

# SPECIFICATION

DEVICE NAME : Power MOSFET

TYPE NAME : 2SK2918-01

SPEC. No. :

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Fuji Electric Co., Ltd.  
Matsumoto Factory

	DATE	NAME	APPROVED	Fuji Electric Co., Ltd.	
DRAWN				DWG. NO.	1/11
CHECKED					

H04-004-07

1. Scope  
This specifies Fuji power MOSFET 2SK2918-01
2. Construction N-channel enhancement mode power MOSFET
3. Application for switching
4. Outview T0-220 Outview See to 5/11 page
5. Absolute maximum ratings at  $T_c=25^\circ\text{C}$  (unless otherwise specified)

Description	Symbol	Characteristics	Unit	
Drain-source voltage	$V_{DS}$	200	V	
Drain-gate voltage	$V_{DGR}$	200	V	
Continuous Drain current	$I_D$	$\pm 20$	A	
Pulsed drain current	$I_{DPULSE}$	$\pm 80$	A	
Gate-source voltage	$V_{GS}$	$\pm 30$	V	
Maximum power dissipation	$P_D$	80	W	
Operating and storage temperature range	$T_{ch}$	150	$^\circ\text{C}$	
	$T_{sto}$	-55 ~ +150	$^\circ\text{C}$	

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

Description	Symbol	Conditions	Characteristics			Unit	
			Min.	Typ.	Max.		
Drain-source breakdown voltage	$BV_{DSS}$	$I_D = 1\text{mA}$ $V_{GS} = 0\text{V}$	200			V	
Gate threshold voltage	$V_{GS(th)}$	$I_D = 1\text{mA}$ $V_{DS} = V_{GS}$	2.5	3.0	3.5	V	
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 200\text{V}$ $V_{GS} = 0\text{V}$	$T_{ch} = 25^\circ\text{C}$		10	500	$\mu\text{A}$
	$I_{DSS}$		$T_{ch} = 125^\circ\text{C}$		0.2	1.0	mA
Gate-source leakage current	$I_{GSS}$	$V_{GS} = \pm 30\text{V}$ $V_{DS} = 0\text{V}$		10	100	nA	
Drain-source on-state resistance	$R_{DS(on)}$	$I_D = 10\text{A}$ $V_{GS} = 10\text{V}$		100	130	$\text{m}\Omega$	

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Dynamic ratings

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Forward transconductance	$g_{fs}$	$I_D = 10A$ $V_{DS} = 25V$	7.0	15.0		S
Input capacitance	$C_{iss}$	$V_{DS} = 25V$ $V_{GS} = 0V$ $f = 1MHz$		1800	2700	pF
Output capacitance	$C_{oss}$			320	480	pF
Reverse transfer capacitance	$C_{rss}$			80	120	pF
Turn-on time	$t_{d(on)}$	$V_{CC} = 150V$ $V_{GS} = 10V$ $I_D = 20A$ $R_{GS} = 10\Omega$		15	25	ns
	$t_r$			60	90	ns
Turn-off time	$t_{d(off)}$			65	100	ns
	$t_f$			60	90	ns

Reverse diode

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Avalanche capability	$I_{AV}$	$L = 100\mu H$ , $T_{ch} = 25^\circ C$ *See Fig.1 and 2	20.0			A
Diode forward on-voltage	$V_{SD}$	$I_F = 2 \times I_{DR}$ $V_{GS} = 0V$ , $T_{ch} = 25^\circ C$		1.06	1.59	V
Reverse recovery time	$t_{rr}$	$I_F = I_{DR}$ $V_{GS} = 0V$ $-di_F/dt = 100A/\mu s$ $T_{ch} = 25^\circ C$		145		ns
Reverse recovery charge	$Q_{rr}$				900	

7. Thermal resistance

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Thermal resistance	$R_{th_{ch-c}}$				1.56	$^\circ C/W$
	$R_{th_{ch-a}}$				75.0	$^\circ C/W$

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Fig.1 Test circuit

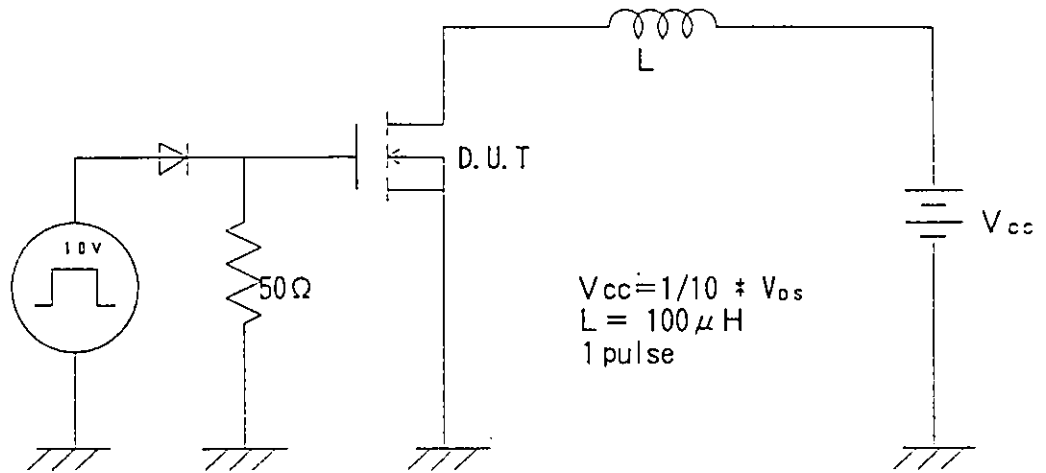
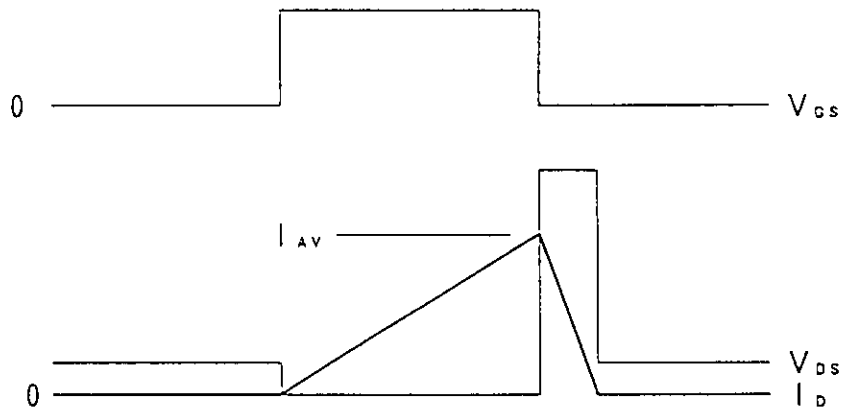
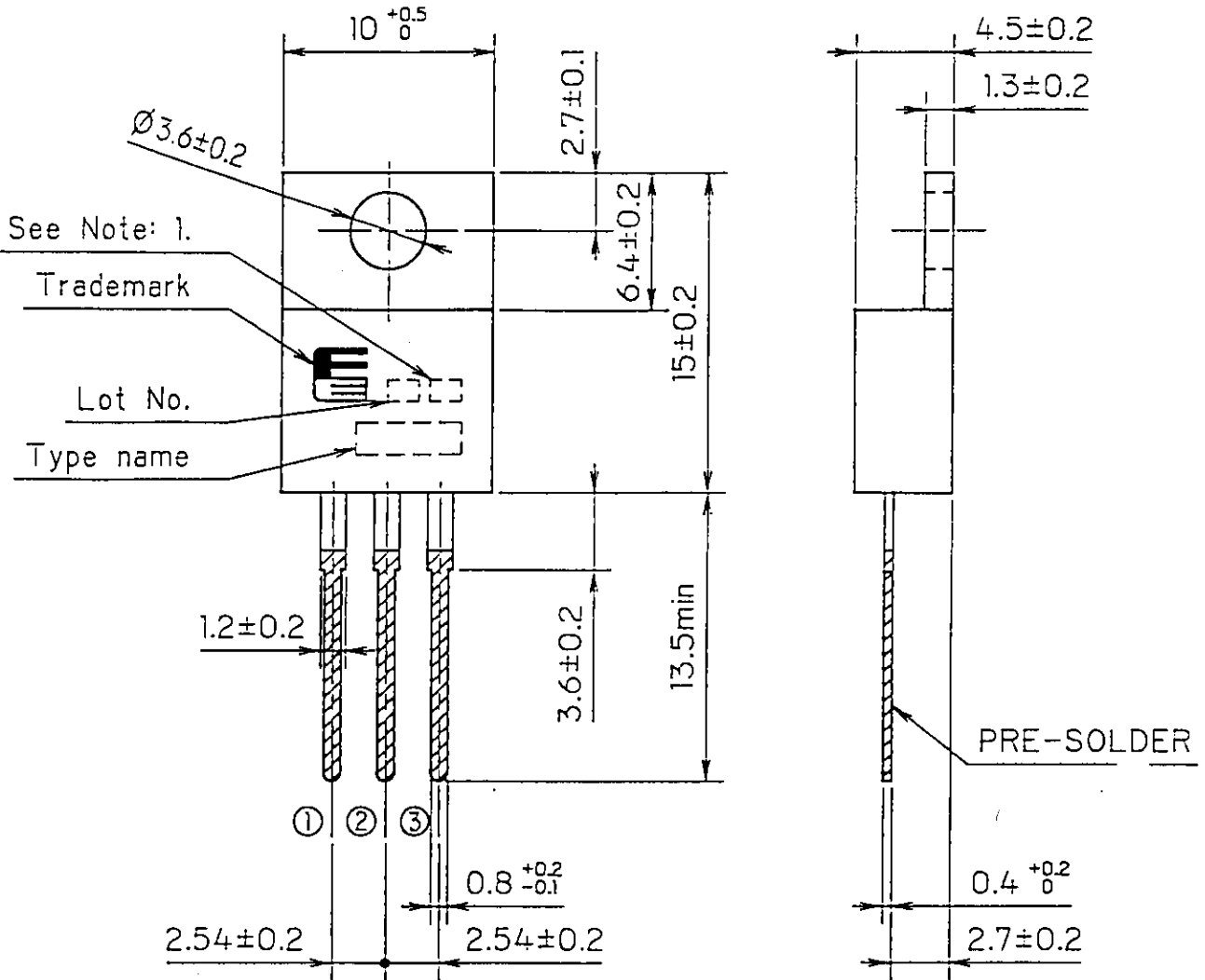


Fig.2 Operating waveforms

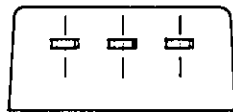


# FUJI POWER MOS FET

TYPE : 2SK2918-01



## CONNECTION



① ② ③

- ① GATE
- ② DRAIN
- ③ SOURCE

Note: 1.  $V_{GS(th)}$  selected code.

JEDEC : TO-220AB

Note: 1. Guaranteed mark of avalanche ruggedness.

DIMENSIONS ARE IN MILLIMETERS.

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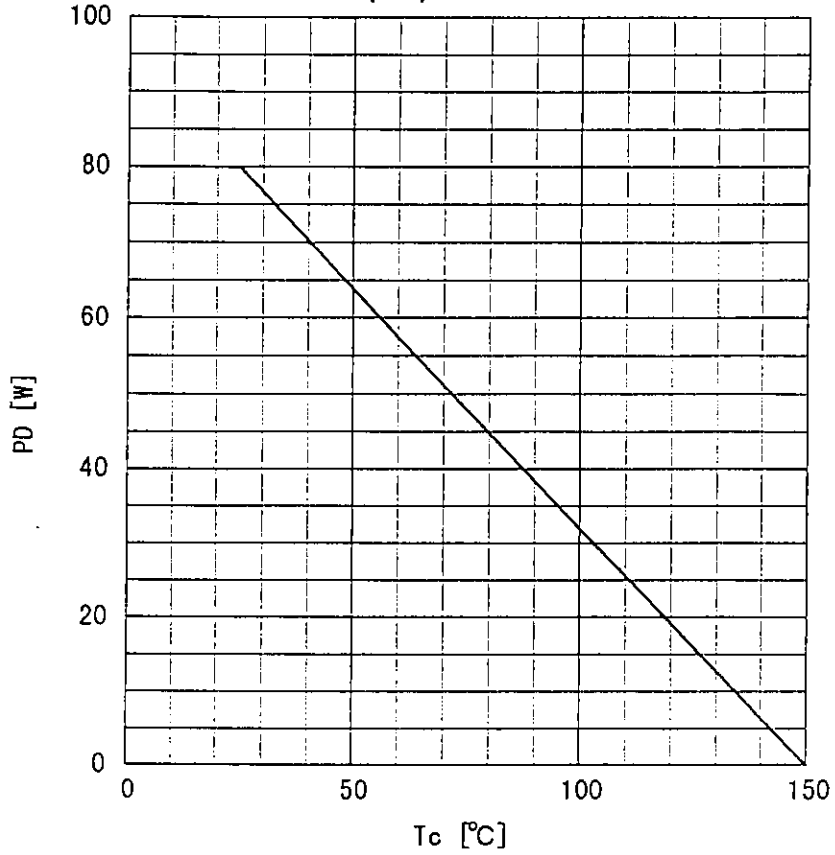
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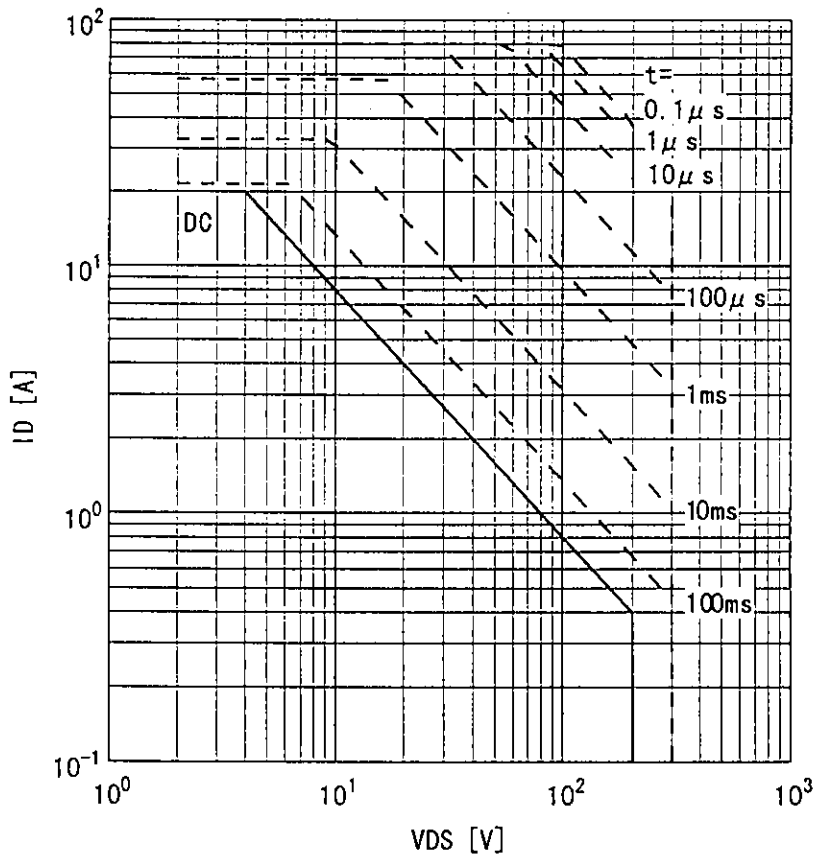
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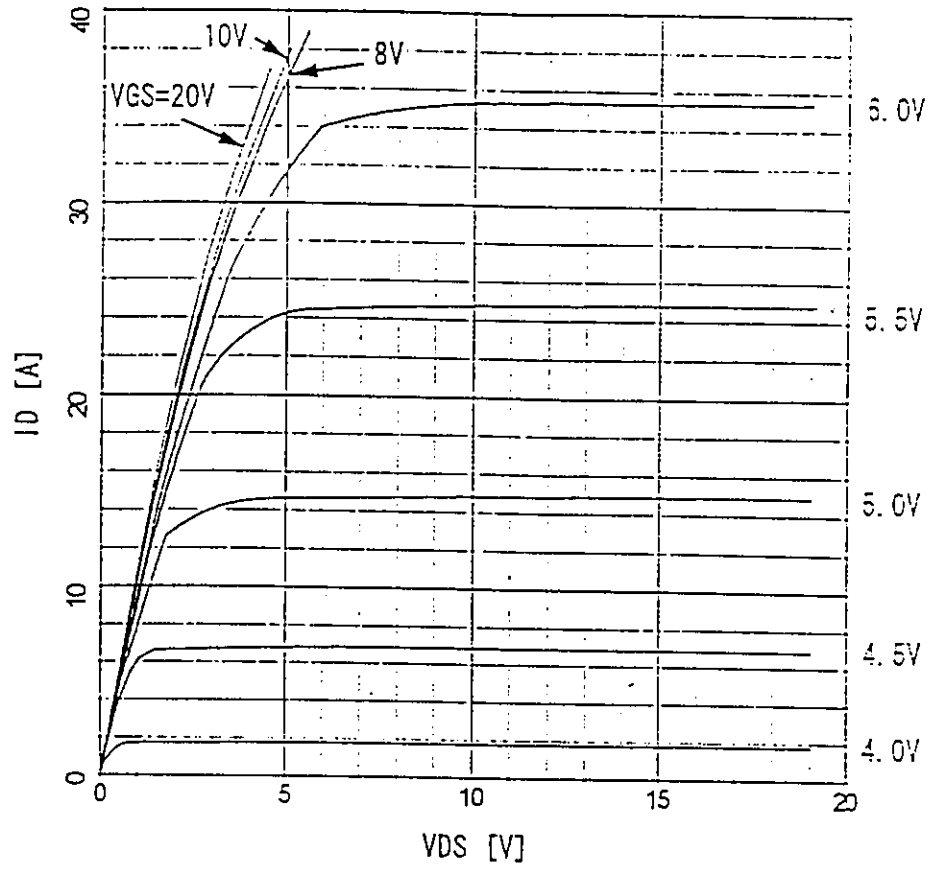
### Power Dissipation PD=f(Tc)



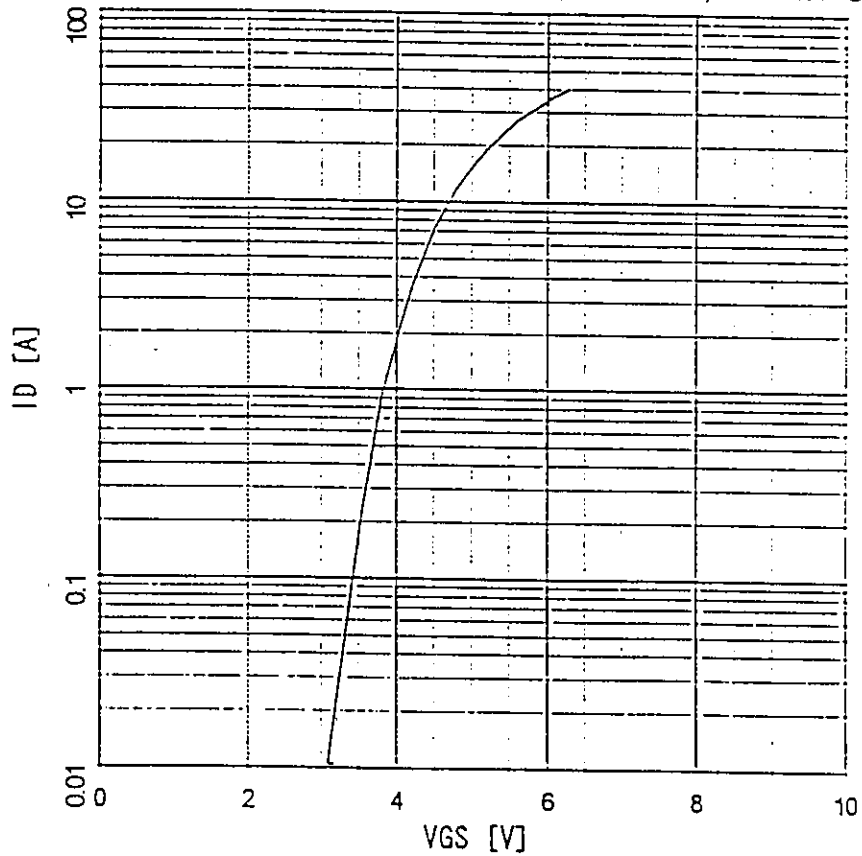
### Safe operating area ID=f(VDS) : D=0.01, Tc=25°C



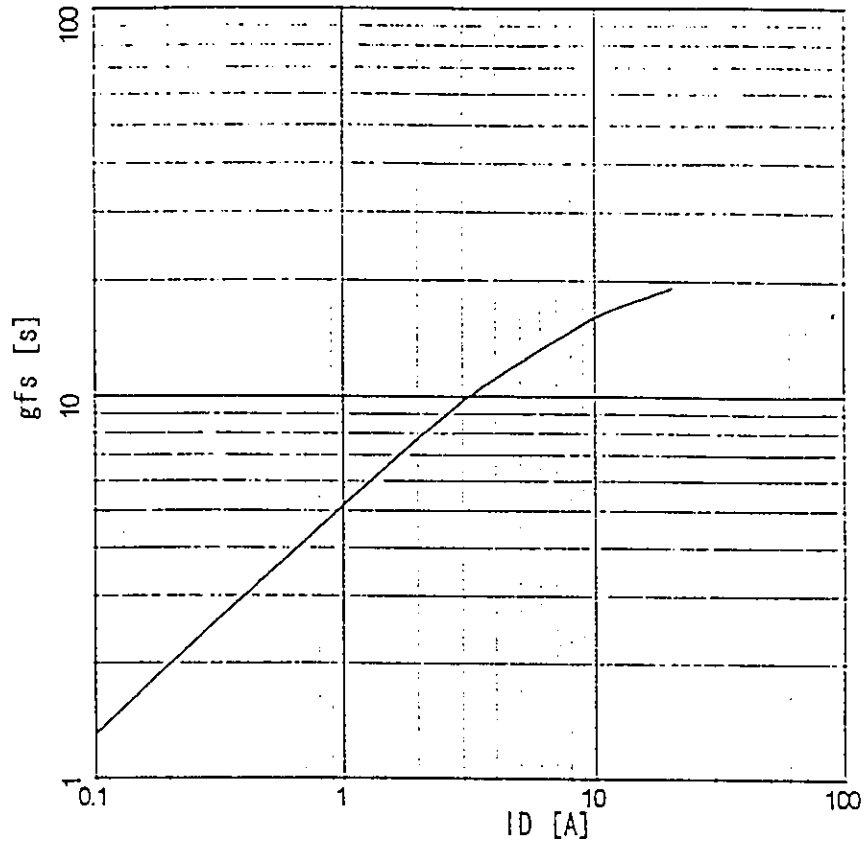
Typical output characteristics  
 $I_D = f(V_{DS})$ : 80  $\mu$ s pulse test,  $T_{ch} = 25^\circ\text{C}$



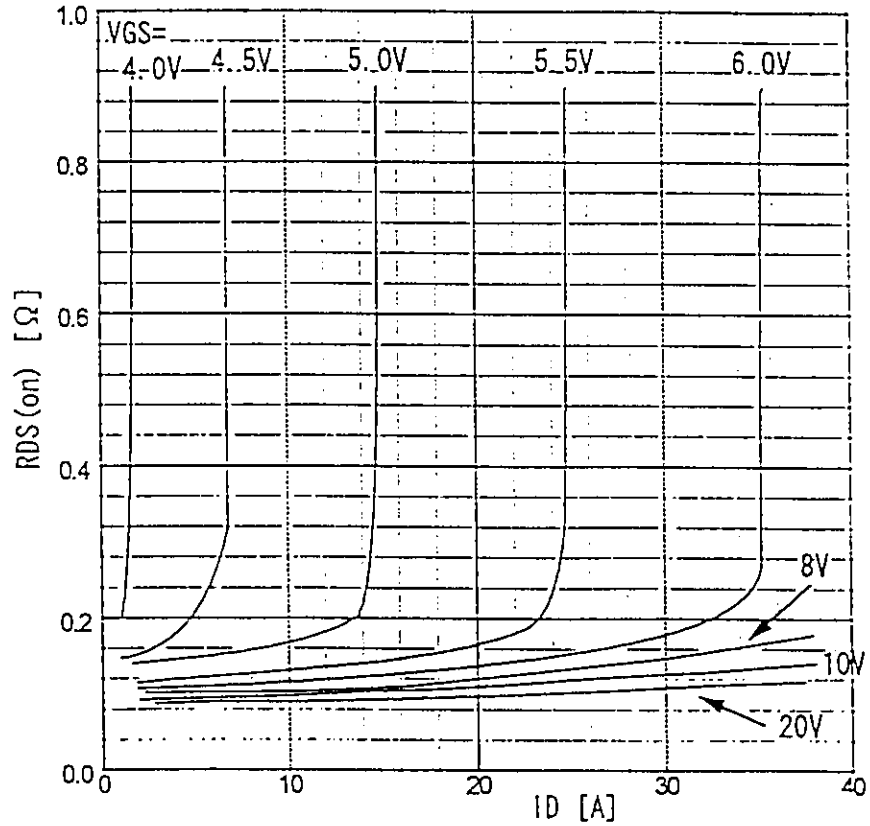
Typical transfer characteristic  
 $I_D = f(V_{GS})$ : 80  $\mu$ s pulse test,  $V_{DS} = 25V$ ,  $T_{ch} = 25^\circ\text{C}$



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

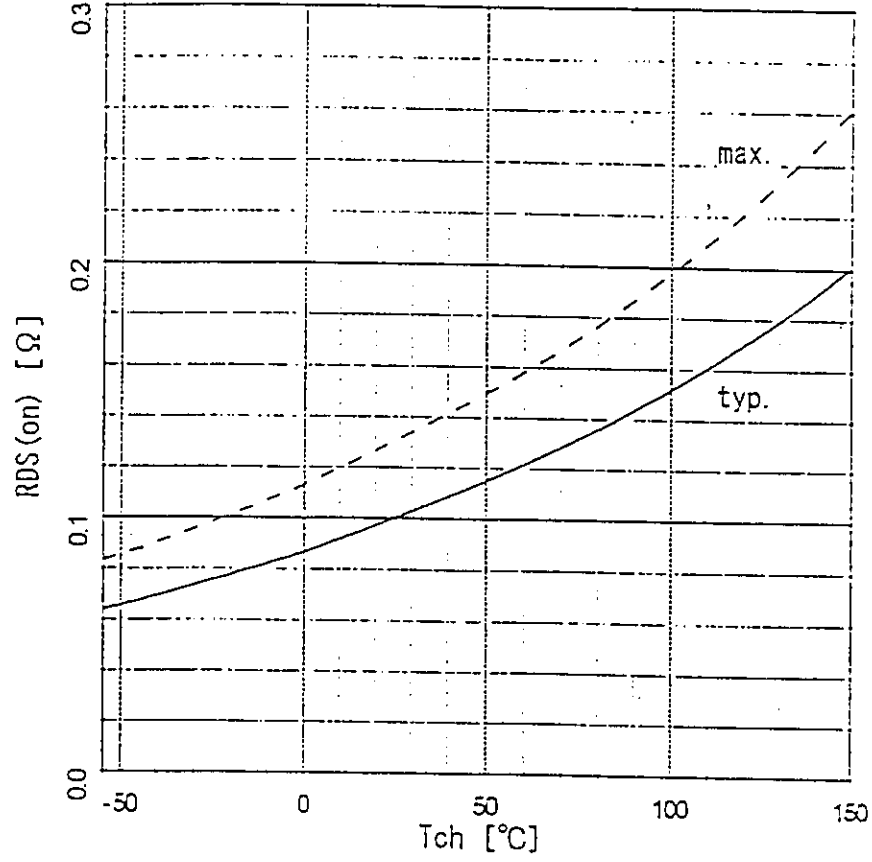


Typical drain-source on-state resistance  
 $R_{DS(on)} = f(I_D)$ :  $T_{ch} = 25^\circ C$

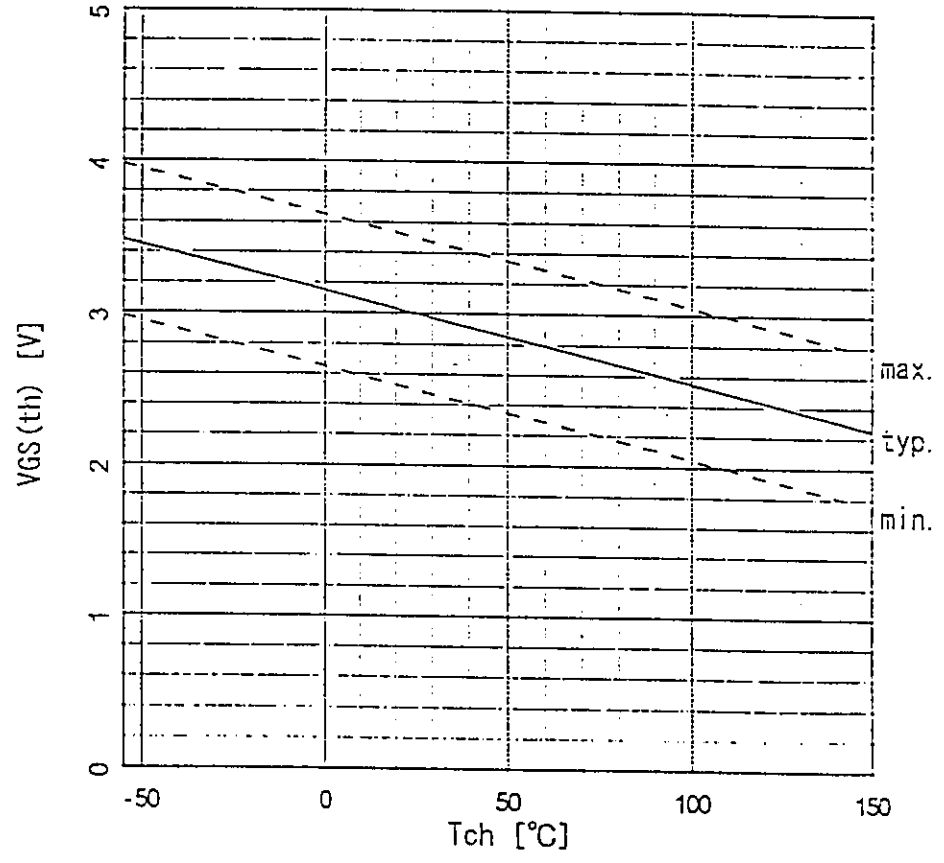




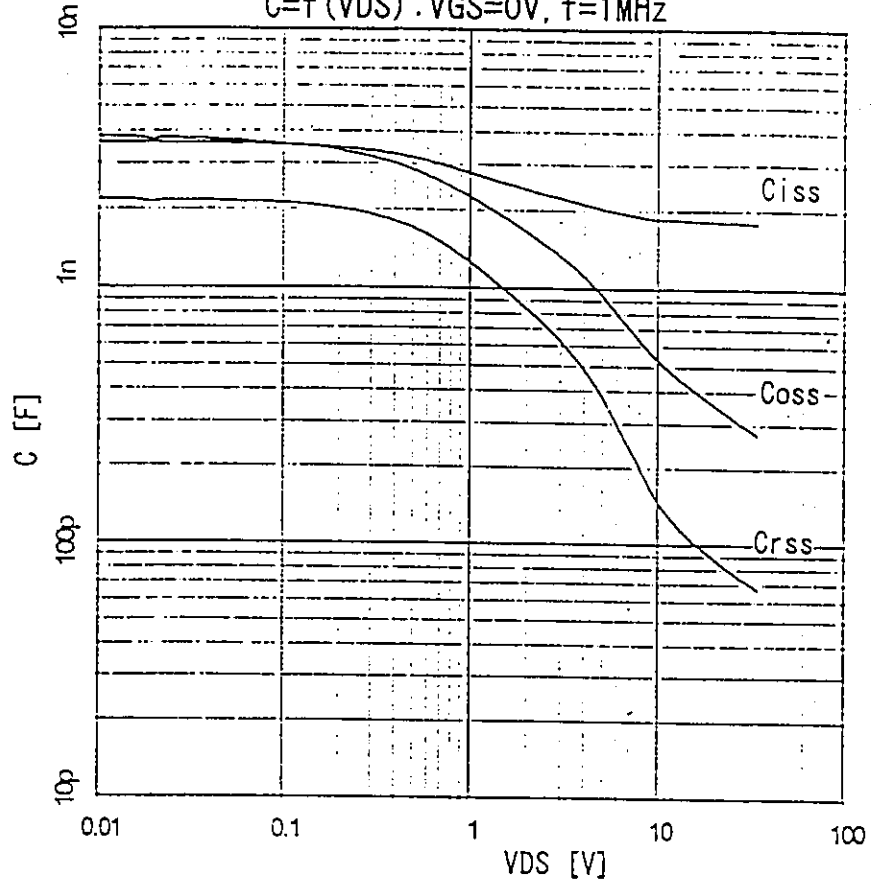
Drain-source on-state resistance  
 $R_{DS(on)} = f(T_{ch}) : I_D = 10A, V_{GS} = 10V$



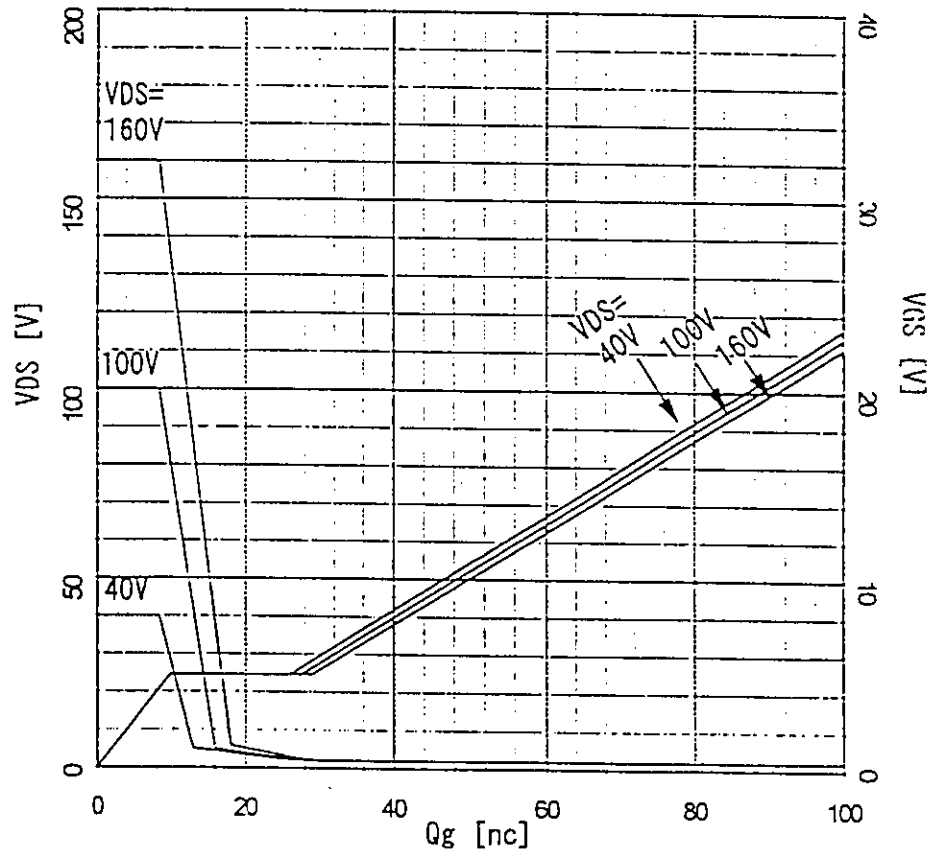
Gate threshold voltage  
 $V_{GS(th)} = f(T_{ch}) : I_D = 1mA, V_{DS} = V_{GS}$



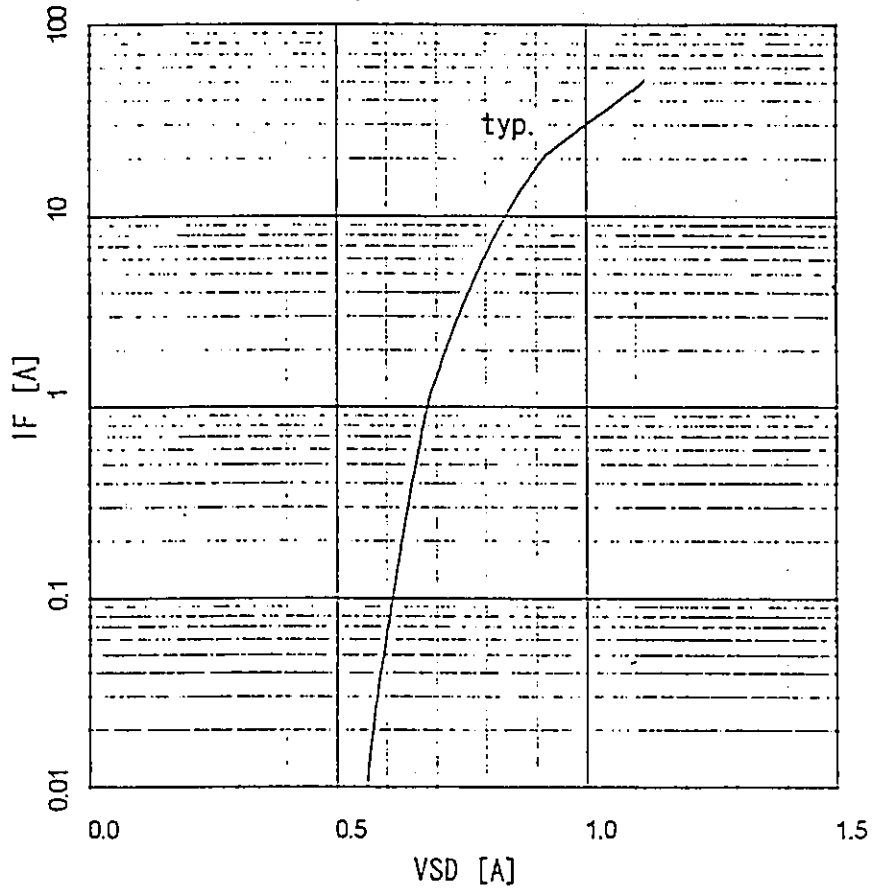
Typical capacitances  
 $C=f(V_{DS}) : V_{GS}=0V, f=1MHz$



Typical gate charge characteristics  
 $V_{GS}=f(Q_g) : I_D=20A$



Forward characteristic of reverse diode  
 $I_F = f(V_{SD}) : 80 \mu s$  pulses test



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

