

# 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.

1/2

- 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

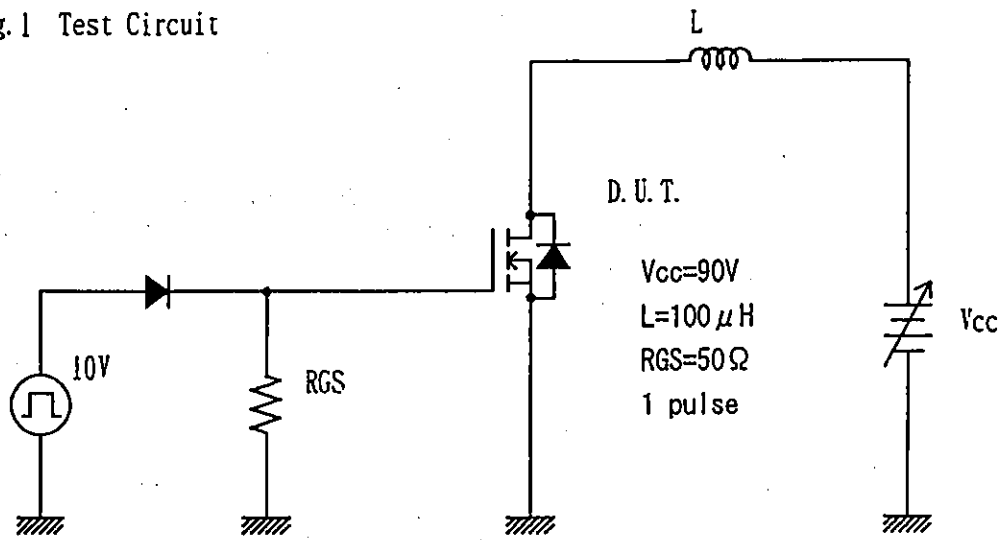
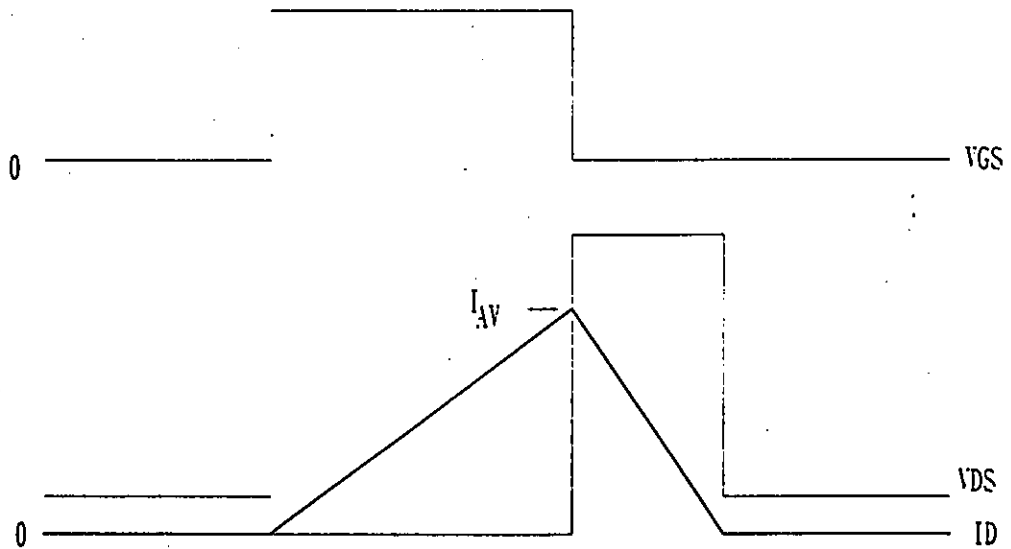
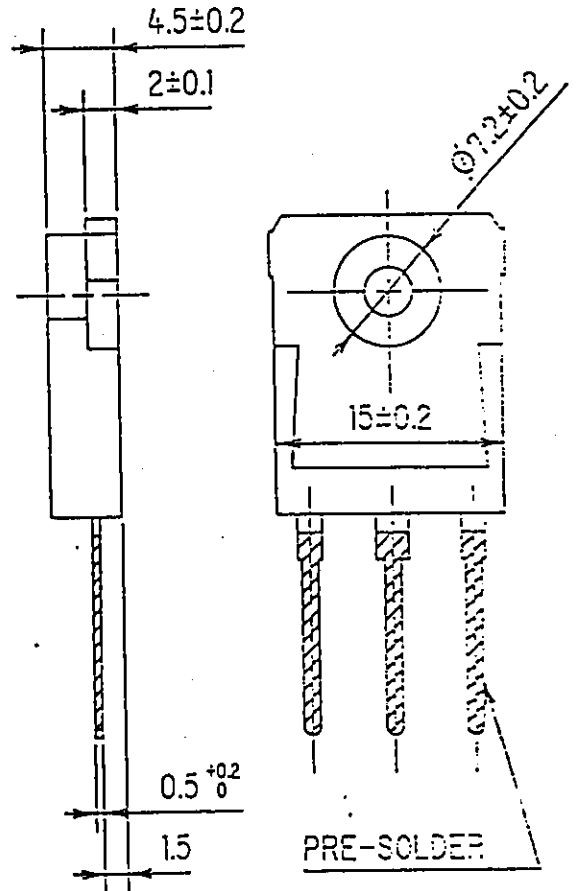
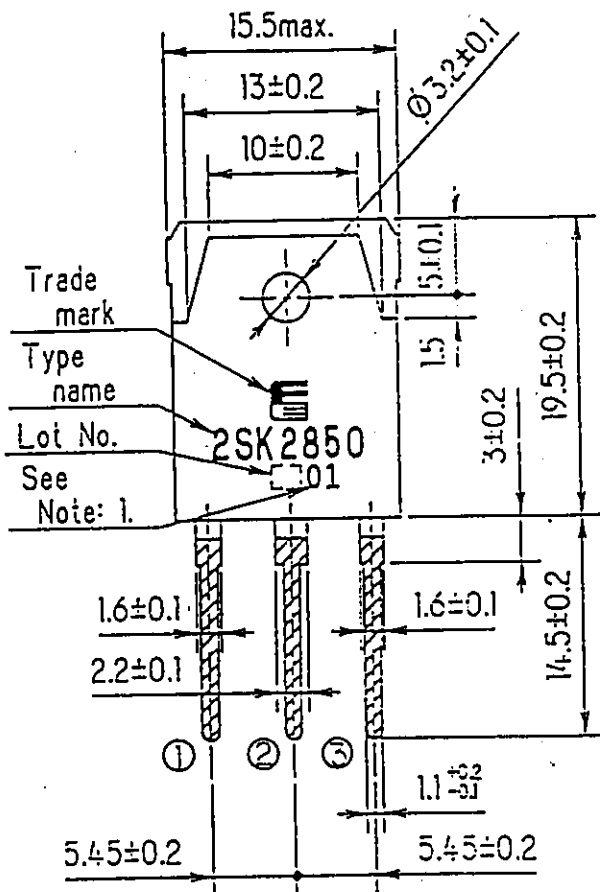


Fig.2 Operating waveforms

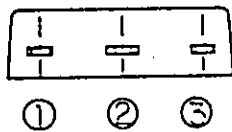


FUJI POWER MOS FET

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

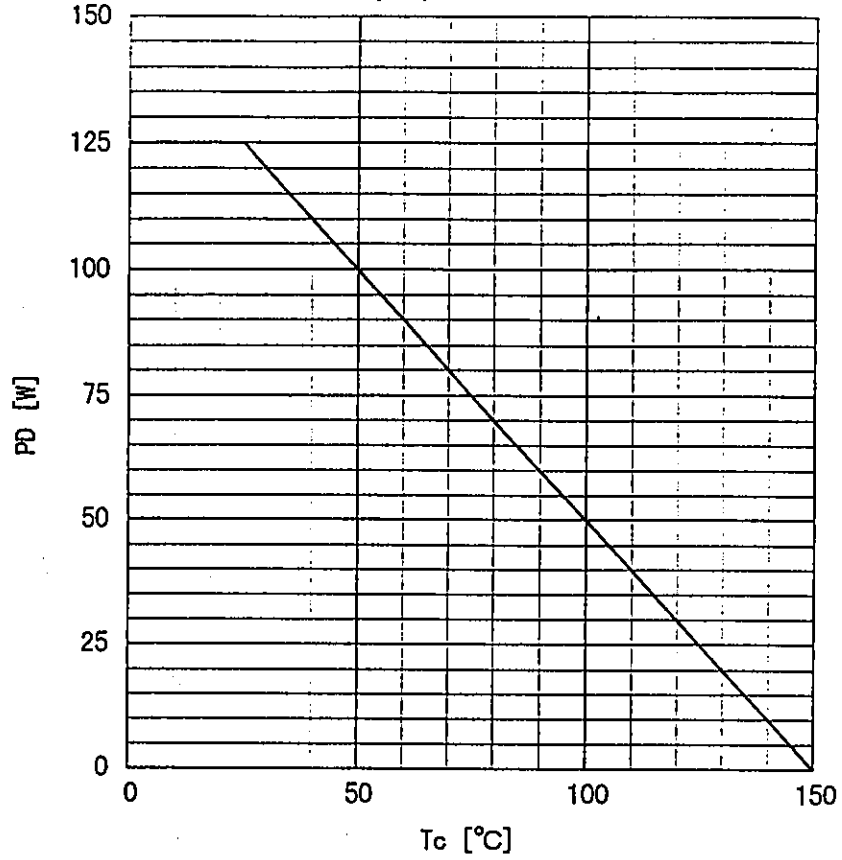
Fuji Electric Co., Ltd.

DWG. NO.

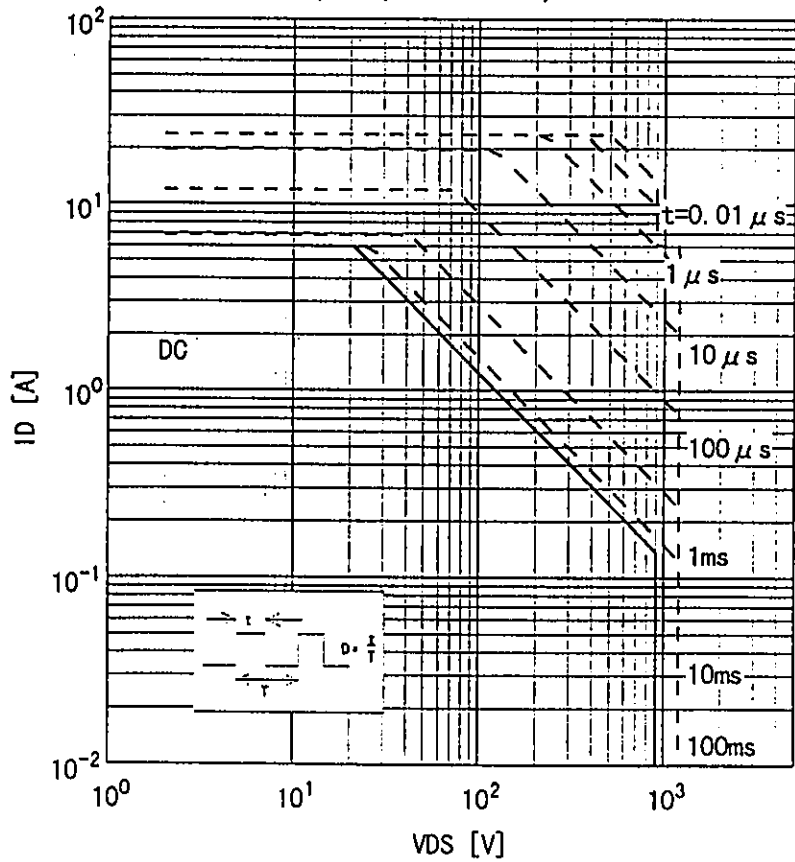
5/12

This material and the information herein is the property of Fuji Electric Co., Ltd. They shall be neither reproduced, copied, lent, or disclosed in any way whatsoever for the use of any third party nor used for the manufacturing purposes without the express written consent of Fuji Electric Co., Ltd.

### Power Dissipation PD=f(Tc)

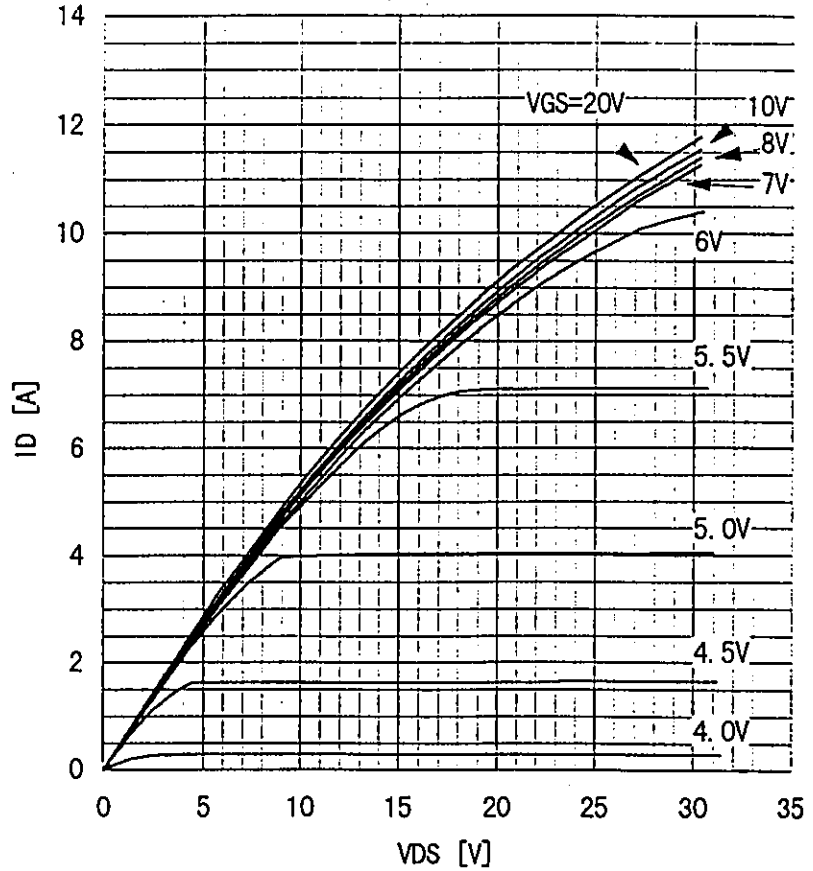


### Safe operating area ID=f(VDS) : D=0.01, Tc=25°C

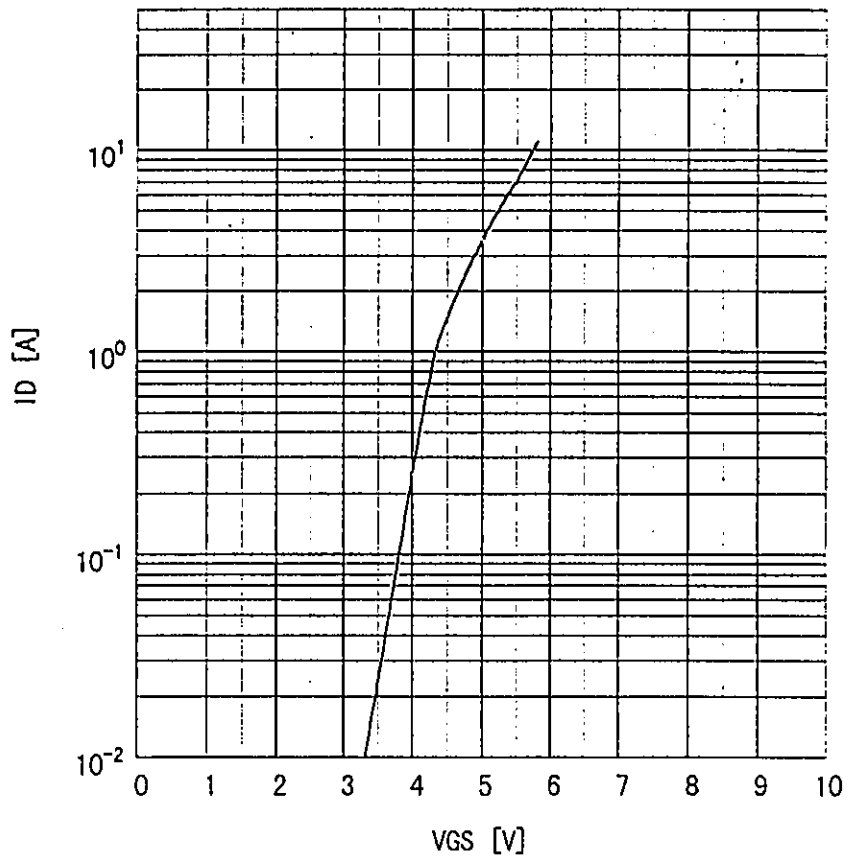


This material and the information herein is the property of Fuji Electric Co., Ltd. They shall be neither reproduced, copied, lent, or disclosed in any way whatsoever for the use of any third party nor used for the manufacturing purposes without the express written consent of Fuji Electric Co., Ltd.

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

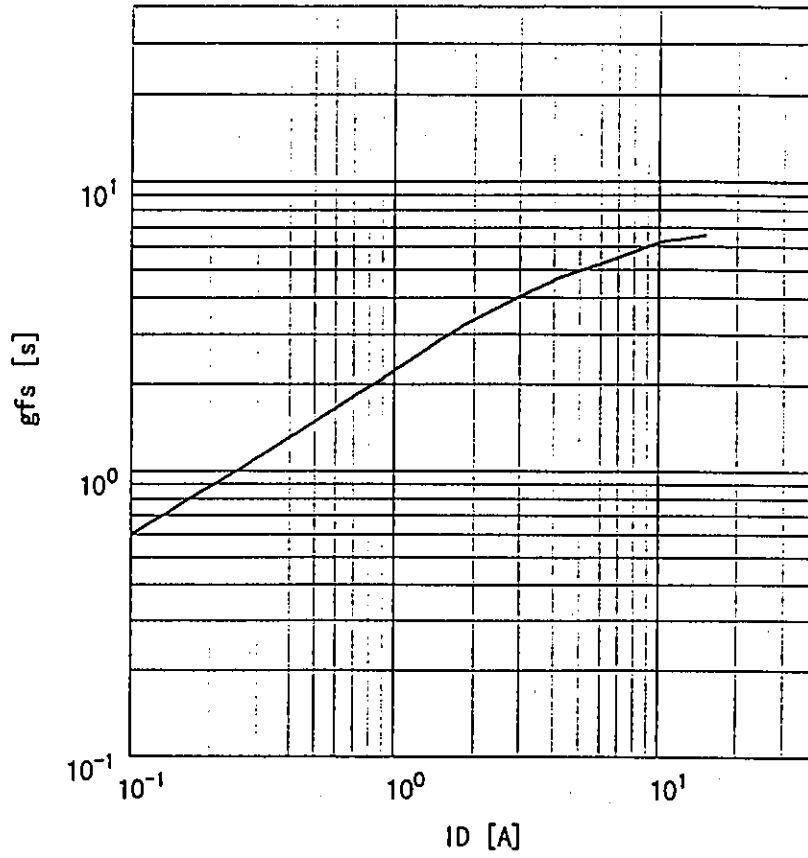


Typical transfer characteristic  
 $I_D = f(V_{GS})$  : 80  $\mu$ s pulse test,  $V_{DS} = 25\text{V}$ ,  $T_{ch} = 25^\circ\text{C}$

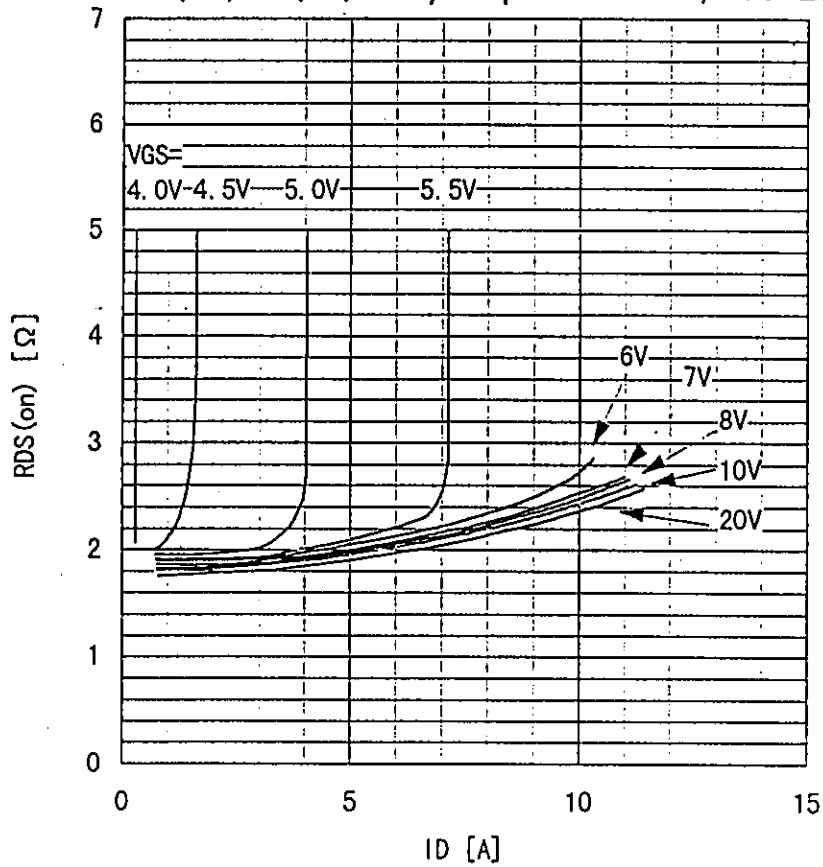


This material and the information herein is the property of Fuji Electric Co., Ltd. They shall be neither reproduced, copied, lent, or disclosed in any way whatsoever for the use of any third party nor used for the manufacturing purposes without the express written consent of Fuji Electric Co., Ltd.

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,  $T_c = 25^\circ C$

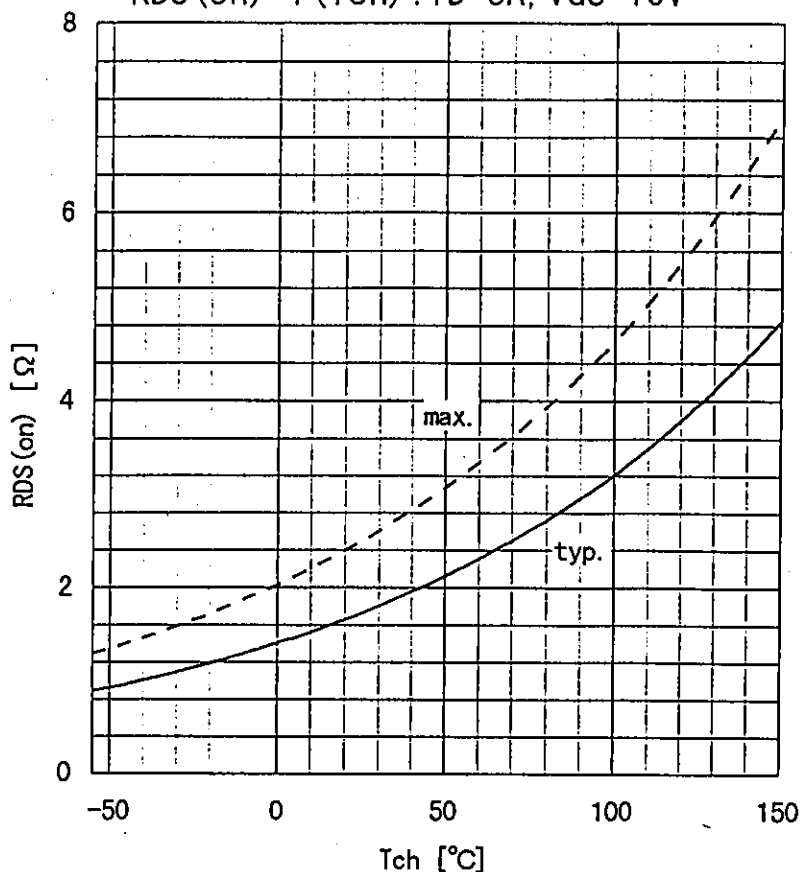





This material and the information herein is the property of Fuji Electric Co., Ltd. They shall be neither reproduced, copied, lent, or disclosed in any way whatsoever for the use of any third party nor used for the manufacturing purposes without the express written consent of Fuji Electric Co., Ltd.

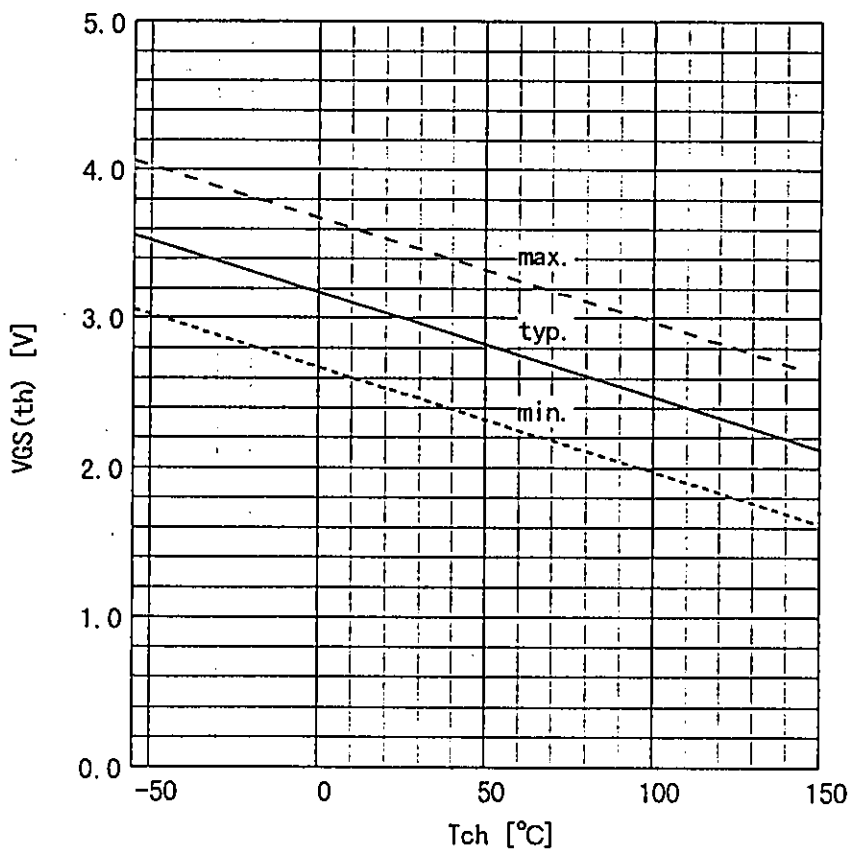
### Drain-source on-state resistance

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



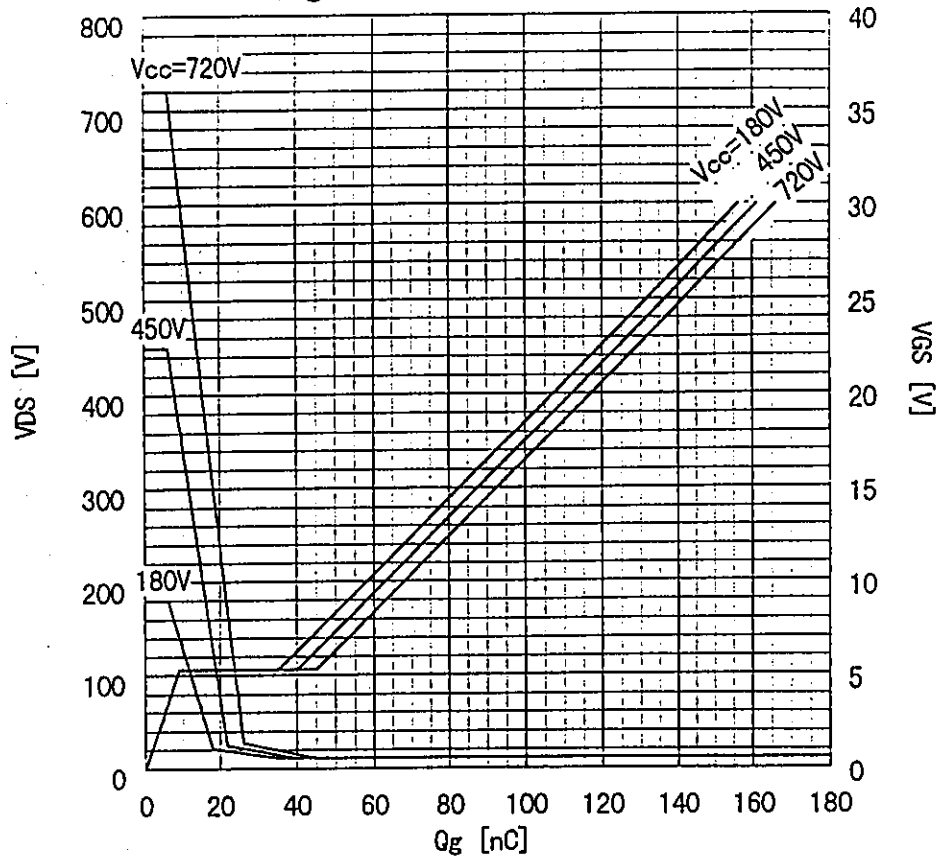
### Gate threshold voltage

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

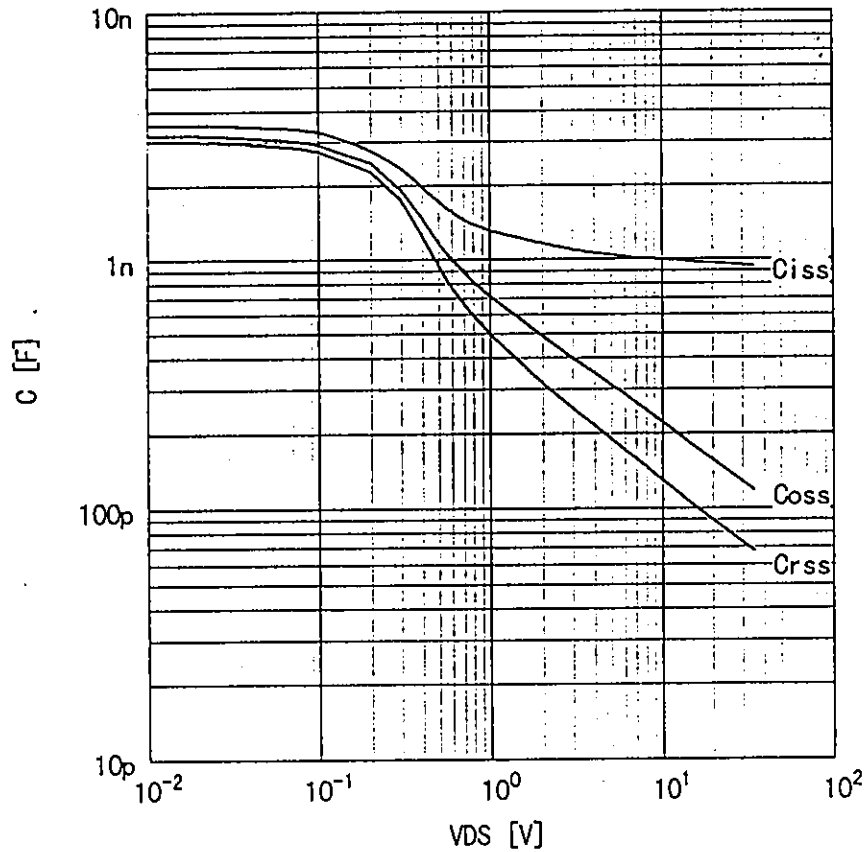


This material and the information herein is the property of Fuji Electric Co., Ltd. They shall be neither reproduced, copied, lent, or disclosed in any way whatsoever for the use of any third party nor used for the manufacturing purposes without the express written consent of Fuji Electric Co., Ltd.

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

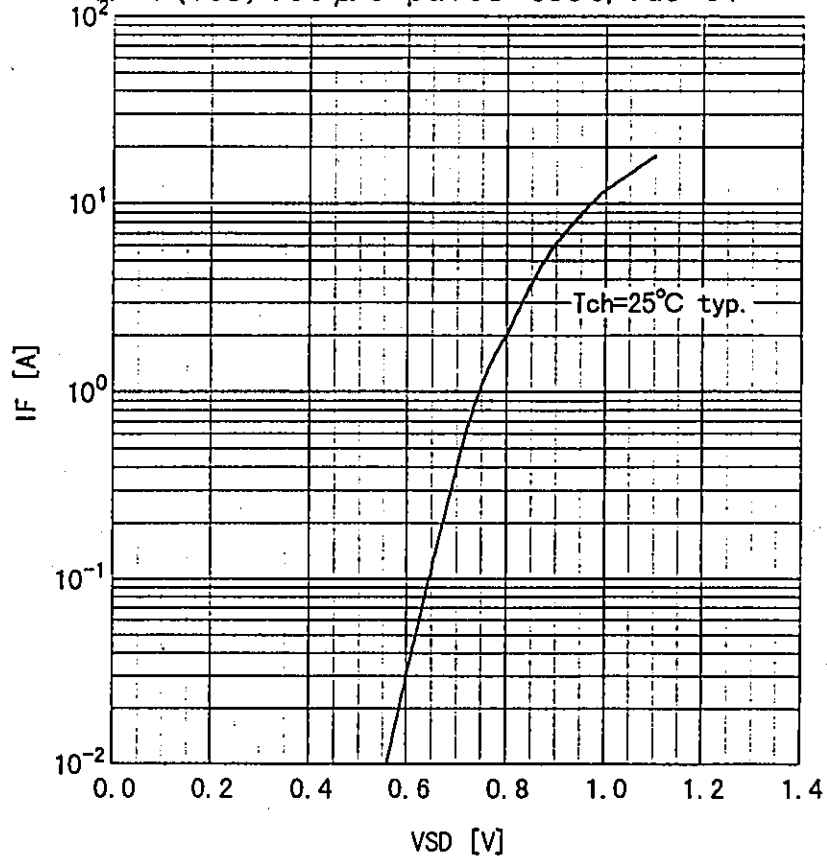


Typical capacitances  
 $C = f(V_{DS}) : V_{GS} = 0V, f = 1MHz$

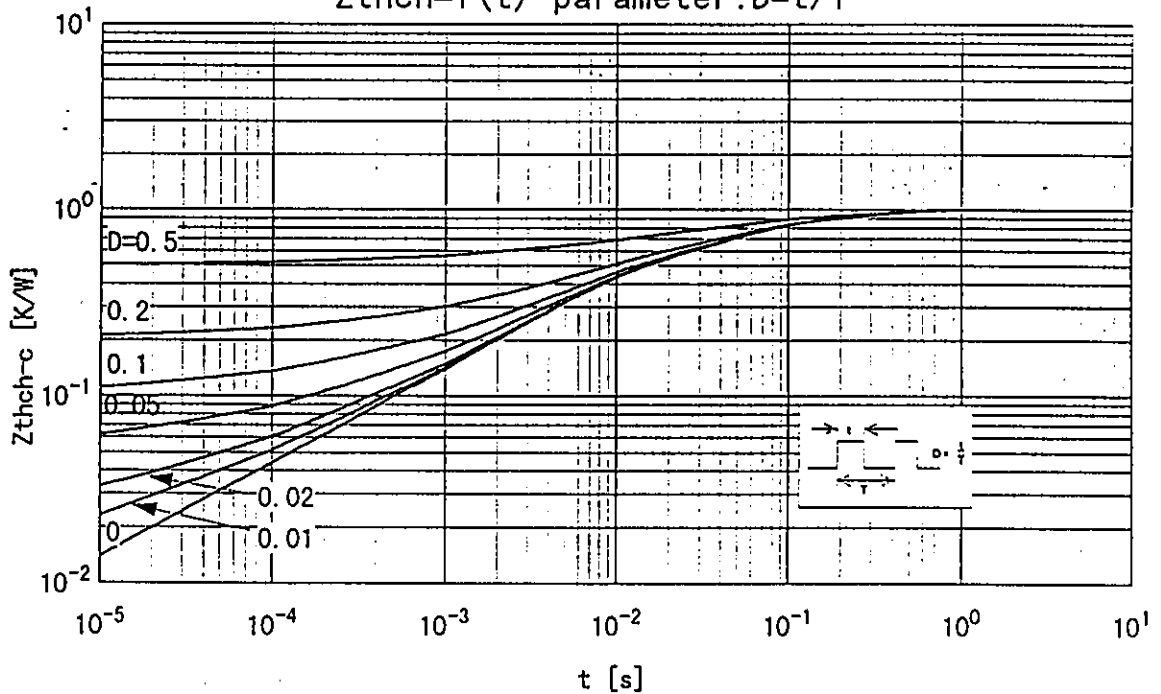


This material and the information herein is the property of Fuji Electric Co., Ltd. They shall be neither reproduced, copied, lent, or disclosed in any way whatsoever for the use of any third party nor used for the manufacturing purposes without the express written consent of Fuji Electric Co., Ltd.

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:  $D = t/T$



This material and the information herein is the property of Fuji Electric Co., Ltd. They shall be neither reproduced, copied, lent, or disclosed in any way whatsoever for the use of any third party nor used for the manufacturing purposes without the express written consent of Fuji Electric Co., Ltd.

### Avalanche energy derating

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

