

SPECIFICATION

DEVICE NAME : Power MOSFET

TYPE NAME : 2SK2827-01

SPEC. NO. :

Fuji Electric Co.,Ltd.

This Specification is subject to change without notice.

	DATE	NAME	APPROVED		Fuji Electric Co.,Ltd.	
DRAWN					DWG. NO.	1/12
CHECKED						

1.Scope This specifies Fuji Power MOSFET 2SK2827-01

2.Construction N-Channel enhancement mode power MOSFET

3.Applications for Switching

4.Outview TO-220 Outview See to 5/12 page

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

Description	Symbol	Characteristics	Unit	Remarks
Drain-Source Voltage	V_{DS}	600	V	
Continuous Drain Current	I_D	± 9	A	
Pulsed Drain Current	I_{DP}	± 32	A	
Gate-Source Voltage	V_{GS}	± 35	V	
Repetitive or non-repetitive	I_{AV}	9	A	$T_{ch} \leq 150^\circ\text{C}$
Maximum Avalanche Energy	E_{AV}	144.4	mJ	*1
Maximum Power Dissipation	P_D	60	W	
Operating and Storage	T_{ch}	150	°C	
Temperature range	T_{stg}	-55 to +150	°C	

*1 L=3.27mH, Vcc=60V

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}	$I_D=1\text{mA}$ $V_{GS}=0\text{V}$	600			V
Gate Threshold Voltage	$V_{GS(th)}$	$I_D=1\text{mA}$ $V_{DS}=V_{GS}$	3.5	4.0	4.5	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=600\text{V}$ $V_{GS}=0\text{V}$	$T_{ch}=25^\circ\text{C}$ $T_{ch}=125^\circ\text{C}$	10 0.2	500 1.0	μA mA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 35\text{V}$ $V_{DS}=0\text{V}$		10	100	nA
Drain-Source On-State Resistance	$R_{DS(on)}$	$I_D=4.5\text{A}$ $V_{GS}=10\text{V}$		1.0	1.2	Ω

Dynamic Ratings

Description	Symbol	Conditions	min.	typ.	max.	Unit
Forward Transconductance	g_{fs}	$I_D=4.5A$ $V_{DS}=25V$	2.5	5.0		S
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$		900	1400	pF
Output Capacitance	C_{oss}			150	230	
Reverse Transfer Capacitance	C_{rss}			70	110	
Turn-On Time	$t_d(on)$	$V_{cc}=300V$ $V_{GS}=10V$		25	40	ns
	t_r			70	110	
Turn-Off Time	$t_d(off)$	$I_D=9A$ $R_{GS}=10\Omega$		60	90	
	t_f			35	60	

Reverse Diode

Description	Symbol	Conditions	min.	typ.	max.	Unit
Avalanche Capability	I_{AV}	$L=3.27mH$ $T_{ch}=25^\circ C$				
		See Fig.1 and Fig.2	9			A
Diode Forward On-Voltage	V_{SD}	$I_F=2 \times I_{DR}$ $V_{GS}=0V$ $T_{ch}=25^\circ C$		1.0	1.5	V
Reverse Recovery Time	t_{rr}	$I_F=2 \times I_{DR}$ $-di/dt=100A/\mu s$ $T_{ch}=25^\circ C$		550		ns
Reverse Recovery Charge	Q_{rr}			7		μC

7. Thermal Resistance

Description	Symbol	min.	typ.	max.	Unit
Channel to Case	$R_{th(ch-c)}$			2.08	$^\circ C/W$
Channel to Ambient	$R_{th(ch-a)}$			75.0	$^\circ C/W$

Fig.1 Test Circuit

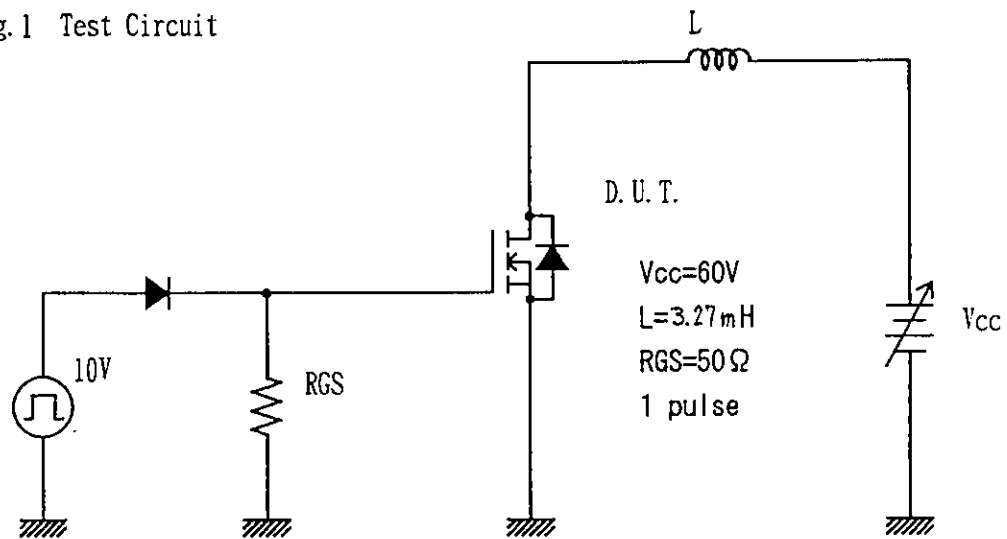
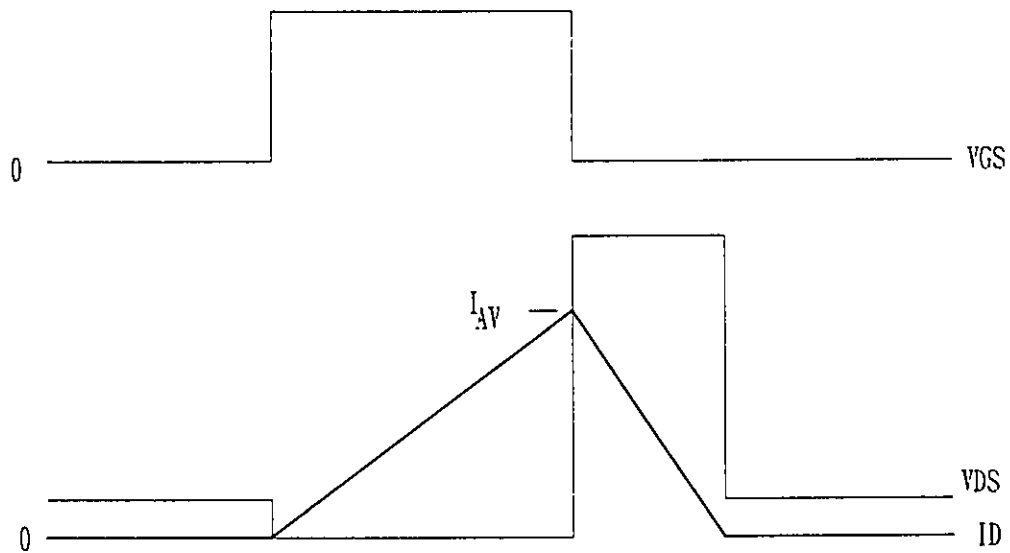


Fig.2 Operating waveforms



TYPE : 2SK2827-01



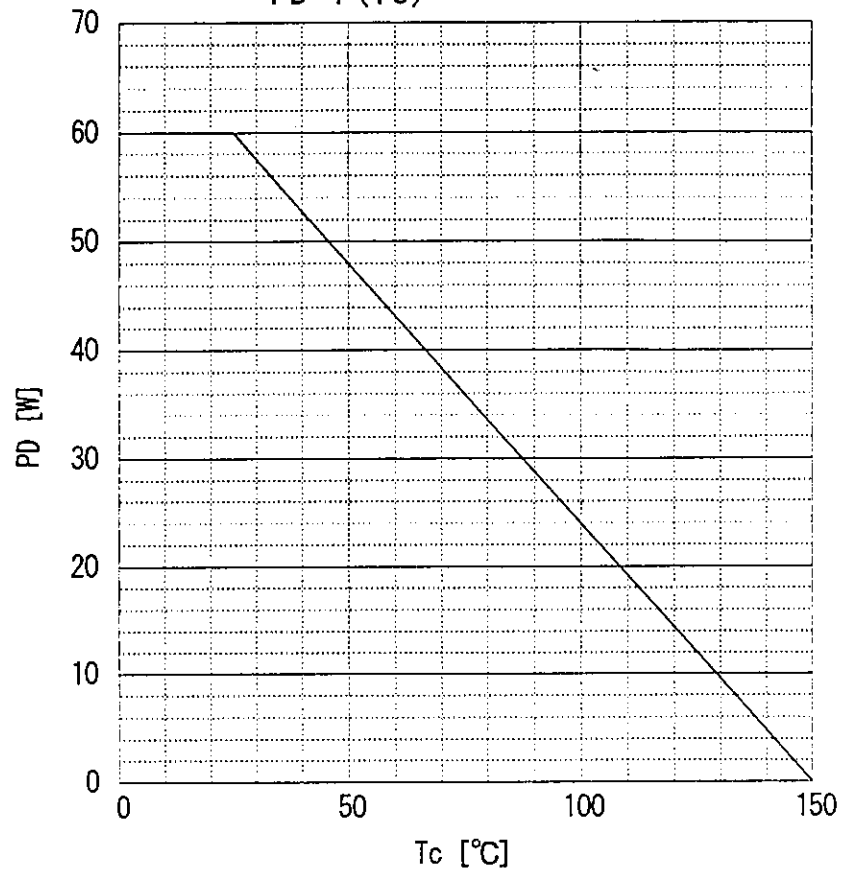
- ① GATE
- ② DRAIN
- ③ SOURCE

JEDEC : TO-220AB

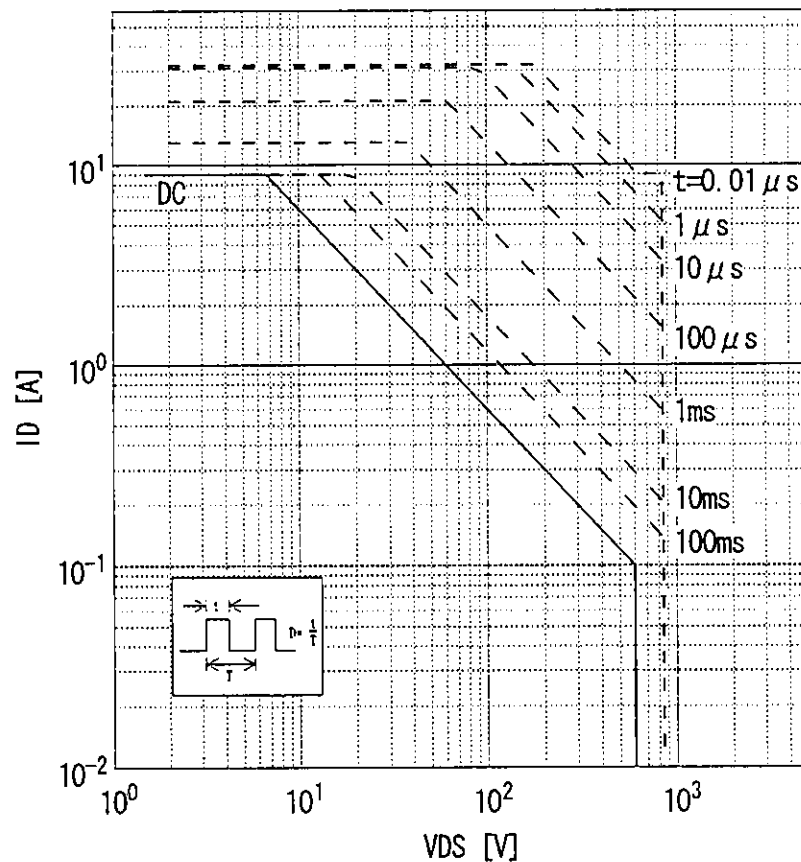
Note: 1. Guaranteed mark of avalanche ruggedness.

DIMENSIONS ARE IN MILLIMETERS.

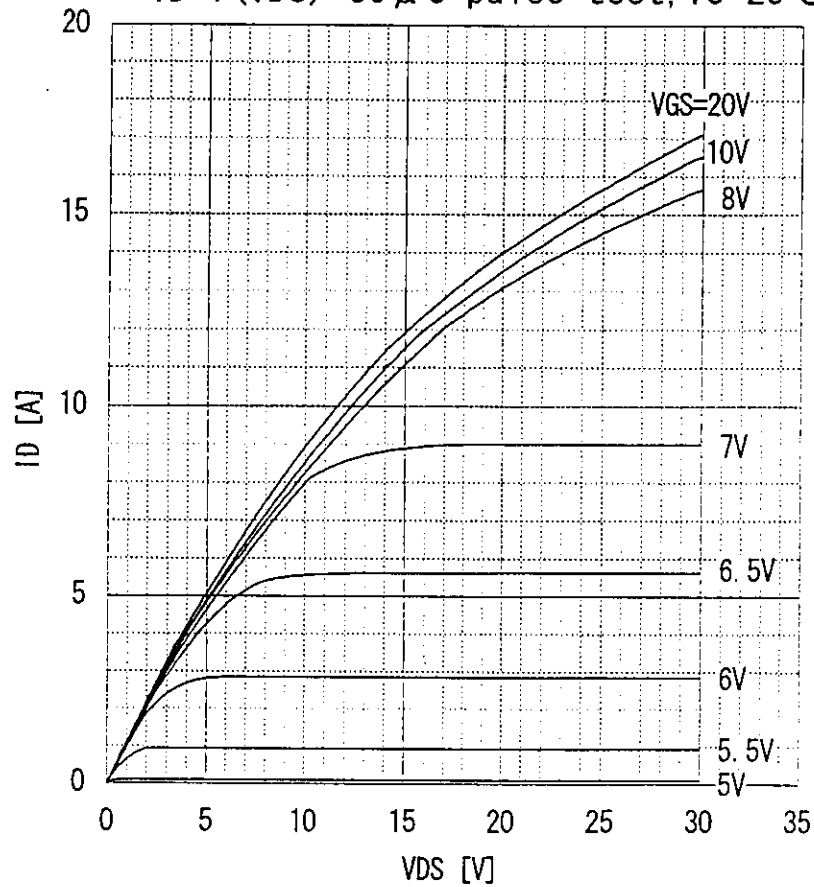
Power Dissipation $PD=f(T_c)$



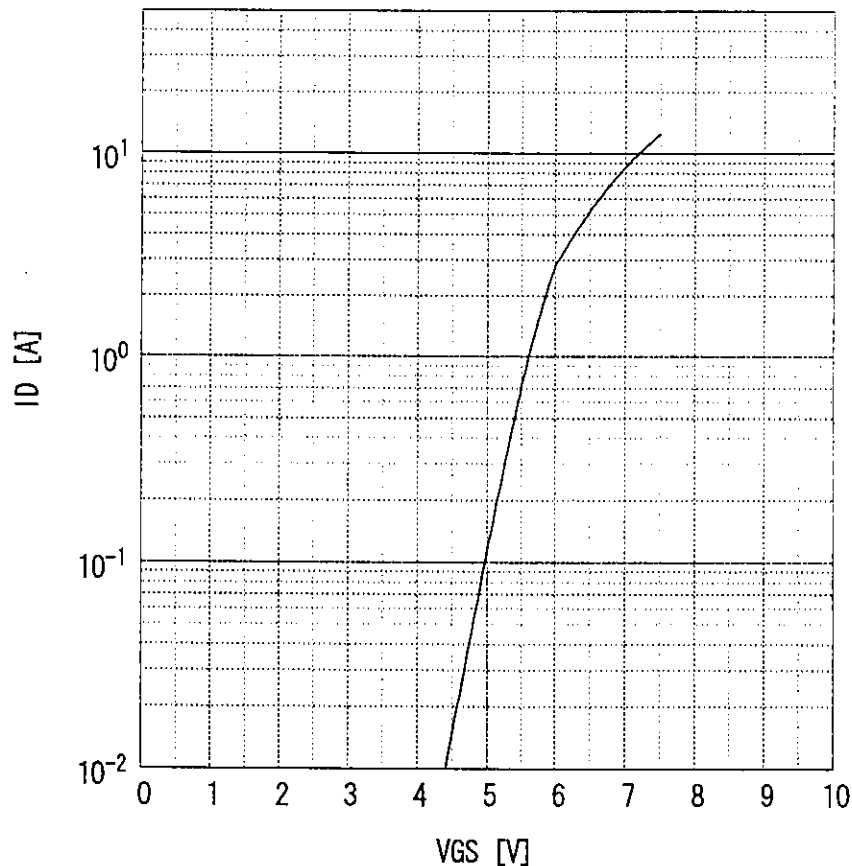
Safe operating area $ID=f(V_{DS}) : D=0.01, T_c=25^\circ C$



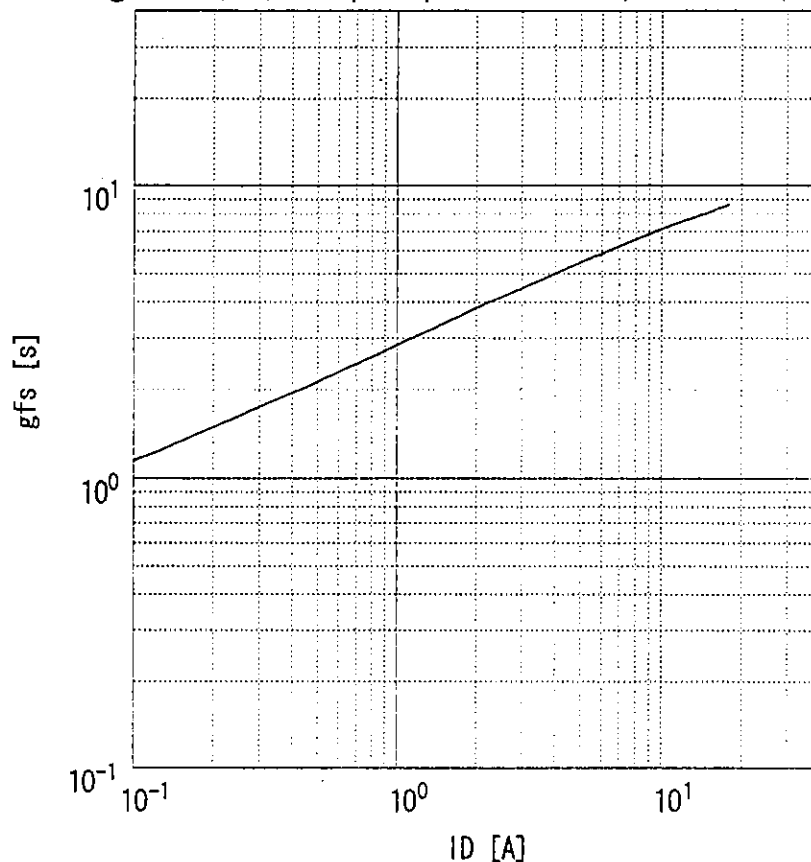
Typical output characteristics
 $I_D = f(V_{DS}) : 80 \mu s$ pulse test, $T_c = 25^\circ C$



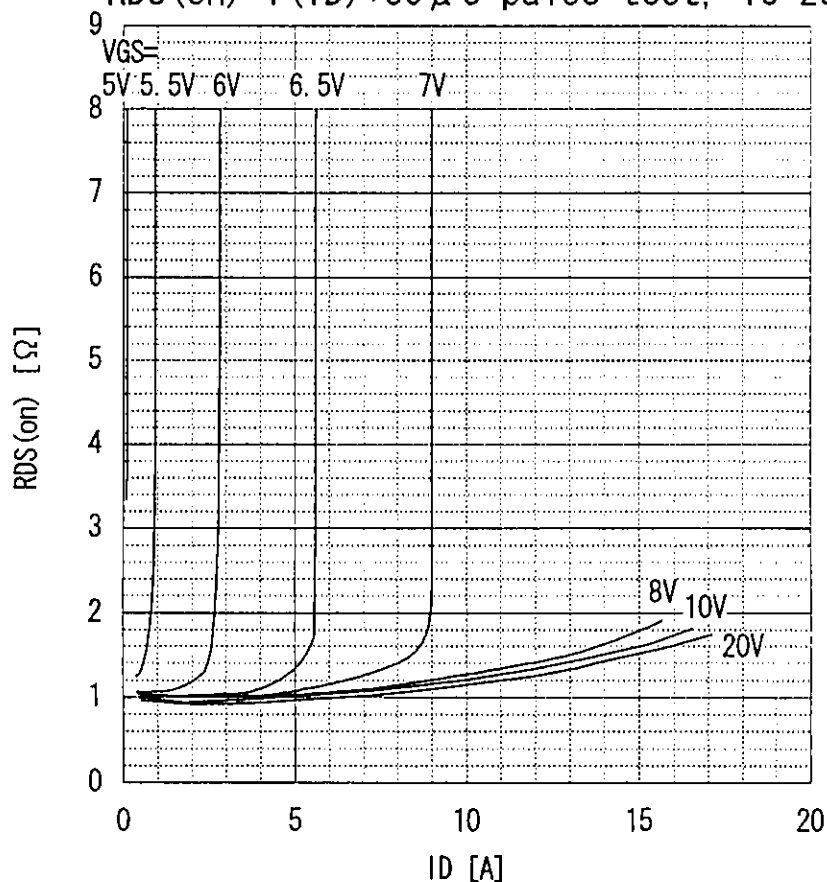
Typical transfer characteristic
 $I_D = f(V_{GS}) : 80 \mu s$ pulse test, $V_{DS} = 25V$, $T_{ch} = 25^\circ C$



Typical forward transconductance
 $g_{fs}=f(I_D)$: 80 μ s pulse test, $V_{DS}=25V$, $T_{ch}=25^\circ C$

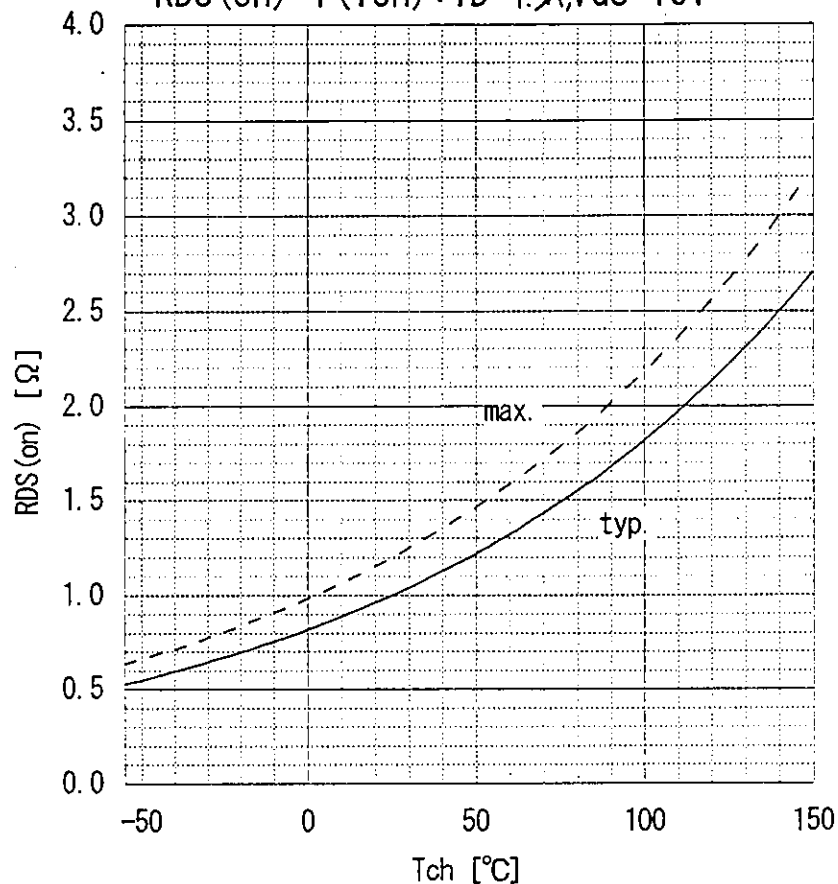


Typical drain-source on-state resistance
 $R_{DS(on)}=f(I_D)$: 80 μ s pulse test, $T_c=25^\circ C$



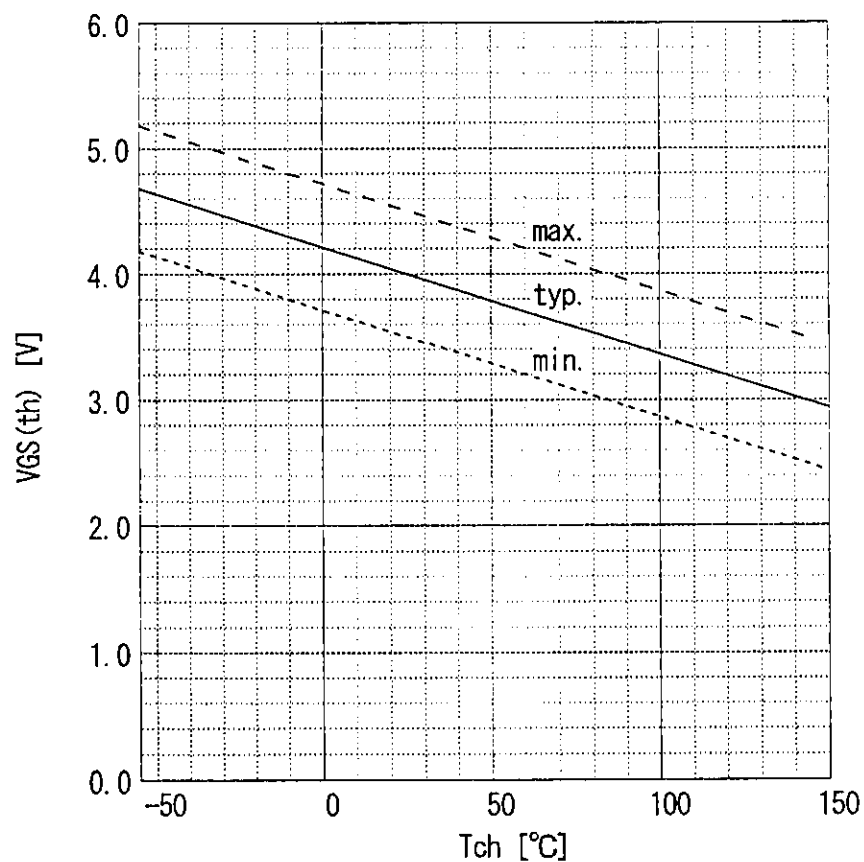
Drain-source on-state resistance

$$R_{DS(on)} = f(T_{ch}) : I_D = 4.5A, V_{GS} = 10V$$

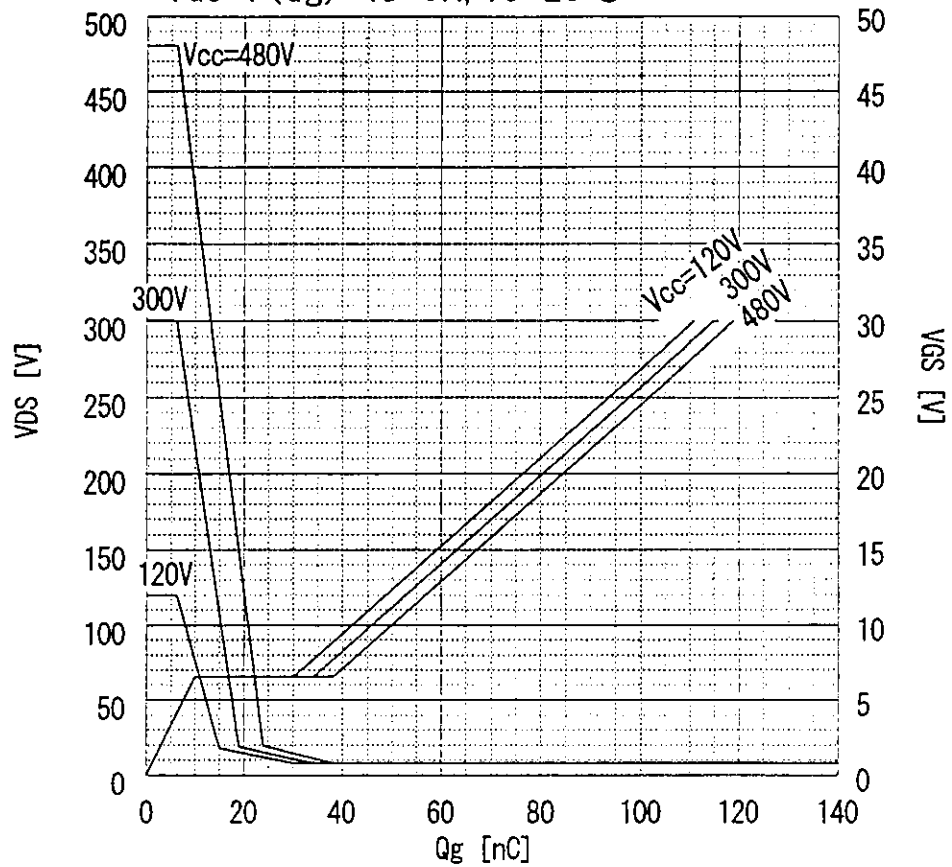


Gate threshold voltage

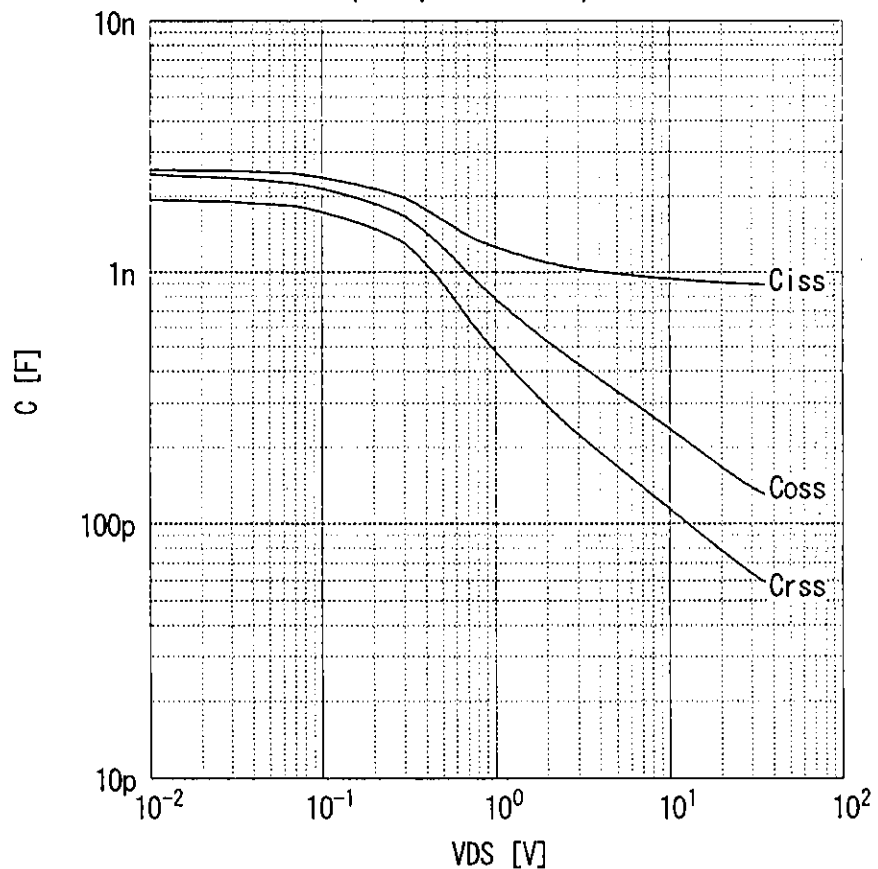
$$V_{GS(th)} = f(T_{ch}) : I_D = 1mA, V_{DS} = V_{GS}$$



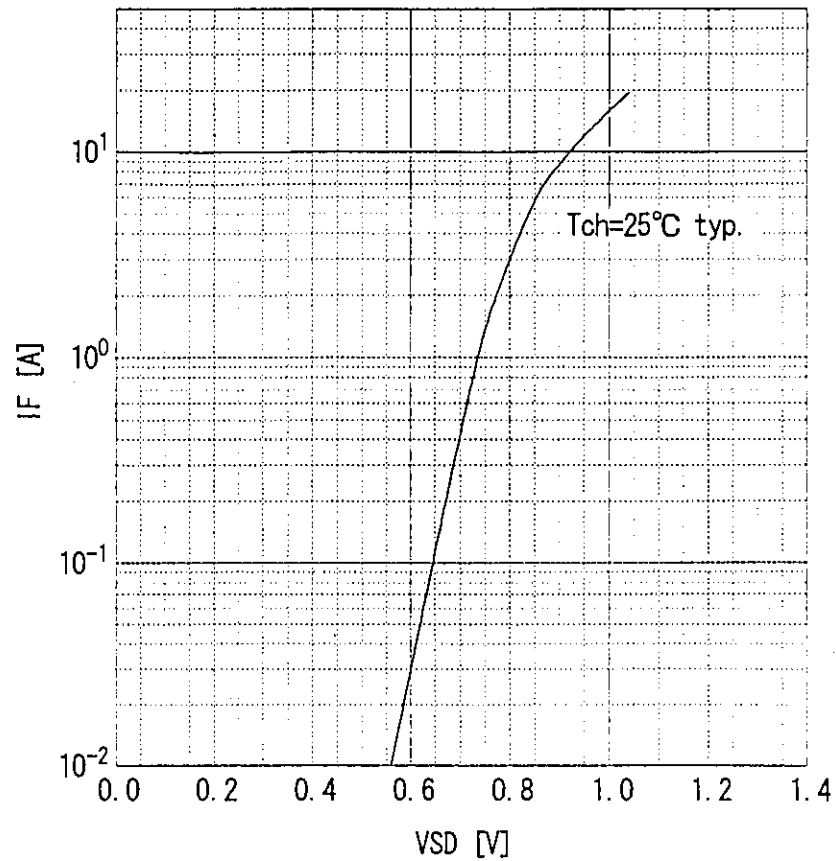
Typical gate charge characteristic
 $V_{GS}=f(Q_g) : I_D=9A, T_c=25^\circ C$



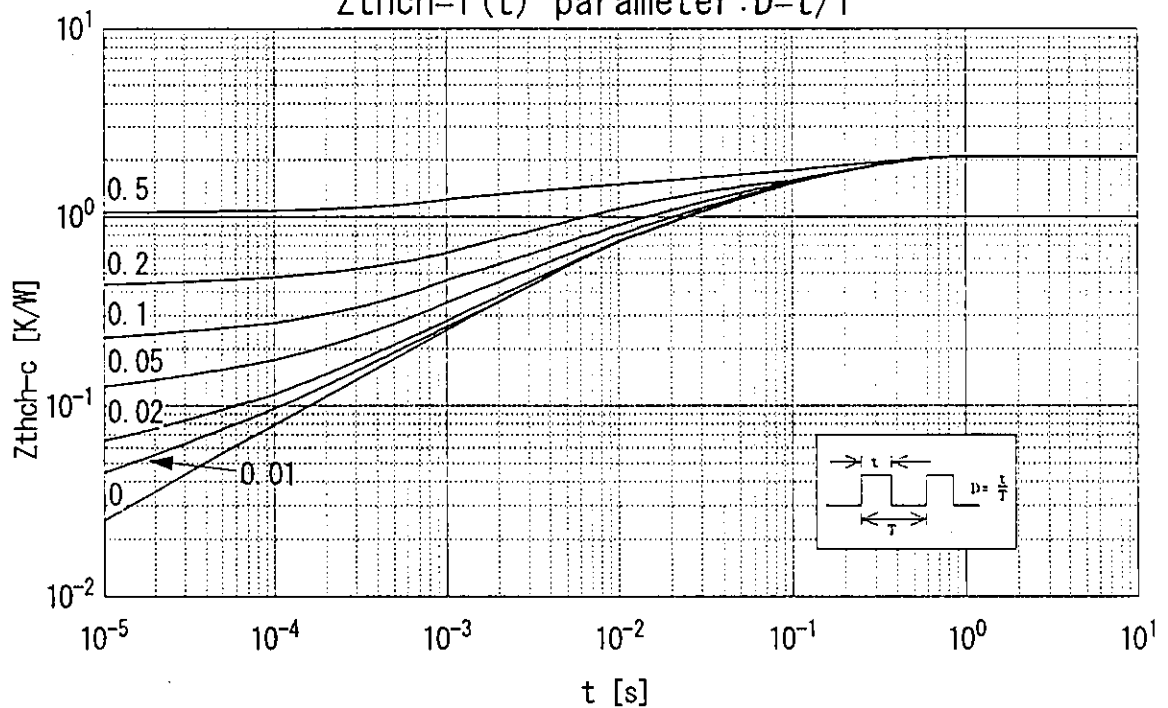
Typical capacitances
 $C=f(V_{DS}) : V_{GS}=0V, f=1MHz$



Forward characteristic of reverse of diode
 $I_F = f(V_{SD})$: 80 μ s pules test, $V_{GS} = 0V$



Transient thermal impedance
 $Z_{thch} = f(t)$ parameter: $D = t/T$



Avalanche energy derating

$E_{as}=f(\text{starting } T_{ch}): V_{cc}=60V, I_{AV}=9A$

