

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

Device Name : Power MOSFET

Type Name : 2SK3362-01

Spec. No. :

Fuji Electric Co.,Ltd.
Matsumoto Factory

	DATE	NAME	APPROVED	Fuji Electric Co.,Ltd.		
DRAWN	Feb.-4-'99			DWG.NO.	1/13	
CHECKED						

- 1.Scope** This specifies Fuji Power MOSFET 2SK3362-01
- 2.Construction** N-Channel enhancement mode power MOSFET
- 3.Applications** for Switching
- 4.Outview** TO-220 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}	60	V	
Continuous Drain Current	I_D	± 50	A	
Pulsed Drain Current	I_{DP}	± 200	A	
Gate-Source Voltage	V_{GS}	± 20	V	
Maximum Avalanche Energy	E_{AV}	867	mJ	*1
Maximum Power Dissipation	P_D	80	W	
Operating and Storage	T_{ch}	150	°C	
Temperature range	T_{stg}	-55 to +150	°C	

*1 L=0.463mH, Vcc=24V

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}	$I_D=1mA$ $V_{GS}=0V$	60			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}	$V_{DS}=60V$ $V_{GS}=0V$ $T_{ch}=25^\circ C$		10	500	μA
		$T_{ch}=125^\circ C$		0.2	1.0	mA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V$ $V_{DS}=0V$		10	100	nA
Drain-Source On-State Resistance	$R_{DS(on)}$	$ID=40A$ $V_{GS}=4V$		12	17	m Ω
		$V_{GS}=10V$		7.5	10	

Dynamic Ratings

Description	Symbol	Conditions	min.	typ.	max.	Unit
Forward Transconductance	g_{fs}	$I_D=40A$ $V_{DS}=25V$	25.0	55.0		S
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$		3500	5250	pF
Output Capacitance	C_{oss}			1250	1870	
Reverse Transfer Capacitance	C_{rss}			360	540	
Turn-On Time	$t_{d(on)}$	$V_{cc}=30V$		15	23	ns
	t_r	$V_{GS}=10V$		75	120	
Turn-Off Time	$t_{d(off)}$	$I_D=75A$		190	285	
	t_f	$R_{GS}=10\Omega$		110	165	

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	50			A
Diode Forward On-Voltage	V_{SD}	$I_F=160A$ $V_{GS}=0V$ $T_{ch}=25^\circ C$		1.15	1.65	V
Reverse Recovery Time	t_{rr}	$I_F=80A$ $V_{GS}=0V$		75	120	ns
Reverse Recovery Charge	Q_{rr}	$-di/dt=100A/\mu s$ $T_{ch}=25^\circ C$		0.17		μC

7.Thermal Resistance

Description	Symbol	min.	typ.	max.	Unit
Channel to Case	$R_{th(ch-c)}$			1.56	$^\circ C/W$
Channel to Ambient	$R_{th(ch-a)}$			75.0	$^\circ C/W$

Fig.1 Test circuit

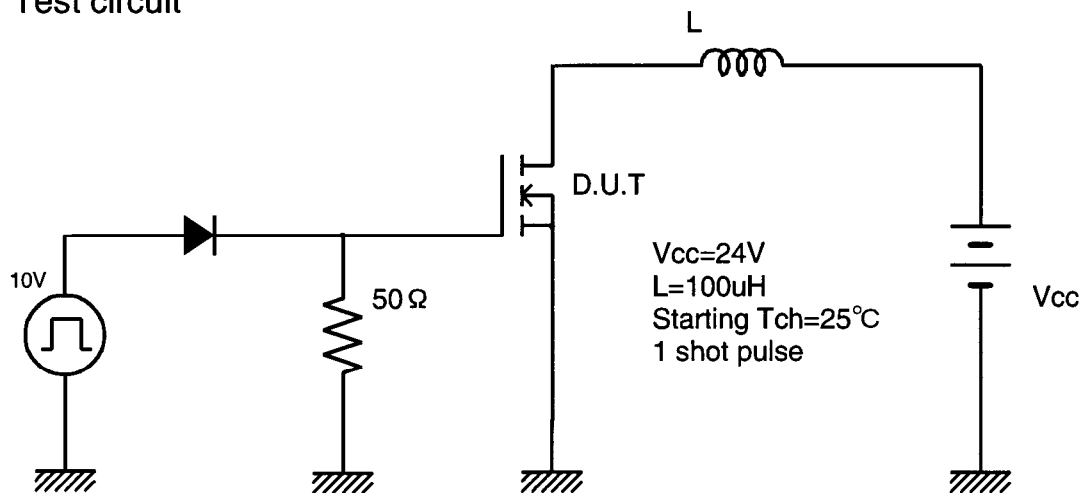
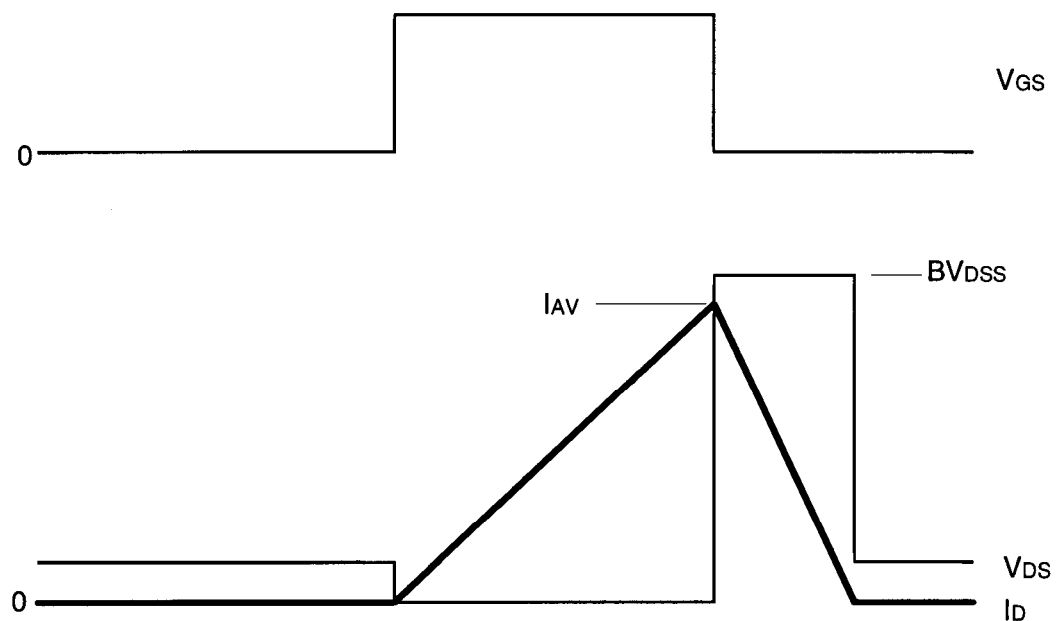
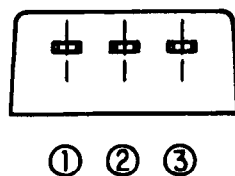
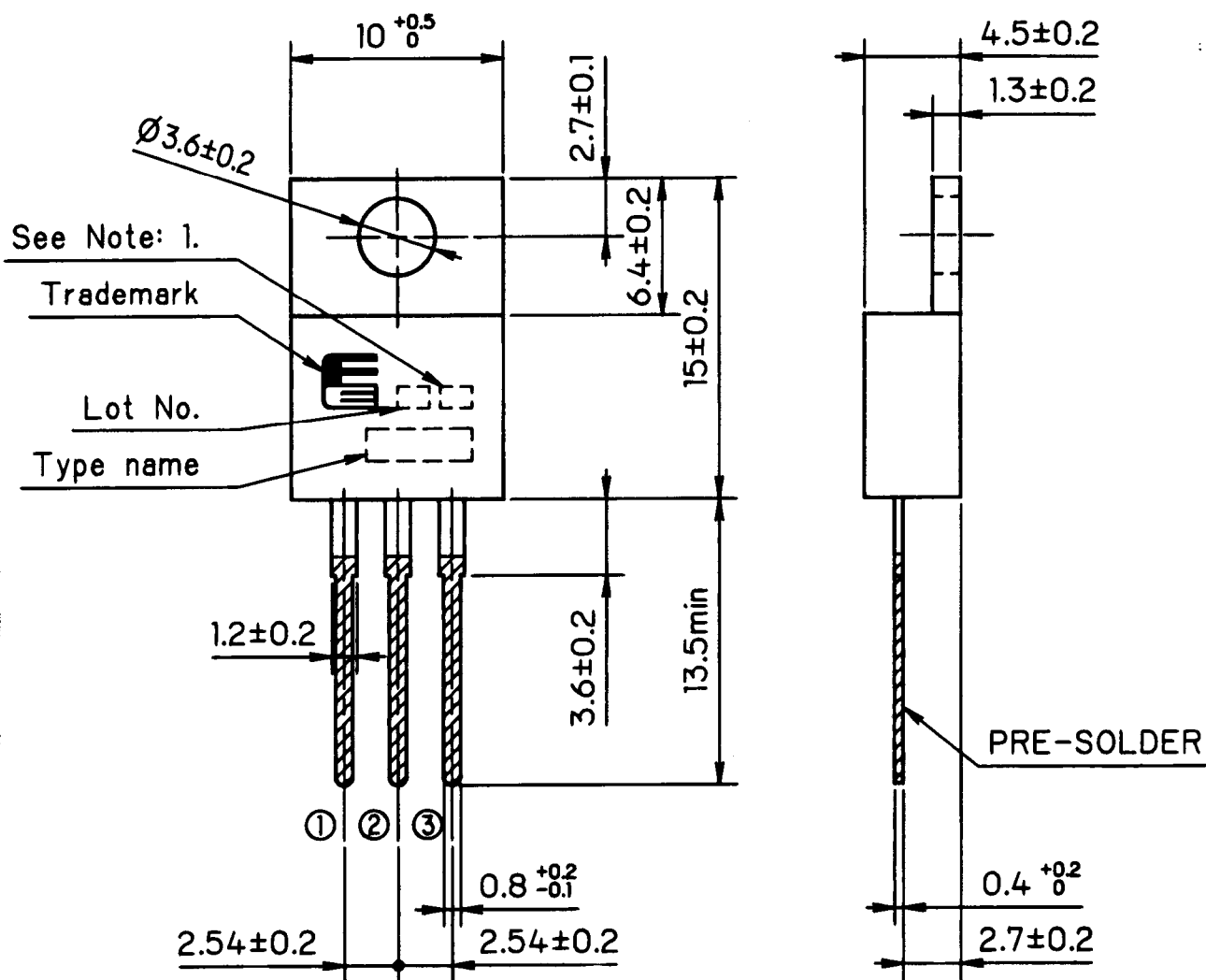


Fig.2 Operating waveforms





CONNECTION

- ① GATE
- ② DRAIN
- ③ SOURCE

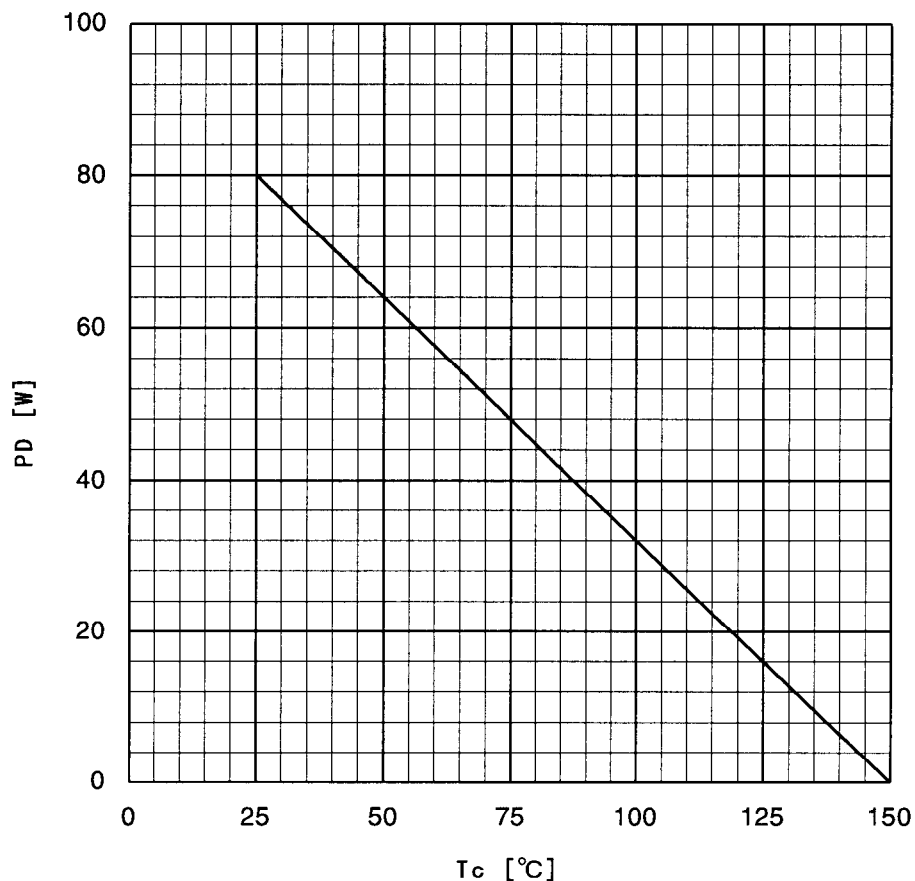
JEDEC : TO-220AB

Note: 1. Guaranteed mark of avalanche ruggedness.

DIMENSIONS ARE IN MILLIMETERS.

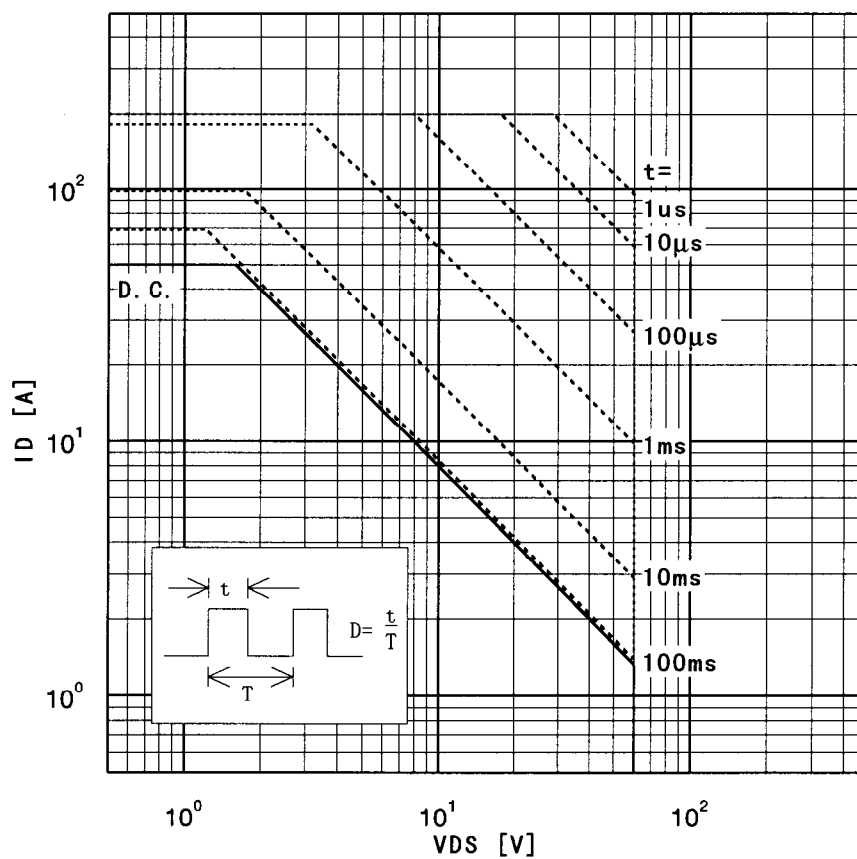
Power Dissipation

$$PD=f(T_c)$$



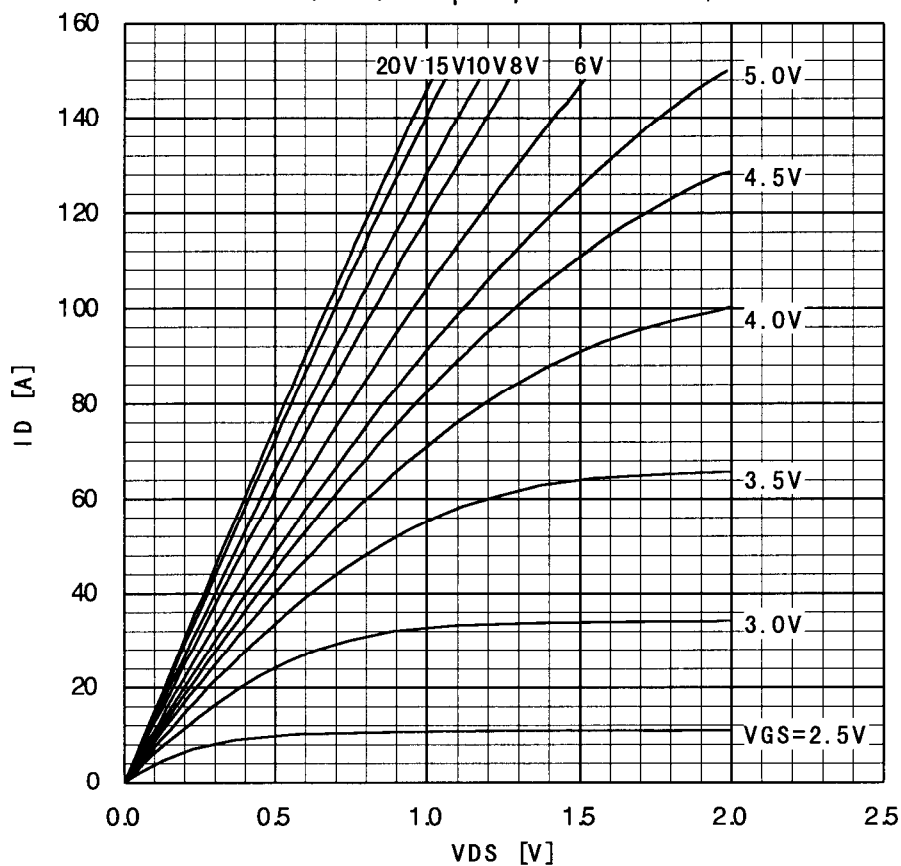
Safe operating area

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



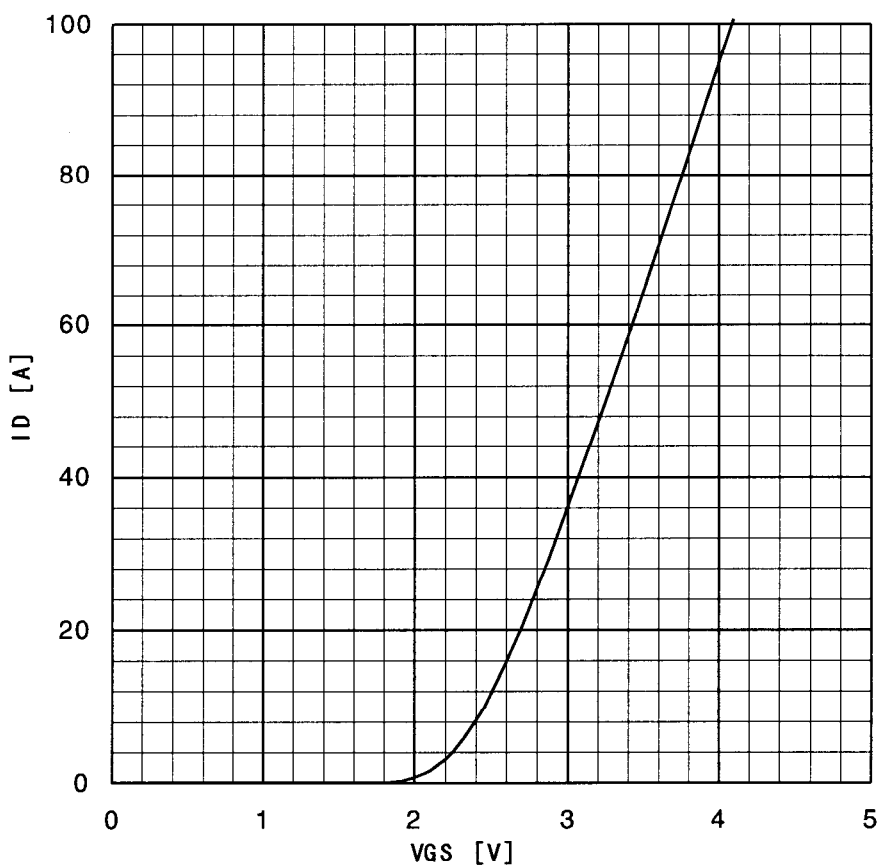
Typical Output Characteristics

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



Typical Transfer Characteristic

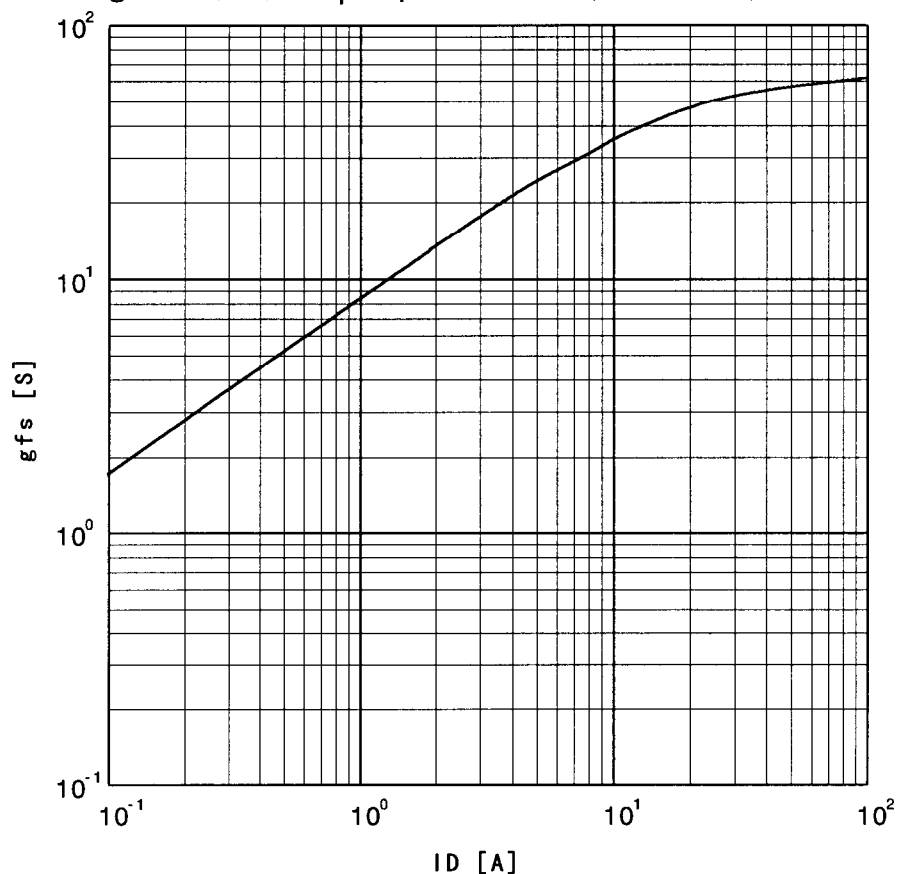
$I_D = f(V_{GS})$: 80 μ s pulse test, $V_{DS} = 25V$, $T_{ch} = 25^\circ\text{C}$



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.

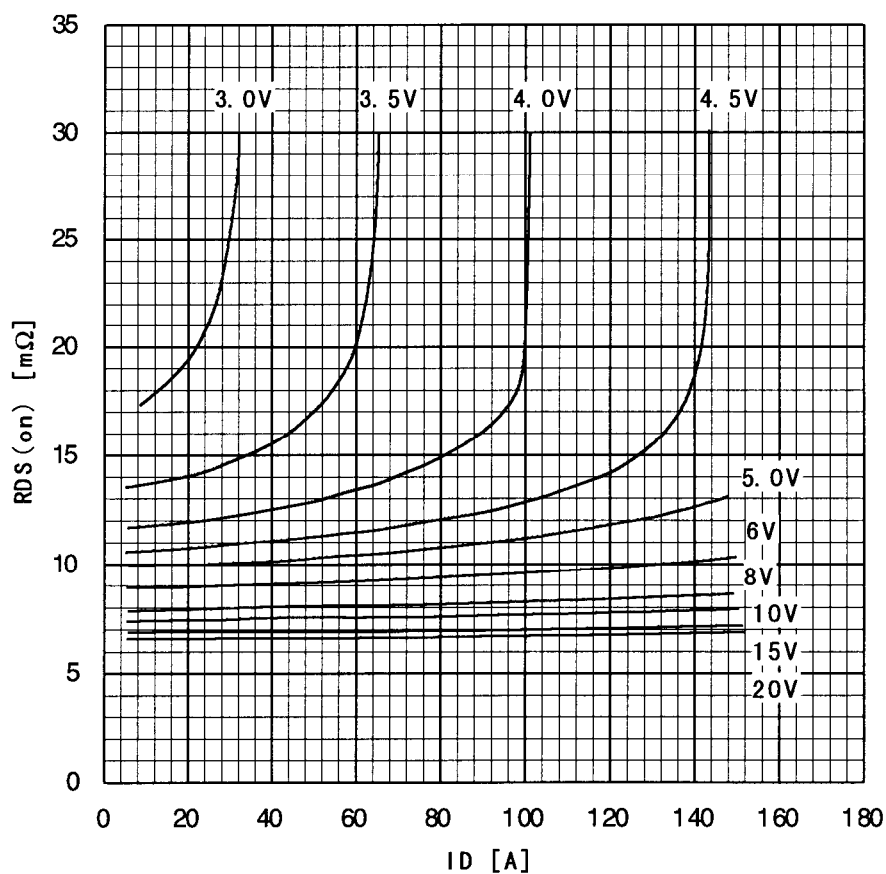
Typical Transconductance

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



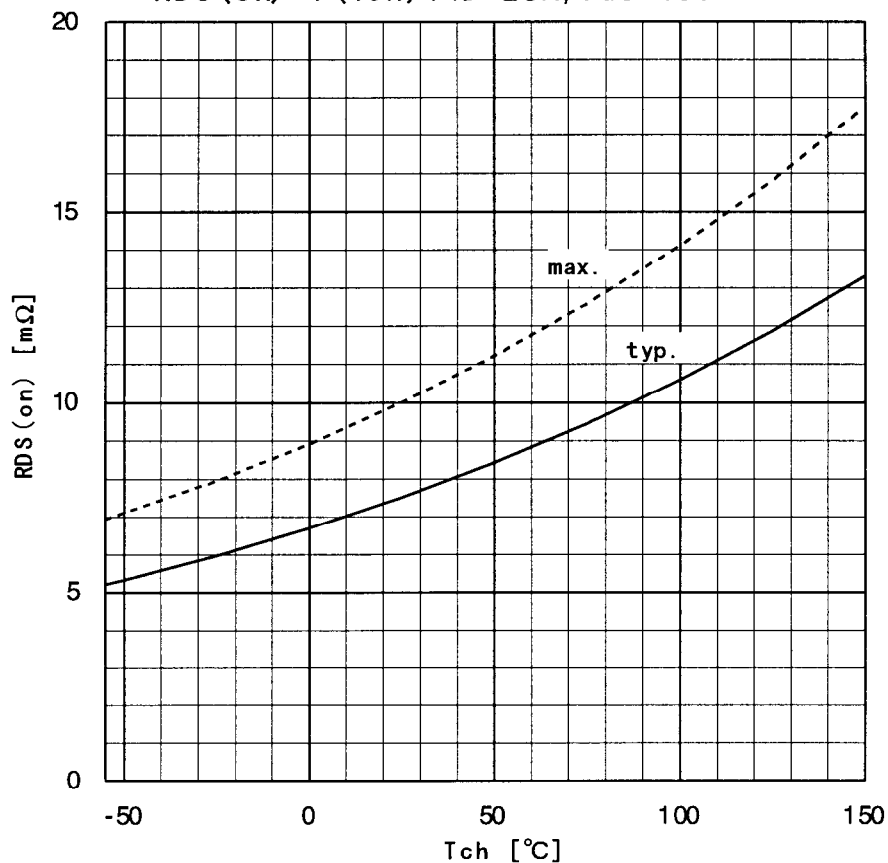
Typical Drain-Source on-State Resistance

$R_{DS(on)}=f(I_D)$: 80 μ s pulse test, $T_{ch}=25^{\circ}C$



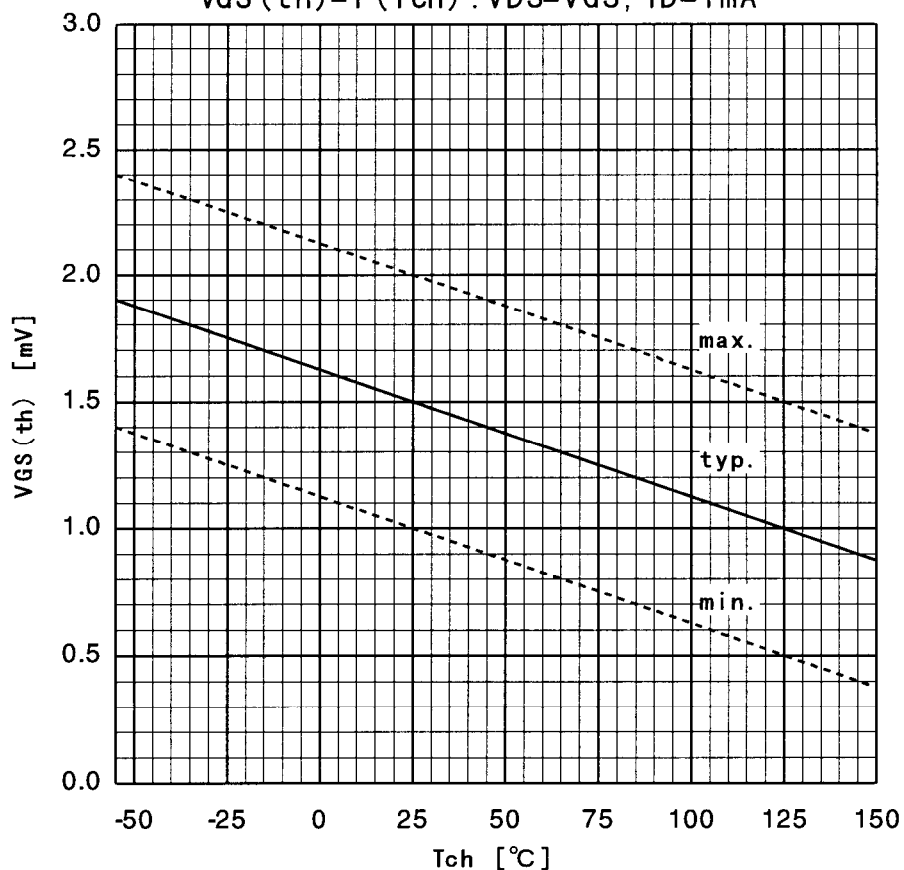
Drain-Source On-state Resistance

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



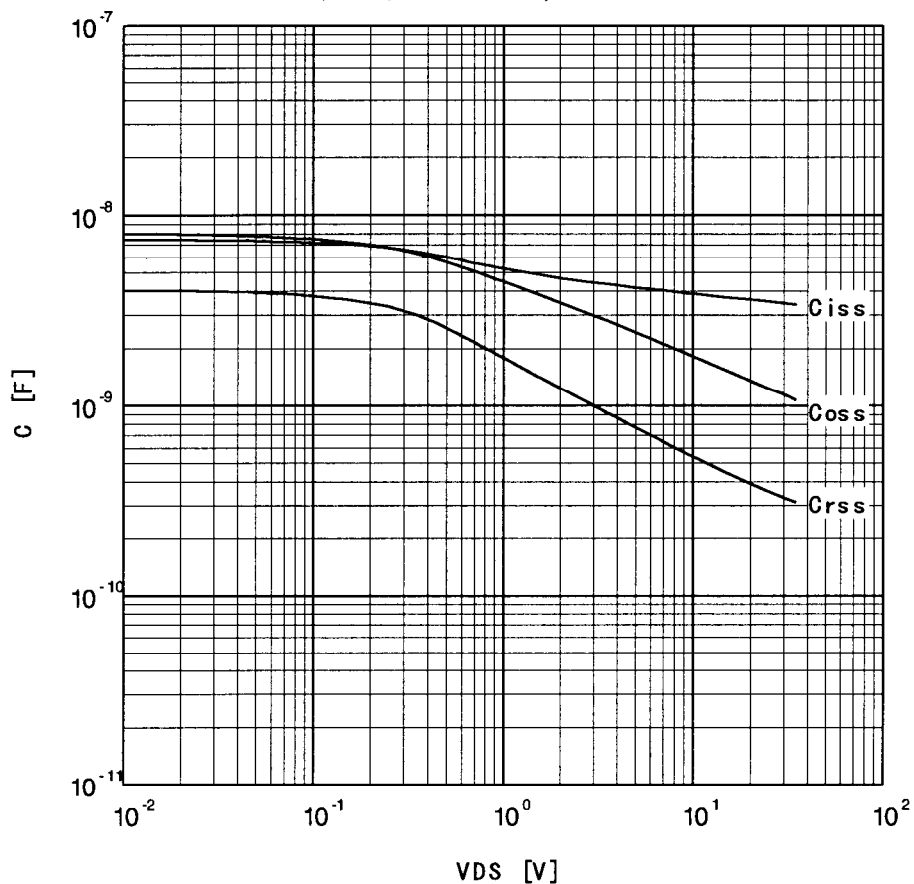
Gate Threshold Voltage vs. Tch

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

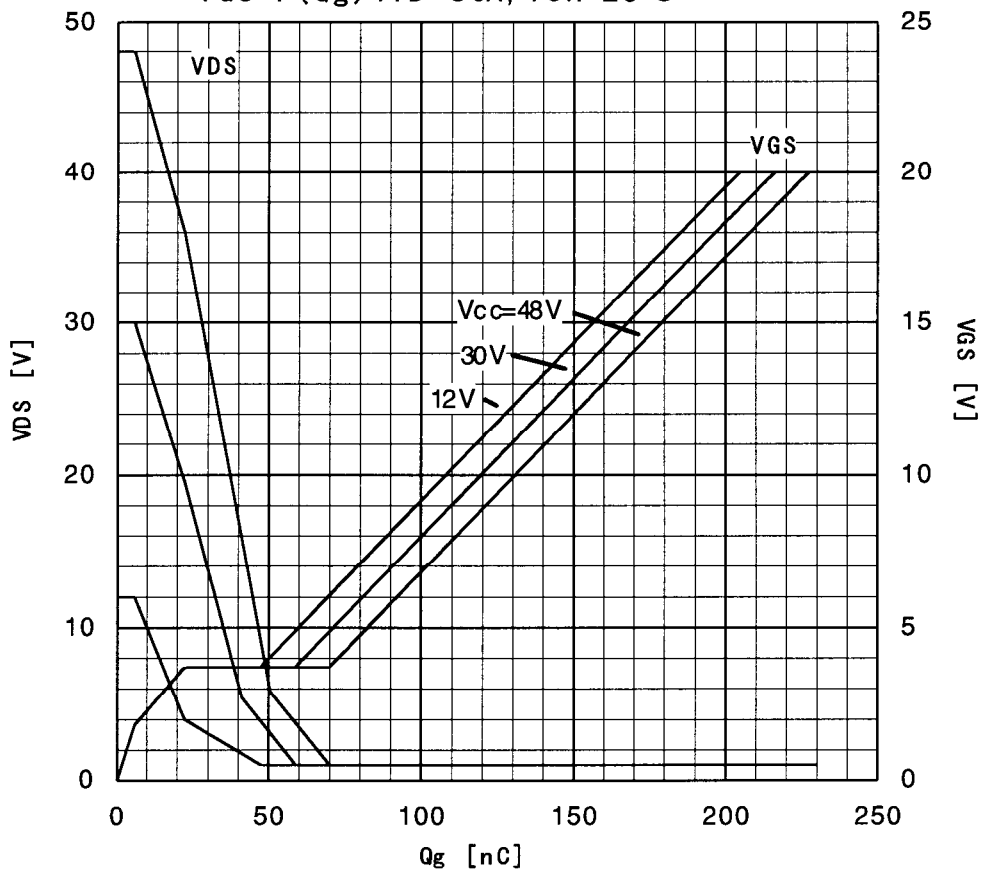


This material and the information herein is the property of Fuji Electric Co.,Ltd. They shall be neither reproduced, copied, lent, or disclosed in any way whatsoever for the use of any third party nor used for the manufacturing purposes without the express written consent of Fuji Electric Co.,Ltd.

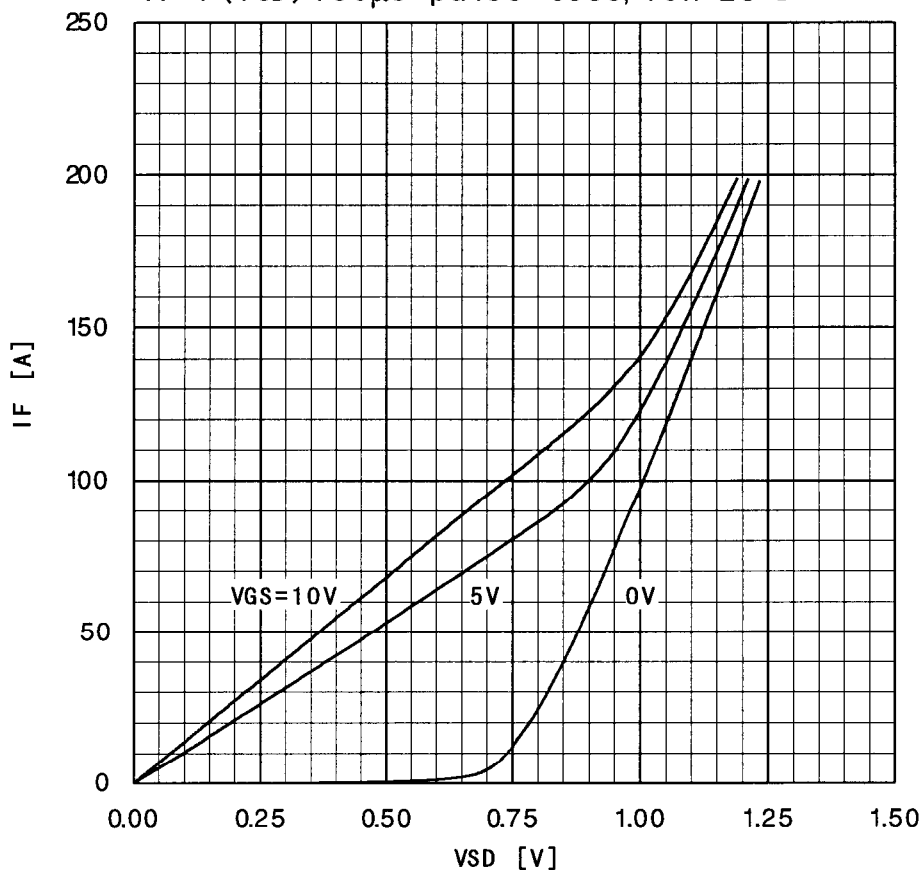
Typical Capacitance
 $C=f(V_{DS}) : V_{GS}=0V, f=1MHz$



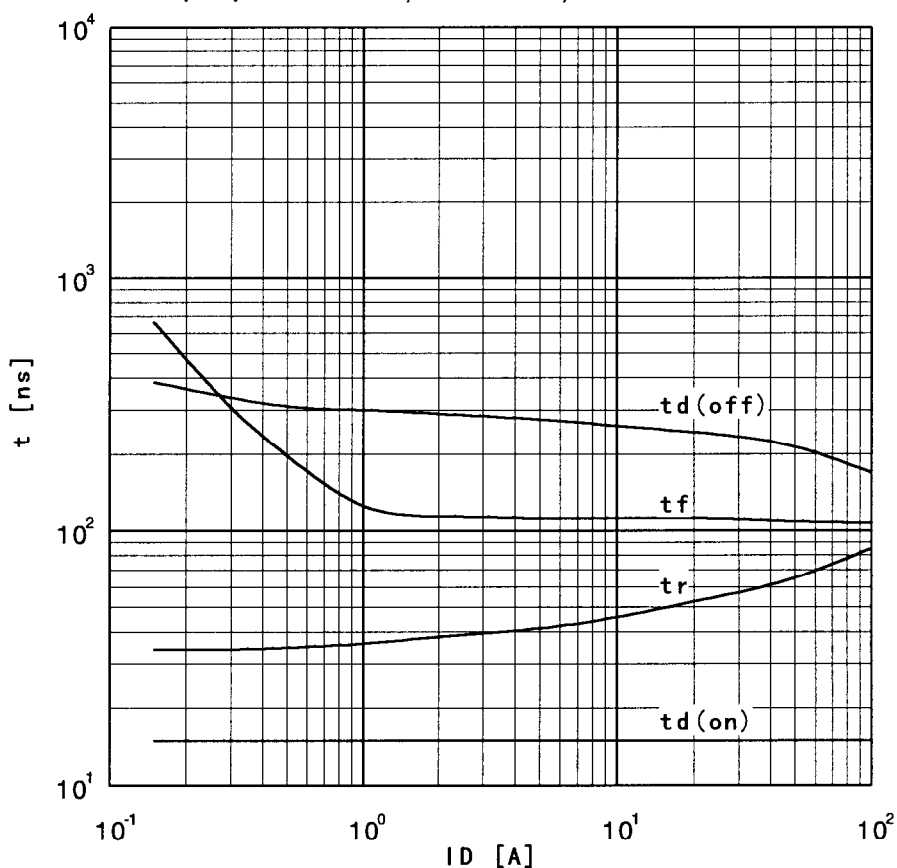
Typical Gate Charge Characteristics
 $V_{GS}=f(Q_g) : I_D=80A, T_{ch}=25^\circ C$



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

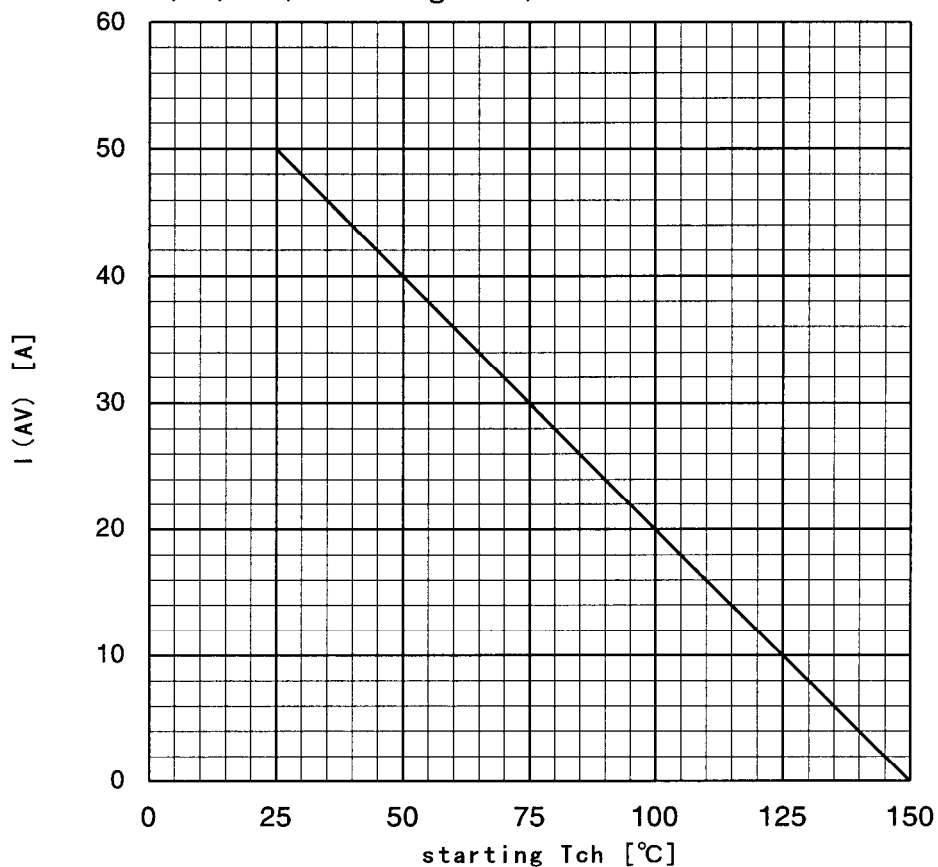


Typical Switching Characteristics vs. I_D
 $t = f(I_D) : V_{CC} = 30V, V_{GS} = 10V, R_G = 10\Omega$



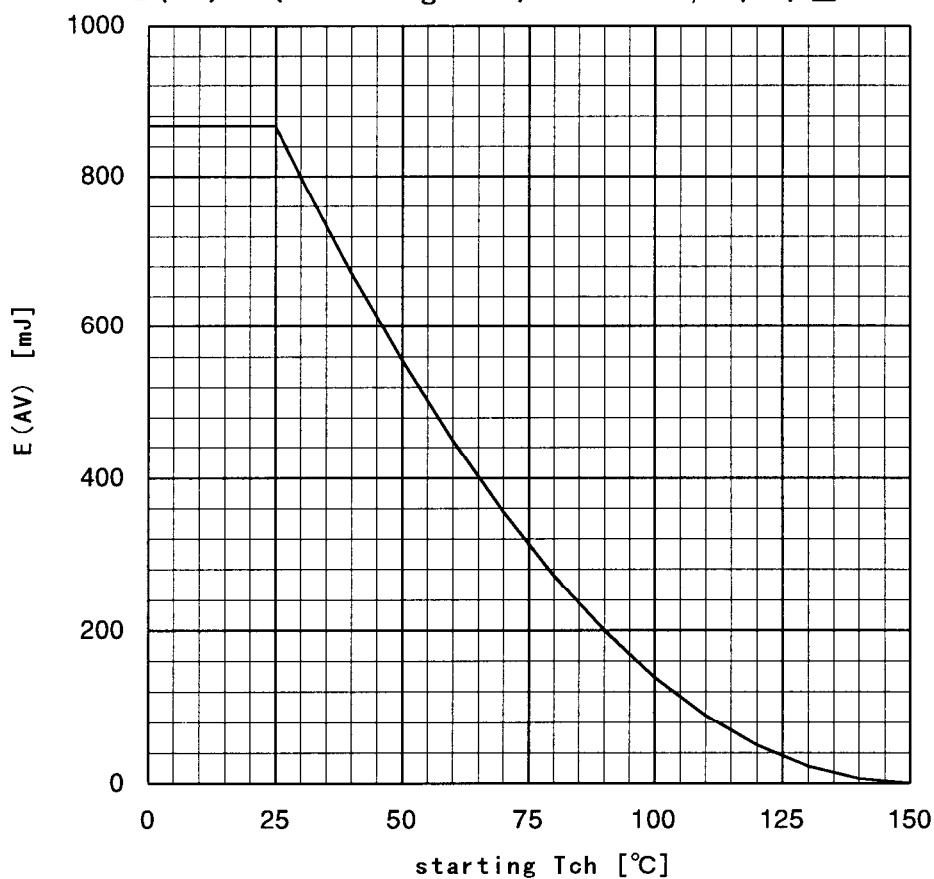
Maximum Avalanche Current vs. starting Tch

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



Maximum Avalanche Energy vs. starting Tch

$$E(AV)=f(\text{starting Tch}):V_{cc}=24V, I(AV) \leq 50A$$



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.

