

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} ≤150°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 =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		10	500	μA
		T _{ch} =25°C				
		T _{ch} =125°C		0.2	1.0	mA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±35V V _{DS} =0V		10	100	nA
Drain-Source On-State Resistance	R _{DS(on)}	I _D =4.5A V _{GS} =10V		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

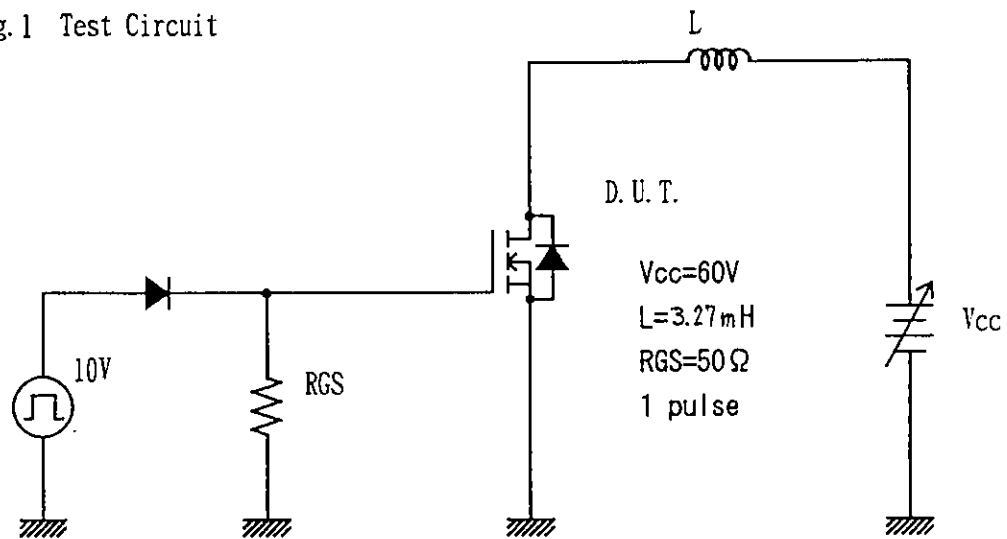
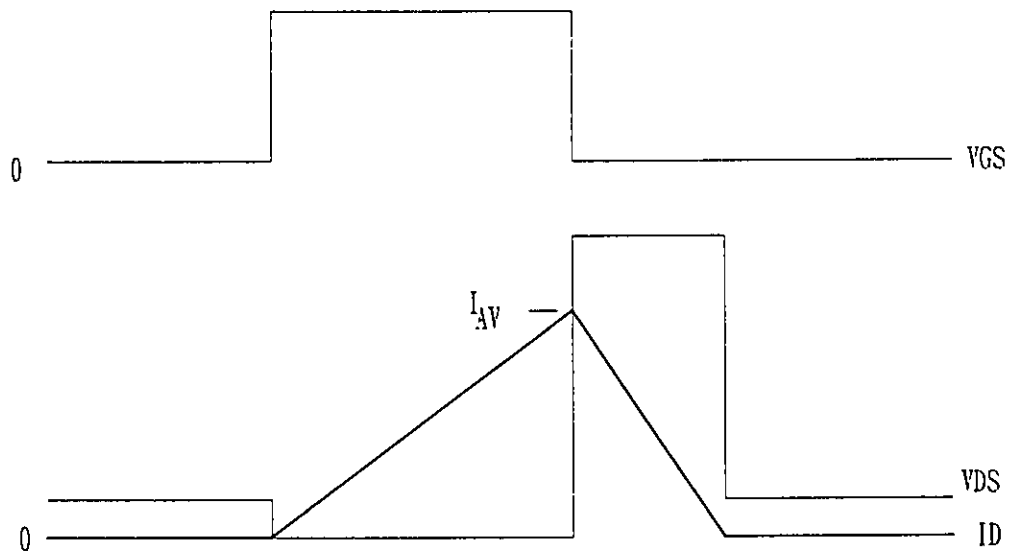
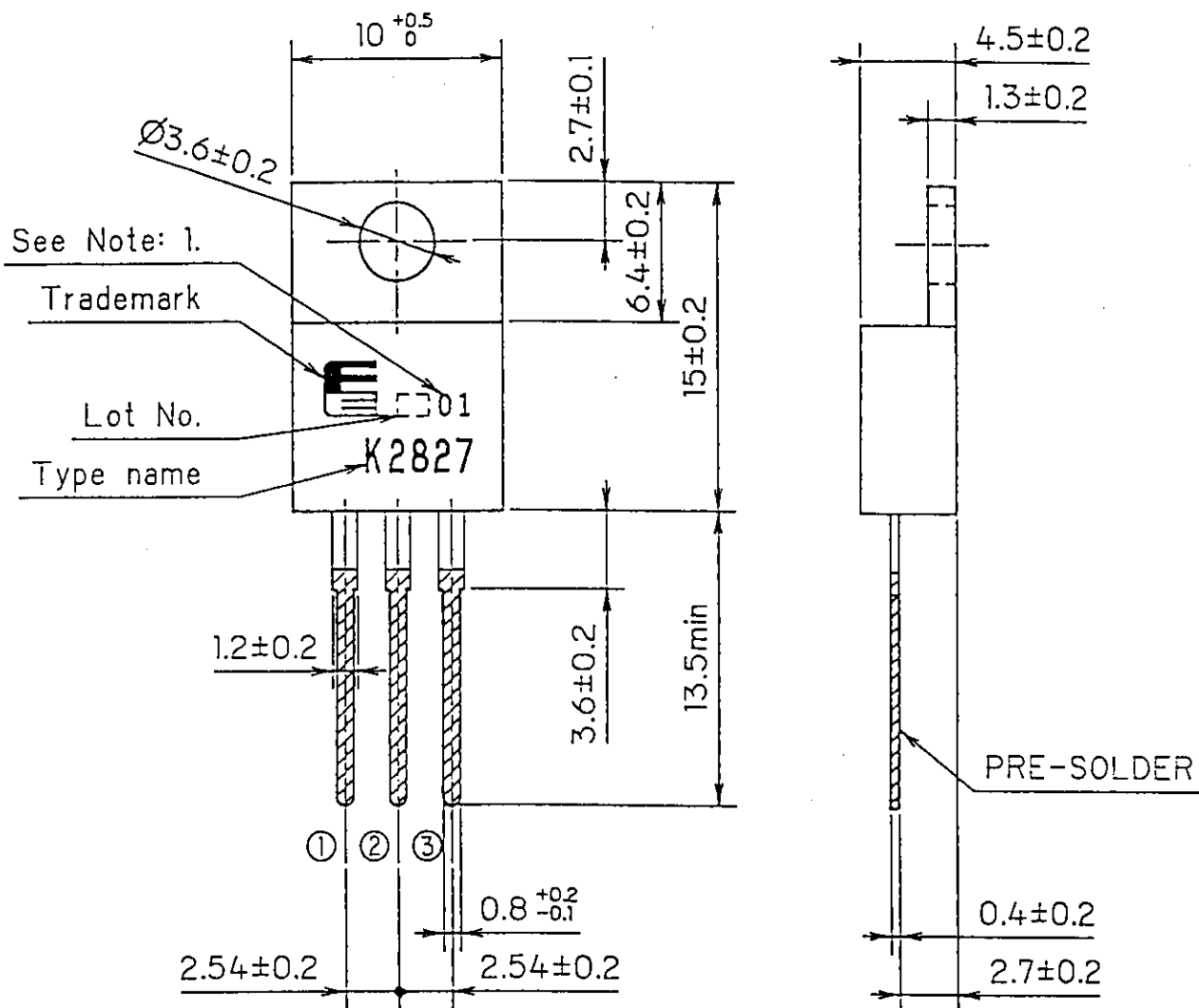


Fig.2 Operating waveforms

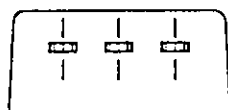


FUJI POWER MOS FET

TYPE : 2SK2827-01



CONNECTION



① ② ③

- ① GATE
- ② DRAIN
- ③ SOURCE

JEDEC : TO-220AB

Note: 1. Guaranteed mark of avalanche ruggedness.

DIMENSIONS ARE IN MILLIMETERS.

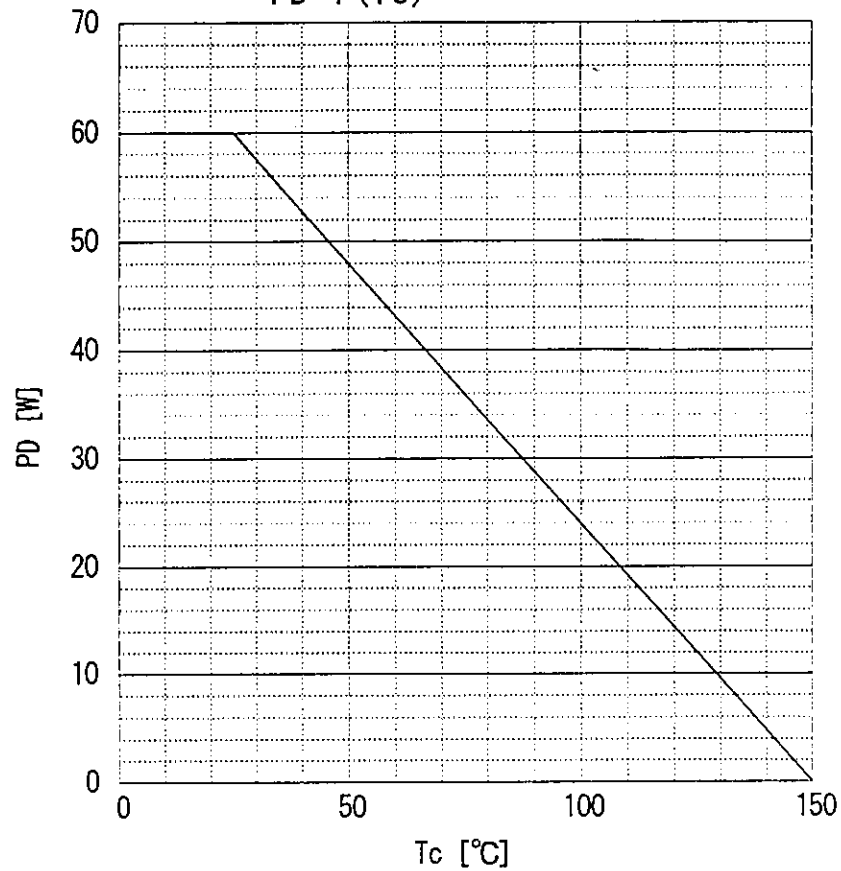
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DWG. NO.

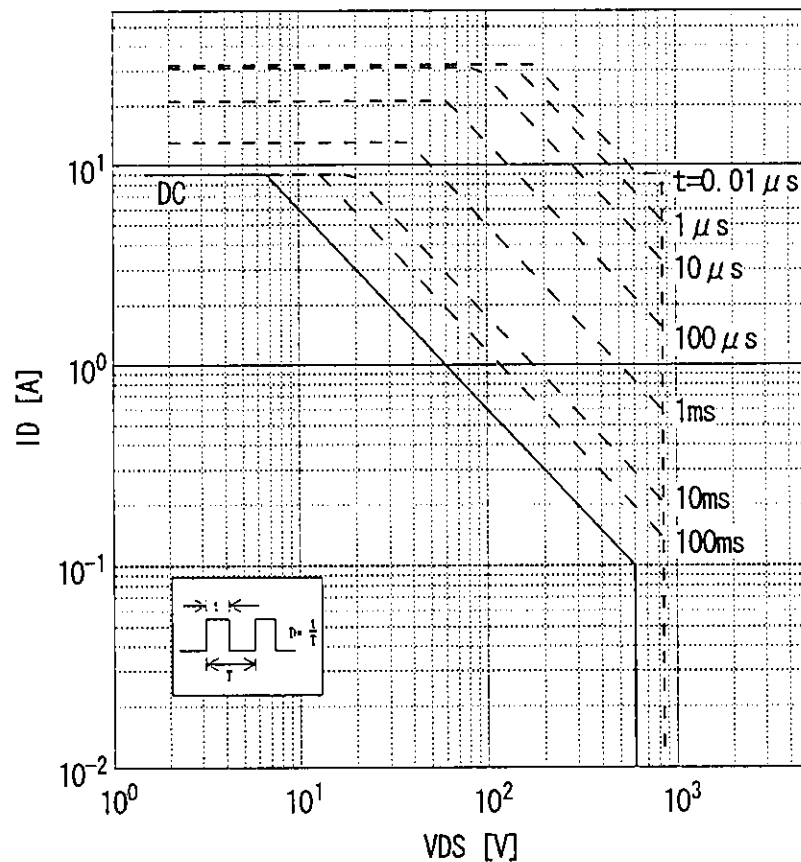
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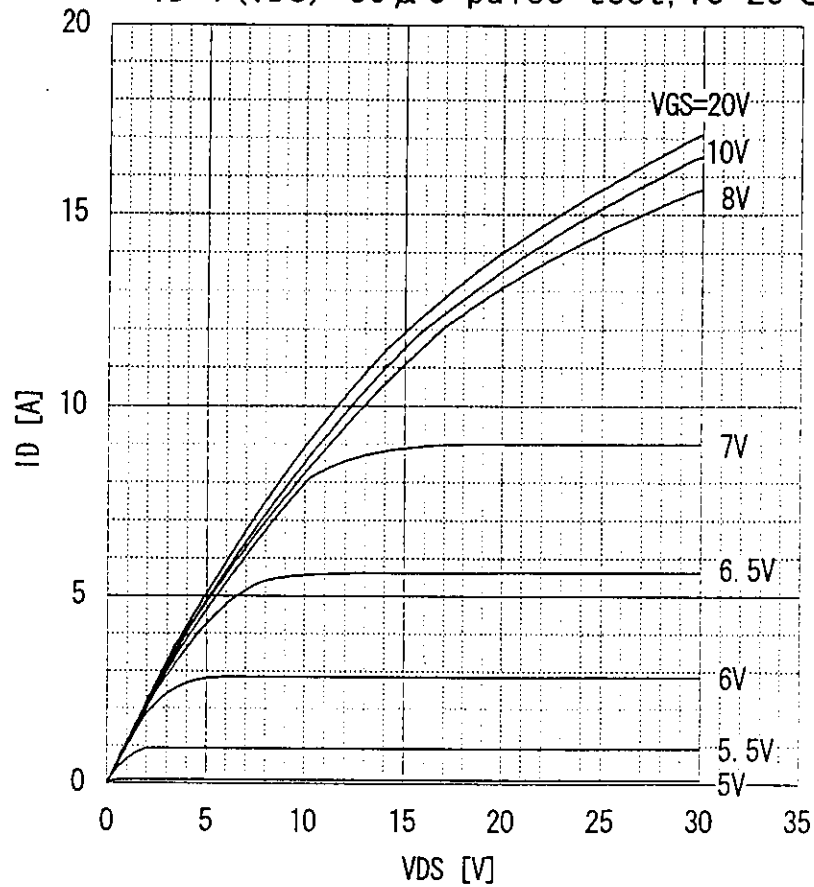
Power Dissipation $PD=f(T_c)$



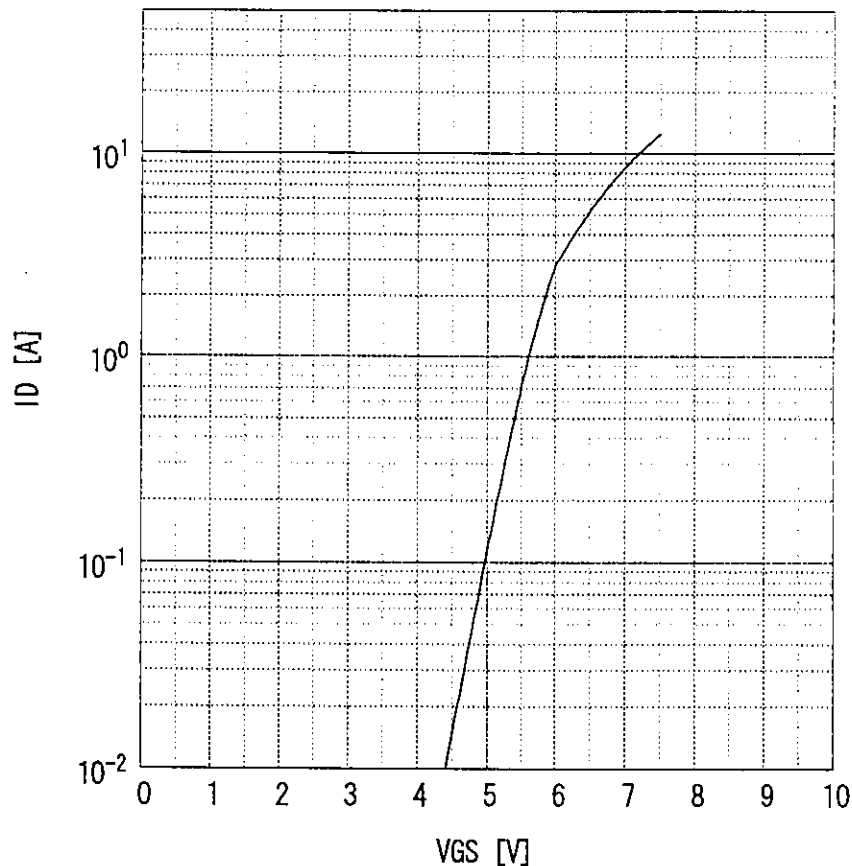
Safe operating area $ID=f(V_{DS}) : D=0.01, T_c=25^\circ\text{C}$



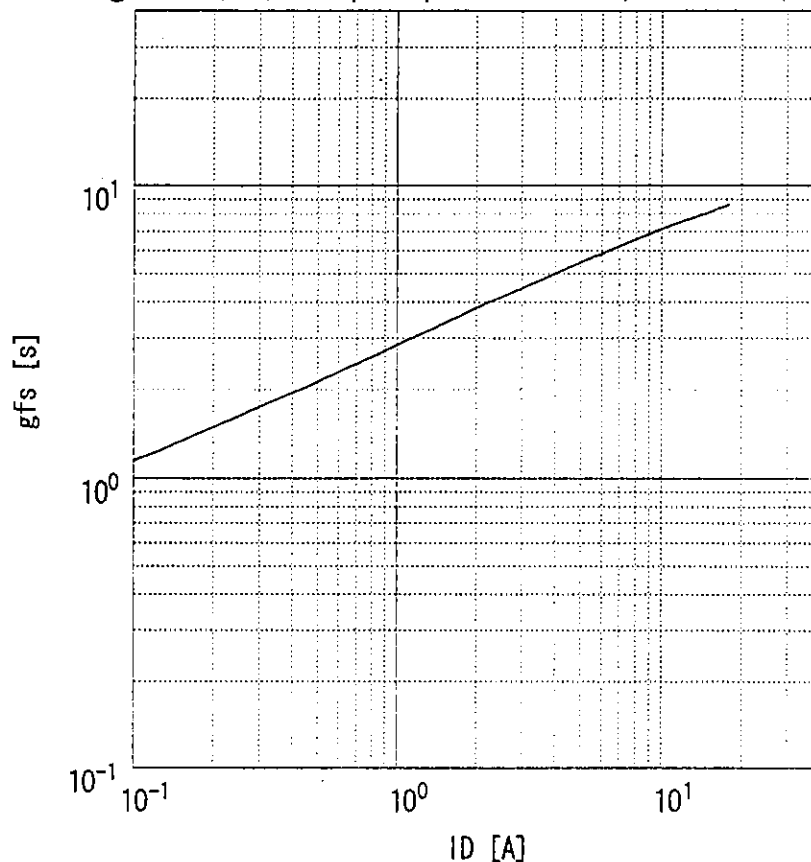
Typical output characteristics
 $I_D = f(V_{DS}) : 80 \mu s$ pulse test, $T_c = 25^\circ C$



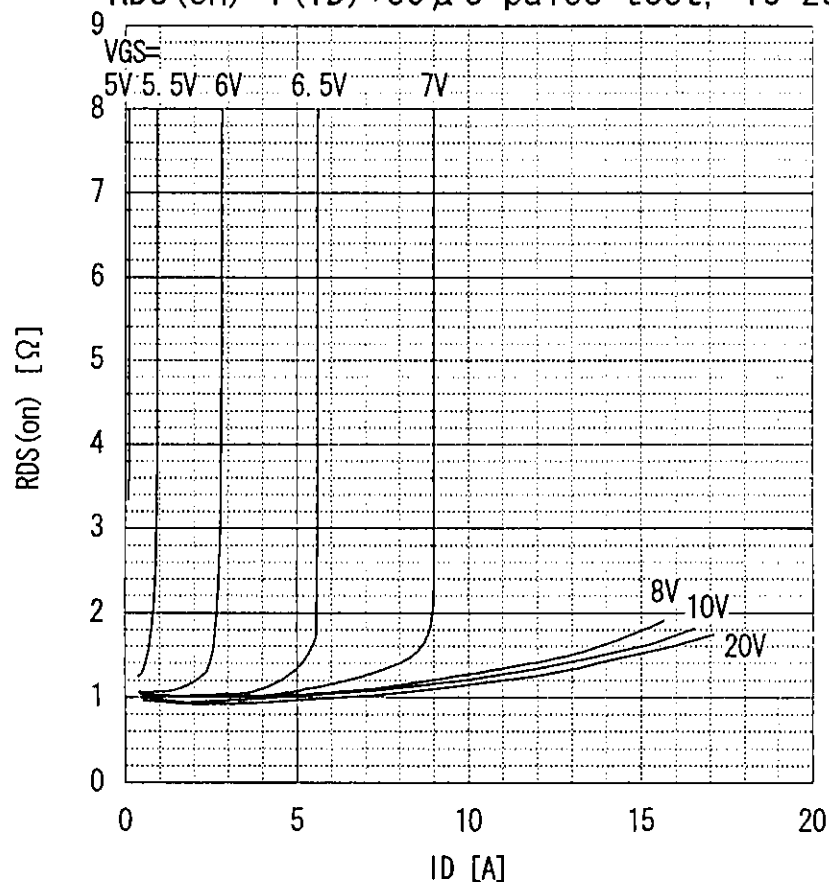
Typical transfer characteristic
 $I_D = f(V_{GS}) : 80 \mu s$ pulse test, $V_{DS} = 25V$, $T_{ch} = 25^\circ C$



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

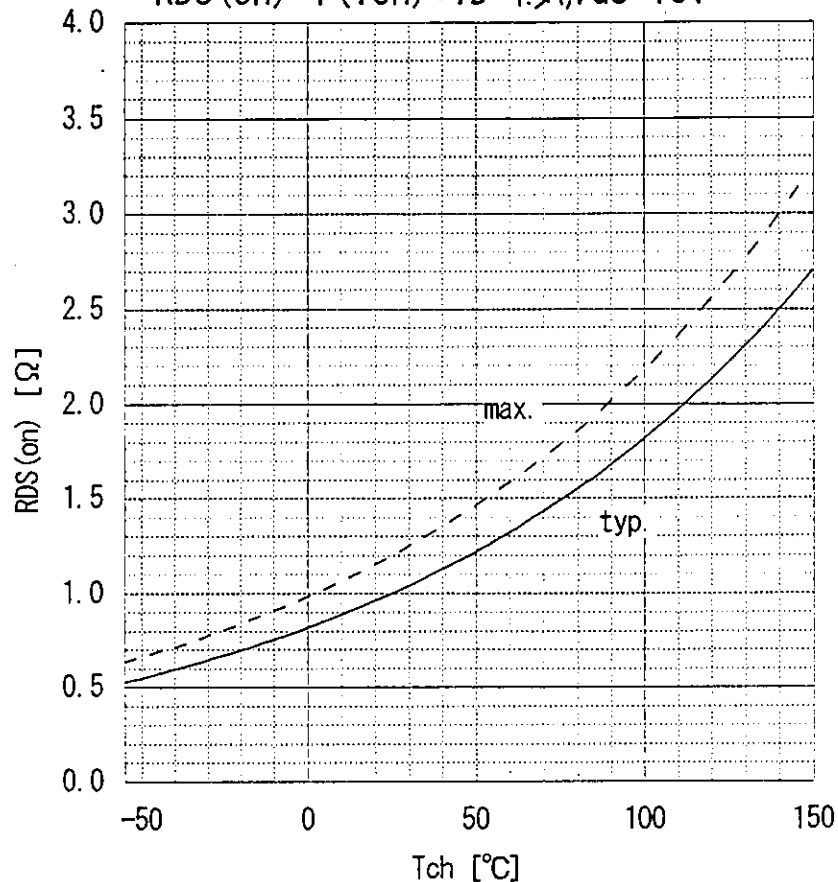


Typical drain-source on-state resistance
 $R_{DS(on)}=f(I_D)$: 80 μ s pulse test, $T_c=25^\circ C$



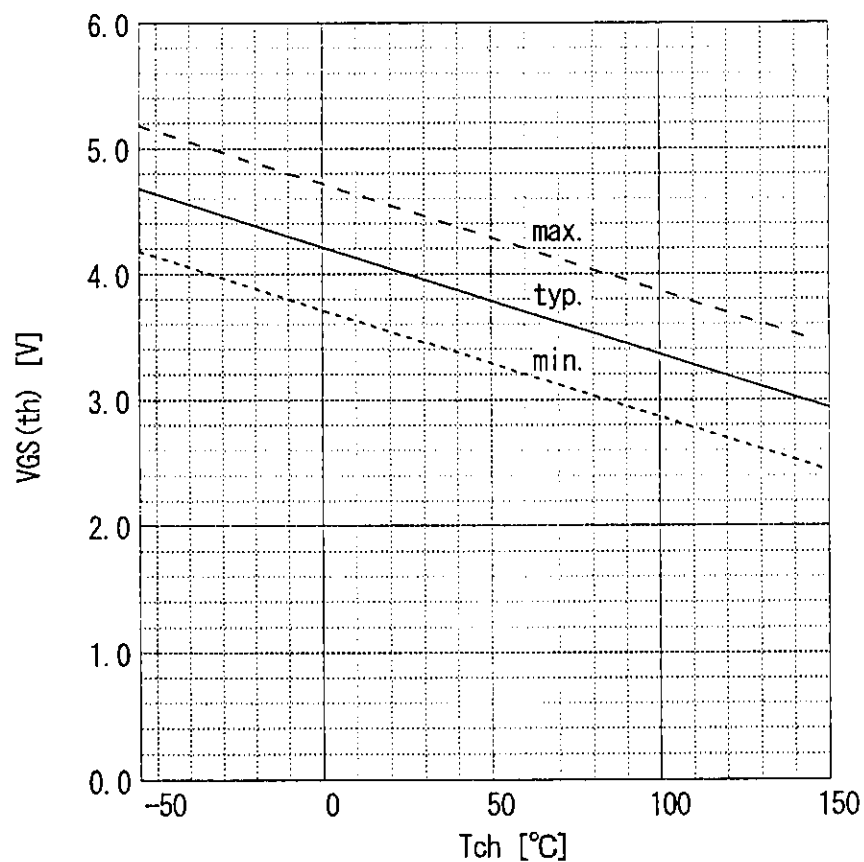
Drain-source on-state resistance

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

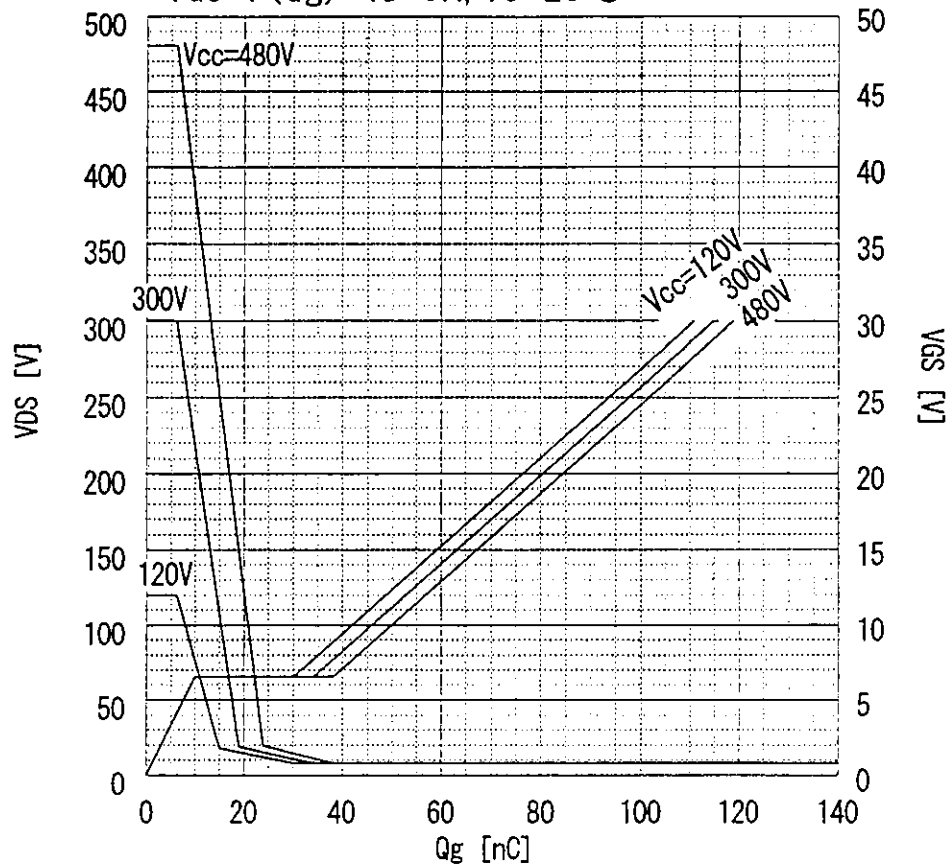


Gate threshold voltage

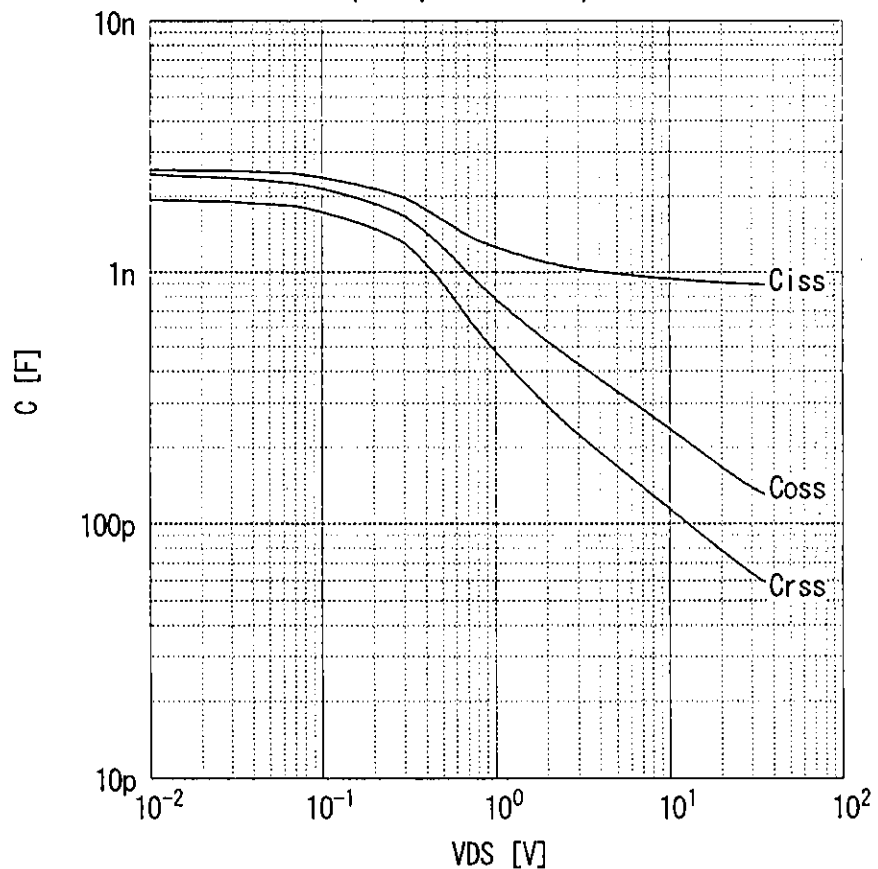
$$V_{GS(th)} = f(T_{ch}) : I_D = 1mA, V_{DS} = V_{GS}$$



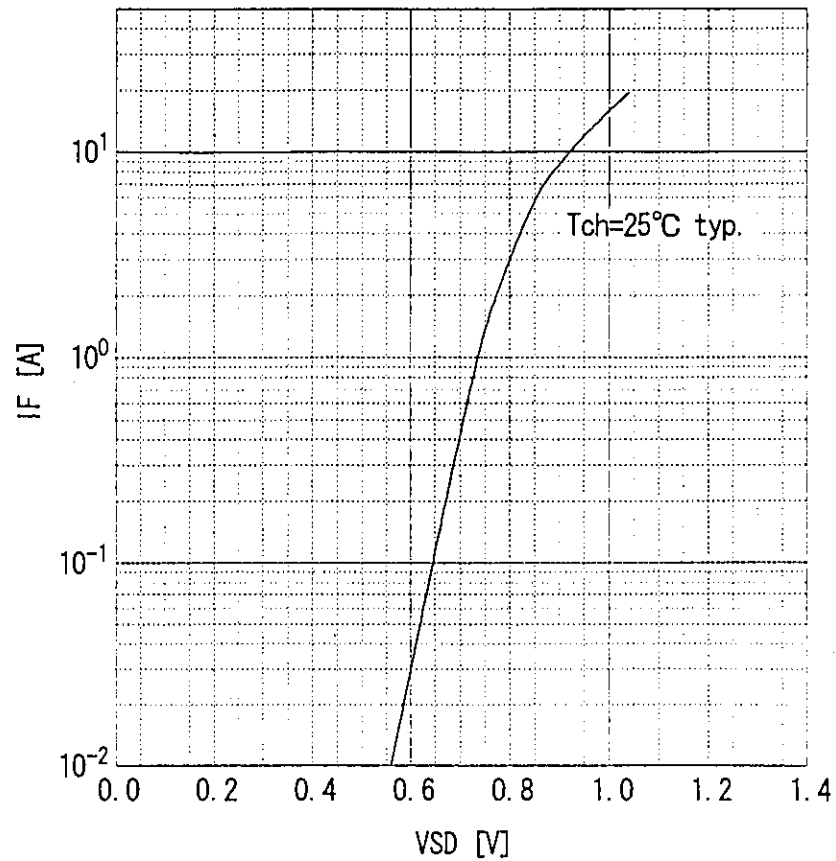
Typical gate charge characteristic
 $V_{GS}=f(Q_g) : I_D=9A, T_c=25^\circ C$



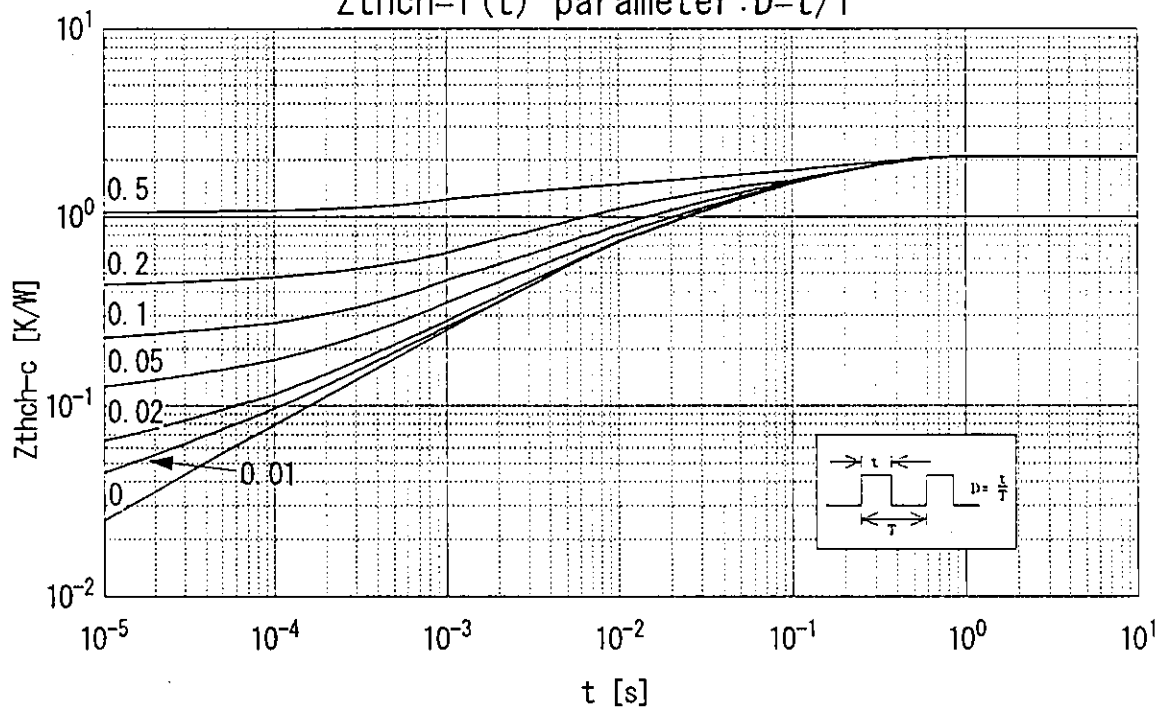
Typical capacitances
 $C=f(V_{DS}) : V_{GS}=0V, f=1MHz$



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

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

