

SPECIFICATION

DEVICE NAME : Power MOSFET

TYPE NAME : 2SK2833-R

SPEC. No. :

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Fuji Electric Co., Ltd.
Matsumoto Factory

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	DATE	NAME	APPROVED	Fuji Electric Co., Ltd	
DRAWN				DWG. NO.	1/10
CHECKED					

H04-004-07

1. Scope
This specifies Fuji power MOSFET 2SK2833-R
2. Construction N-channel enhancement mode power MOSFET
3. Application for switching
4. Outview T0-3PF Outview See to 4/10 page
5. Absolute maximum ratings at $T_c=25^\circ\text{C}$ (unless otherwise specified)

Description	Symbol	Characteristics	Unit	
Drain-source voltage	V_{DS}	120	V	
Drain-gate voltage	V_{DGR}	120	V	$R_{GS} = 20\text{ k}\Omega$
Continuous Drain current	I_D	± 50	A	
Pulsed drain current	I_{DPULSE}	± 200	A	
Gate-source voltage	V_{GS}	± 20	V	
Maximum power dissipation	P_D	100	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}	$I_D = 1\text{mA}$ $V_{GS} = 0\text{V}$	120			V	
Gate threshold voltage	$V_{GS(th)}$	$I_D = 1\text{mA}$ $V_{DS} = V_{GS}$	1.0	1.5	2.5	V	
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 120\text{V}$ $V_{GS} = 0\text{V}$	$T_{ch} = 25^\circ\text{C}$	10	500	μA	
	I_{DSS}		$T_{ch} = 125^\circ\text{C}$	0.2	1.0	mA	
Gate-source leakage current	I_{GSS}	$V_{GS} = \pm 20\text{V}$ $V_{DS} = 0\text{V}$		10	100	nA	
Drain-source on-state resistance	$R_{DS(on)}$	$I_D = 25\text{A}$	$V_{GS} = 4\text{V}$		25	45	m Ω
			$V_{GS} = 10\text{V}$		20	30	

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Dynamic ratings

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Forward transconductance	g f s	$I_D = 25A$ $V_{DS} = 25V$	25	50		S
Input capacitance	Ciss	$V_{DS} = 25V$ $V_{GS} = 0V$ $f = 1MHz$		5000	7500	pF
Output capacitance	Coss			920	1380	pF
Reverse transfer capacitance	Crss			500	750	pF
Turn-on time	t d(on)	$V_{CC} = 60V$ $V_{GS} = 10V$ $I_D = 50A$ $R_{GS} = 25\Omega$		30	45	ns
	t r			200	300	ns
Turn-off time	t d(off)			950	1425	ns
	t f			400	600	ns

Reverse diode

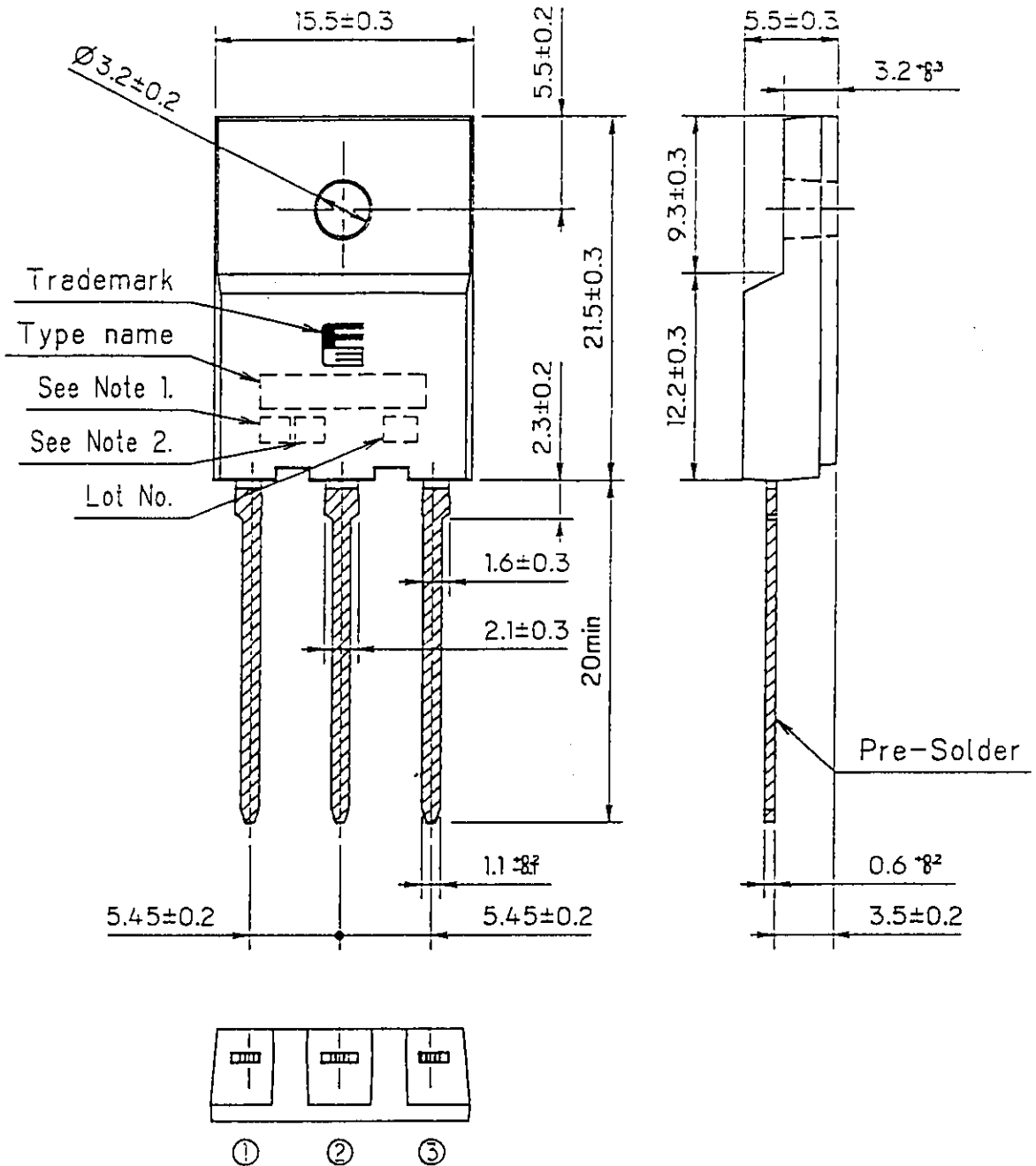
Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Diode forward on-voltage	V_{SD}	$I_F = 2 \times I_{DR}$ $V_{GS} = 0V, T_{ch} = 25^\circ C$		1.33	2.0	V
Reverse recovery time	t r r	$I_F = I_{DR}$ $V_{GS} = 0V$ $-di_F/dt = 100A/\mu s$ $T_{ch} = 25^\circ C$		150		ns
Reverse recovery charge	Q r r			1.1		μC

7. Thermal resistance

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Thermal resistance	Rth _{ch-c}				1.25	$^\circ C/W$
	Rth _{ch-a}				30	$^\circ C/W$

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FUJI POWER MOSFET



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Note 1. Guaranteed mark of avalanche ruggedness.
 2. $V_{GS(th)}$ selected code.

CONNECTION

- ① GATE
- ② DRAIN
- ③ SOURCE

DIMENSIONS ARE IN MILLIMETERS.

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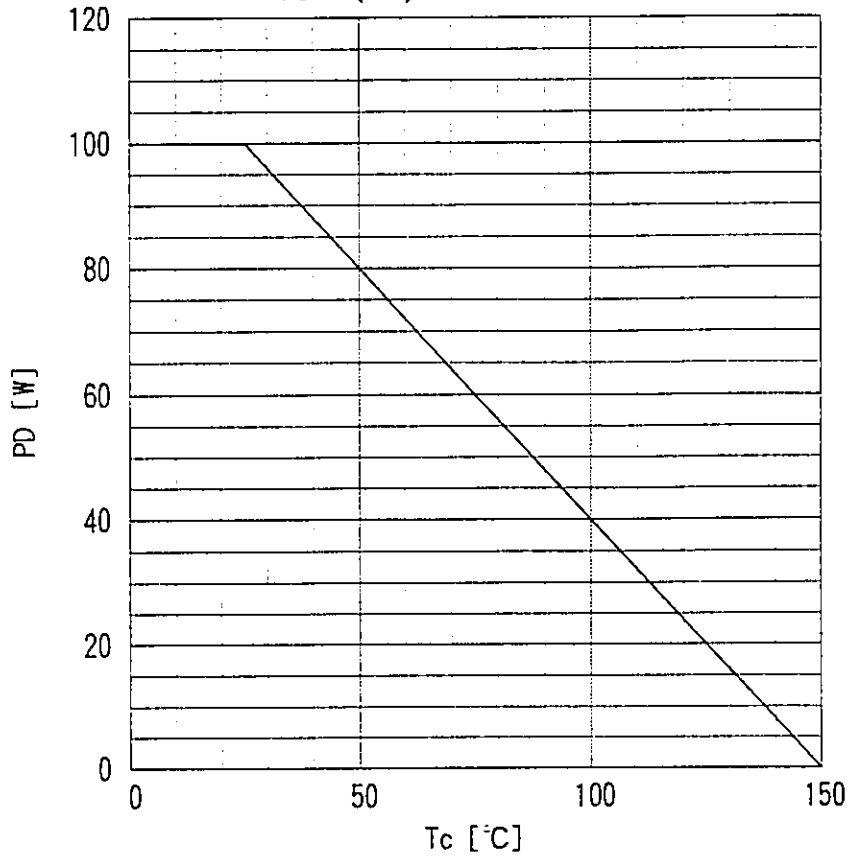
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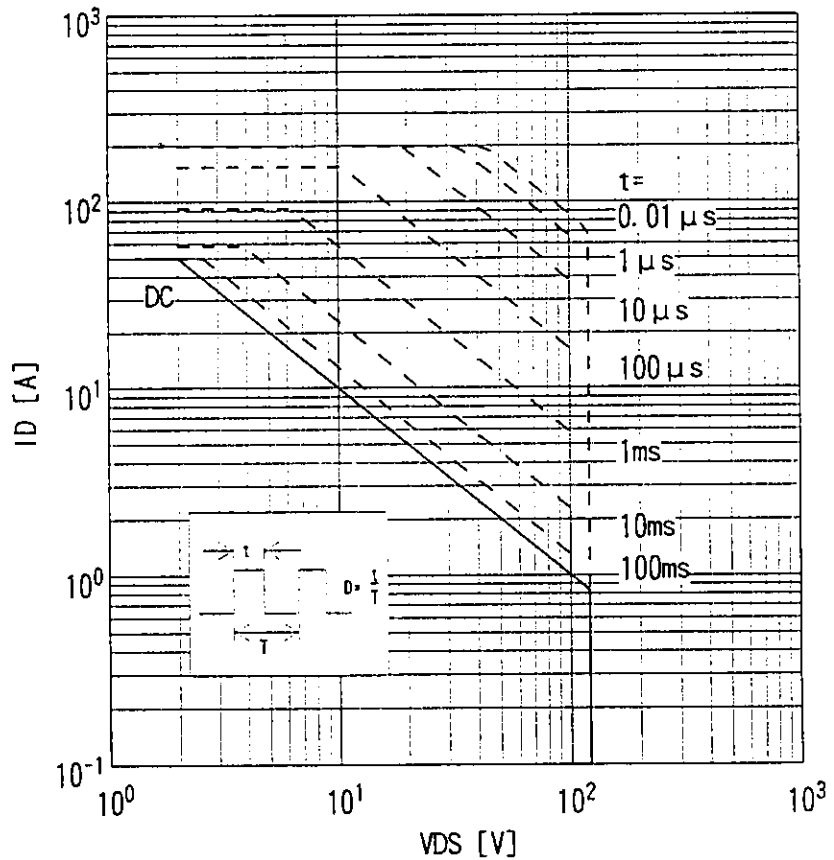
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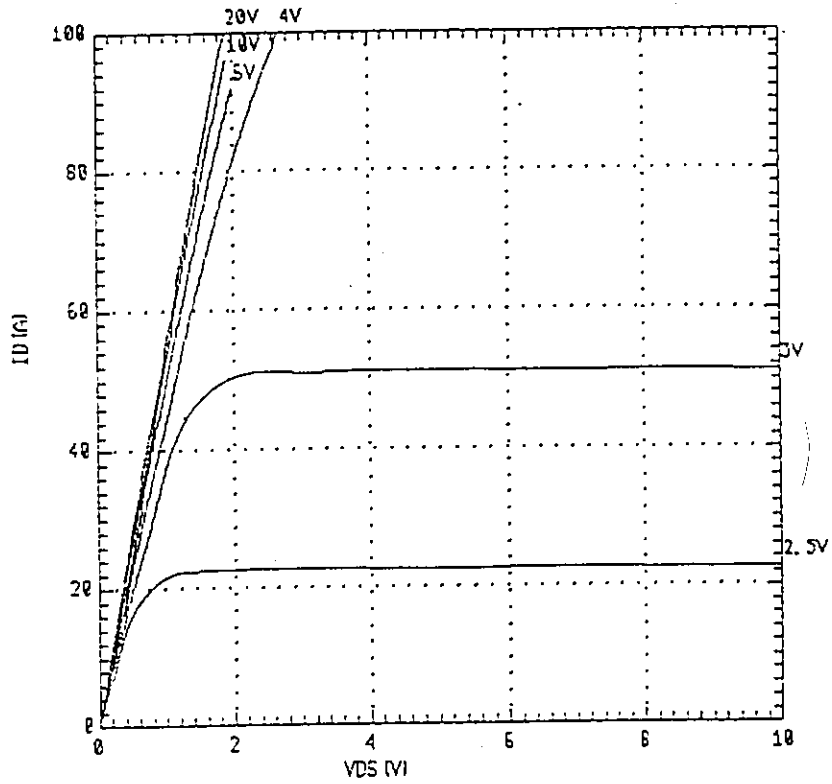
Power Dissipation
 $PD=f(T_c)$



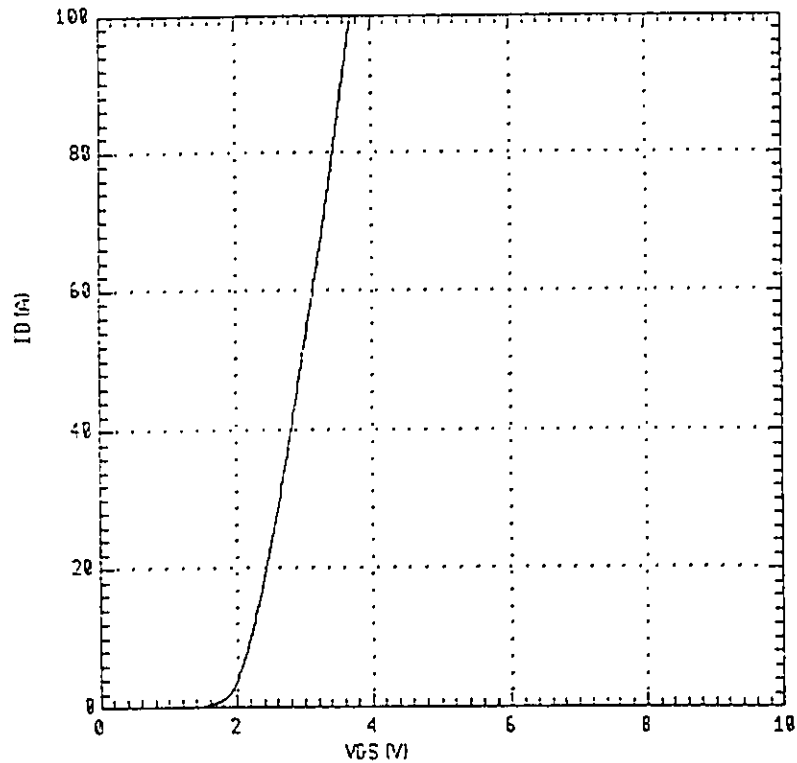
Safe operating area
 $ID=f(V_{DS}): D=0.01, T_c=25^\circ\text{C}$



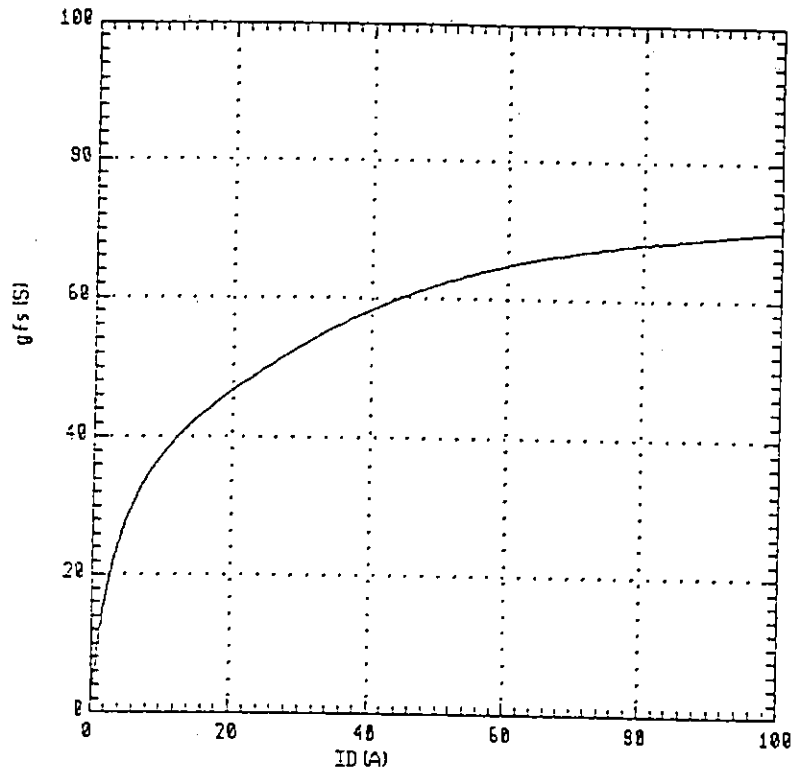
Typical output characteristics
 $I_D = f(V_{DS})$: 80 μ s pulse test, $T_{ch} = 25^\circ\text{C}$



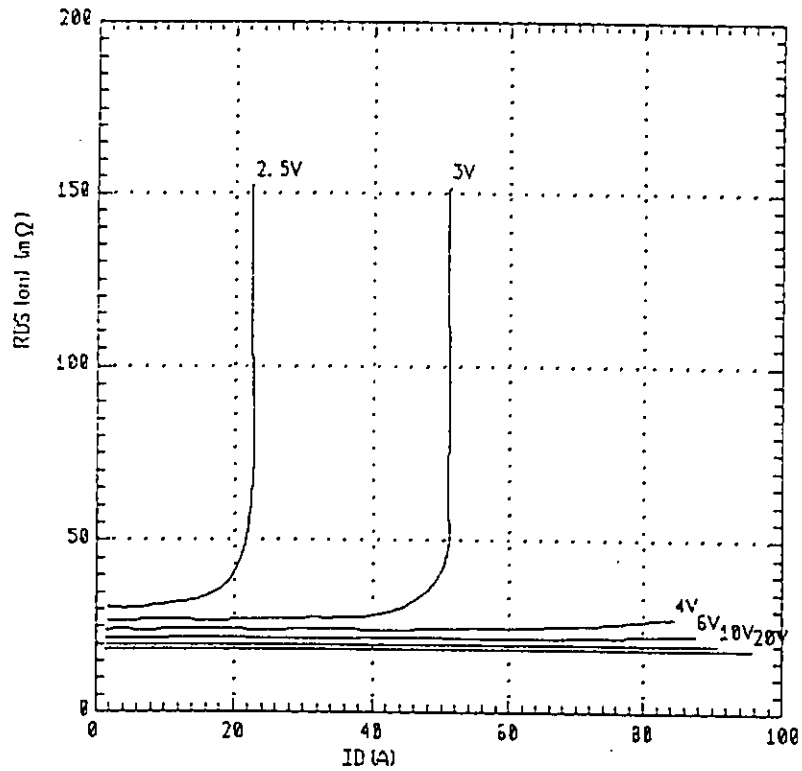
Typical Transfer Characteristic
 $I_D = f(V_{GS})$: 80 μ s pulse test, $V_{DS} = 25\text{V}$



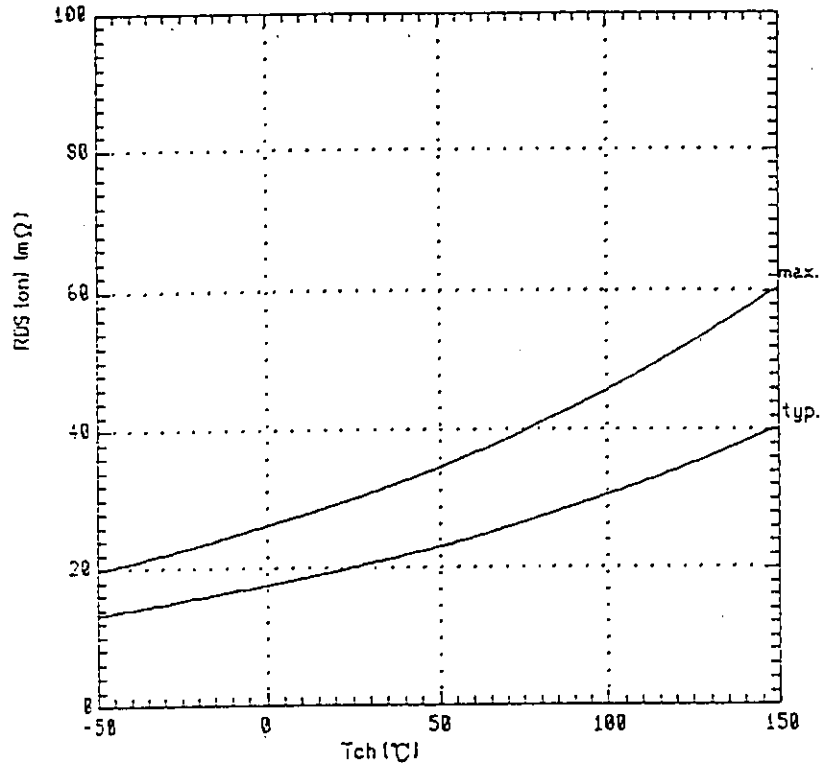
Typical Transconductance
 $g_{fs} = f(I_D)$: 80 μ s pulse test, $V_{DS} = 25V$, $T_{ch} = 25^\circ C$



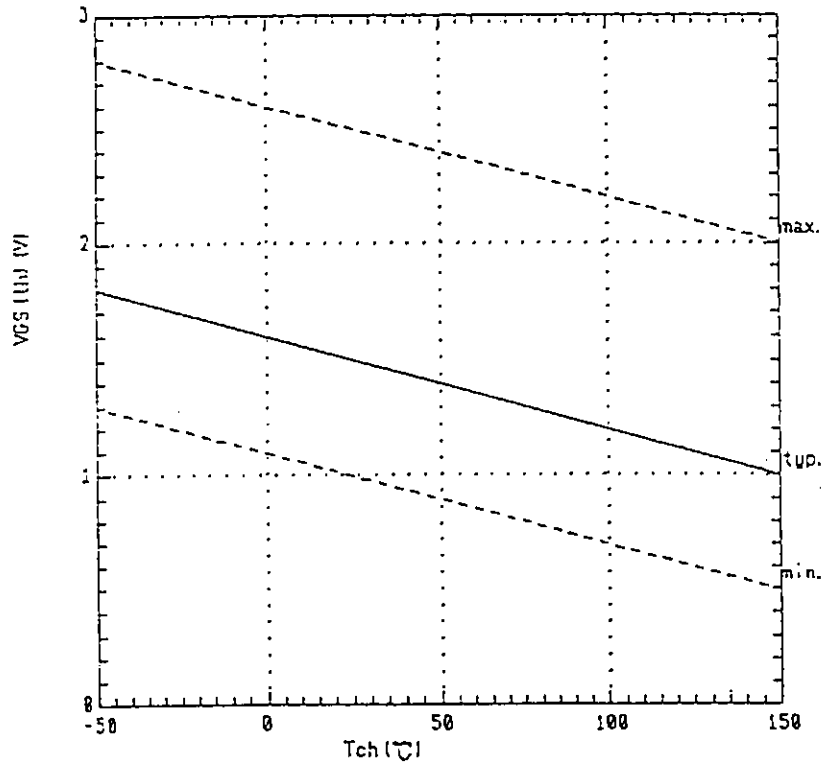
Typical Drain-source on-state resistance
 $R_{DS(on)} = f(I_D)$: 80 μ s pulse test, $T_{ch} = 25^\circ C$



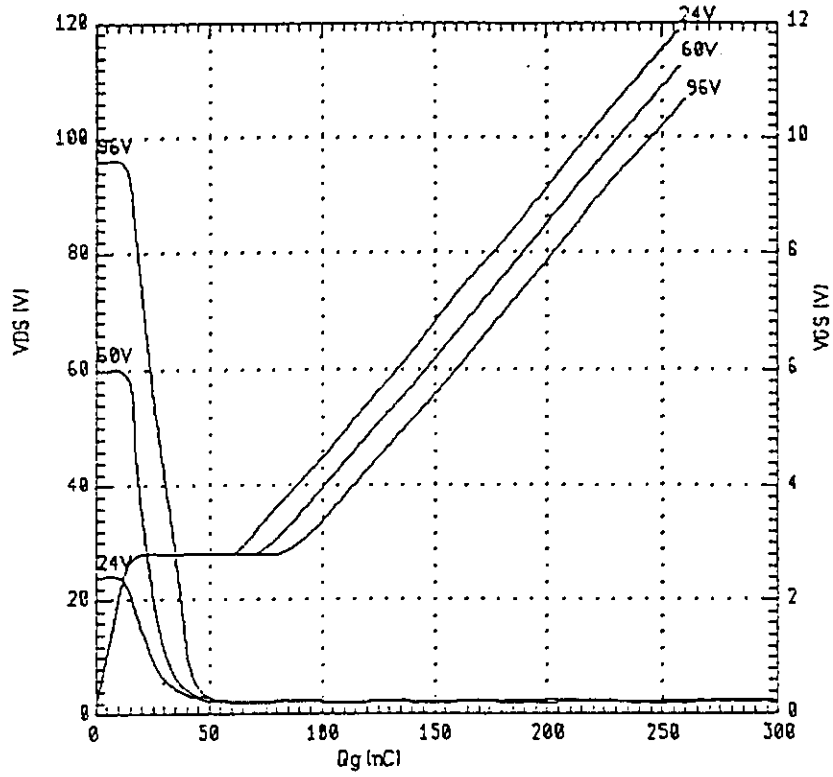
Drain-source on-state resistance
 $R_{DS(on)} = f(T_{ch}) : I_D = 25A, V_{GS} = 10V$



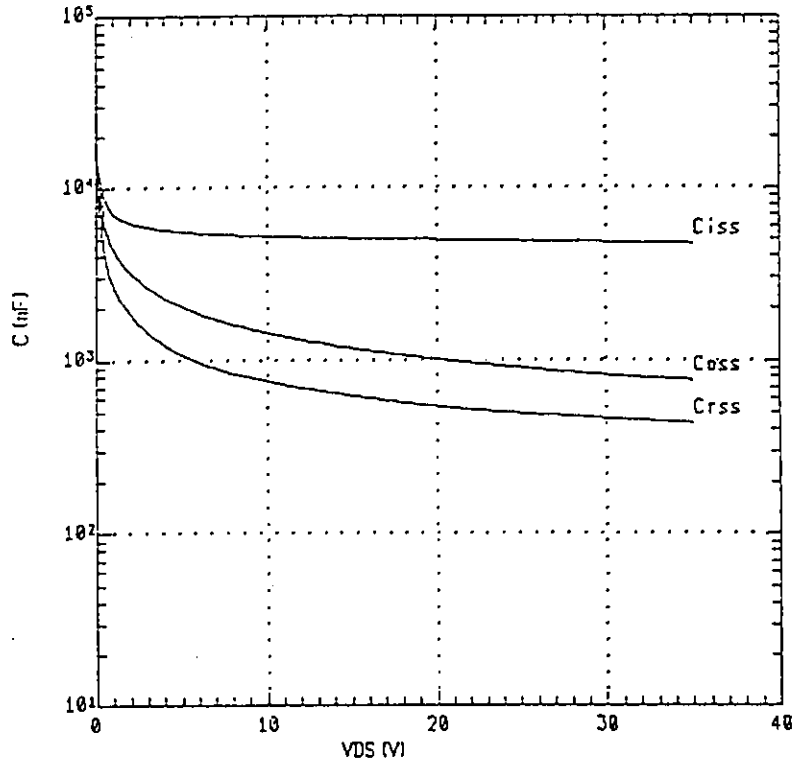
Gate threshold voltage
 $V_{GS(th)} = f(T_{ch}) : V_{DS} = V_{GS}, I_D = 1mA$



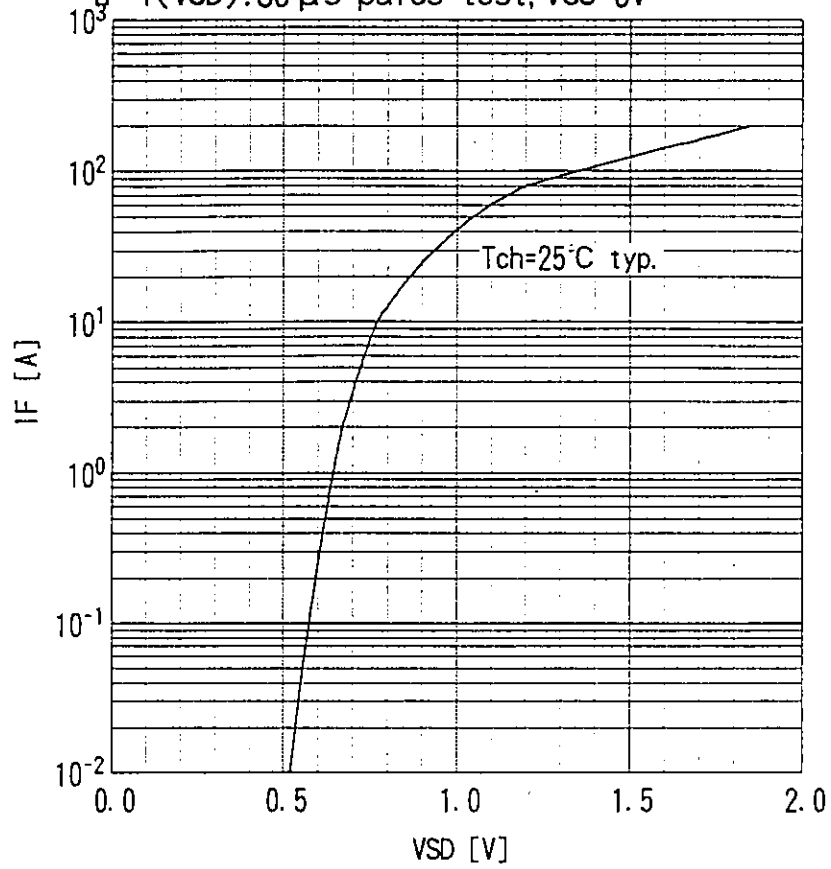
Typical gate charge characteristics
 $V_{GS} = f(Q_g) : I_D = 50A$



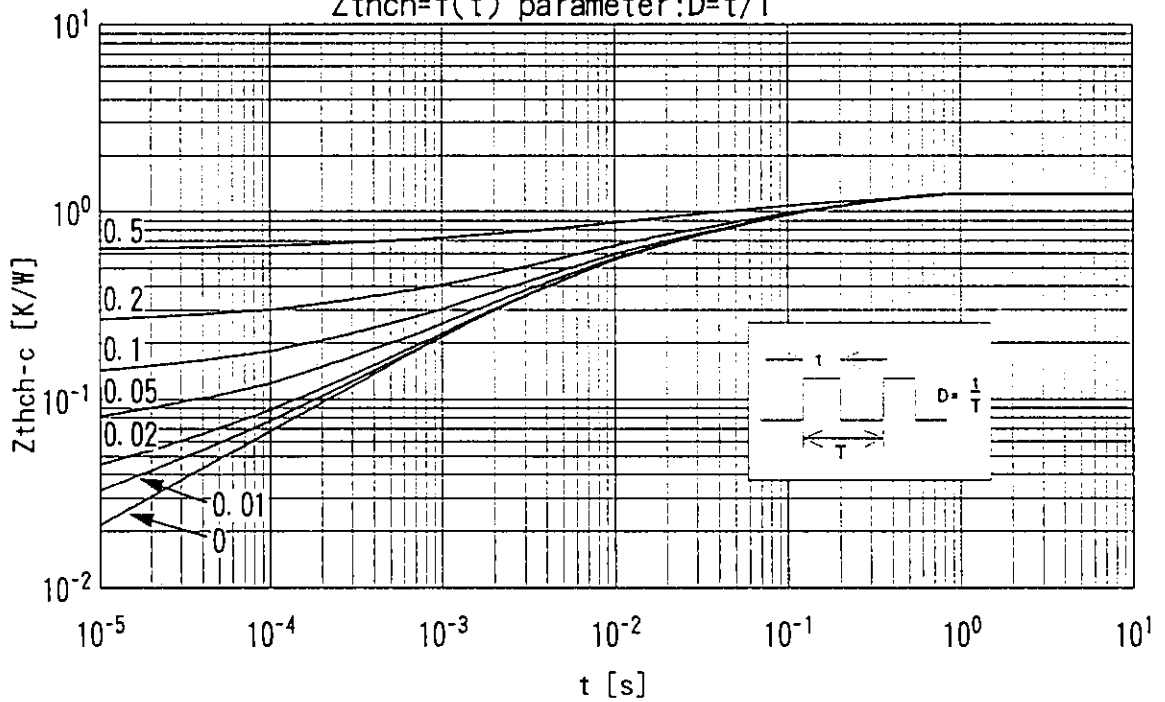
Typical capacitances
 $C = f(V_{DS}) : V_{GS} = 0V, f = 1MHz$



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



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



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