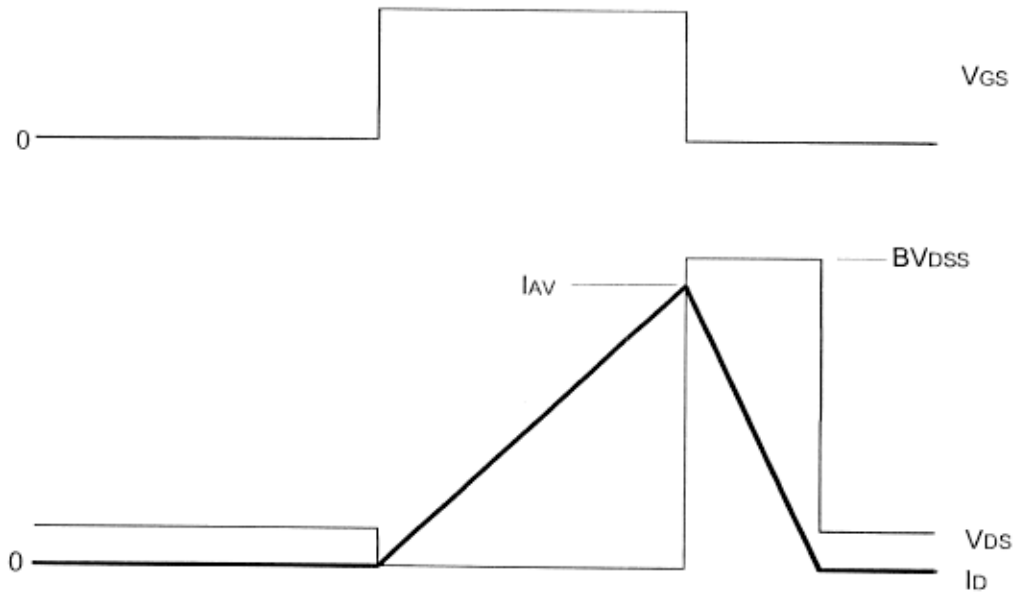
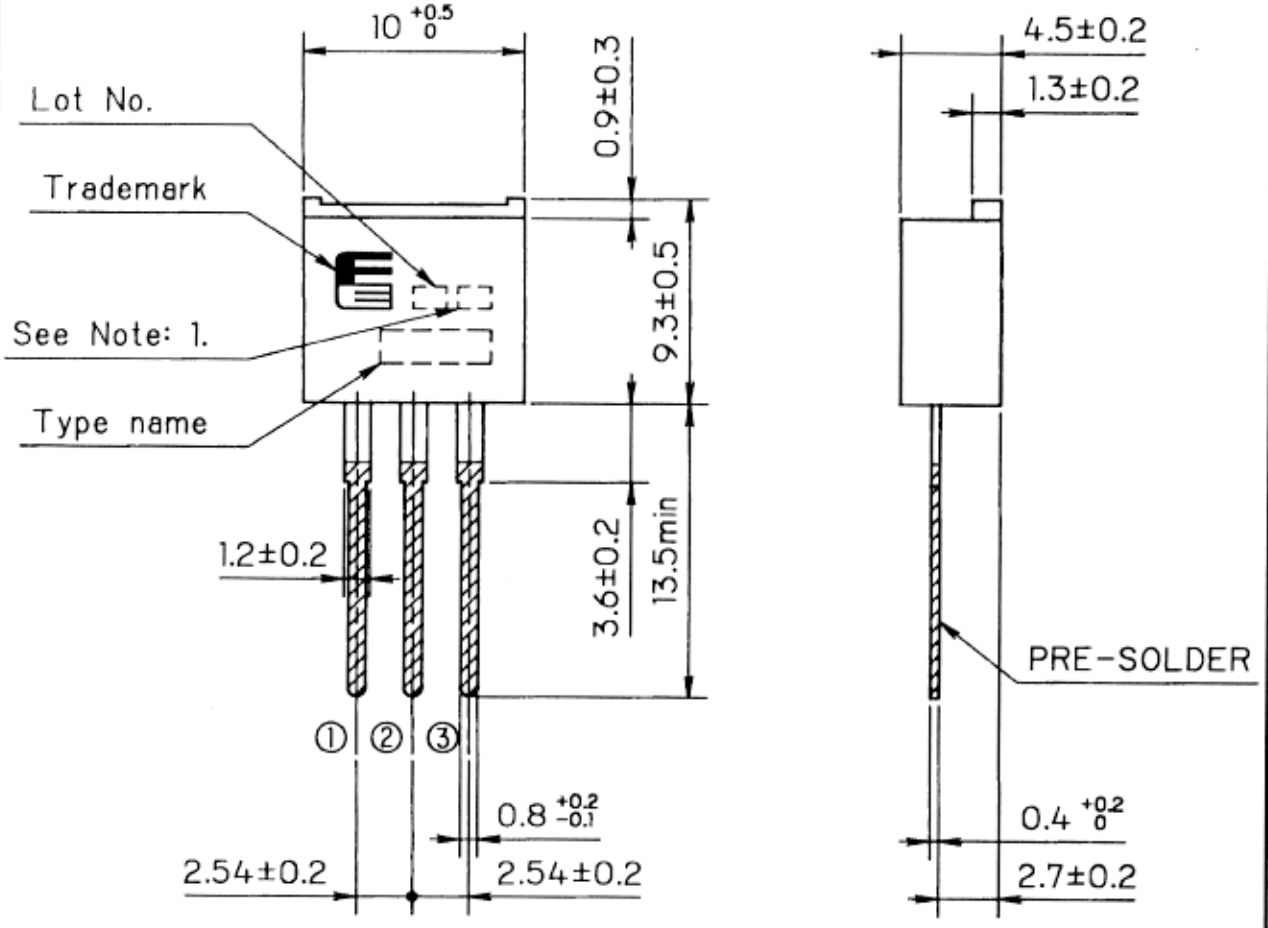
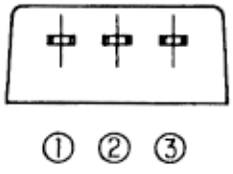


Fig.2 Operating waveforms





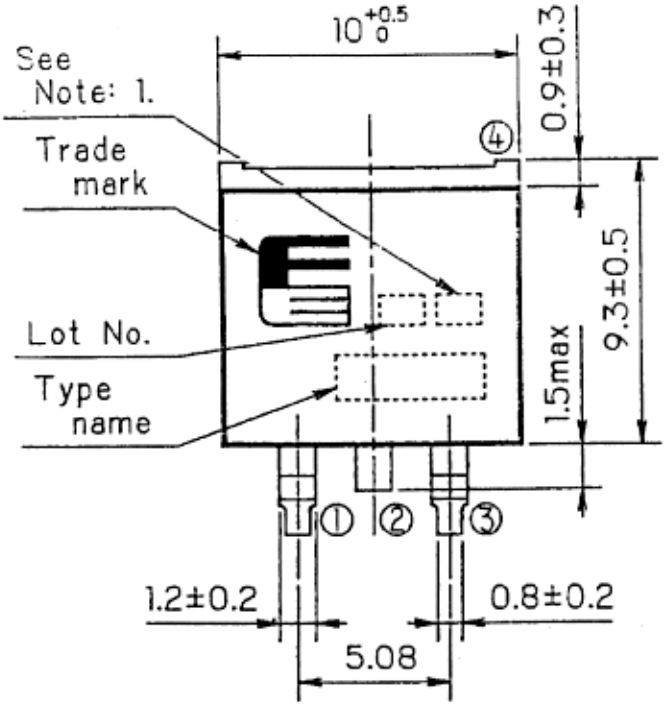


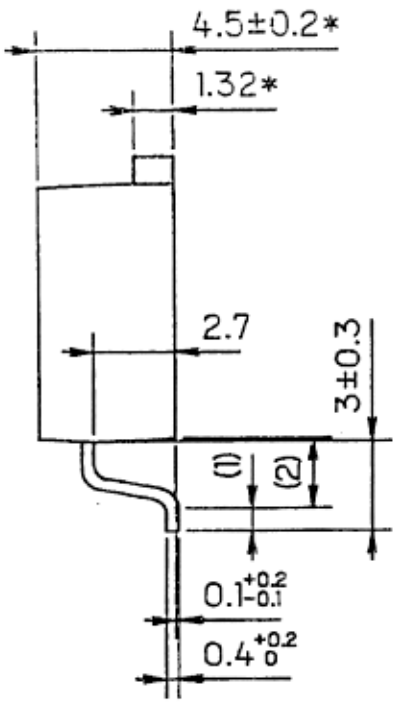
CONNECTION

① GATE
② DRAIN
③ SOURCE

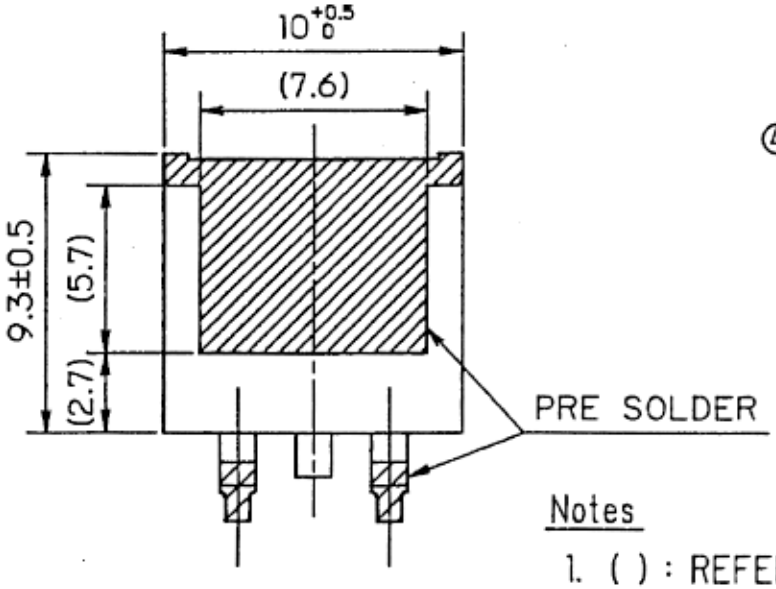
Note: 1. Guaranteed mark of avalanche ruggedness.

DIMENSIONS ARE IN MILLIMETERS.





BOTTOM VIEW



CONNECTION

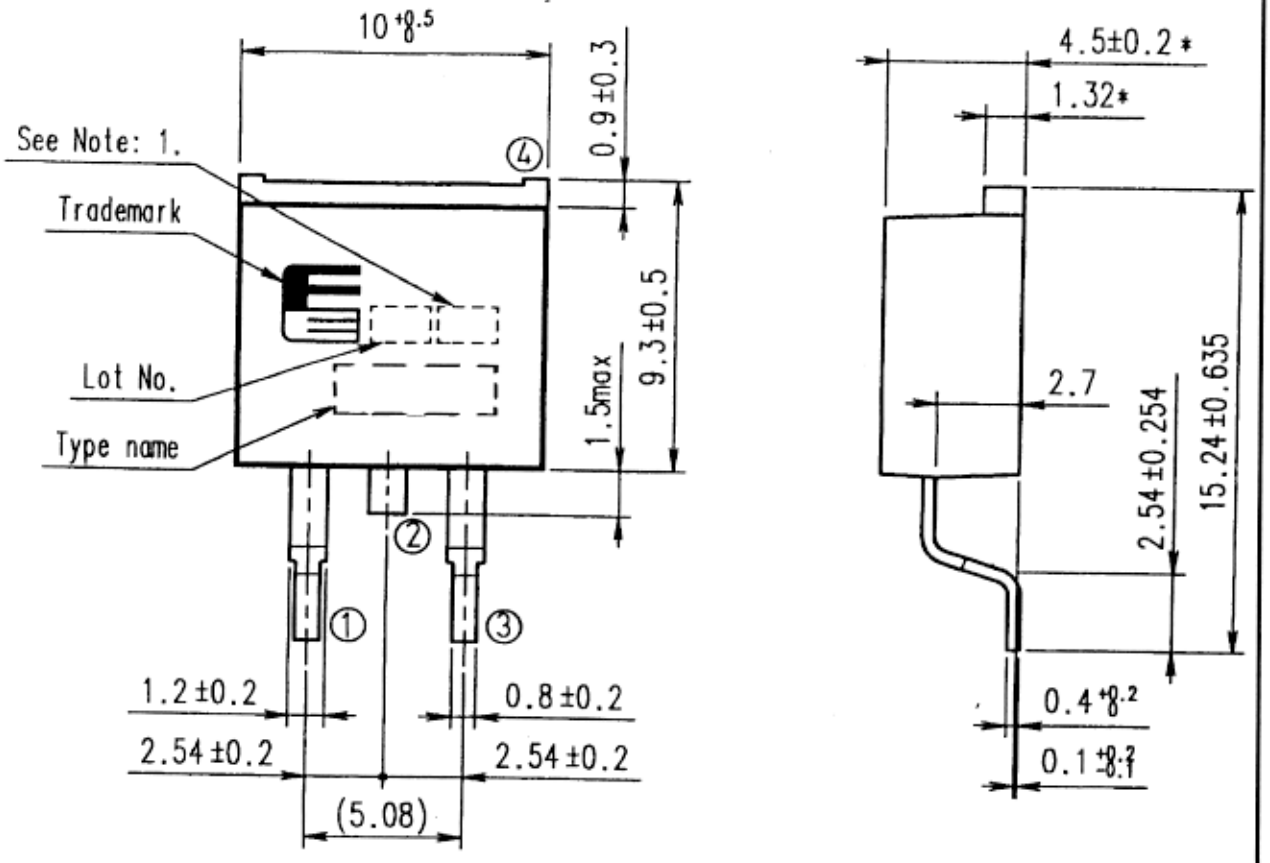
① GATE
④② DRAIN
③ SOURCE

Notes

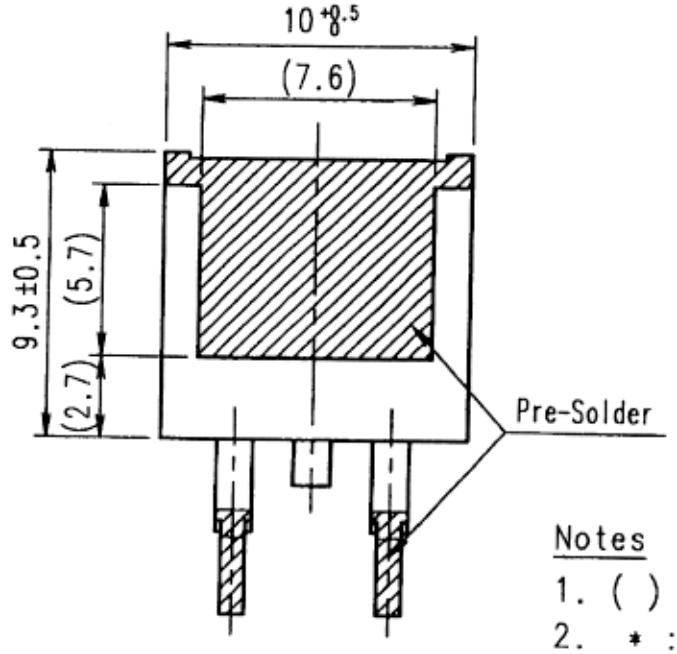
1. ( ) : REFERENCE DIMENSIONS.
2. * : DO NOT INCLUDE SOLDER.

Note: 1. Guaranteed mark of avalanche ruggedness.

DIMENSIONS ARE IN MILLIMETERS.



BOTTOM VIEW



CONNECTION

① GATE
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DIMENSIONS ARE IN MILLIMETERS.

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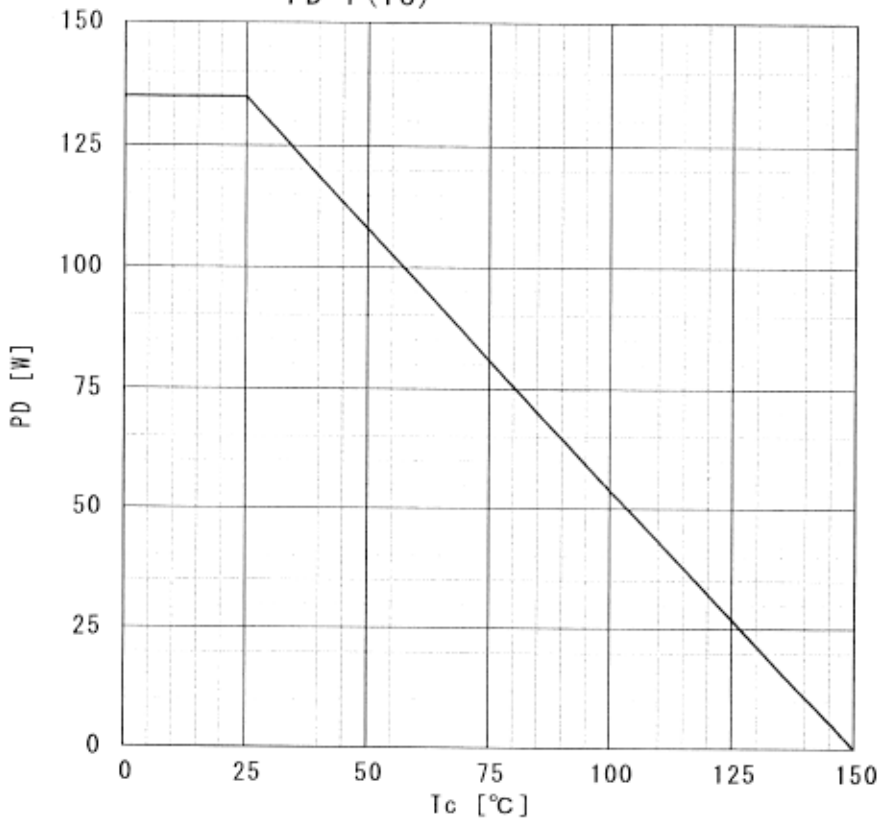
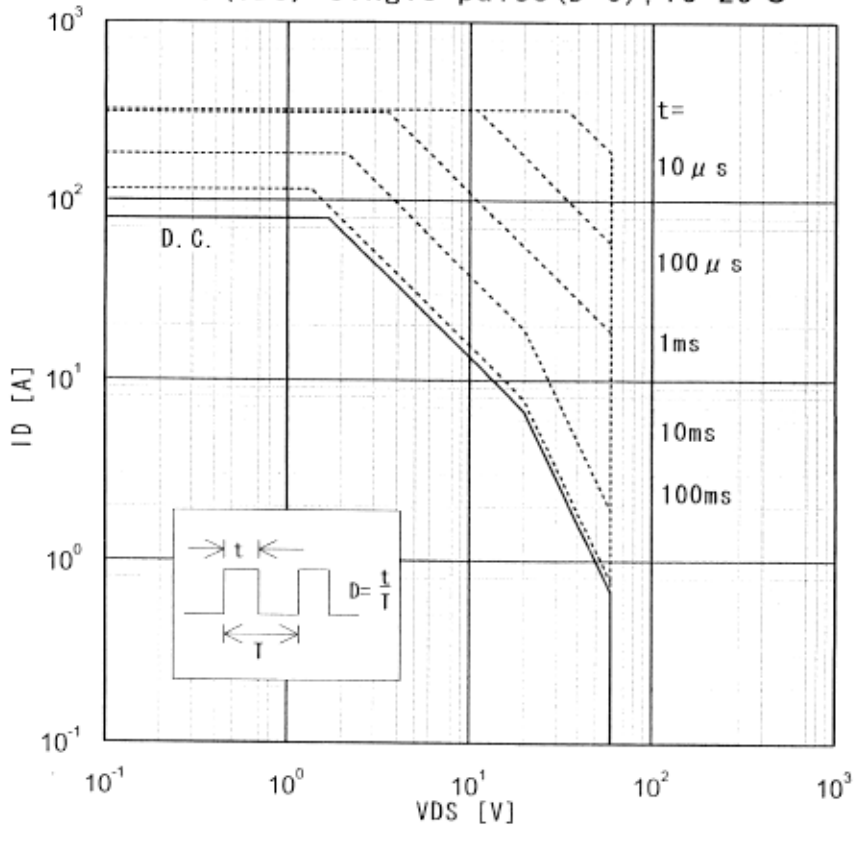
Power Dissipation

PD=f(Tc)



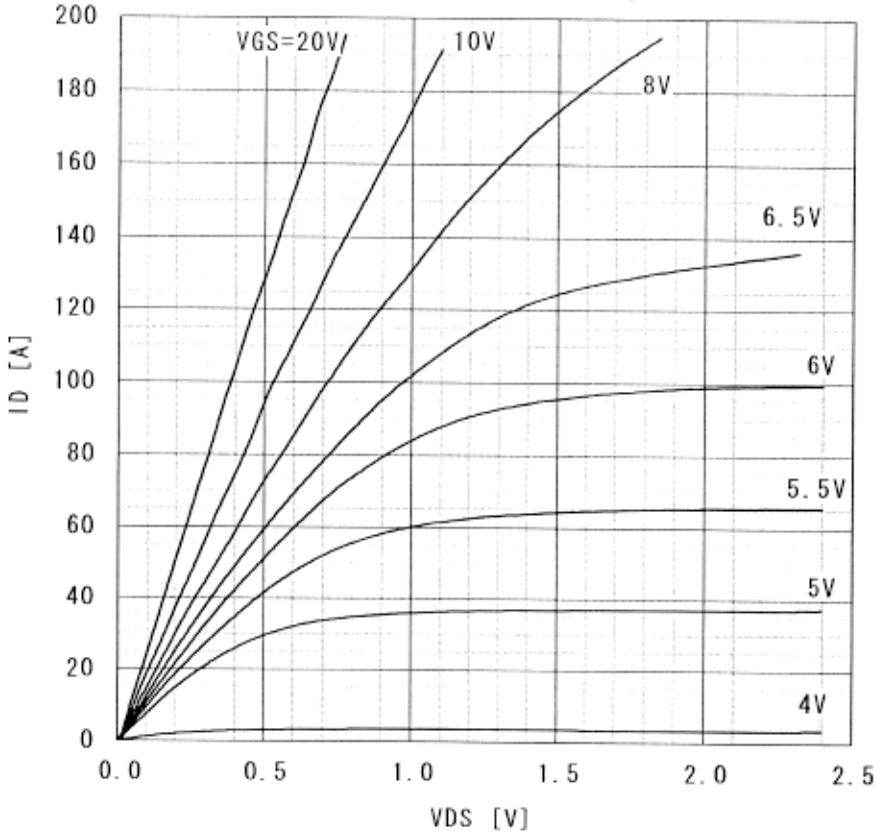
Safe operating area

ID=f(VDS):Single pulse(D=0), Tc=25℃



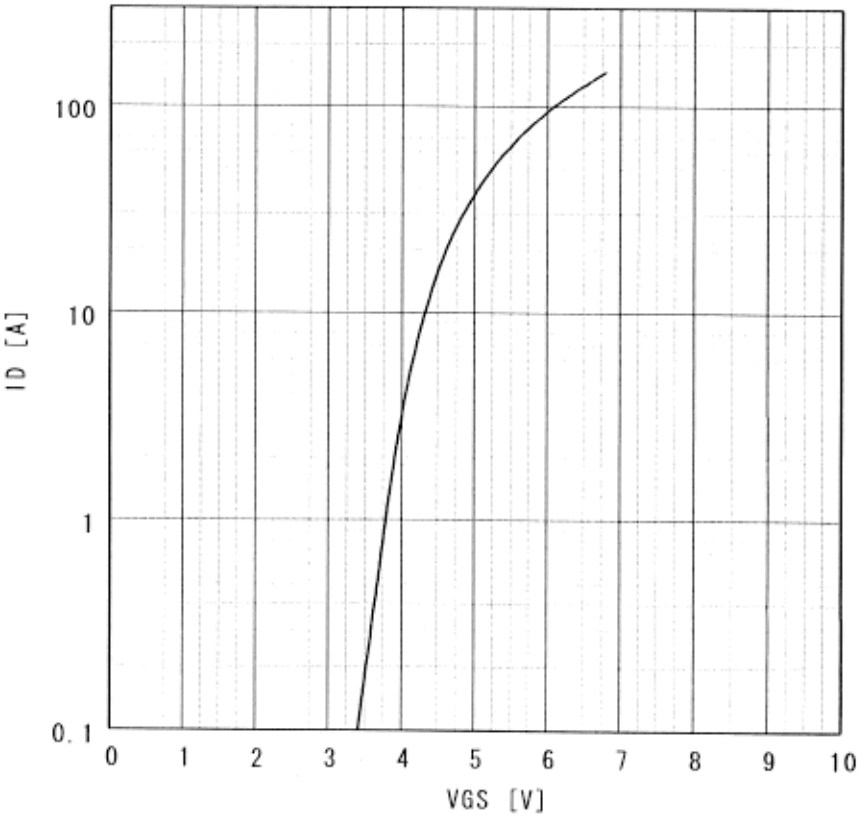
Typical output characteristics

ID=f(VDS):80μs pulse test, Tc=25℃

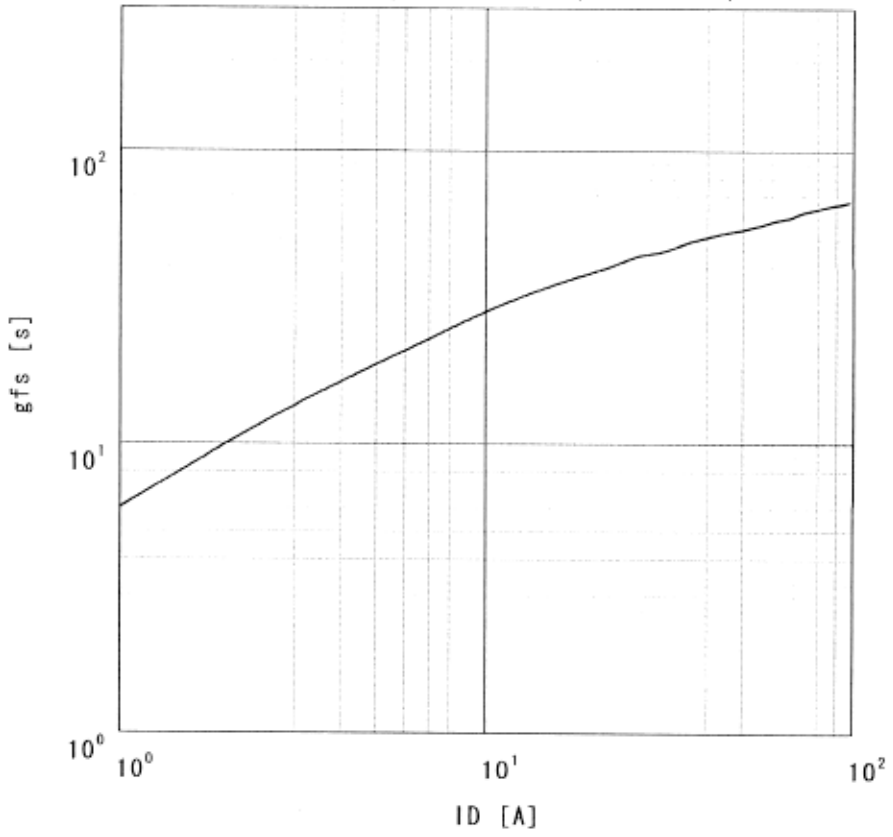


Typical transfer characteristics

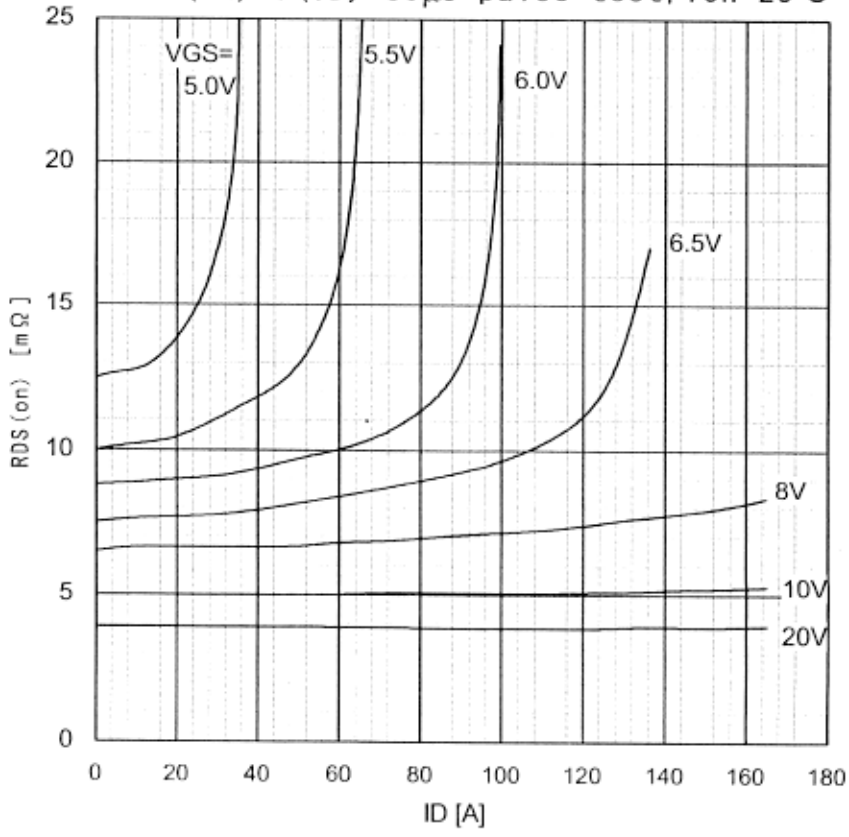
ID=f(VGS):80μs pulse test, VDS=10V, Tch=25℃



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

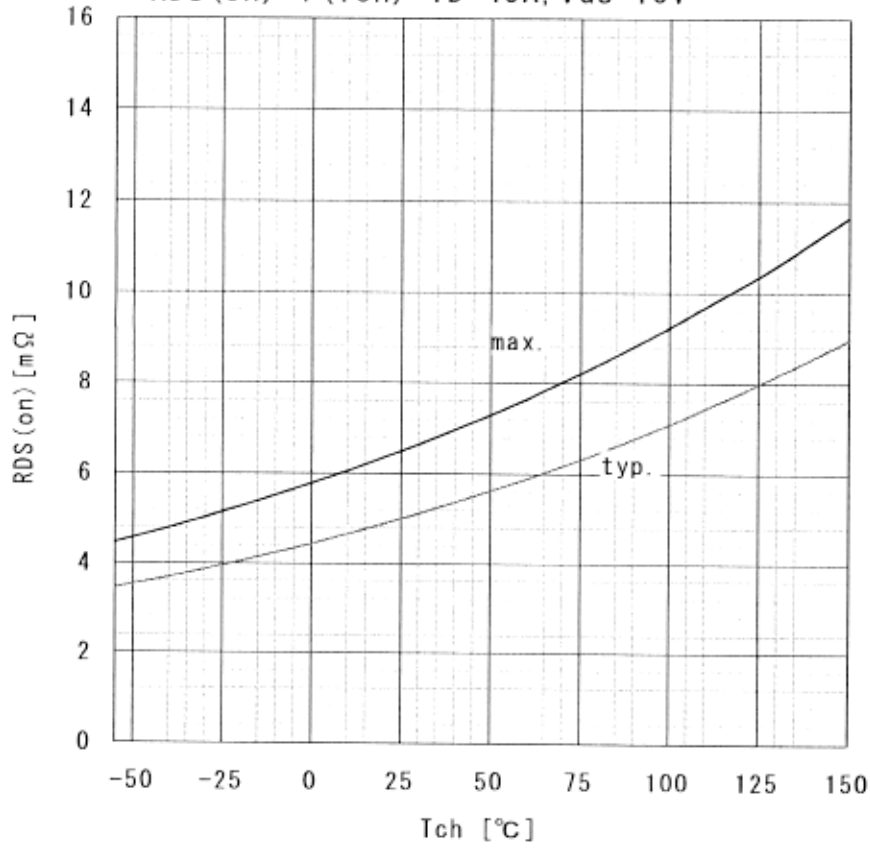


Typical Drain-Source on-State Resistance
RDS(on)=f(ID):80μs pulse test, Tch=25℃



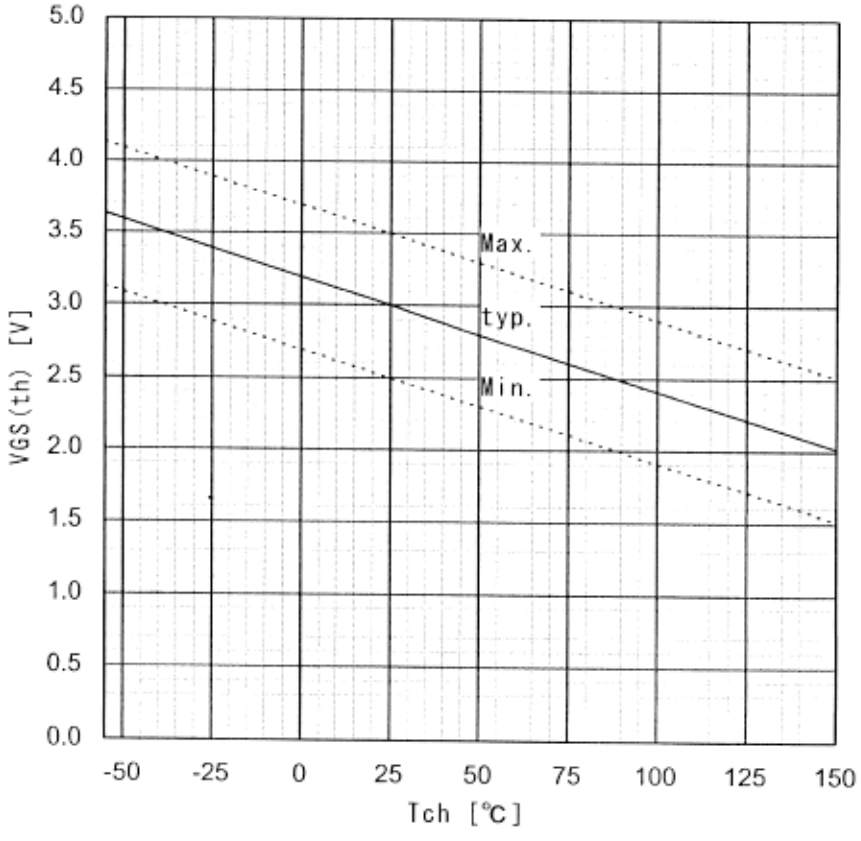
Drain-source on-state resistance

RDS(on)=f(Tch) : ID=40A, VGS=10V

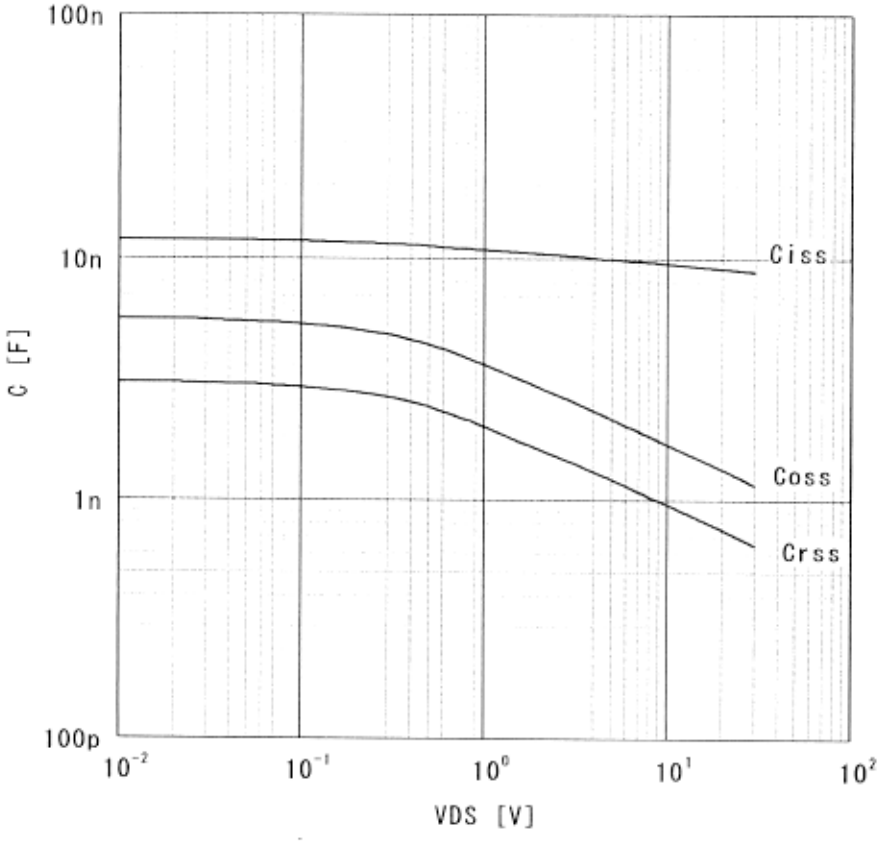


Gate Threshold Voltage vs. Tch

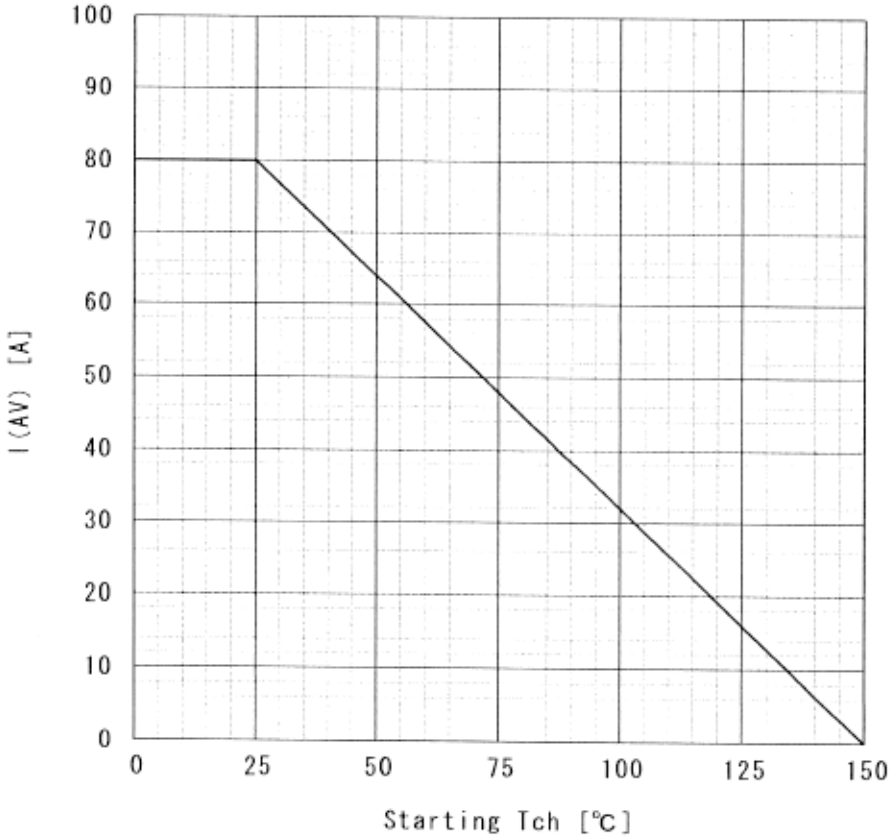
VGS(th)=f(Tch) : VDS=VGS, ID=10mA



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

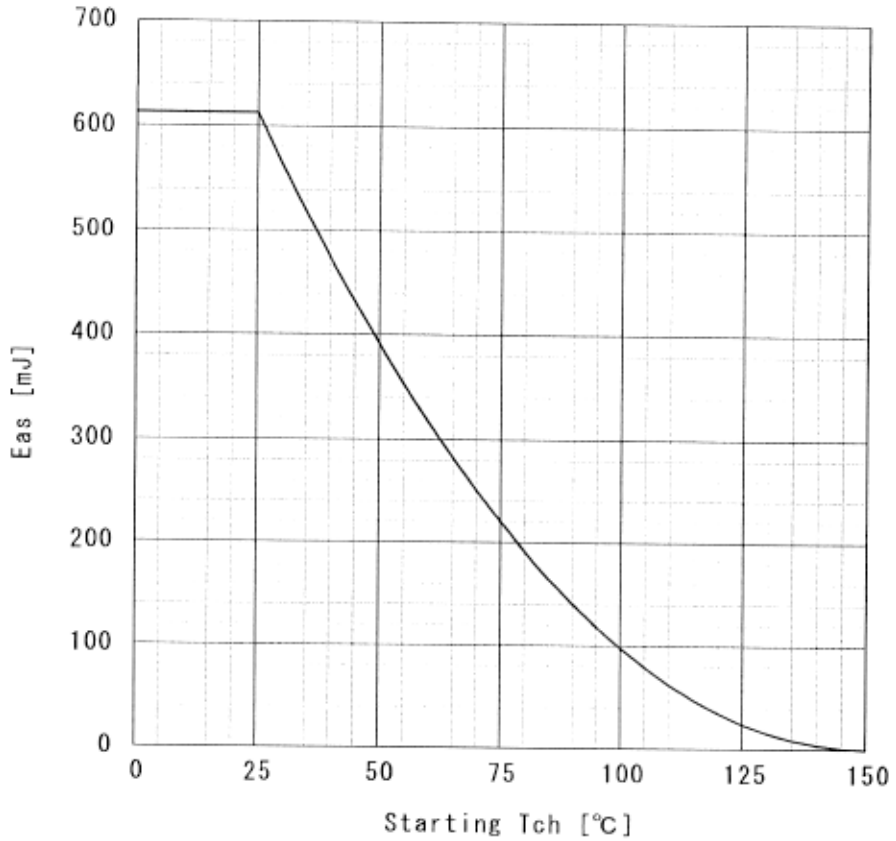


Maximum Avalanche Current vs. starting Tch
I(AV)=f(starting Tch) , single pulse



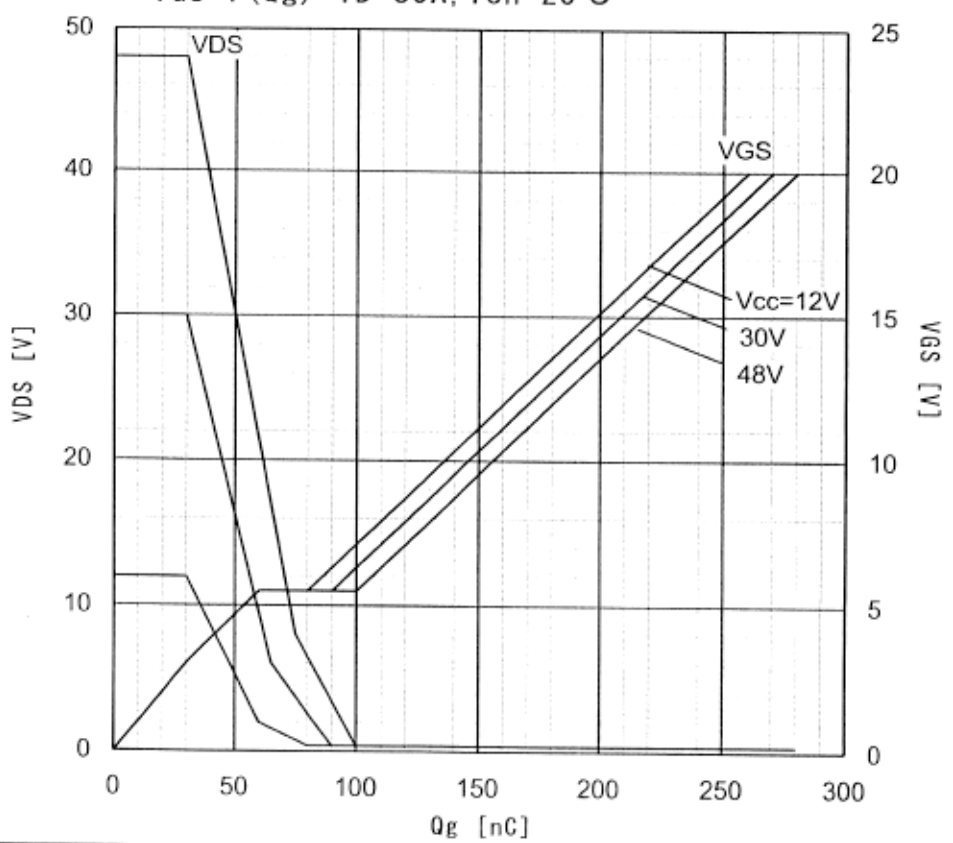
Maximum Avalanche energy vs. starting Tch

Eas=f(starting Tch):Vcc=24V, $I_{AV} \leqq 80A$, single pulse



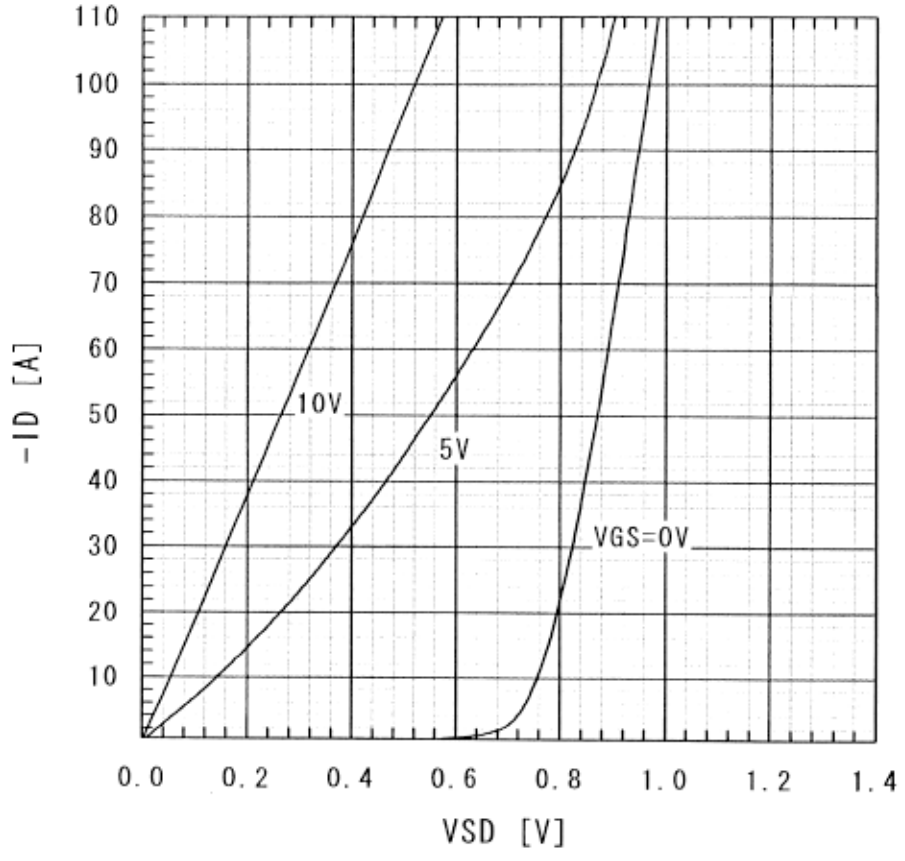
Typical Gate Charge Characteristics

VGS=f(Qg):ID=80A, Tch=25℃



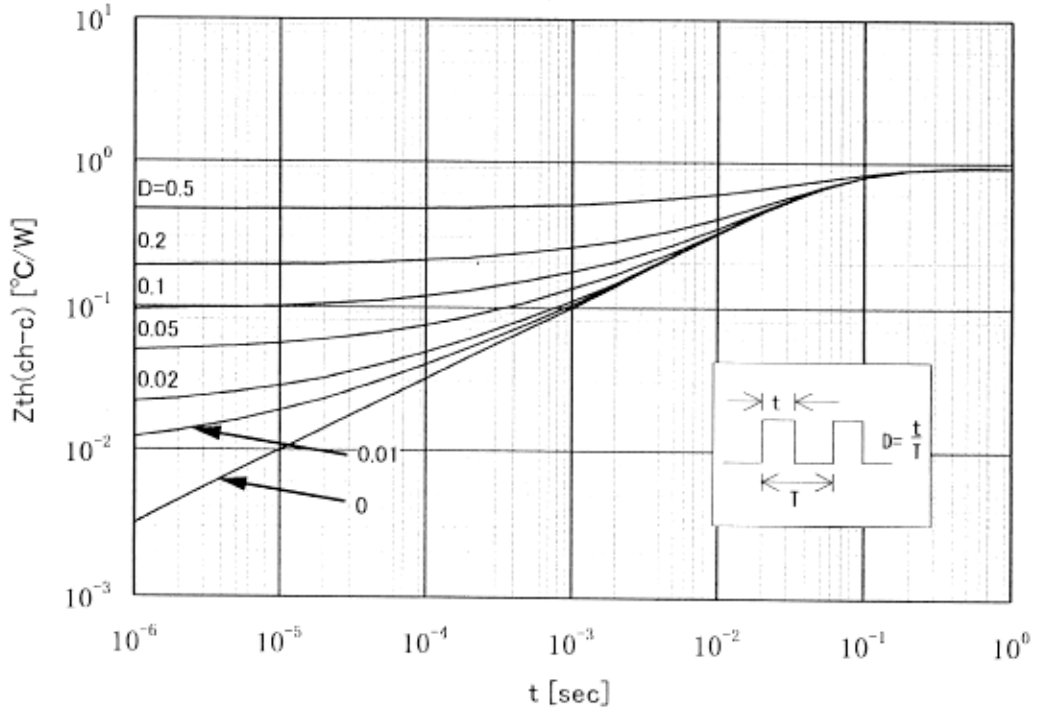
Typical Forward Characteristics of Reverse Diode

-ID=f(VSD) : 80 μs pulse test, Tch=25℃



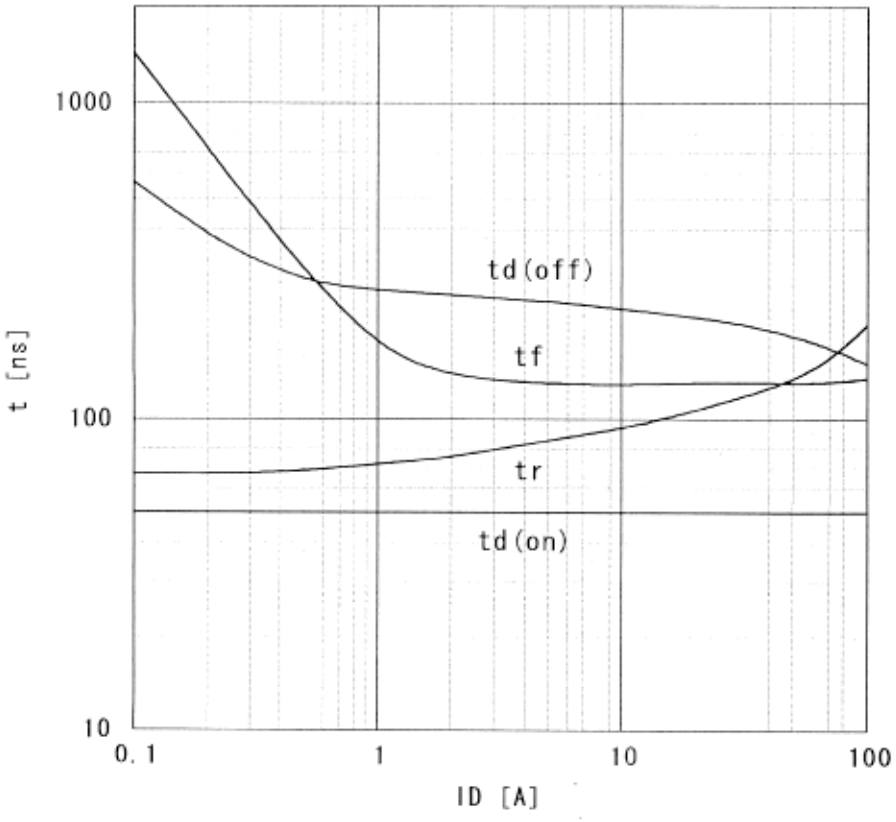
Transient Thermal Impedance

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℃