

SPECIFICATION

DEVICE NAME : Power MOSFET

TYPE NAME : 2SK2516-01L, S

SPEC. No. :

Fuji Electric Co.,Ltd.

This Specification is subject to change without notice.

	DATE	NAME	APPROVED		Fuji Electric Co.,Ltd	
DRAWN					DWG.NO.	
CHECKED						
						1/2

1. Scope
This specifies Fuji power MOSFET 2SK2516-01L, S
2. Construction N-channel enhancement mode power MOSFET
3. Application for switching
4. Outview T-Pack L-type Outviwe See to 5/12 page
S-type Outviwe See to 6/12 page
5. Absolute maximum ratings at $T_c=25^\circ\text{C}$ (unless otherwise specified)

Description	Symbol	Characteristics	Unit	Remarks
Drain-source voltage	V_{DS}	30	V	
Drain-gate voltage	V_{DGR}	30	V	$R_{GS}=20\text{K}\Omega$
Continuous Drain current	I_D	± 50	A	
Pulsed drain current	I_{DPulse}	± 200	A	
Gate-source voltage	V_{GS}	± 16	V	
Maximum power dissipation	P_D	80	W	
Operating and storage temperature range	T_{ch}	150	$^\circ\text{C}$	
	T_{stg}	$-55 \sim +150$	$^\circ\text{C}$	

6. Electrical characteristics at $T_c=25^\circ\text{C}$ (unless otherwise specified)

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Drain-source breakdown voltage	BV_{DSS}	$I_D=1\text{mA}$ $V_{GS}=0\text{V}$	30			V
Gate threshold voltage	$V_{GS(th)}$	$I_D=1\text{mA}$ $V_{DS}=V_{GS}$	1.0	1.5	2.0	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=30\text{V}$ $V_{GS}=0\text{V}$		10	500	μA
	I_{DSS}	$T_{ch}=125^\circ\text{C}$		0.2	1.0	mA
Gate-source leakage current	I_{GSS}	$V_{GS}=\pm 16\text{V}$ $V_{DS}=0\text{V}$		10	100	nA
Drain-source on- state resistance	$R_{DS(on)}$	$I_D=25\text{A}$	$V_{GS}=4\text{V}$	16	22	m Ω
			$V_{GS}=10\text{V}$	10	13	

Dynamic ratings

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Forward transconductance	g_{fs}	$I_D = 25\text{ A}$ $V_{DS} = 12\text{ V}$	17	35		S
Input capacitance	C_{iss}	$V_{DS} = 25\text{ V}$ $V_{GS} = 0\text{ V}$ $f = 1\text{ MHz}$		3500	5250	pF
Output capacitance	C_{oss}			1650	2480	pF
Reverse transfer capacitance	C_{rss}			830	1250	pF
Turn-on time	$t_{d(on)}$	$V_{CC} = 12\text{ V}$ $V_{GS} = 10\text{ V}$ $I_D = 50\text{ A}$ $R_{GS} = 10\Omega$		15	25	ns
	t_r			65	100	ns
Turn-off time	$t_{d(off)}$			190	290	ns
	t_f			140	210	ns

Reverse diode

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Avalanche capability	I_{AV}	$L = 100\mu\text{H}$, $T_{ch} = 25^\circ\text{C}$ * see Fig1 and Fig2	50.0			A
Diode forward on-voltage	V_{SD}	$I_F = 2 \times I_{DR}$ $V_{GS} = 0\text{ V}$, $T_{ch} = 25^\circ\text{C}$		1.25	1.80	V
Reverse recovery time	t_{rr}	$I_F = I_{DR}$ $V_{GS} = 0\text{ V}$ $-di_F/dt = 100\text{ A}/\mu\text{s}$ $T_{ch} = 25^\circ\text{C}$		60		ns
Reverse recovery charge	Q_{rr}			70		μC

7. Thermal resistance

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Thermal resistance	$R_{th_{ch-c}}$				1.56	$^\circ\text{C}/\text{W}$
	$R_{th_{ch-a}}$				125	$^\circ\text{C}/\text{W}$

Fig.1 Test circuit

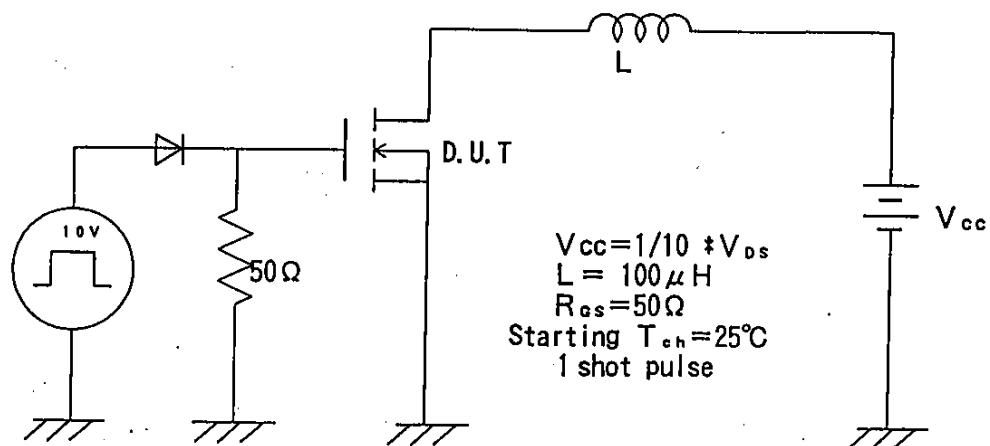
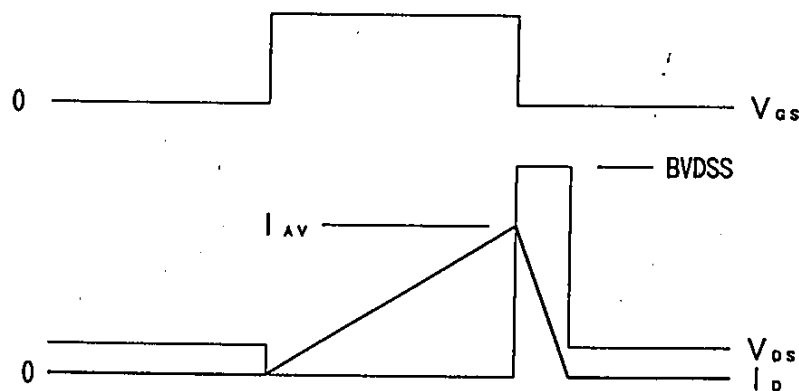
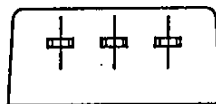
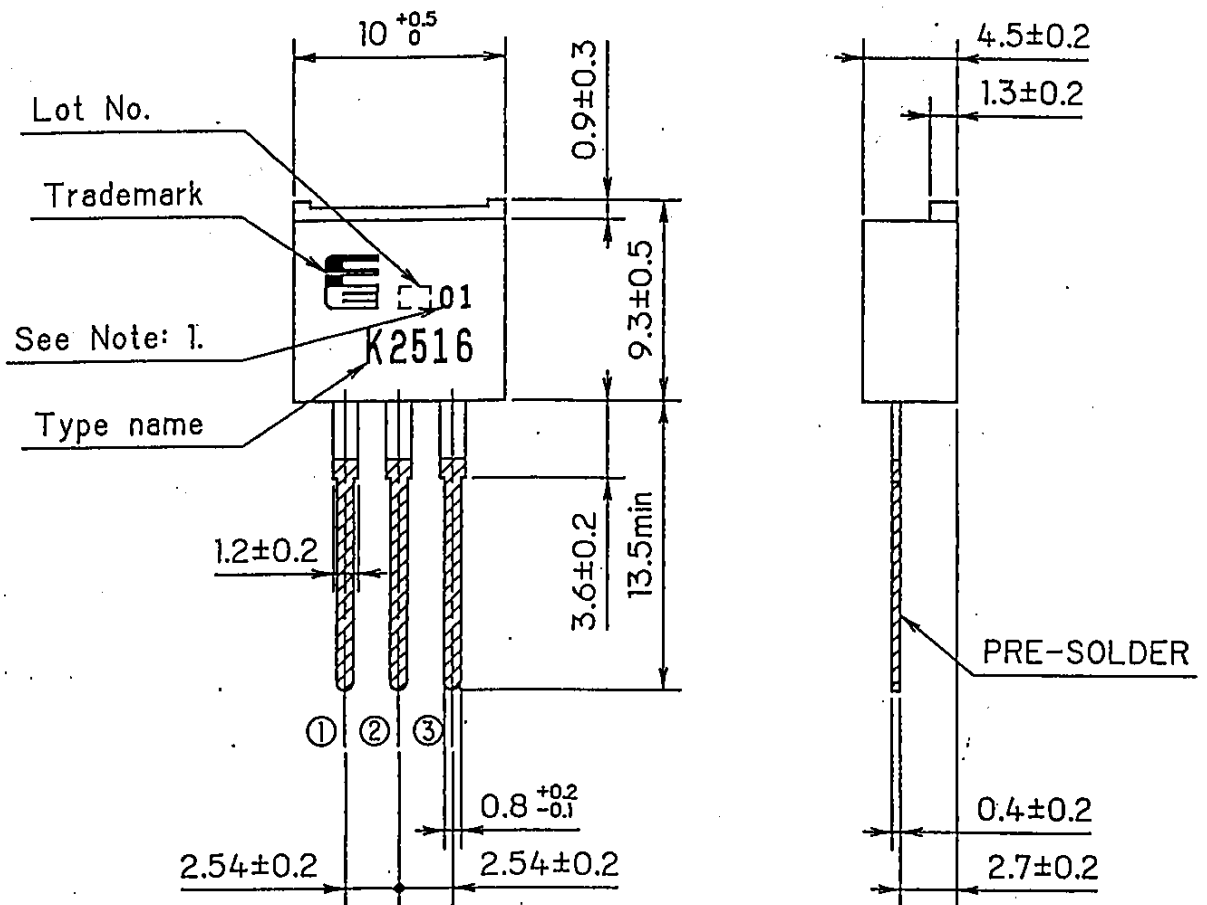


Fig.2 Operating waveforms



FUJI POWER MOS FET

TYPE : 2SK2516-01L



① ② ③

CONNECTION

- ① GATE
- ② DRAIN
- ③ SOURCE

Note: 1. Guaranteed mark of avalanche ruggedness.

DIMENSIONS ARE IN MILLIMETERS.

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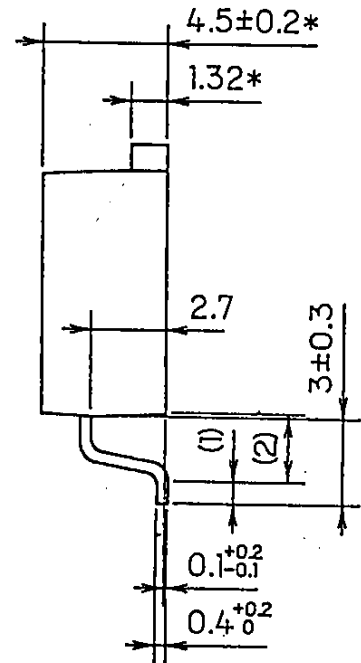
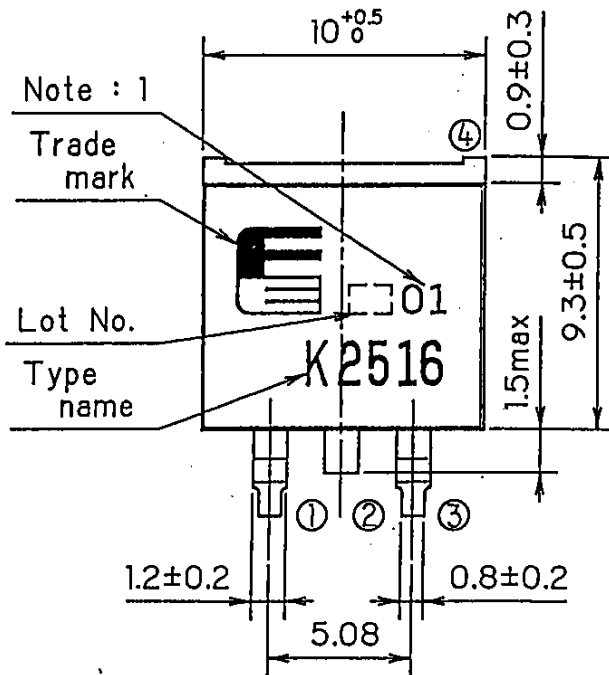
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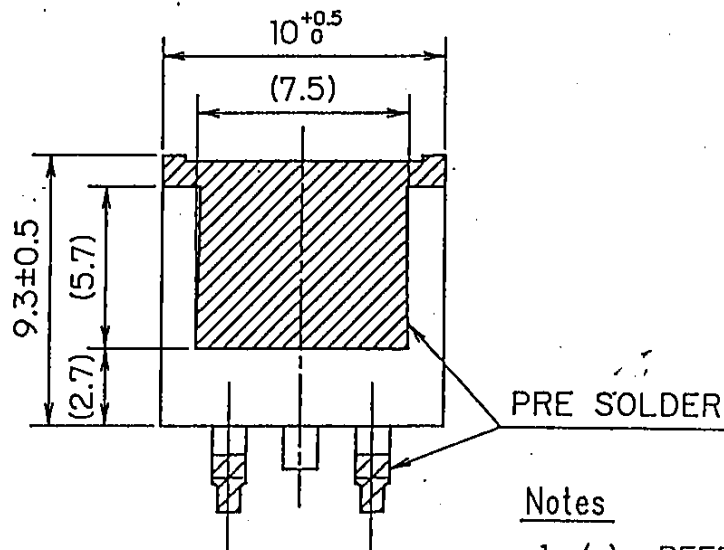
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FUJI POWER MOS FET

TYPE : 2SK2516-01S



BOTTOM VIEW



CONNECTION

- ① GATE
- ④ ② DRAIN
- ③ SOURCE

Notes

Note 1. Guaranteed mark of avalanche ruggedness.

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

DIMENSIONS ARE IN MILLIMETERS.

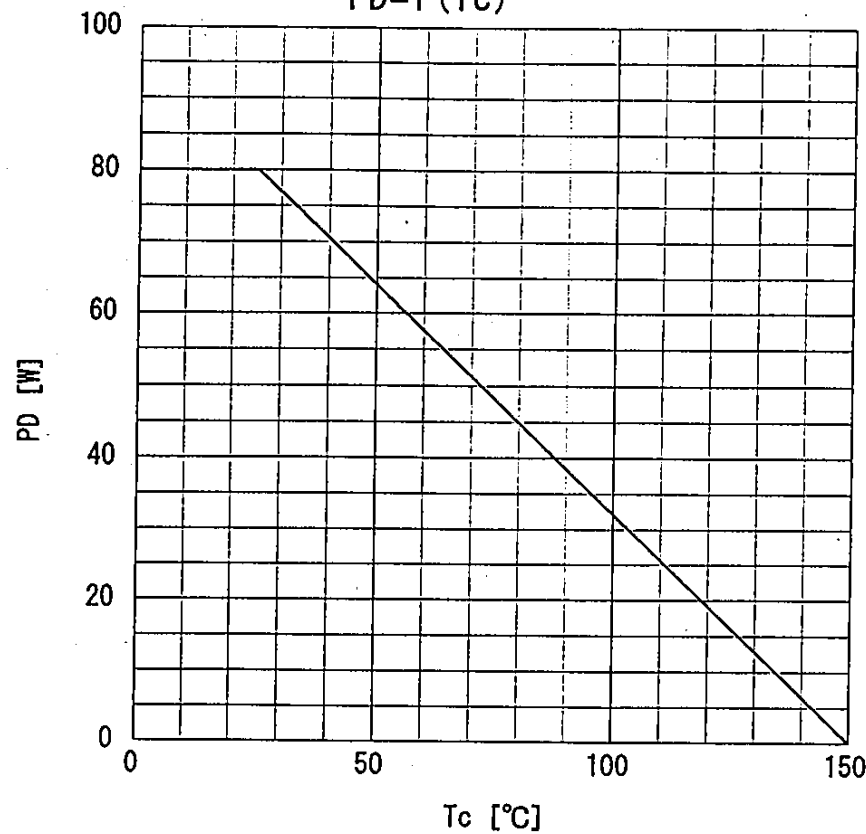
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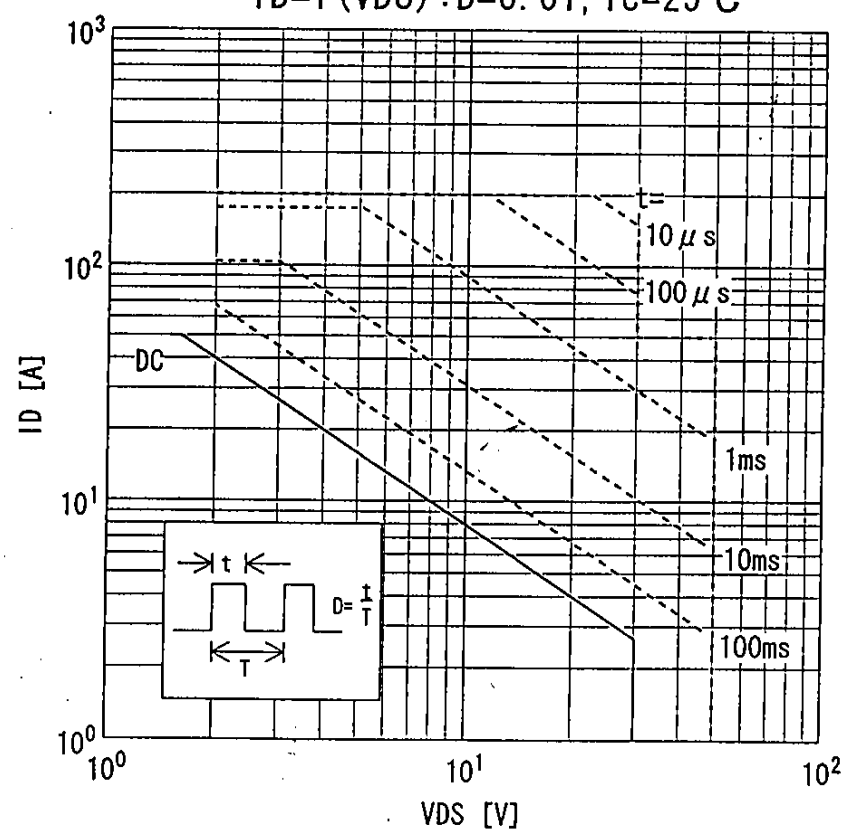
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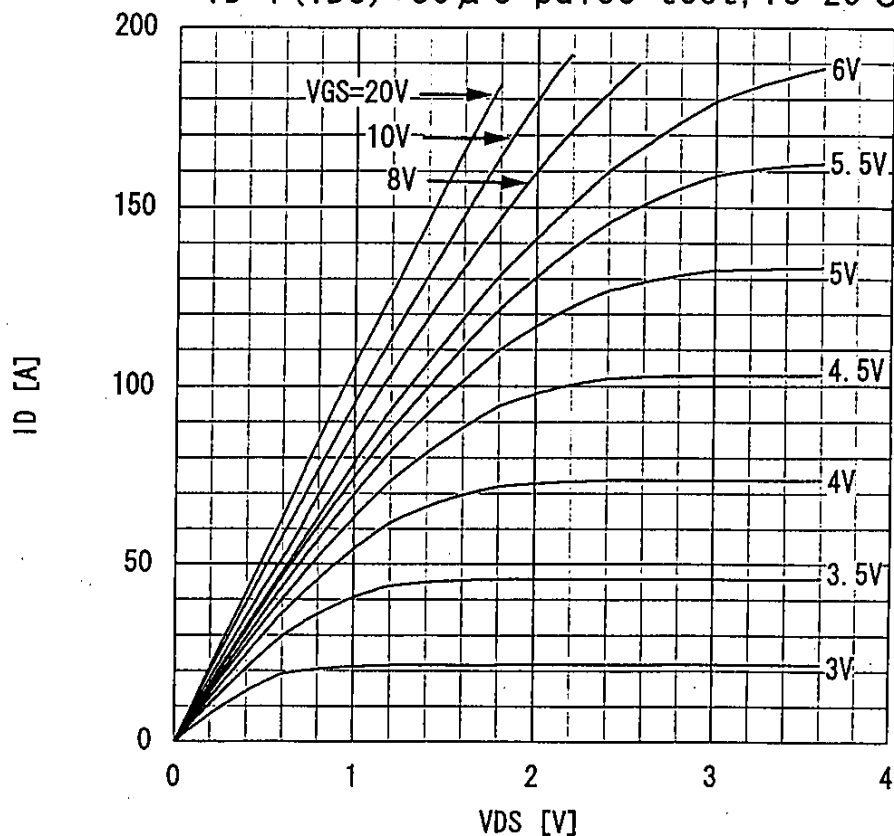
Power Dissipation $PD=f(T_c)$



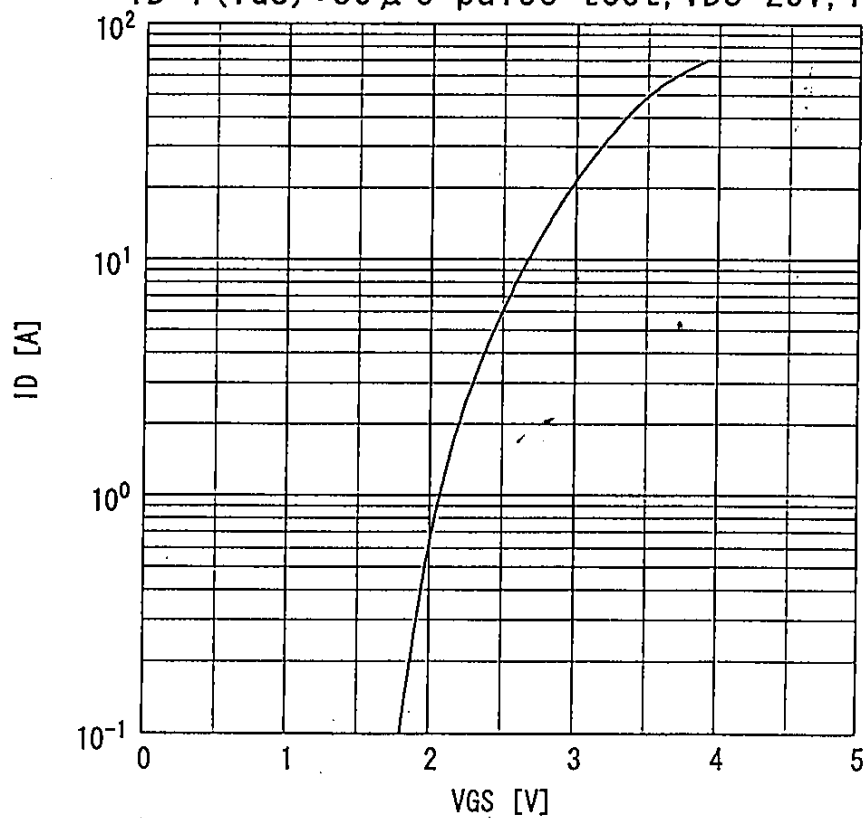
Safe operating area $ID=f(V_{DS}) : D=0.01, T_c=25^\circ C$



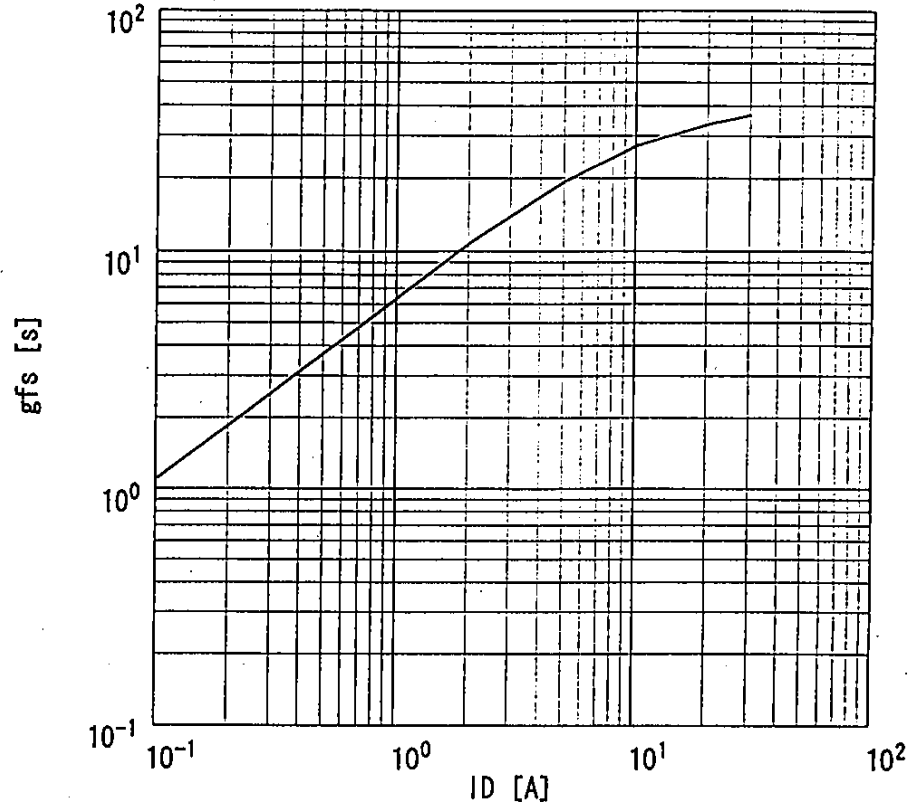
Typical output characteristics
 $I_D = f(V_{DS}) : 80 \mu s \text{ pulse test, } T_c = 25^\circ C$



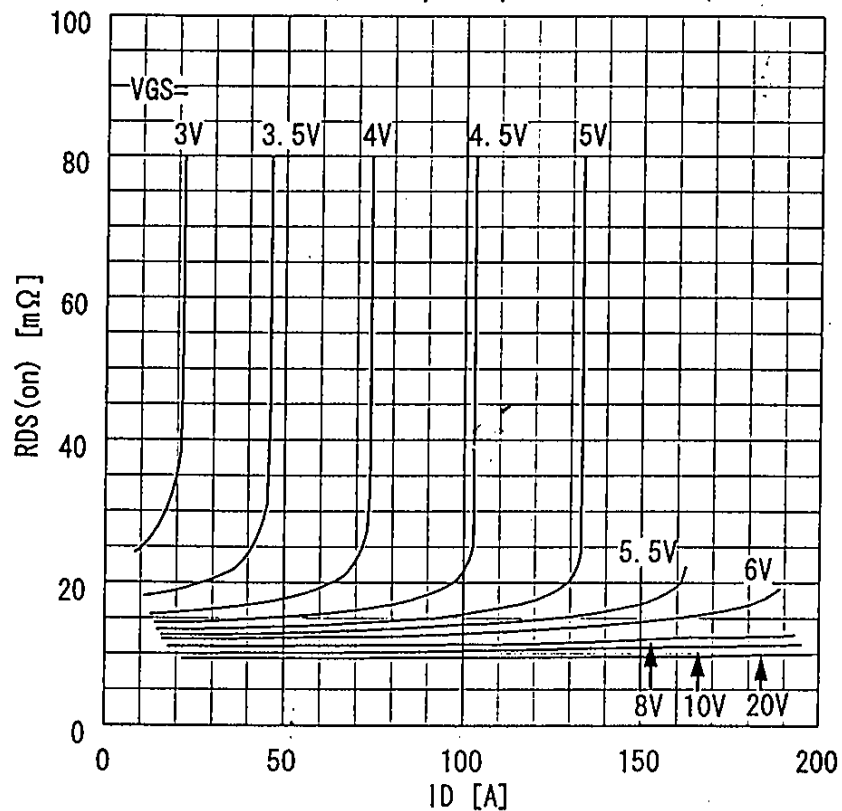
Typical transfer characteristic
 $I_D = f(V_{GS}) : 80 \mu s \text{ pulse test, } V_{DS} = 25V, T_{ch} = 25^\circ C$



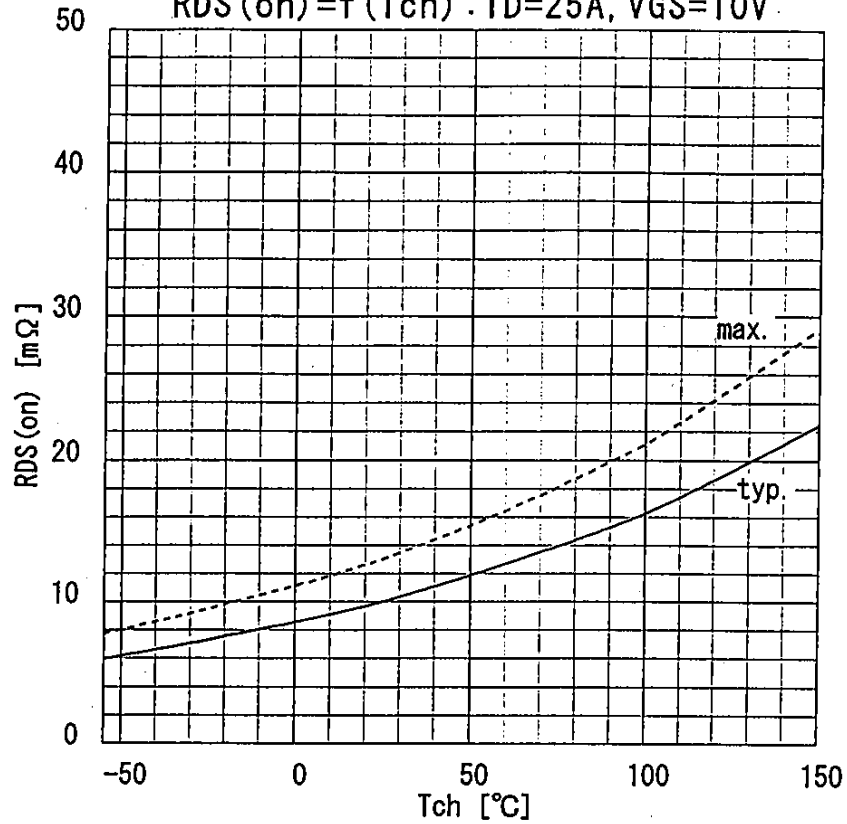
Typical forward transconductance
 $g_{fs}=f(I_D)$: 80 μ s pulse test, $V_{DS}=25V$, $T_{ch}=25^\circ C$



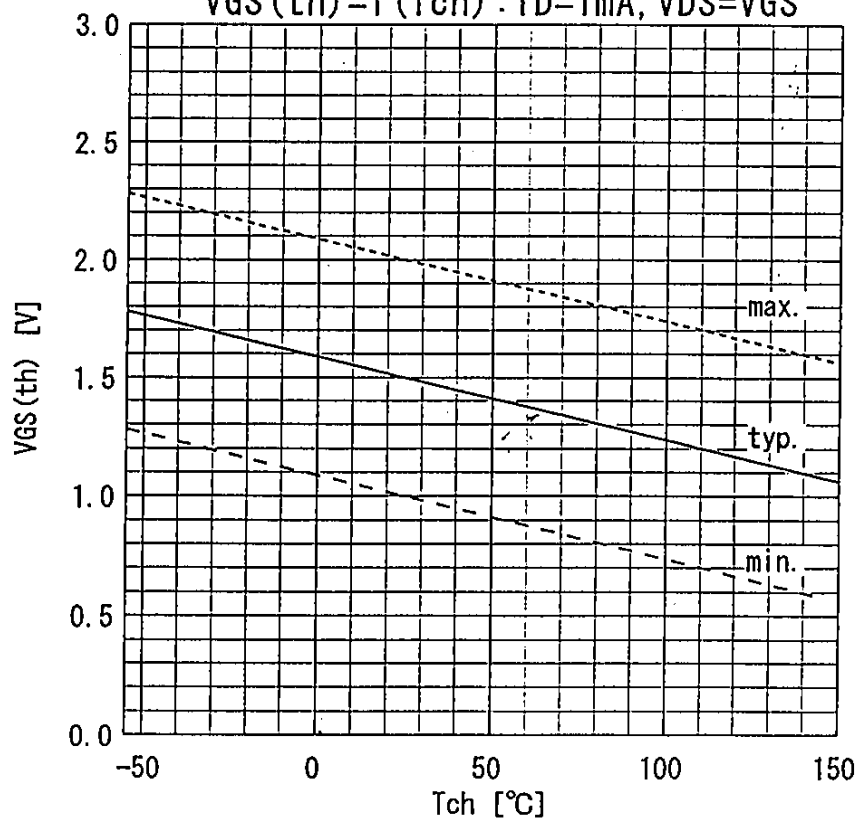
Typical drain-source on-state resistance
 $R_{DS(on)}=f(I_D)$: 80 μ s pulse test, $T_c=25^\circ C$



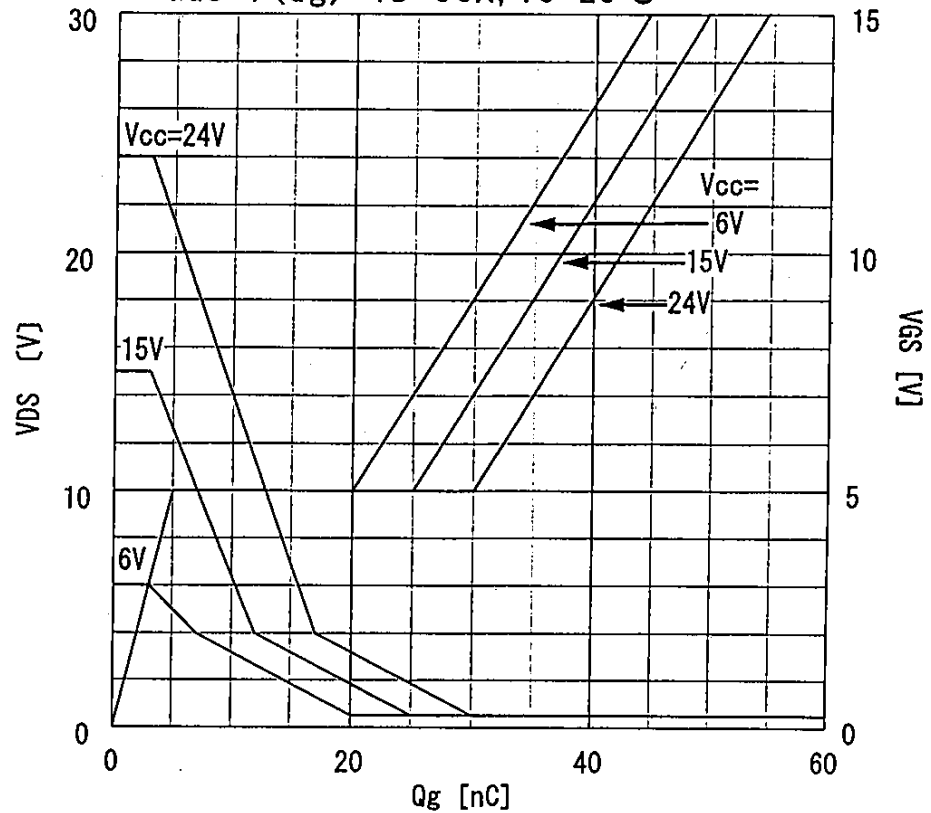
Drain-source on-state resistance
 $R_{DS(on)} = f(T_{ch}) : I_D = 25A, V_{GS} = 10V$



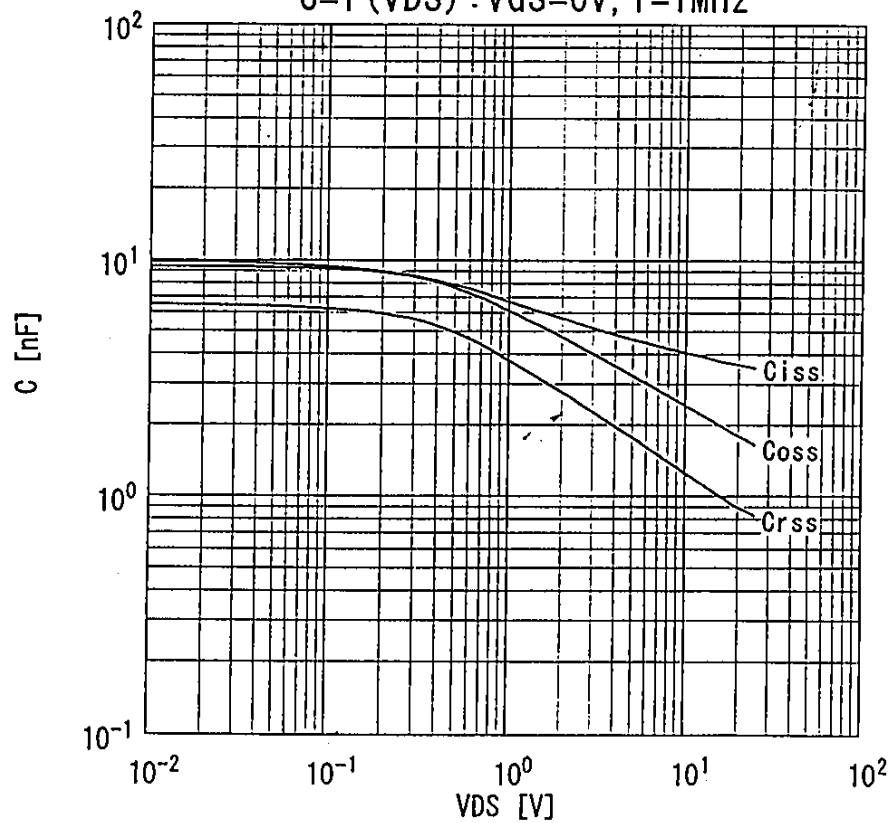
Gate threshold voltage
 $V_{GS(th)} = f(T_{ch}) : I_D = 1mA, V_{DS} = V_{GS}$



Typical gate charge characteristic
 $V_{GS}=f(Q_g) : I_D=50A, T_c=25^\circ C$

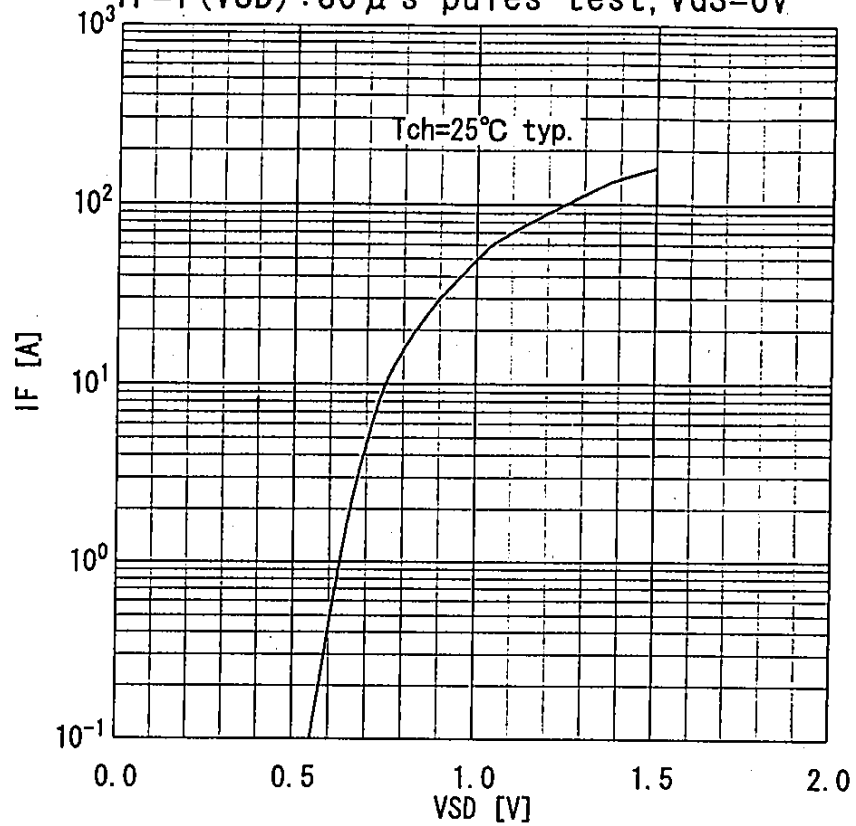


Typical capacitances
 $C=f(V_{DS}) : V_{GS}=0V, f=1MHz$



Forward characteristic of reverse diode

$I_F = f(V_{SD})$: 80 μ s pulses test, $V_{GS} = 0V$



Transient thermal impedance

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

