

# SPECIFICATION

DEVICE NAME : Power MOSFET

TYPE NAME : 2SK2850-01

SPEC. NO. : - - - - -

Fuji Electric Co.,Ltd.

This Specification is subject to change without notice.

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

- 1.Scope This specifies Fuji Power MOSFET 2SK2850-01
- 2.Construction N-Channel enhancement mode power MOSFET
- 3.Applications for Switching
- 4.Outview TO-3P 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 <sub>DS</sub>	900	V	
Continuous Drain Current	I <sub>D</sub>	±6	A	
Pulsed Drain Current	I <sub>DP</sub>	±24	A	
Gate-Source Voltage	V <sub>GS</sub>	±30	V	
Maximum Avalanche Energy	E <sub>AV</sub>	277	mJ	*1
Maximum Power Dissipation	P <sub>D</sub>	125	W	
Operating and Storage	T <sub>ch</sub>	150	°C	
Temperature range	T <sub>stg</sub>	-55 to +150	°C	

\*1 L=14.1mH,Vcc=90V

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

Static Ratings

Description	Symbol	Conditions	min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	I <sub>D</sub> =1mA V <sub>GS</sub> =0V	900			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	I <sub>C</sub> =1mA V <sub>DS</sub> =V <sub>GS</sub>	2.5	3.0	3.5	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =900V V <sub>GS</sub> =0V		10	500	μA
		T <sub>ch</sub> =25°C				
		T <sub>ch</sub> =125°C		0.2	1.0	mA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±30V V <sub>DS</sub> =0V		10	100	nA
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	I <sub>D</sub> =3A V <sub>GS</sub> =10V		1.87	2.5	Ω

### Dynamic Ratings

Description	Symbol	Conditions	min.	typ.	max.	Unit
Forward Transconductance	$g_{fs}$	$I_D=3A$ $V_{DS}=25V$	2.0	4.0		S
Input Capacitance	$C_{iss}$	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$		950	1450	pF
Output Capacitance	$C_{oss}$			140	210	
Reverse Transfer Capacitance	$C_{rss}$			80	120	
Turn-On Time	$t_{d(on)}$	$V_{cc}=600V$		20	30	ns
	$t_r$	$V_{GS}=10V$		50	80	
Turn-Off Time	$t_{d(off)}$	$I_D=6A$		110	170	
	$t_f$	$R_{GS}=10\Omega$		60	90	

### Reverse Diode

Description	Symbol	Conditions	min.	typ.	max.	Unit
Avalanche Capability	$I_{AV}$	$L=100\mu H$ $T_{ch}=25^\circ C$ See Fig.1 and Fig.2	6			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	$t_{rr}$	$I_F=I_{DR}$ $-di/dt=100A/\mu s$ $T_{ch}=25^\circ C$		900		ns
Reverse Recovery Charge	$Q_{rr}$				10	

### 7. Thermal Resistance

Description	Symbol	min.	typ.	max.	Unit
Channel to Case	$R_{th(ch-c)}$			1.00	$^\circ C/W$
Channel to Ambient	$R_{th(ch-a)}$			35.0	$^\circ C/W$

Fig.1 Test Circuit

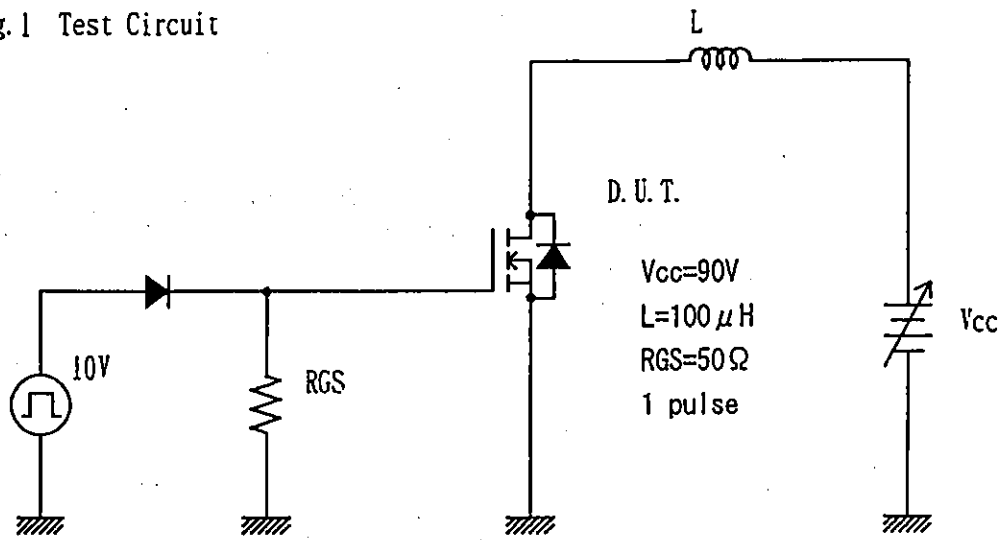
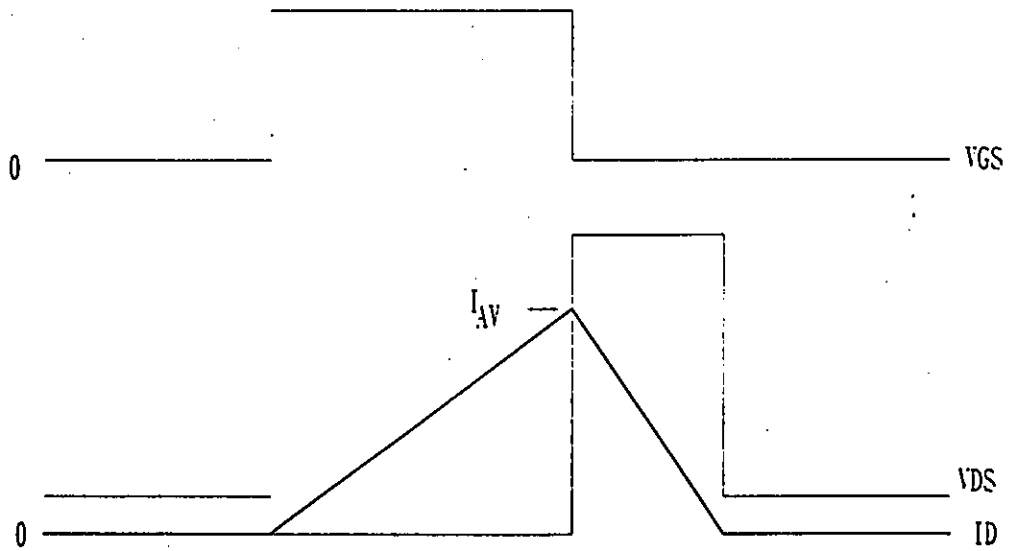
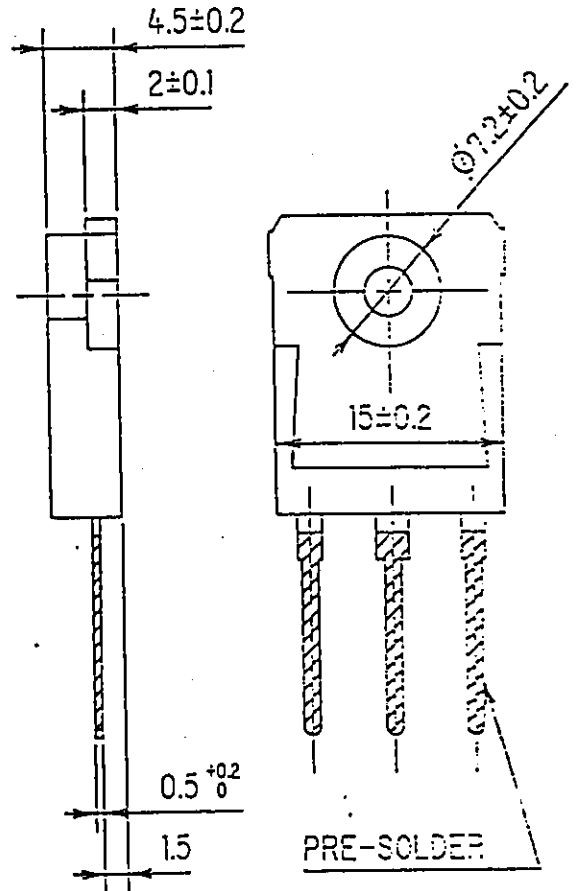
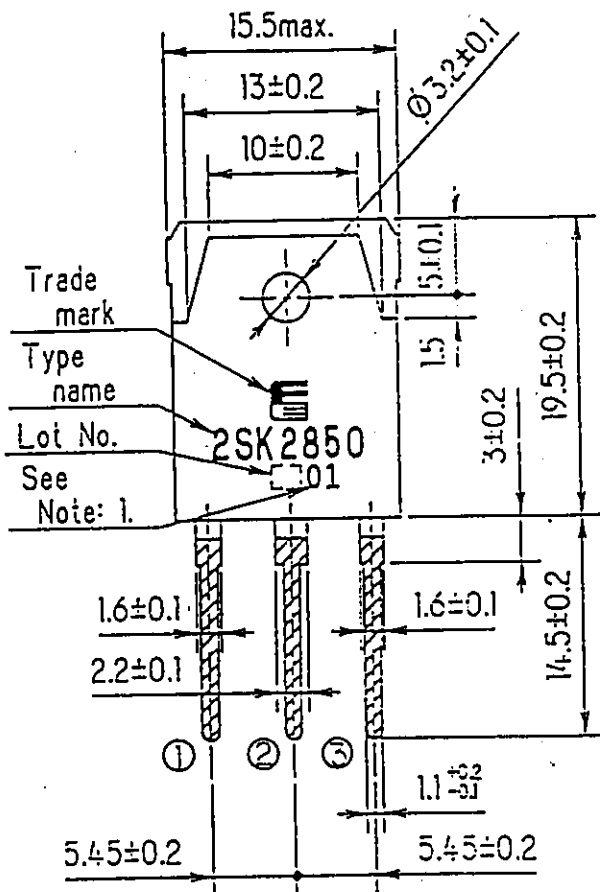


Fig.2 Operating waveforms

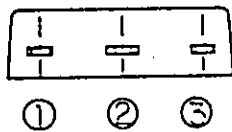


FUJI POWER MOS FET

TYPE : 2SK2850-01



DIMENSIONS ARE IN MILLIMETERS.



CONNECTION

- ① GATE
- ② DRAIN
- ③ SOURCE

Note: 1. Guaranteed mark of avalanche ruggedness.

JEDEC : TO-247

EIAJ : SC-65

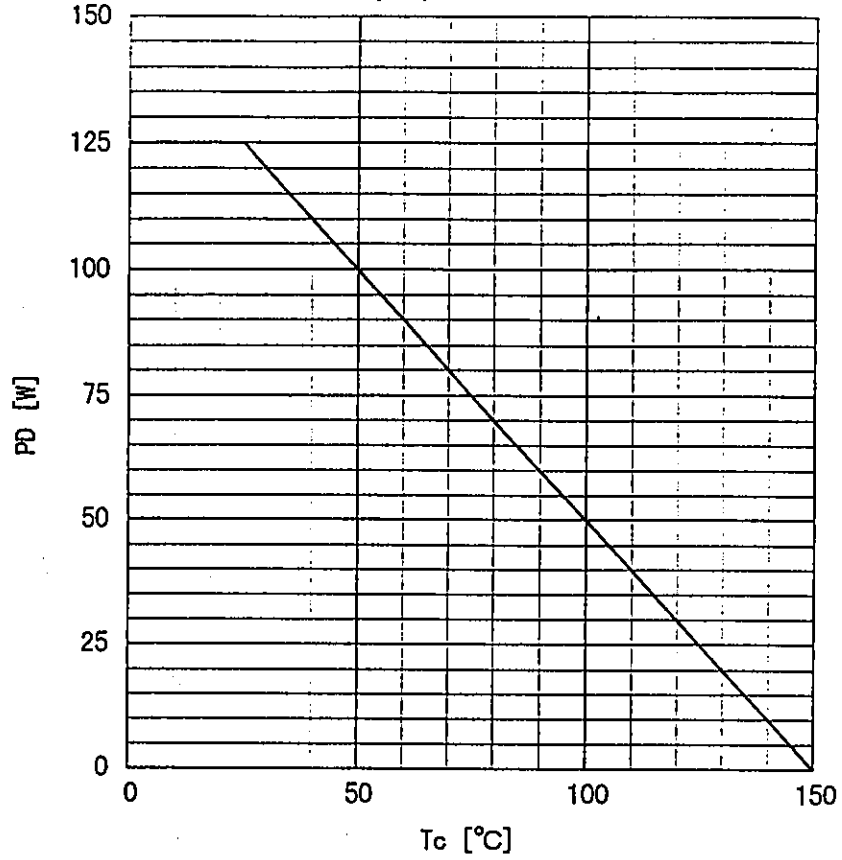
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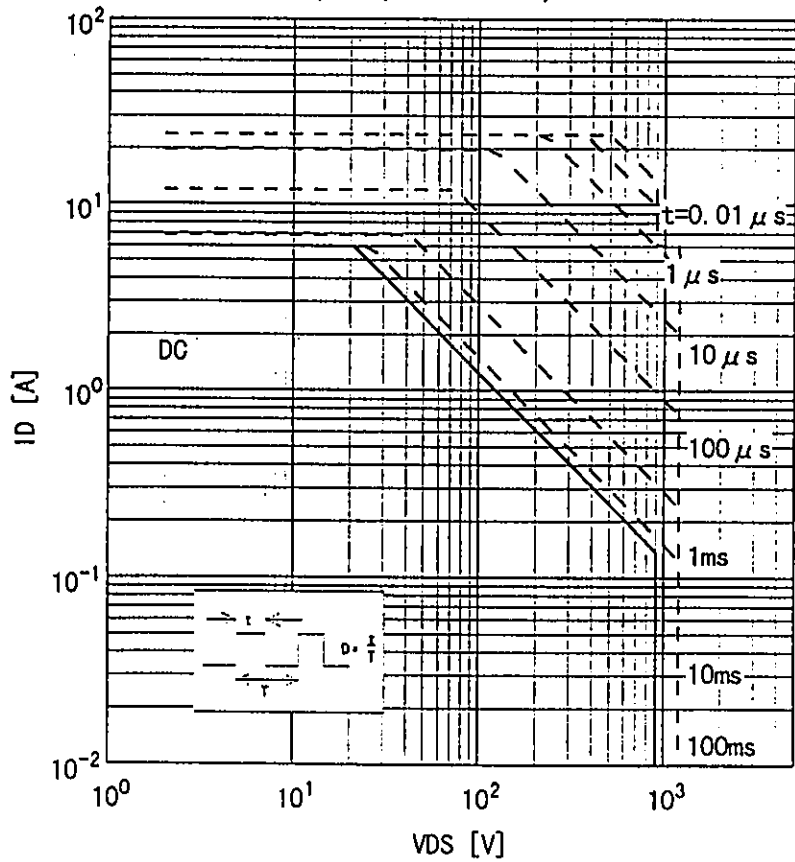
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### Power Dissipation $PD=f(T_c)$

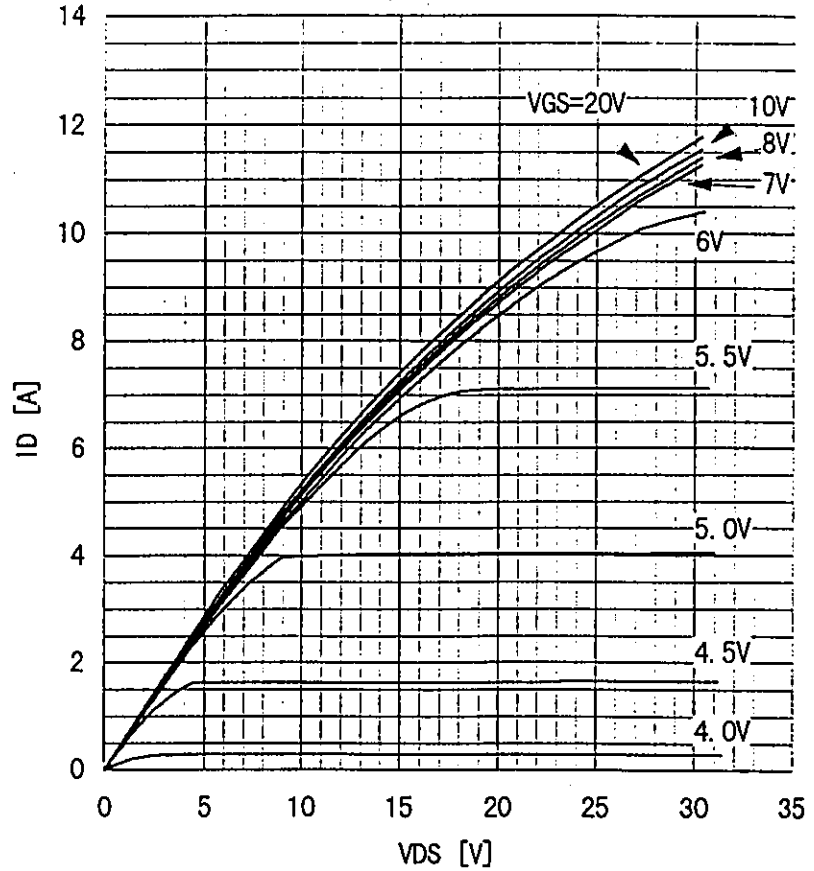


### Safe operating area $ID=f(V_{DS}) : D=0.01, T_c=25^\circ\text{C}$

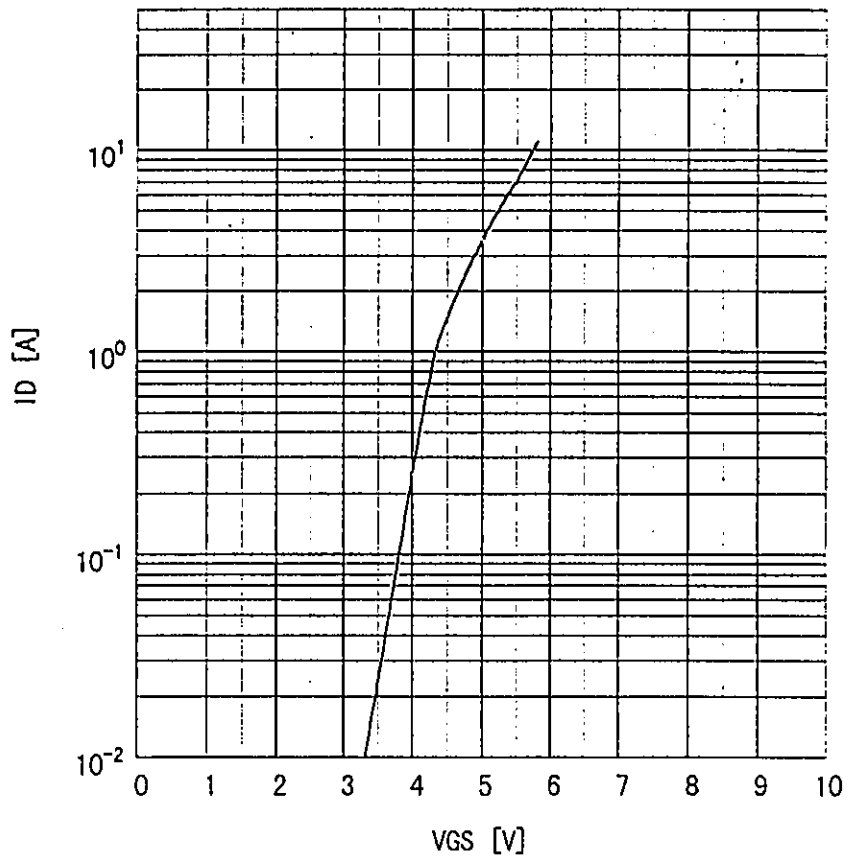


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Typical output characteristics  
 $I_D = f(V_{DS}) : 80 \mu s$  pulse test,  $T_c = 25^\circ C$

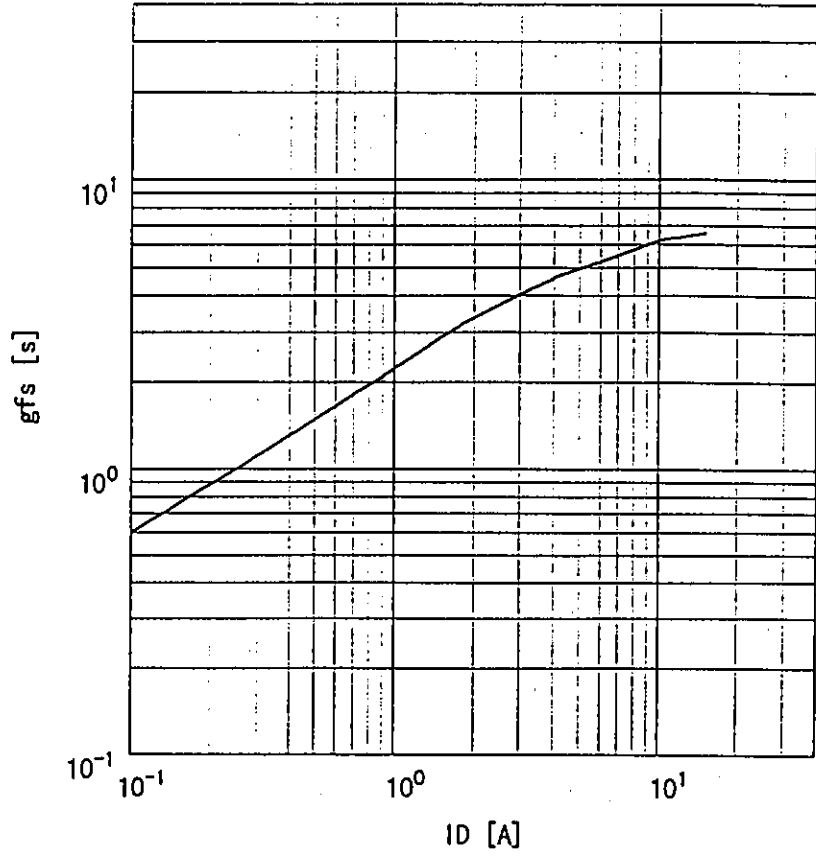


Typical transfer characteristic  
 $I_D = f(V_{GS}) : 80 \mu s$  pulse test,  $V_{DS} = 25V$ ,  $T_{ch} = 25^\circ C$

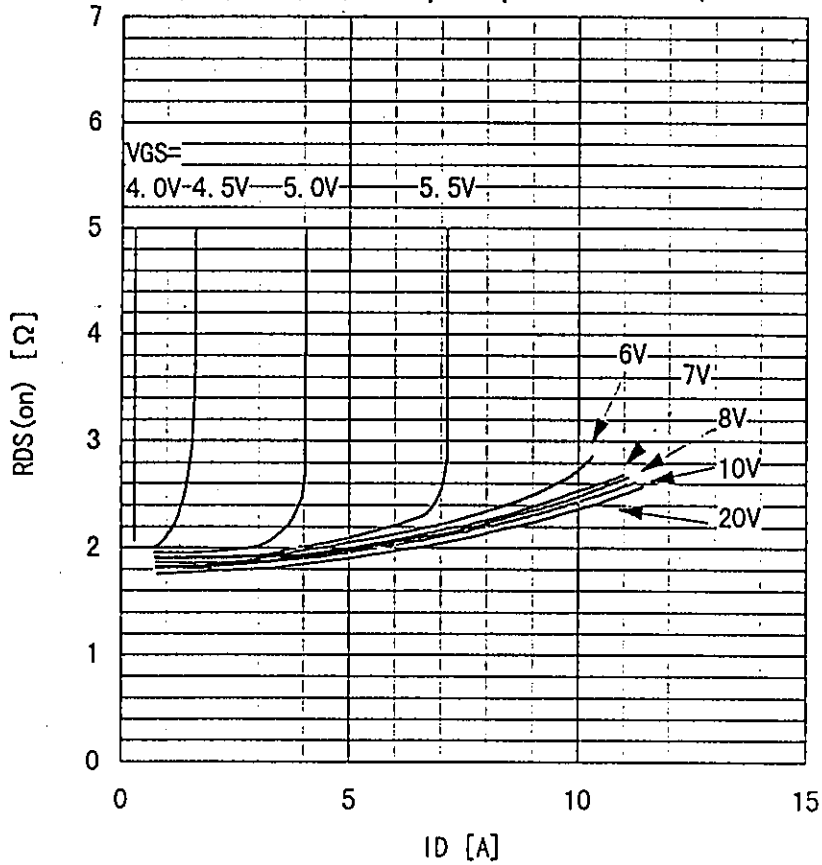


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Typical forward transconductance  
 $g_{fs} = f(I_D) : 80 \mu s$  pulse test,  $V_{DS} = 25V$ ,  $T_{ch} = 25^\circ C$



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

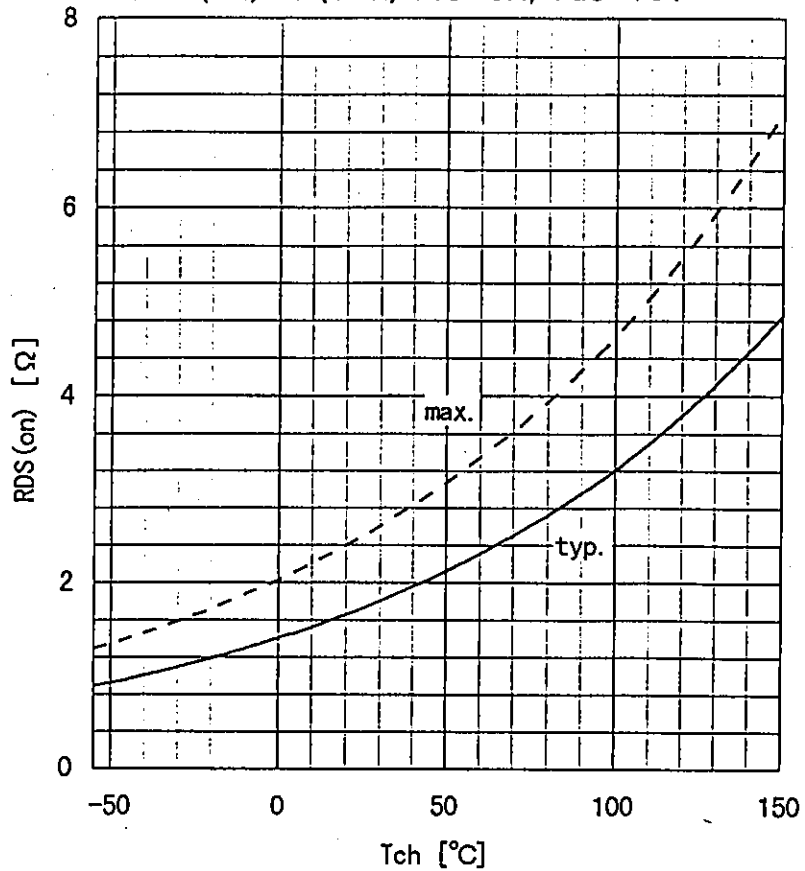





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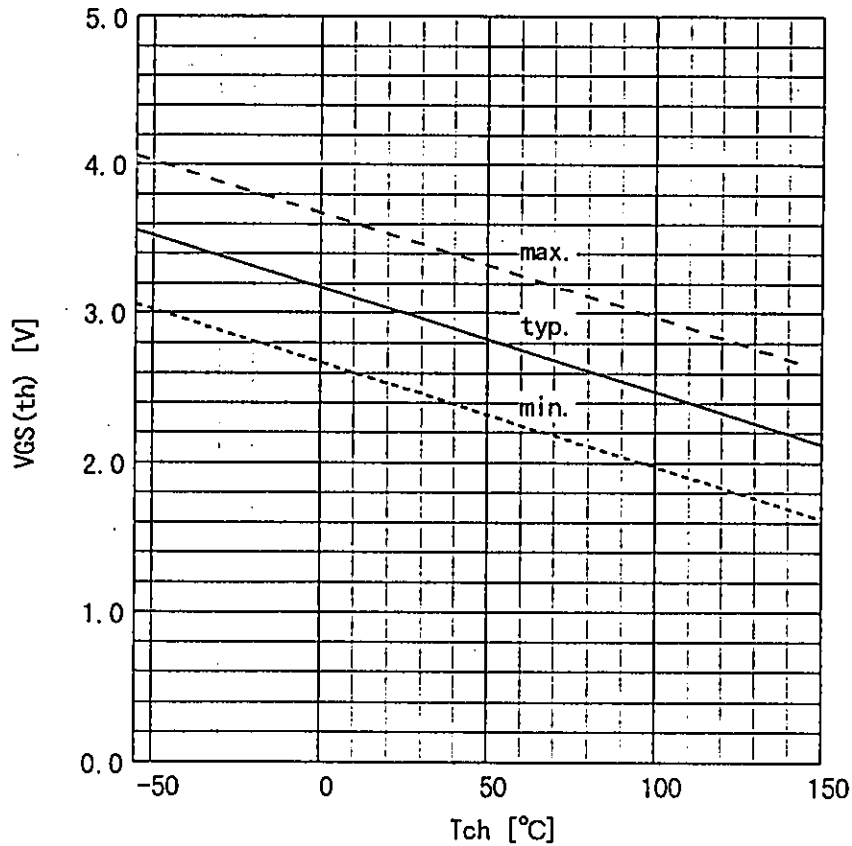
### Drain-source on-state resistance

$$RDS(on) = f(T_{ch}) : I_D = 3A, V_{GS} = 10V$$



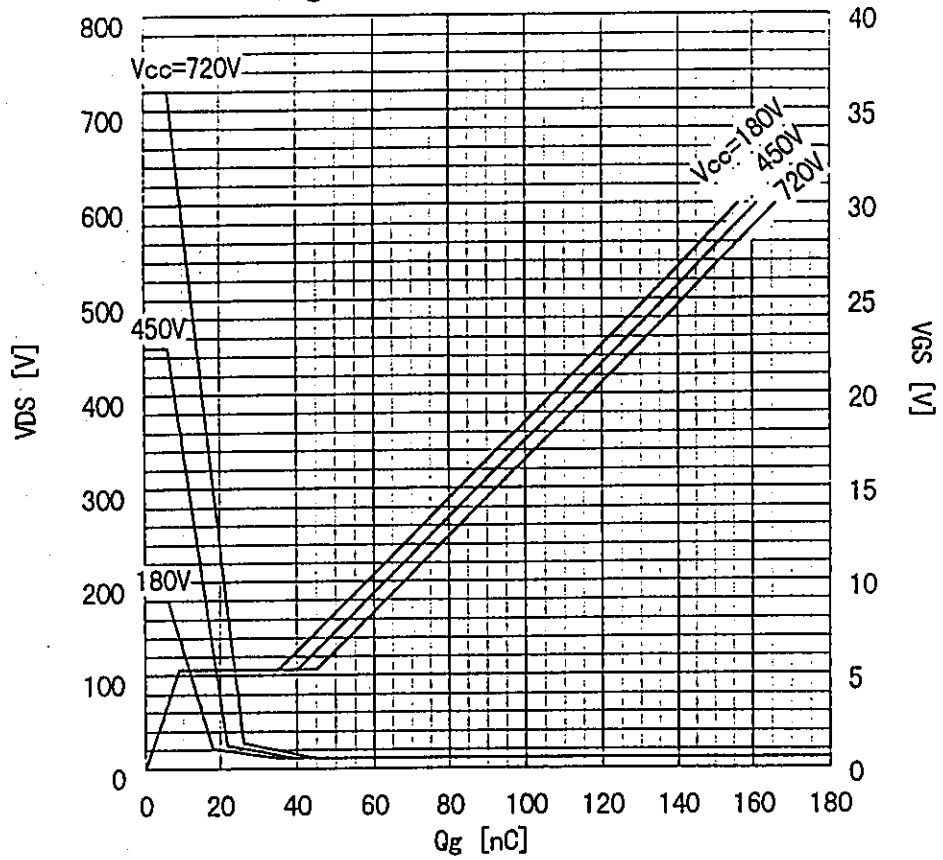
### Gate threshold voltage

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

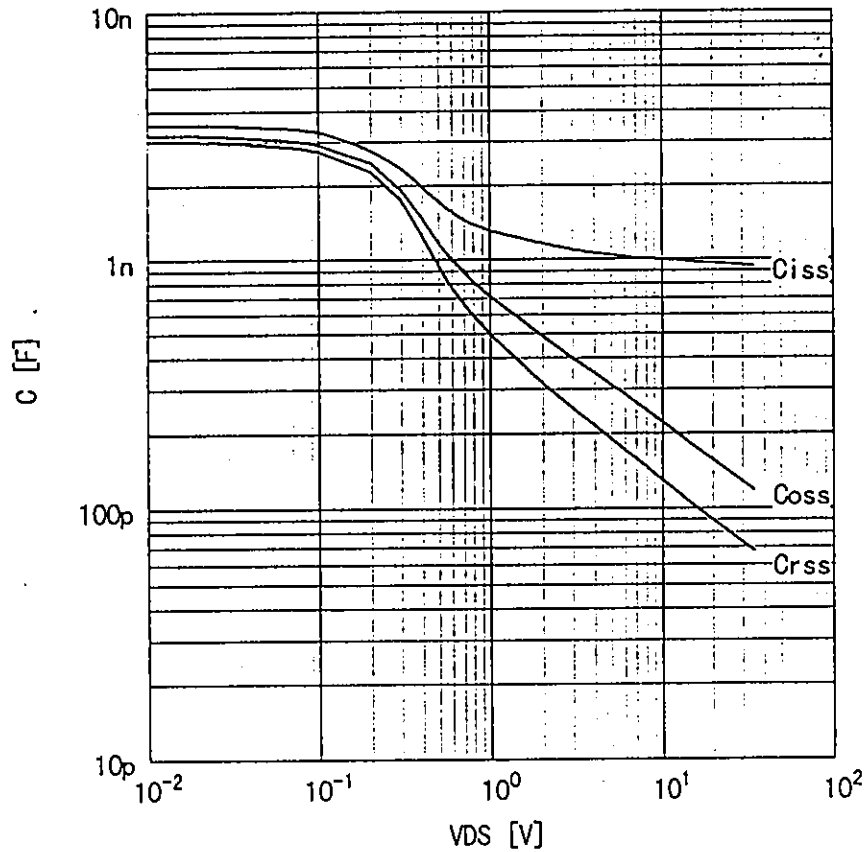


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Typical gate charge characteristic  
 $V_{GS} = f(Q_g) : I_D = 6A, T_c = 25^\circ C$

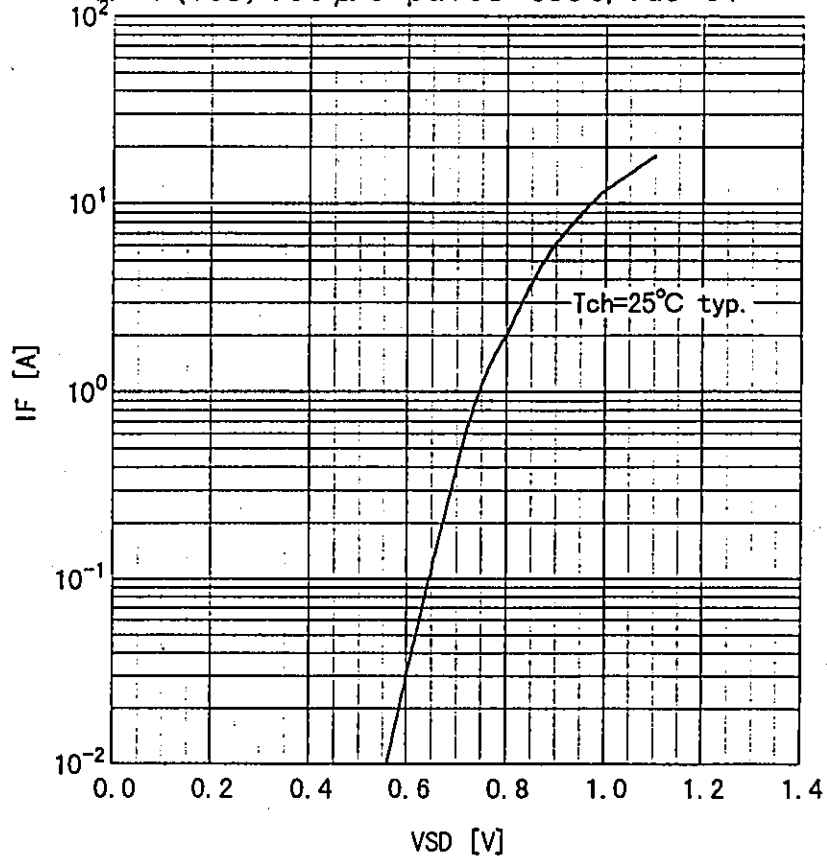


Typical capacitances  
 $C = f(V_{DS}) : V_{GS} = 0V, f = 1MHz$

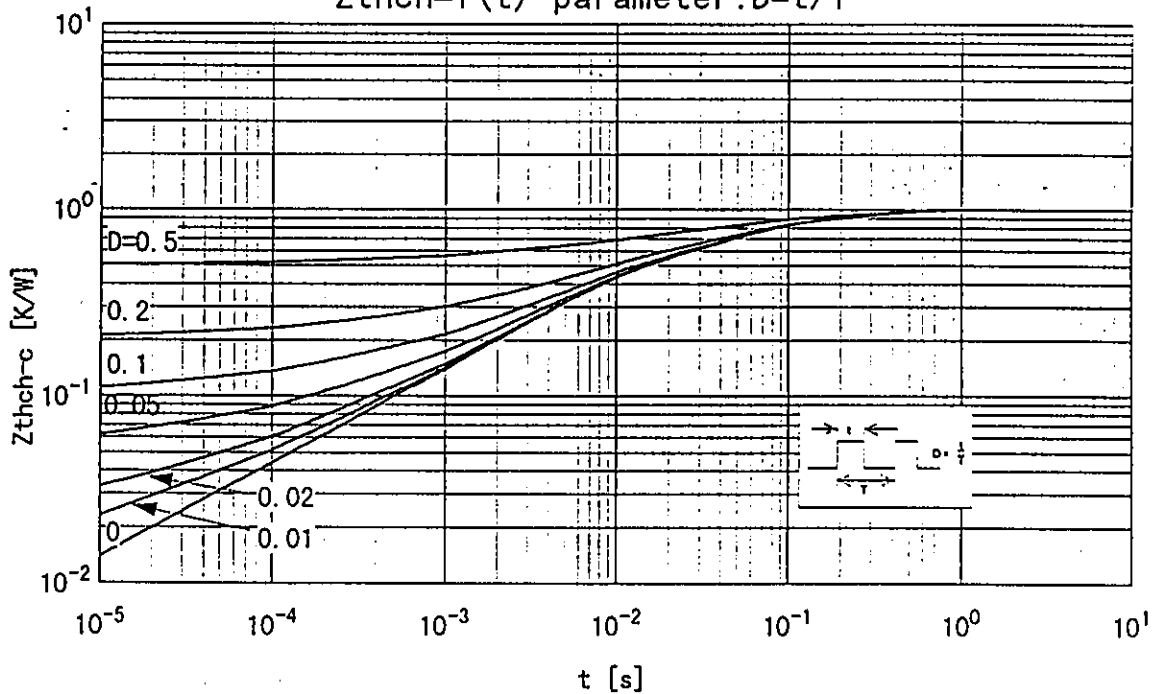


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Forward characteristic of reverse of diode  
 $I_F = f(V_{SD}) : 80 \mu s$  pulses test,  $V_{GS} = 0V$



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



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Avalanche energy derating  
 $E_{as}=f(\text{starting } T_{ch}) : V_{CC}=90V, I_{AV}=6A$

