

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.

SPECIFICATION

(TENTATIVE)

Device Name : Power MOSFET

Type Name : 2SK2891-01

Spec. No. :

Fuji Electric Co.,Ltd.
Matsumoto Factory

	DATE	NAME	APPROVED		Fuji Electric Co.,Ltd.	
DRAWN					DWG. NO.	1 / 13
CHECKED						

1.Scope This specifies Fuji Power MOSFET 2SK2891-01

2.Construction N-Channel enhancement mode power MOSFET

3.Applications for Switching

4.Outview TO-3P Outview See to 5/13 page

5.Absolute Maximum Ratings at Tc=25°C (unless otherwise specified)

Description	Symbol	Characteristics	Unit	Remarks
Drain-Source Voltage	V_{DS}	30	V	
Continuous Drain Current	I_D	± 100	A	
Pulsed Drain Current	I_{DP}	± 400	A	
Gate-Source Voltage	V_{GS}	± 16	V	
Maximum Avalanche Energy	E_{AV}	1555.6	mJ	*1
Maximum Power Dissipation	P_D	125	W	
Operating and Storage	T_{ch}	150	°C	
Temperature range	T_{stg}	-55 to +150	°C	

*1 L=0.207mH, Vcc=12V

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}	$I_D=1mA$ $V_{GS}=0V$	30			V
Gate Threshold Voltage	$V_{GS(th)}$	$I_D=1mA$ $V_{DS}=V_{GS}$	1.0	1.5	2.0	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V$ $V_{GS}=0V$ $T_{ch}=25°C$		10	500	μA
		$T_{ch}=125°C$		0.2	1.0	mA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16V$ $V_{DS}=0V$		10	100	nA
Drain-Source On-State Resistance	$R_{DS(on)}$	$ID=50A$ $V_{GS}=4V$		7.0	9.5	mΩ
		$V_{GS}=10V$		4.4	5.5	

Dynamic Ratings

Description	Symbol	Conditions	min.	typ.	max.	Unit
Forward Transconductance	g_{fs}	$I_D=50A$ $V_{DS}=25V$	35	70		S
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$		3900	5850	pF
Output Capacitance	C_{oss}			2000	3000	
Reverse Transfer Capacitance	C_{rss}			850	1280	
Turn-On Time	$t_{d(on)}$	$V_{cc}=15V$		17	30	ns
	t_r	$V_{GS}=10V$		70	110	
Turn-Off Time	$t_{d(off)}$	$I_D=100A$		250	380	
	t_f	$R_{GS}=10\Omega$		180	270	

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	100			A
Diode Forward On-Voltage	V_{SD}	$I_F=50A$ $V_{GS}=0V$ $T_{ch}=25^\circ C$		1.0	1.5	V
Reverse Recovery Time	t_{rr}	$I_F=50A$ $V_{GS}=0V$		65		ns
Reverse Recovery Charge	Q_{rr}	$-di/dt=100A/\mu s$ $T_{ch}=25^\circ C$		0.12		μC

7.Thermal Resistance

Description	Symbol	min.	typ.	max.	Unit
Channel to Case	$R_{th(ch-c)}$			1.0	$^\circ C/W$
Channel to Ambient	$R_{th(ch-a)}$			35.0	$^\circ C/W$

Fig.1 Test circuit

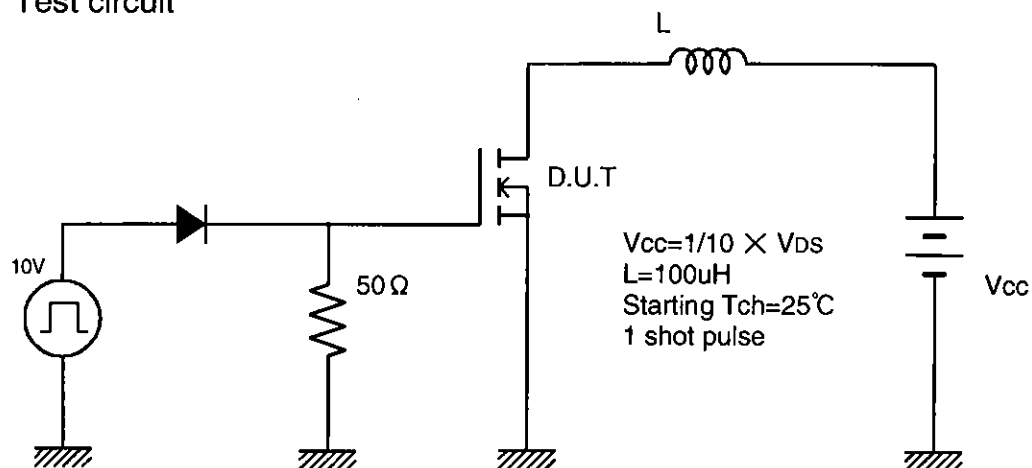
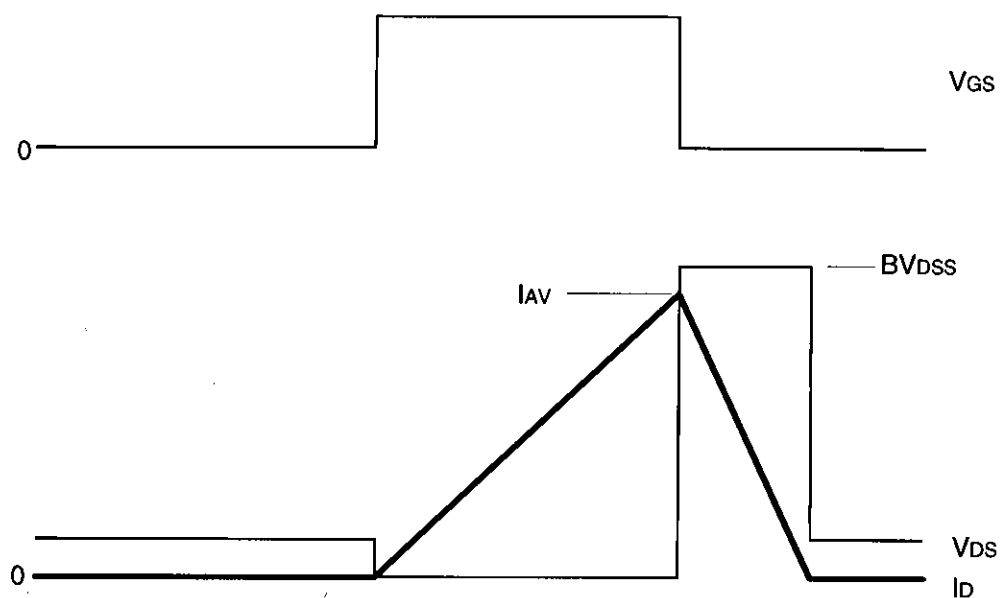
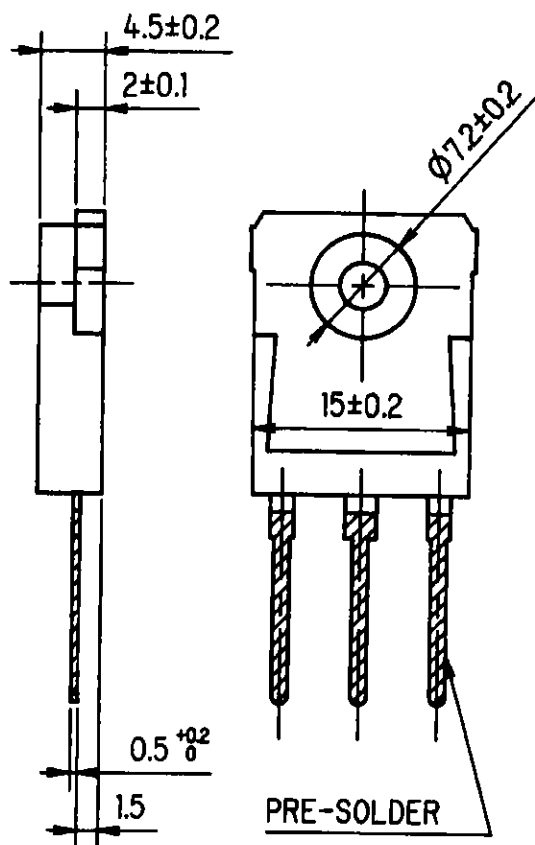
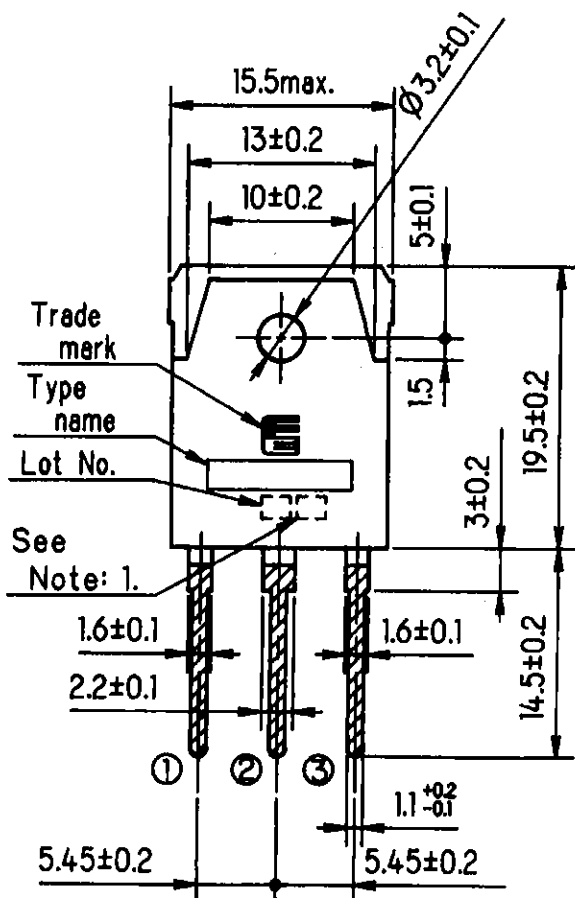
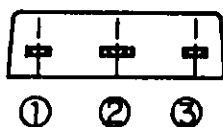


Fig.2 Operating waveforms





DIMENSIONS ARE IN MILLIMETERS.



CONNECTION

- ① GATE
- ② DRAIN
- ③ SOURCE

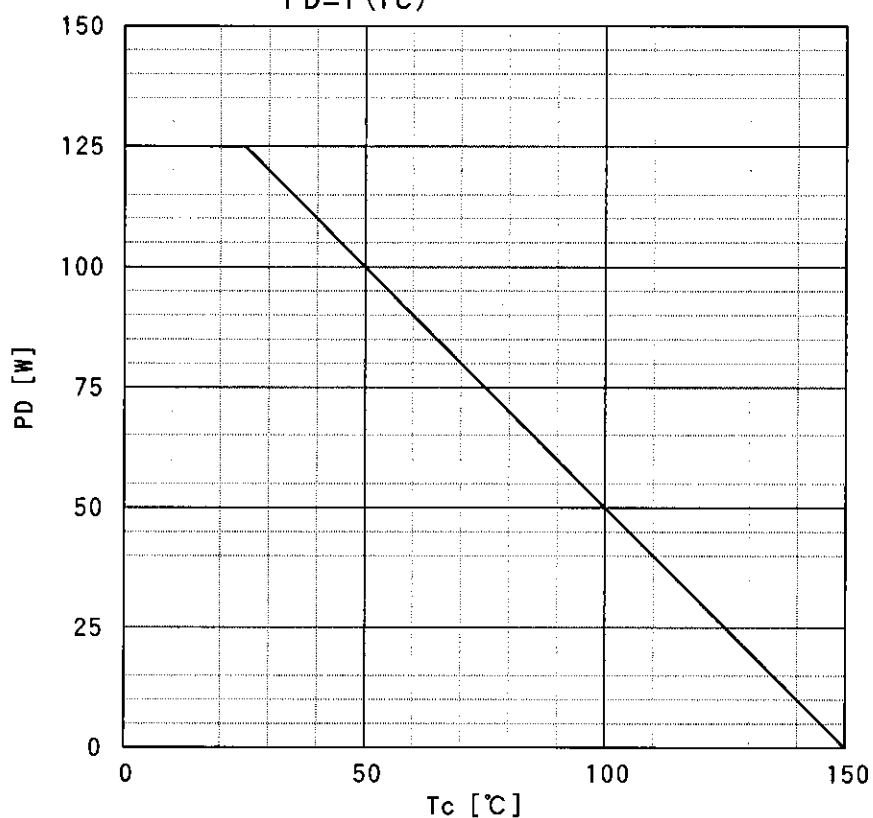
Note: 1. Guaranteed mark of avalanche ruggedness.

JEDEC : TO-247

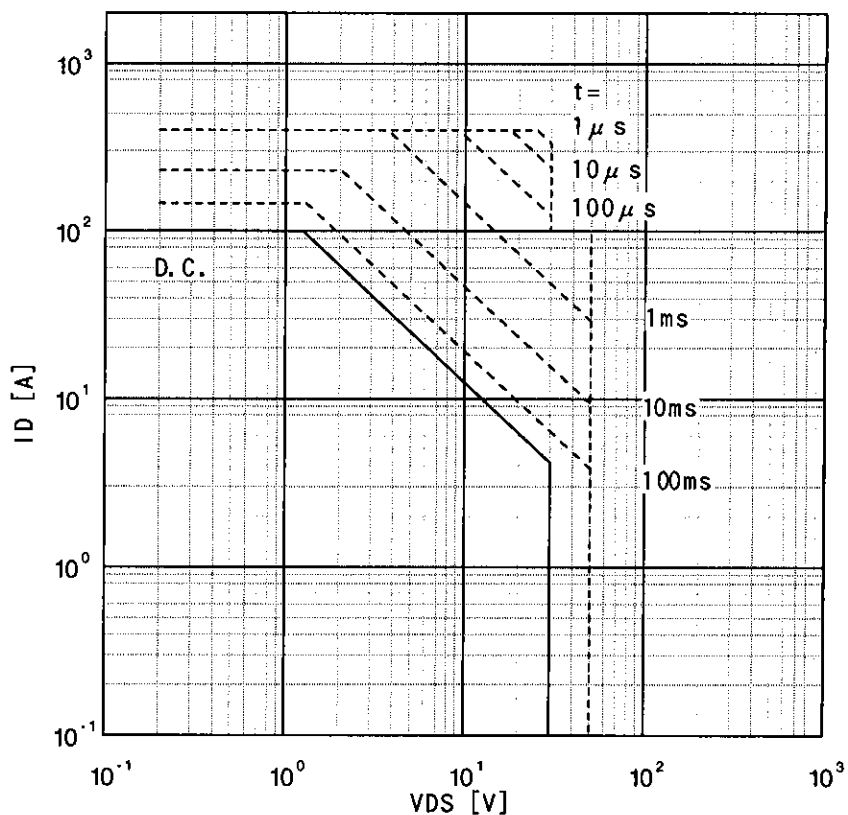
EIAJ : SC-65

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.

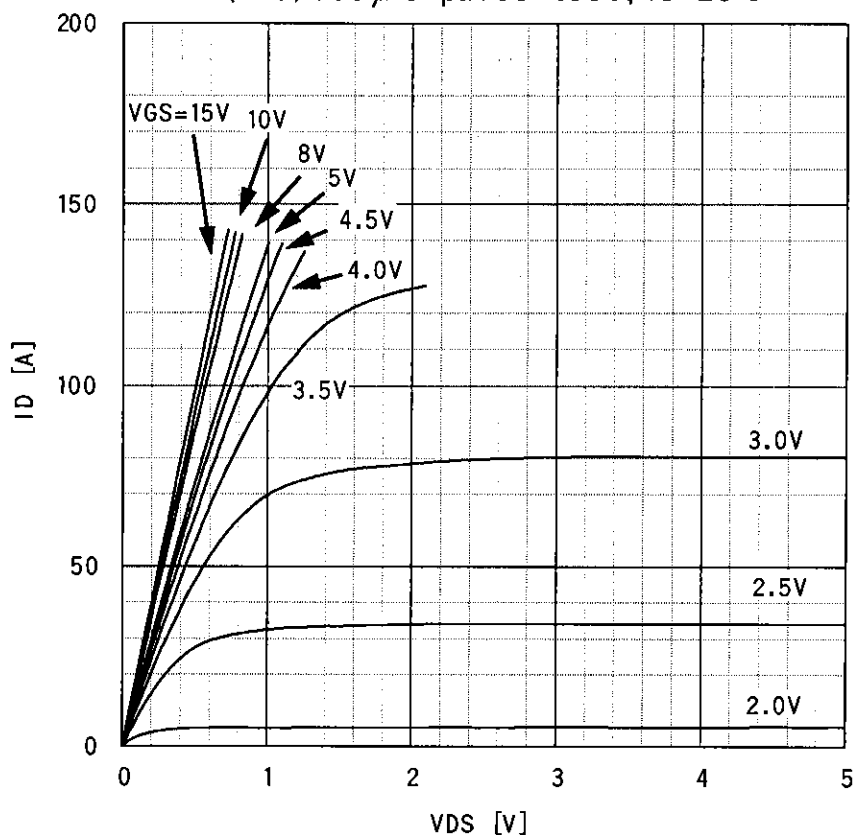
Power Dissipation
 $PD = f(T_c)$



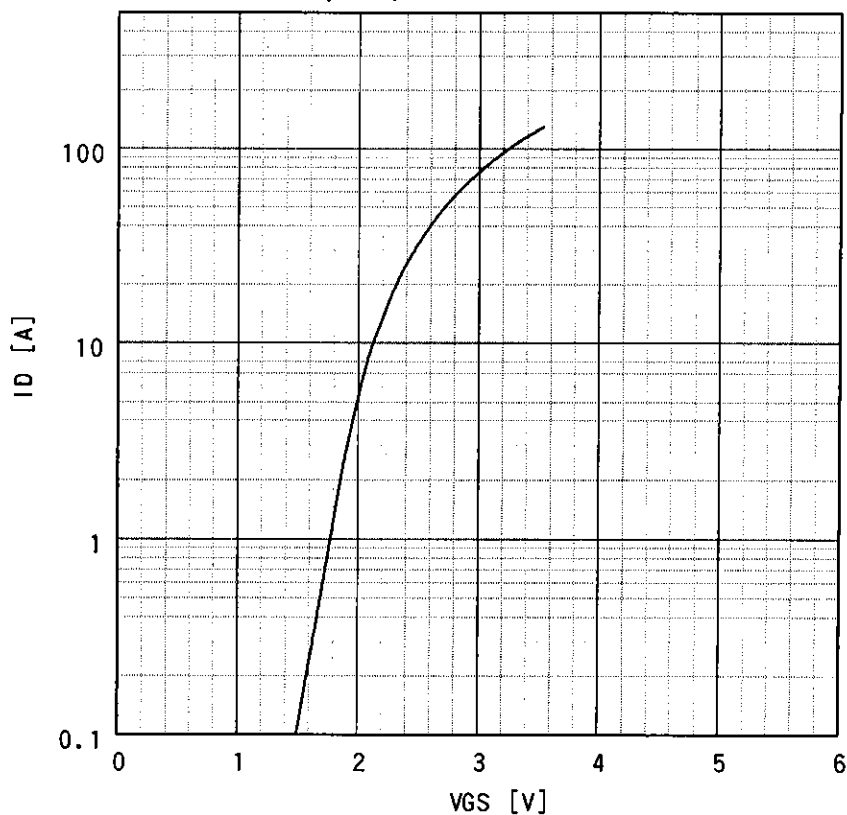
Safe operating area
 $ID = f(V_{DS}) : D=0.01, T_c=25^\circ\text{C}$



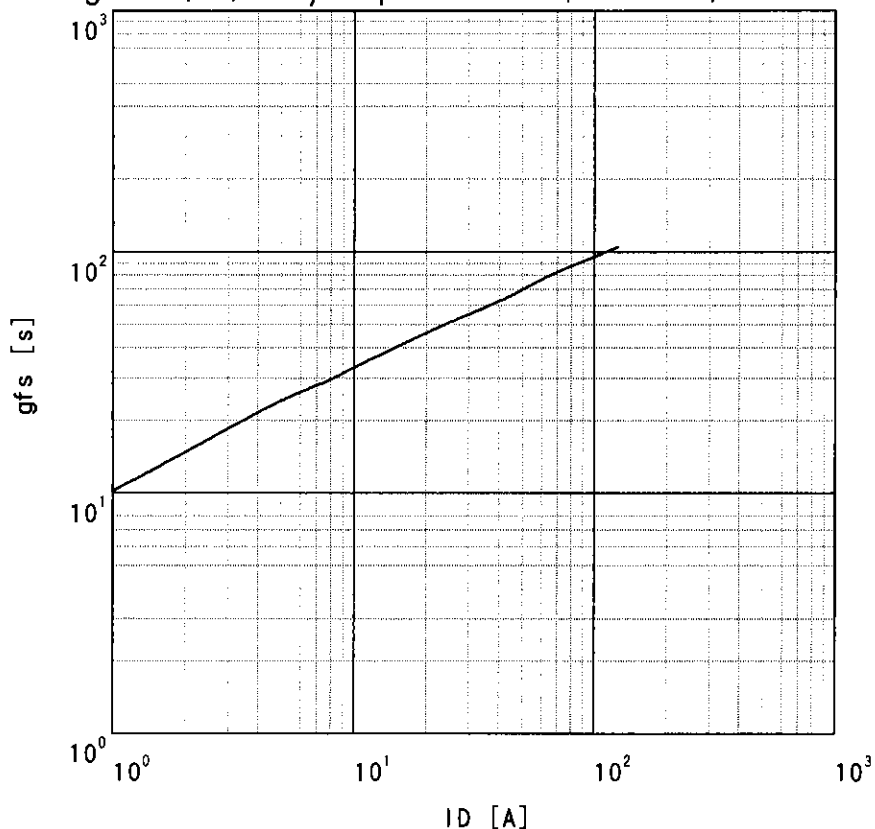
Typical output characteristics
 $I_D = f(V_{DS}) : 80 \mu s \text{ pulse test}, T_c = 25^\circ C$



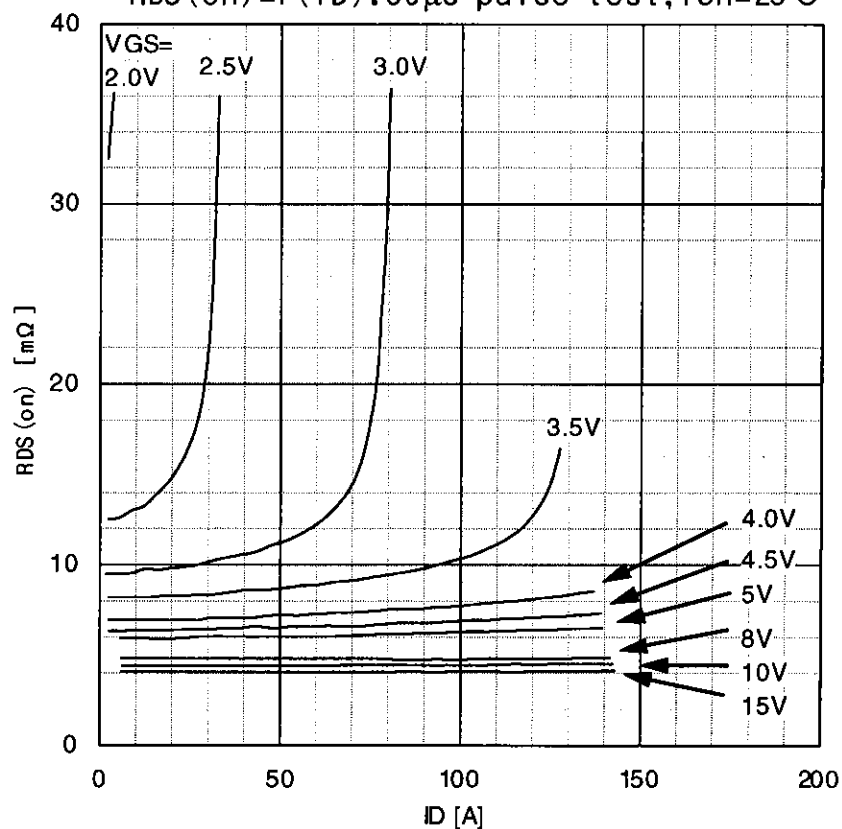
Typical transfer characteristics
 $I_D = f(V_{GS}) : 80 \mu s \text{ pulse test}, V_{DS} = 25V, T_{ch} = 25^\circ C$



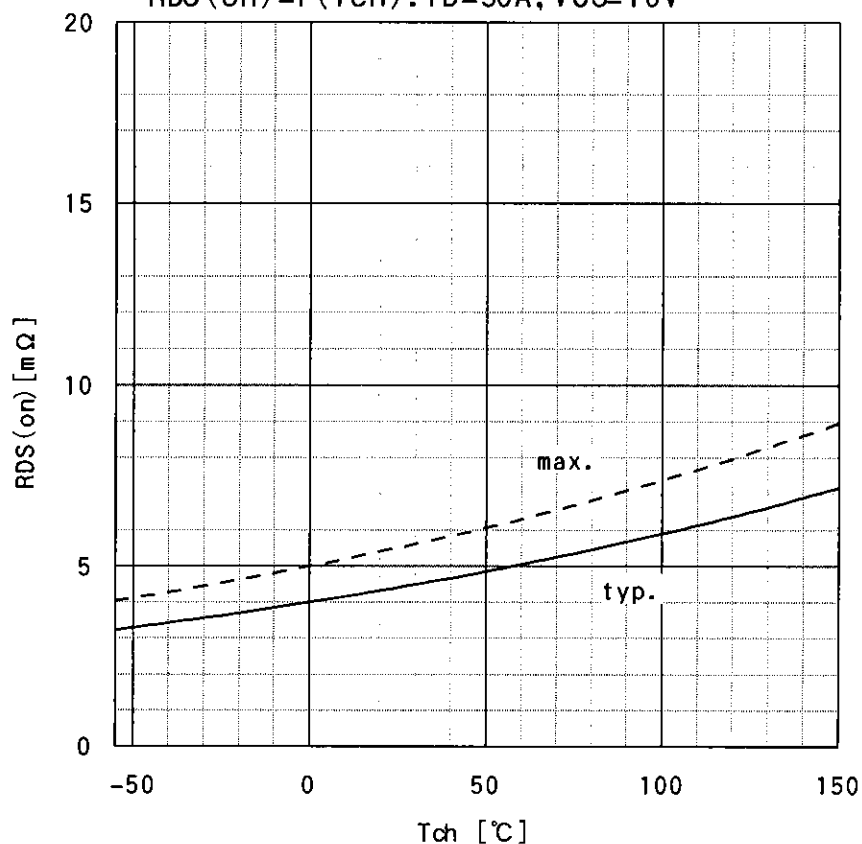
Typical forward transconductance
 $g_{fs}=f(I_D):80\mu s$ pulse test, $V_{DS}=25V$, $T_{ch}=25^\circ C$



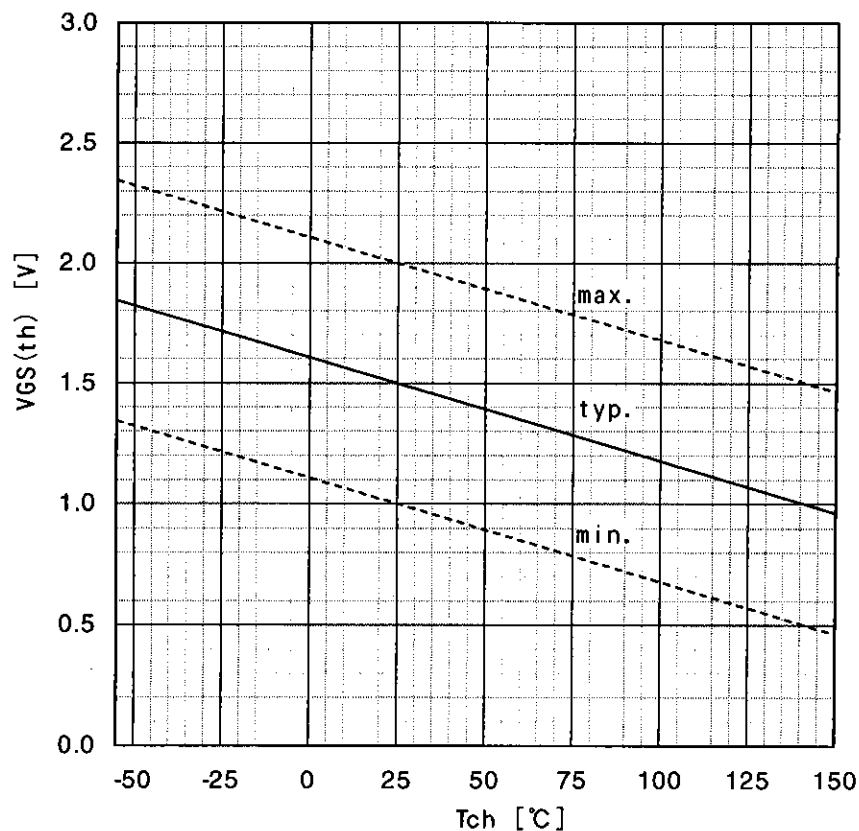
Typical Drain-Source on-State Resistance
 $R_{DS(on)}=f(I_D):80\mu s$ pulse test, $T_{ch}=25^\circ C$



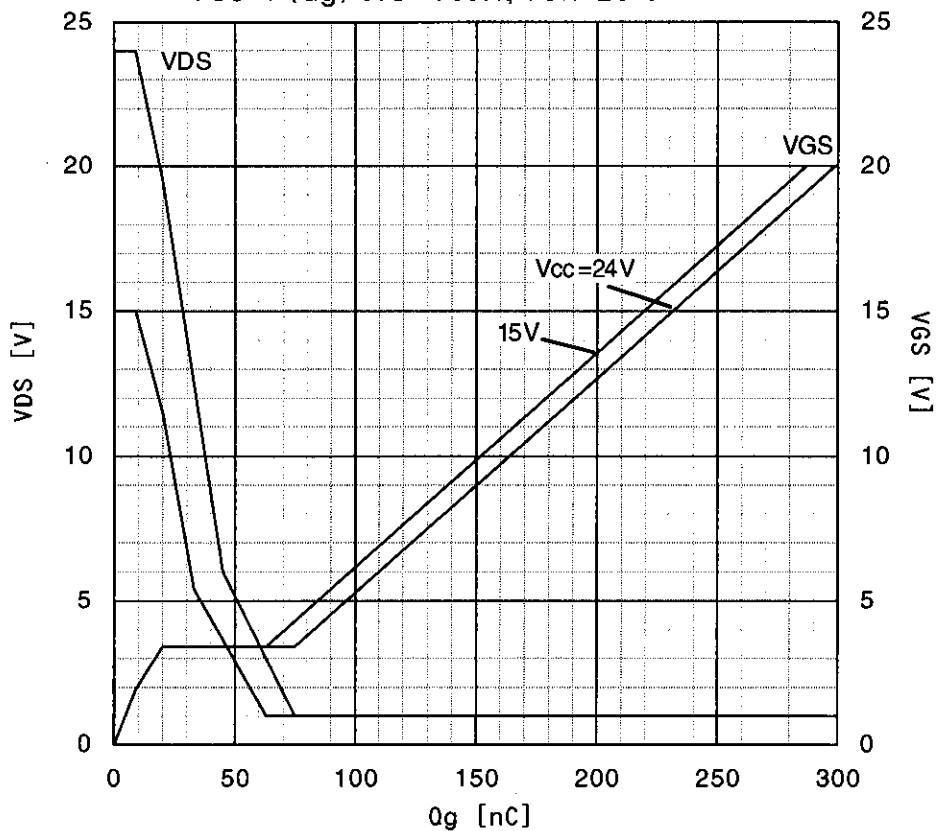
Drain-source on-state resistance
 $R_{DS(on)} = f(T_{ch}) : I_D = 50A, V_{GS} = 10V$



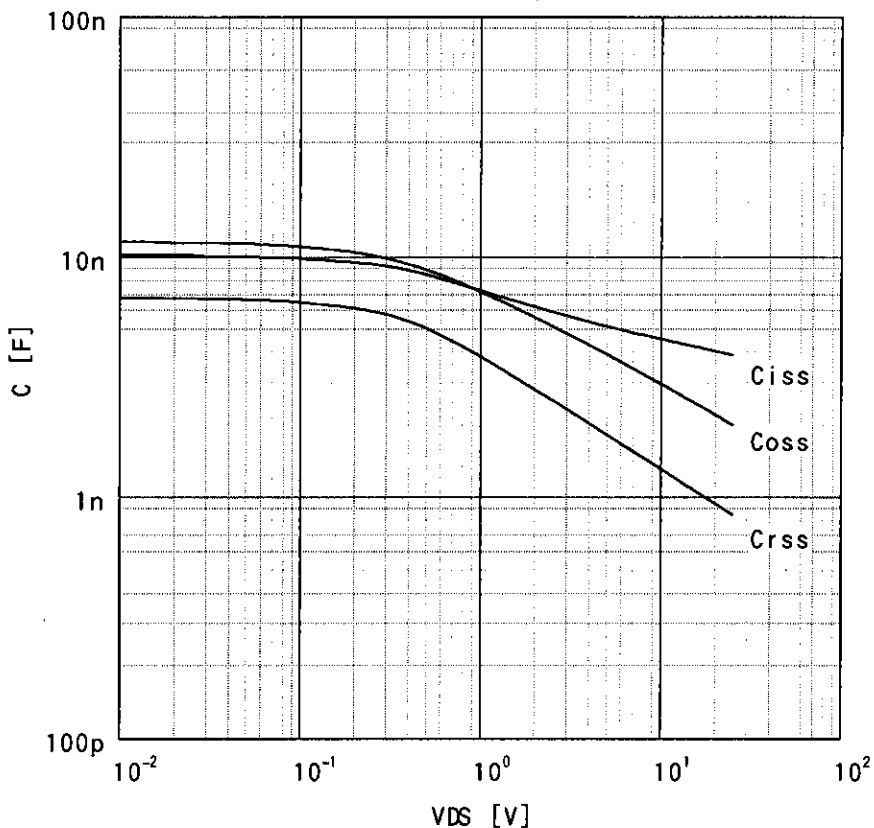
Gate Threshold Voltage vs. T_{ch}
 $V_{GS(th)} = f(T_{ch}) : V_{DS} = V_{GS}, I_D = 1mA$



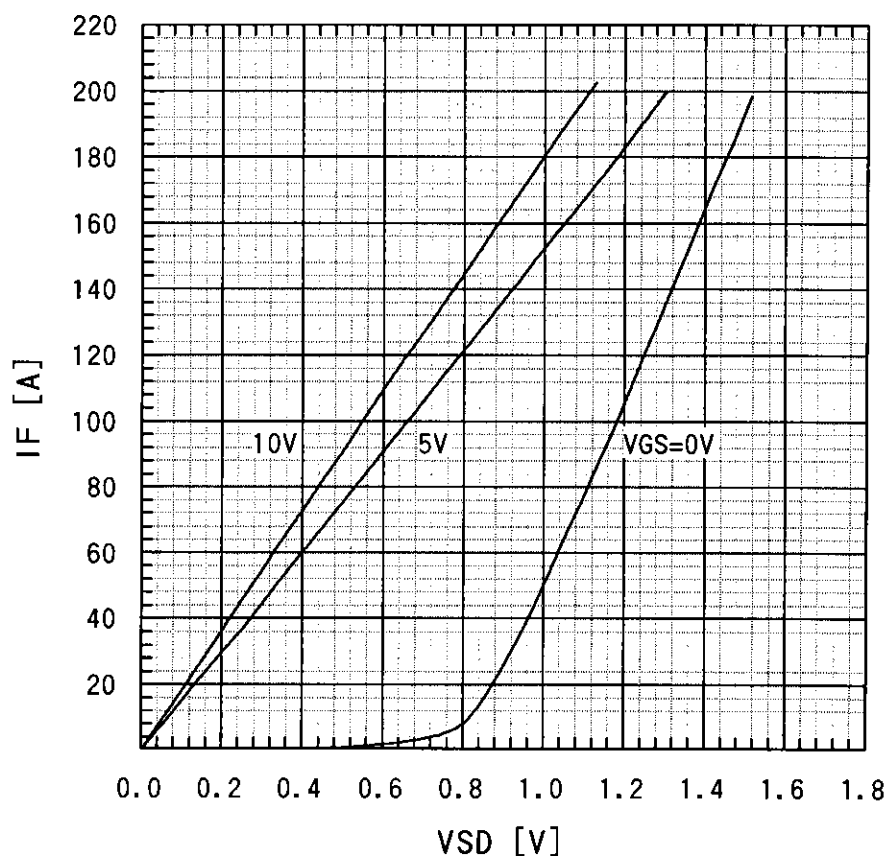
Typical Gate Charge Characteristics $V_{GS}=f(Q_g) : I_D=100A, T_{ch}=25^{\circ}C$



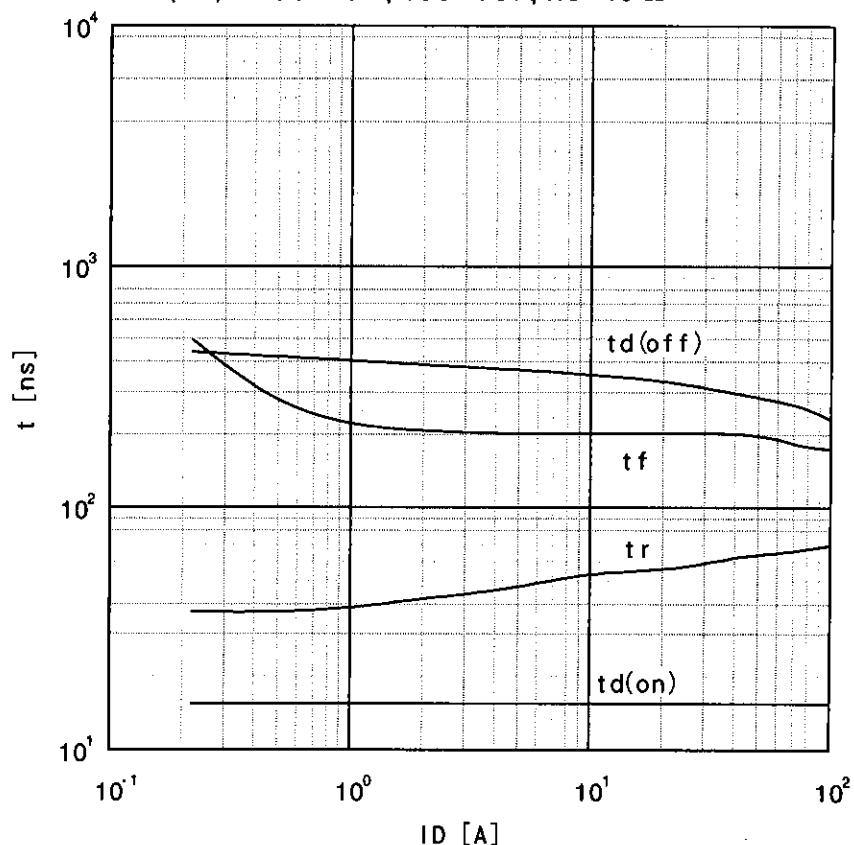
Typical capacitances $C=f(V_{DS}) : V_{GS}=0V, f=1MHz$



Typical Forward Characteristics of Reverse Diode $I_F = f(V_{SD}) : 80 \mu s \text{ pulse test, } T_{ch} = 25^\circ C$

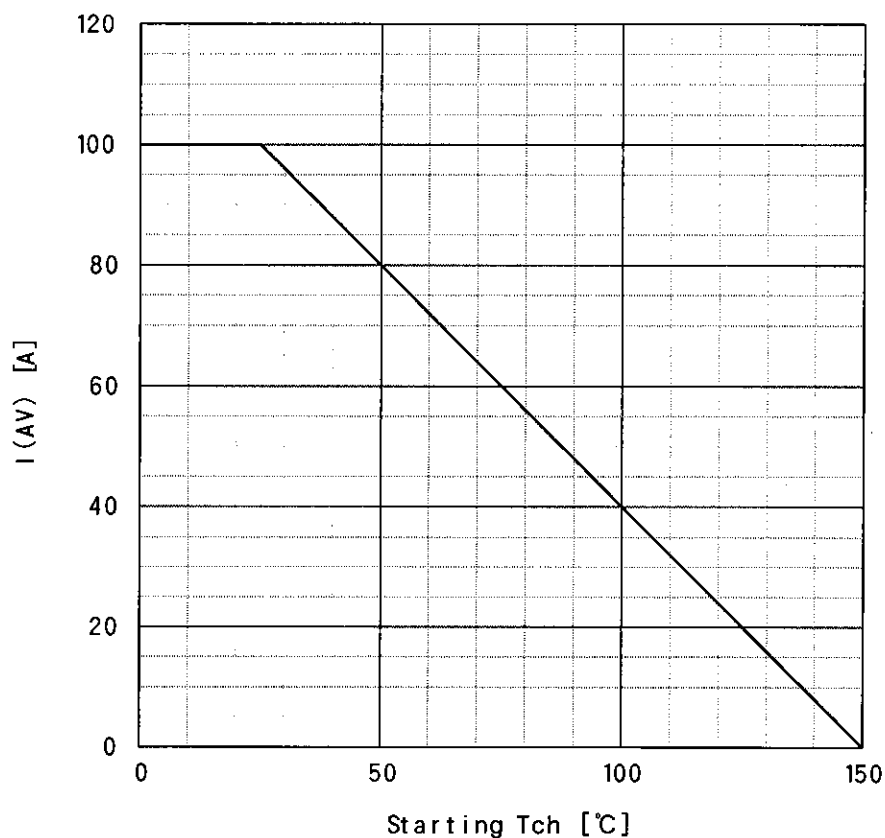


Typical Switching Characteristics vs. I_D $t = f(I_D) : V_{cc} = 15V, V_{GS} = 10V, R_G = 10 \Omega$



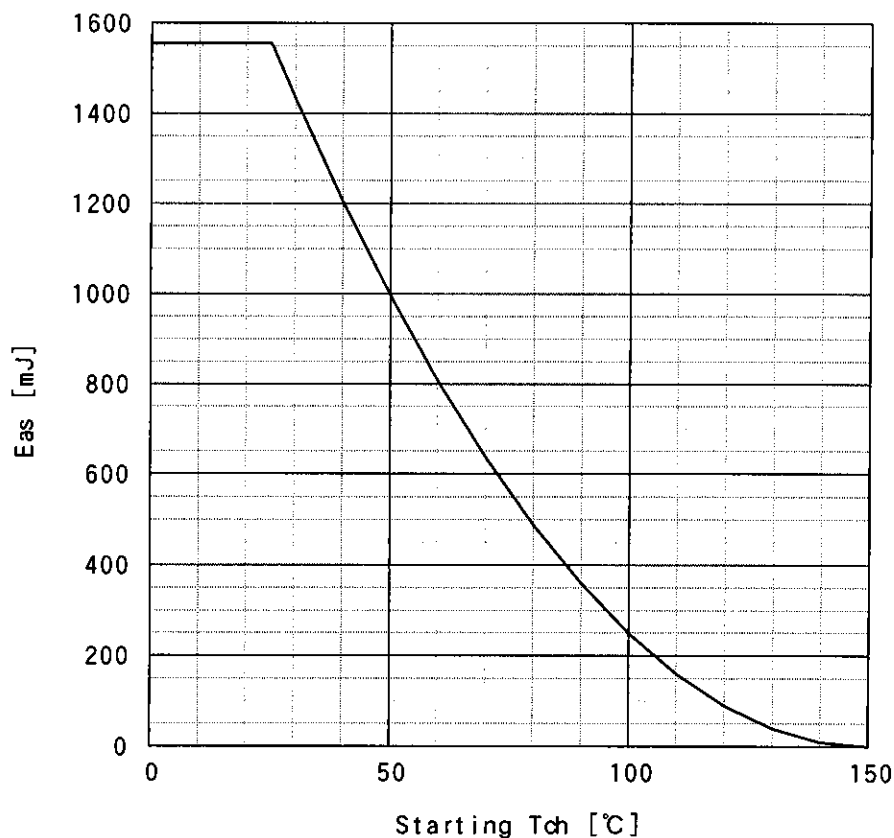
Maximum Avalanche Current vs. starting Tch

$$I_{AV} = f(\text{starting Tch})$$



Maximum Avalanche energy vs. starting Tch

$$E_{as} = f(\text{starting Tch}) : V_{CC} = 12V, I_{AV} \leq 100A$$



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.

