

SPECIFICATION

DEVICE NAME : Power MOSFET

TYPE NAME : 2SK2954-MR

SPEC. No. : - - -

Fuji Electric Co., Ltd.
Matsumoto Factory

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

1. Scope
This specifies Fuji power MOSFET 2SK2954-MR
2. Construction N-channel enhancement mode power MOSFET
3. Application for switching
4. Outview T0-220F 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}	100	V	
Drain-gate voltage	V_{DGR}	100	V	
Continuous Drain current	I_D	± 30	A	
Pulsed drain current	$I_{Dpulsec}$	± 120	A	
Gate-source voltage	V_{GS}	± 20	V	
Maximum power dissipation	P_D	50	W	
Operating and storage temperature range	T_{ch}	150	$^\circ\text{C}$	
	T_{stg}	-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}	$I_D = 1\text{mA}$ $V_{GS} = 0\text{V}$	100			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}	$V_{DS} = 100\text{V}$ $V_{GS} = 0\text{V}$	$T_{ch} = 25^\circ\text{C}$	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	$R_{DS(on)}$	$I_D = 15\text{A}$	$V_{GS} = 4\text{V}$	40	70	m Ω
			$V_{GS} = 10\text{V}$	30	55	

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Dynamic ratings

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Forward transconductance	g_{fs}	$I_o = 15A$ $V_{os} = 25V$	15	30		S
Input capacitance	C_{iss}	$V_{os} = 25V$ $V_{cs} = 0V$ $f = 1MHz$		2500	3700	pF
Output capacitance	C_{oss}			500	750	pF
Reverse transfer capacitance	C_{rss}			250	380	pF
Turn-on time	$t_{d(on)}$	$V_{cc} = 30V$ $V_{gs} = 10V$ $I_o = 30A$ $R_{gs} = 25\Omega$		20	30	ns
	t_r			140	210	ns
Turn-off time	$t_{d(off)}$			500	750	ns
	t_f			260	390	ns

Reverse diode

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Diode forward on-voltage	V_{SD}	$I_F = 2 \times I_{DR}$ $V_{GS} = 0V, T_{ch} = 25^\circ C$		0.9	1.5	V
Reverse recovery time	t_{rr}	$I_F = I_{DR}$ $V_{GS} = 0V$ $-di_F/dt = 100A/\mu s$ $T_{ch} = 25^\circ C$		130		ns
Reverse recovery charge	Q_{rr}			1		μC

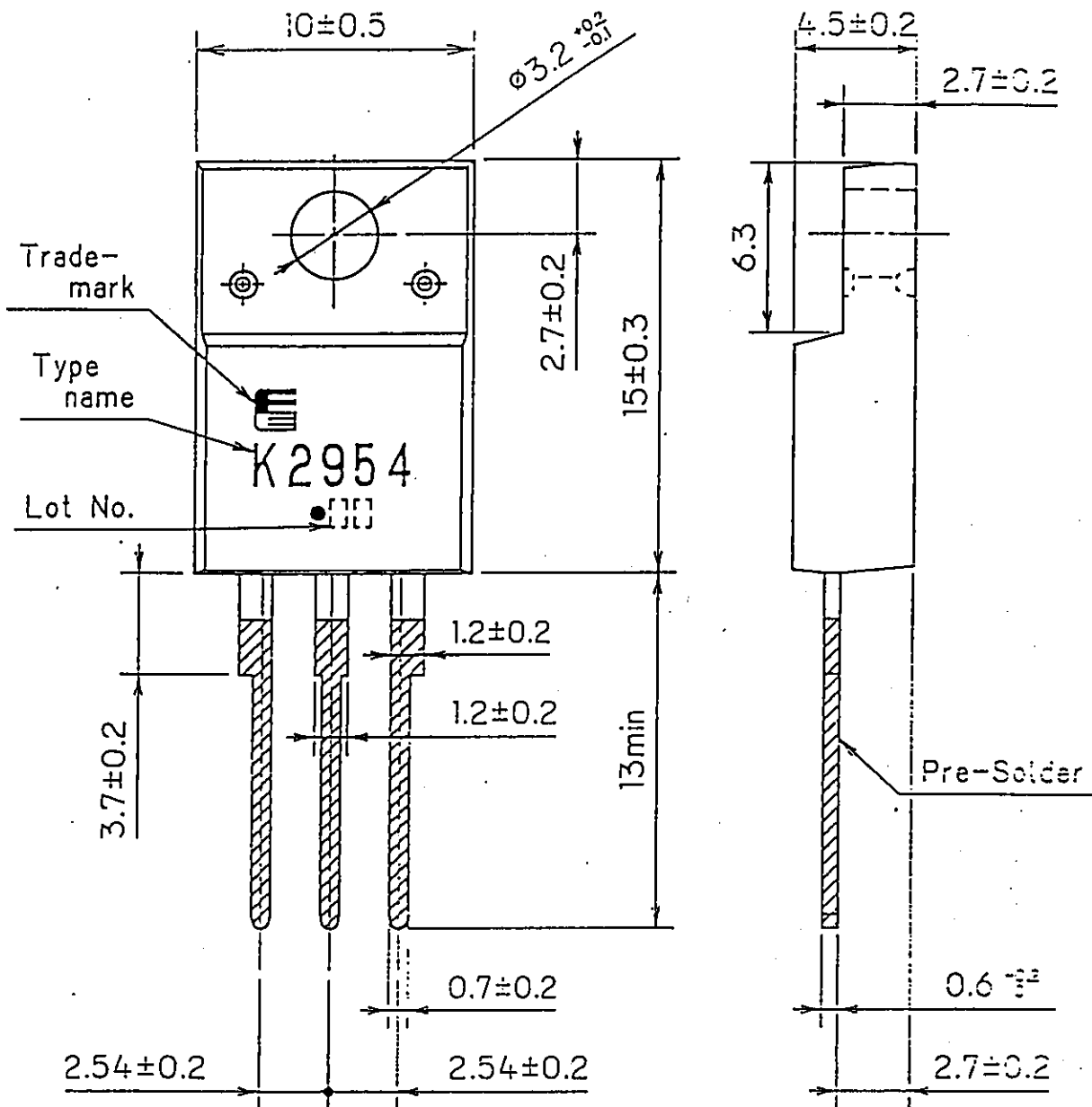
7. Thermal resistance

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Thermal resistance	$R_{th_{ch-c}}$				2.5	$^\circ C/W$
	$R_{th_{ch-a}}$				62.5	$^\circ C/W$

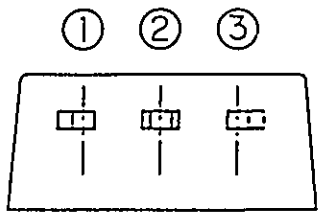
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FUJI POWER MOS FET

TYPE : 2SK2954-MR



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CONNECTION

- ① GATE
- ② DRAIN
- ③ SOURCE

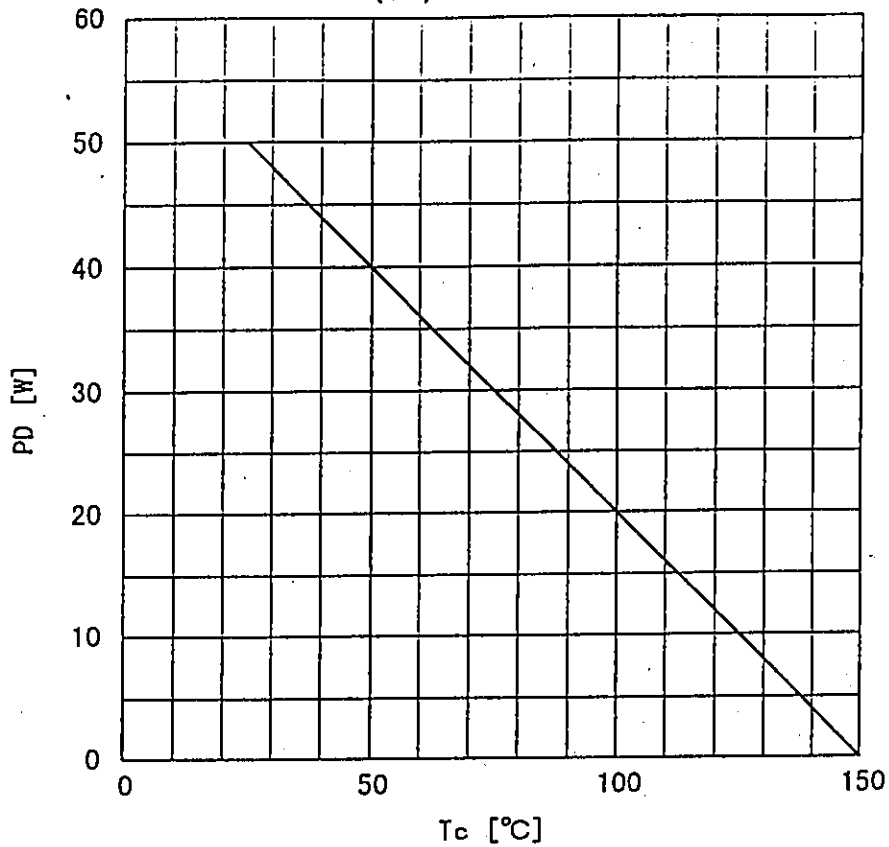
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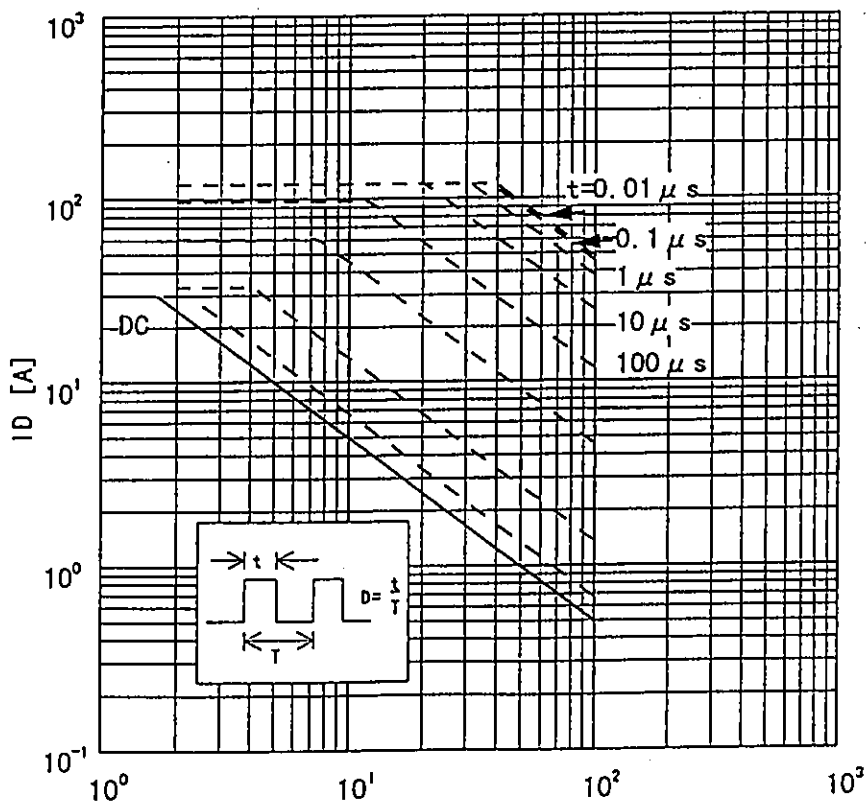
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Power Dissipation
 $PD=f(T_c)$

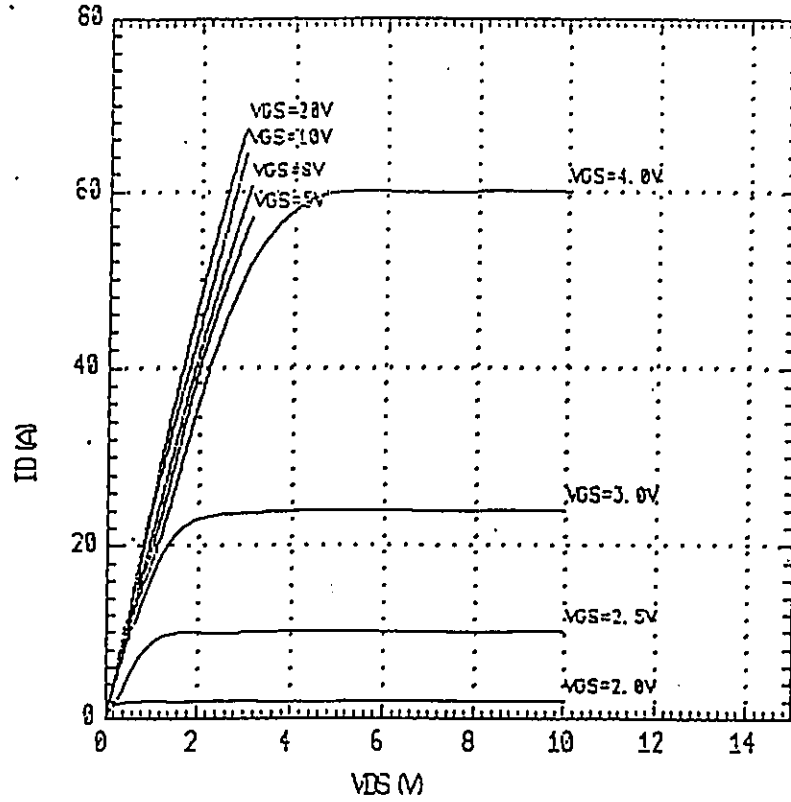


Safe operating area
 $ID=f(V_{DS}) : D=0.01, T_c=25^\circ C$

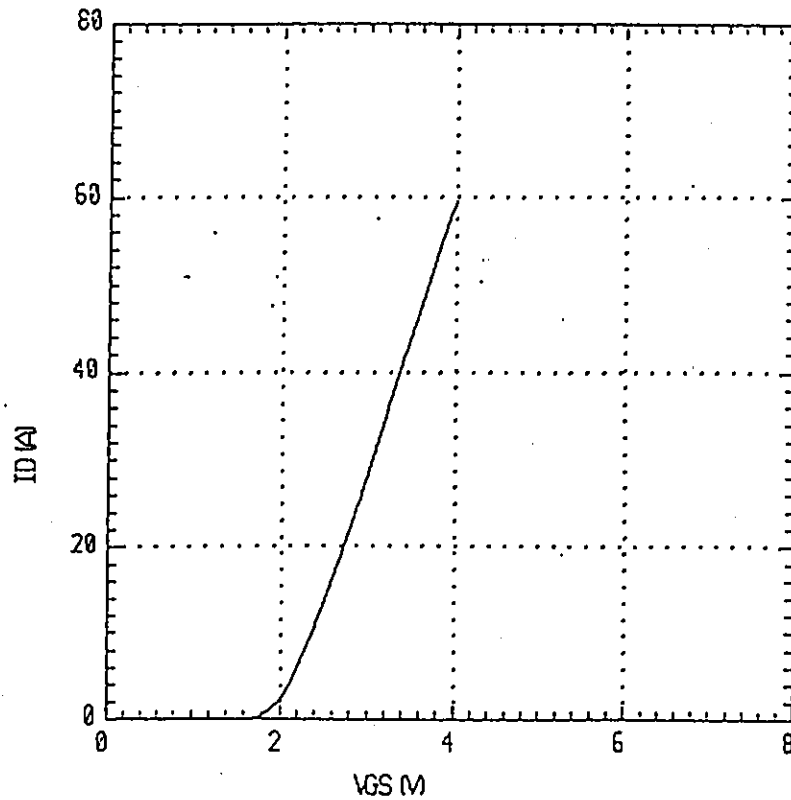


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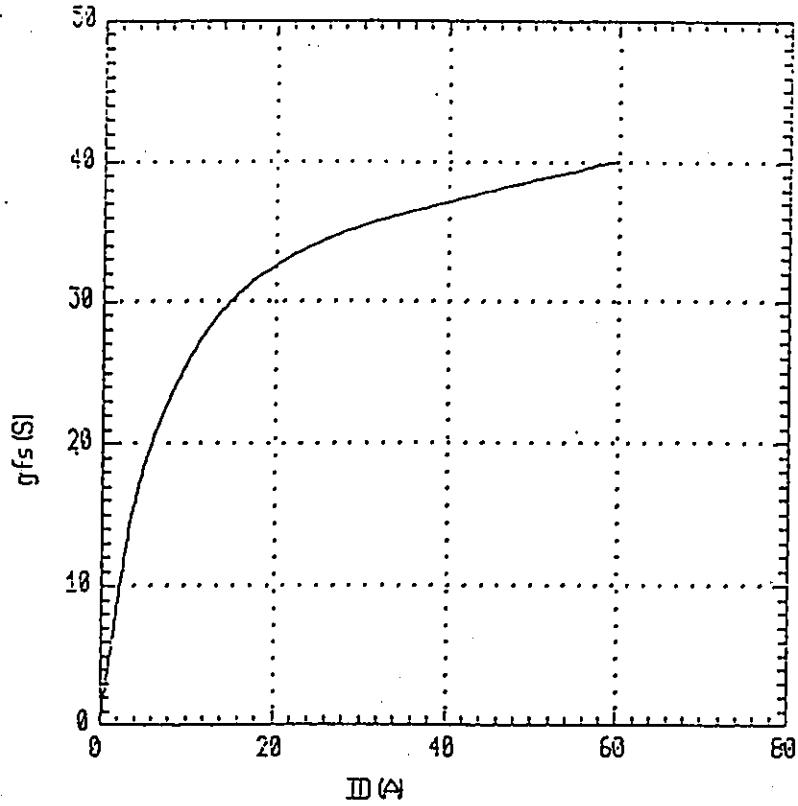
Typical output characteristics
 $I_D = f(V_{DS})$: 80 μ s pulse test, $T_{ch} = 25^\circ\text{C}$



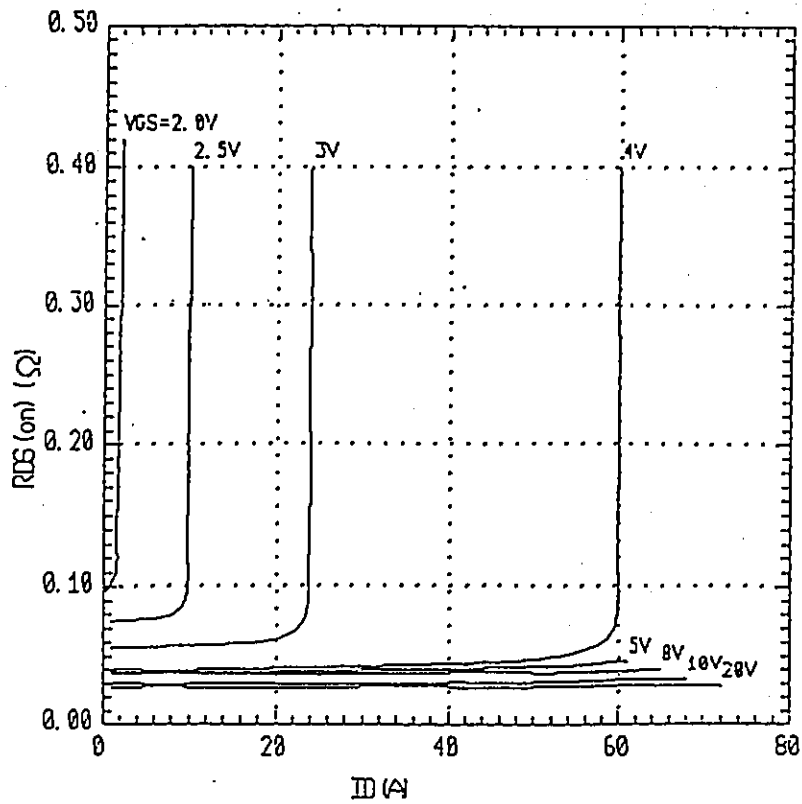
Typical Transfer Characteristics
 $I_D = f(V_{GS})$: 80 μ s pulse test, $V_{DS} = 25\text{V}$, $T_{ch} = 25^\circ\text{C}$



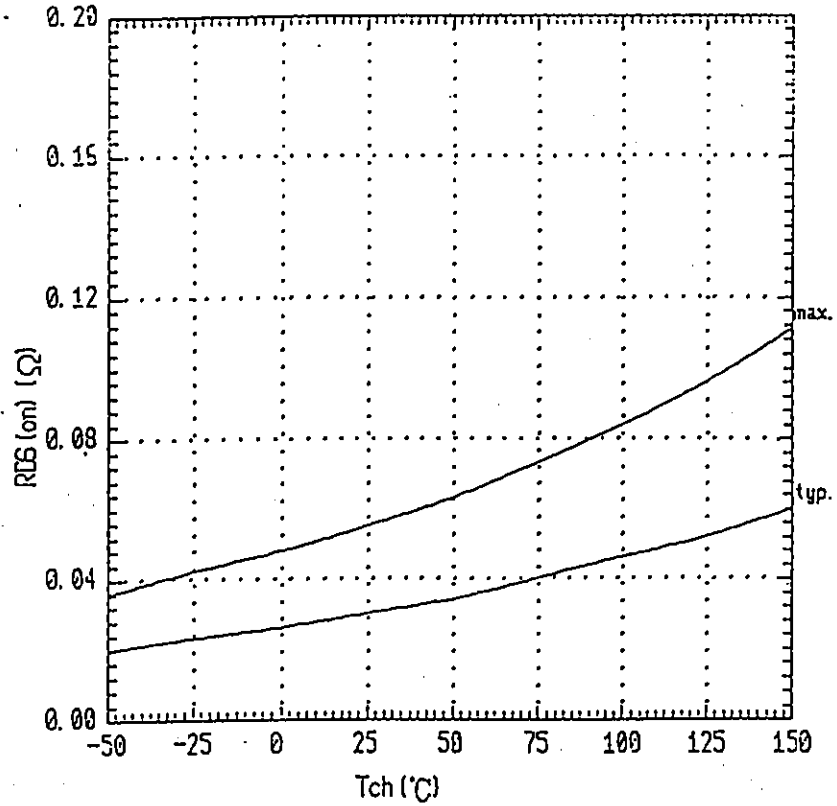
Typical Transconductance
 $g_{fs}=f(I_D)$: $80\mu s$ pulse test, $V_{DS}=25V$, $T_{ch}=25^\circ C$



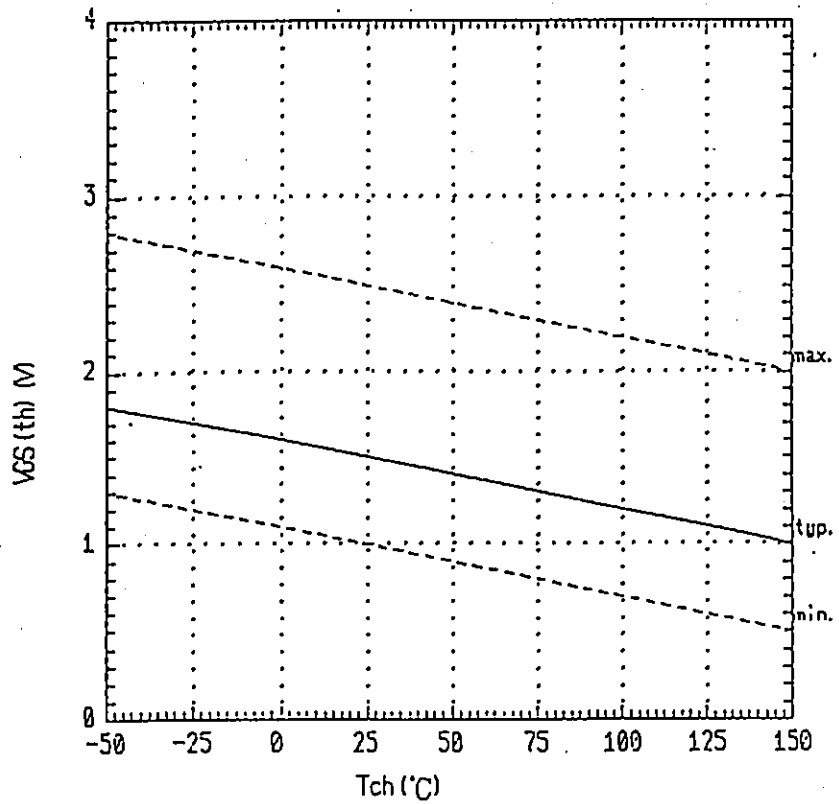
Typical Drain-source on-state resistance
 $R_{DS(on)}=f(I_D)$: $80\mu s$ pulse test, $T_{ch}=25^\circ C$



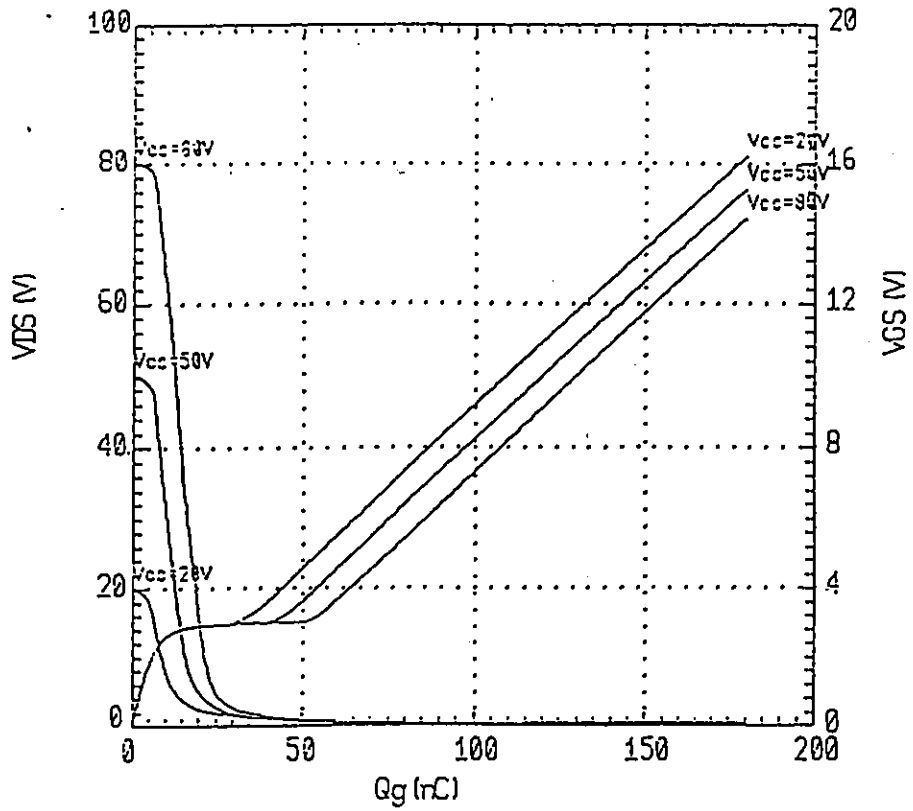
Drain-source on-state resistance
 $R_{DS(on)} = f(T_{ch}) : I_D = 15A, V_{GS} = 10V$



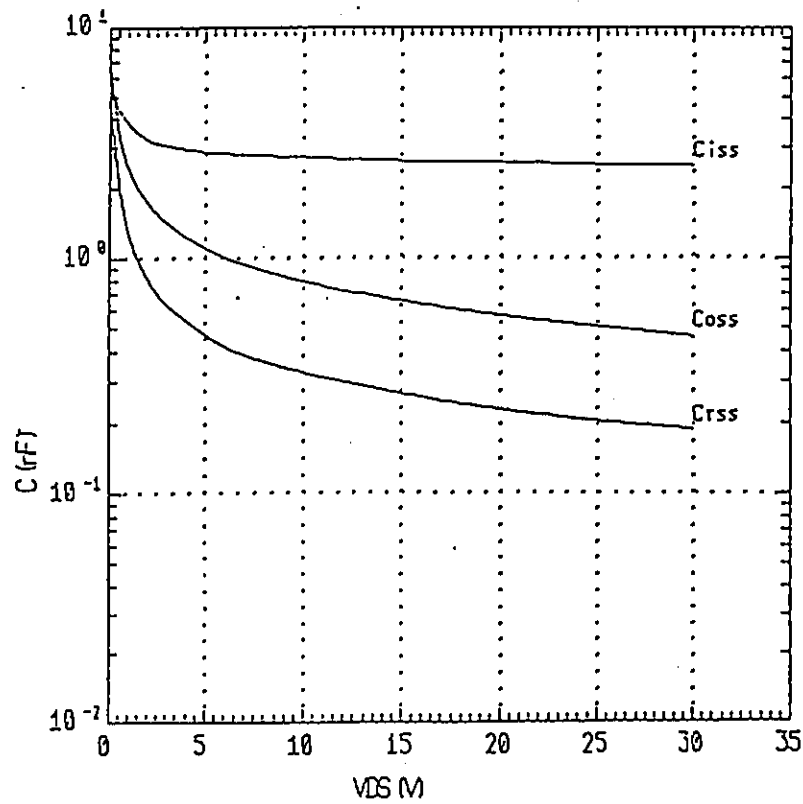
Gate threshold voltage
 $V_{GS(th)} = f(T_{ch}) : V_{DS} = V_{GS}, I_D = 1mA$



Typical gate charge characteristics
 $V_{GS} = f(Q_g) : I_D = 30A$

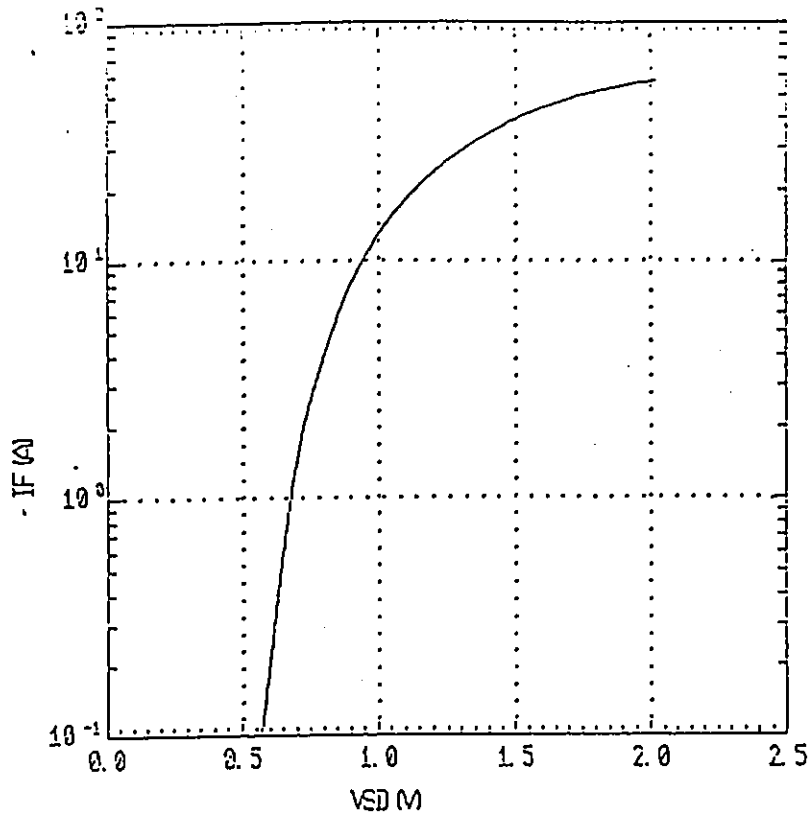


Typical capacitances
 $C = f(V_{DS}) : V_{GS} = 0V, f = 1MHz$



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Forward characteristic of reverse diode
 $I_F = f(V_{SD}) : 30 \mu s$ pulse test



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

