

SPECIFICATION

DEVICE NAME : Power MOSFET

TYPE NAME : 2SK2249-01L, S

SPEC. No. : **MS5F2667**

Fuji Electric Co.,Ltd.

This Specification is subject to change without notice.

	DATE	NAME	APPROVED		Fuji Electric Co.,Ltd.	
DRAWN					DWG.NO.	
CHECKED						
						1/12

1. Scope
This specifies Fuji power MOSFET 2SK2249-01L, S
2. Construction N-channel enhancement mode power MOSFET
3. Application for switching
4. Outview T-Pack L-type See to 5/12 page
 S-type See to 6/12 page
5. Absolute maximum ratings at $T_c=25^\circ\text{C}$ (unless otherwise specified)

Description	Symbol	Characteristics	Unit	Remarks
Drain-source voltage	V_{DS}	30	V	
Drain-gate voltage	V_{DGR}	30	V	$R_{GS}=20\text{K}\Omega$
Continuous Drain current	I_D	± 10	A	
Pulsed drain current	I_{DPULSE}	± 40	A	
Gate-source voltage	V_{GS}	± 16	V	
Maximum power dissipation	P_D	35	W	
Operating and storage temperature range	T_{ch}	150	$^\circ\text{C}$	
	T_{stg}	$-55 \sim +150$	$^\circ\text{C}$	

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}	$I_D = 1\text{mA}$ $V_{GS} = 0\text{V}$	30			V
Gate threshold voltage	$V_{GS(th)}$	$I_D = 1\text{mA}$ $V_{DS} = V_{GS}$	1.0	1.5	2.0	V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 30\text{V}$ $V_{GS} = 0\text{V}$		10	500	μA
	I_{DSS}	$T_{ch} = 125^\circ\text{C}$		0.2	1.0	mA
Gate-source leakage current	I_{GSS}	$V_{GS} = \pm 16\text{V}$ $V_{DS} = 0\text{V}$		10	100	nA
Drain-source on- state resistance	$R_{DS(on)}$	$I_D = 5\text{A}$ $V_{GS} = 4\text{V}$		45	80	m Ω
		$V_{GS} = 10\text{V}$		35	60	

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Dynamic ratings

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Forward transconductance	g_{fs}	$I_D = 5A$ $V_{DS} = 10V$	5.0	10.0		S
Input capacitance	C_{iss}	$V_{DS} = 10V$ $V_{GS} = 0V$ $f = 1MHz$		900	1350	pF
Output capacitance	C_{oss}			600	900	pF
Reverse transfer capacitance	C_{rss}			160	240	pF
Turn-on time	$t_{d(on)}$	$V_{CC} = 10V$ $I_D = 10A$ $V_{GS} = 10V$ $R_{GS} = 25\Omega$		10	15	ns
	t_r			15	25	ns
Turn-off time	$t_{d(off)}$			110	170	ns
	t_f			60	90	ns

Reverse diode

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Avalanche capability	I_{AV}	$L=100\mu H$, $T_{ch}=25^\circ C$ *see Fig1 and 2	10			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}	$I_F = I_{DR}$ $V_{GS}=0V$ $-di_F/dt=-100A/\mu s$ $T_{ch}=25^\circ C$		35		ns
Reverse recovery charge	Q_{rr}			0.05		μC

7. Thermal resistance

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Thermal resistance	$R_{th_{ch-C}}$				3.57	$^\circ C/W$
	$R_{th_{ch-a}}$				125	$^\circ C/W$

Fig.1 Test circuit .

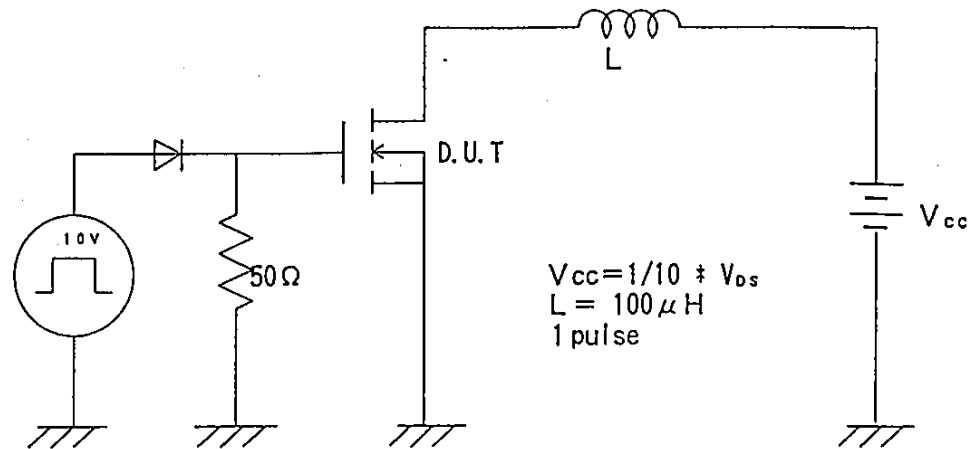
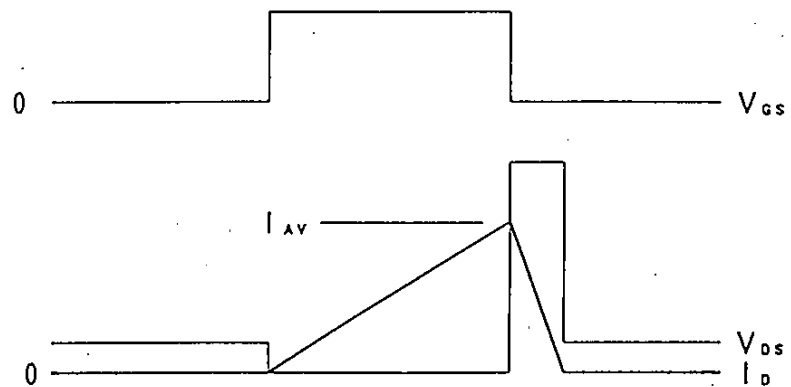
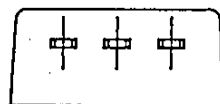
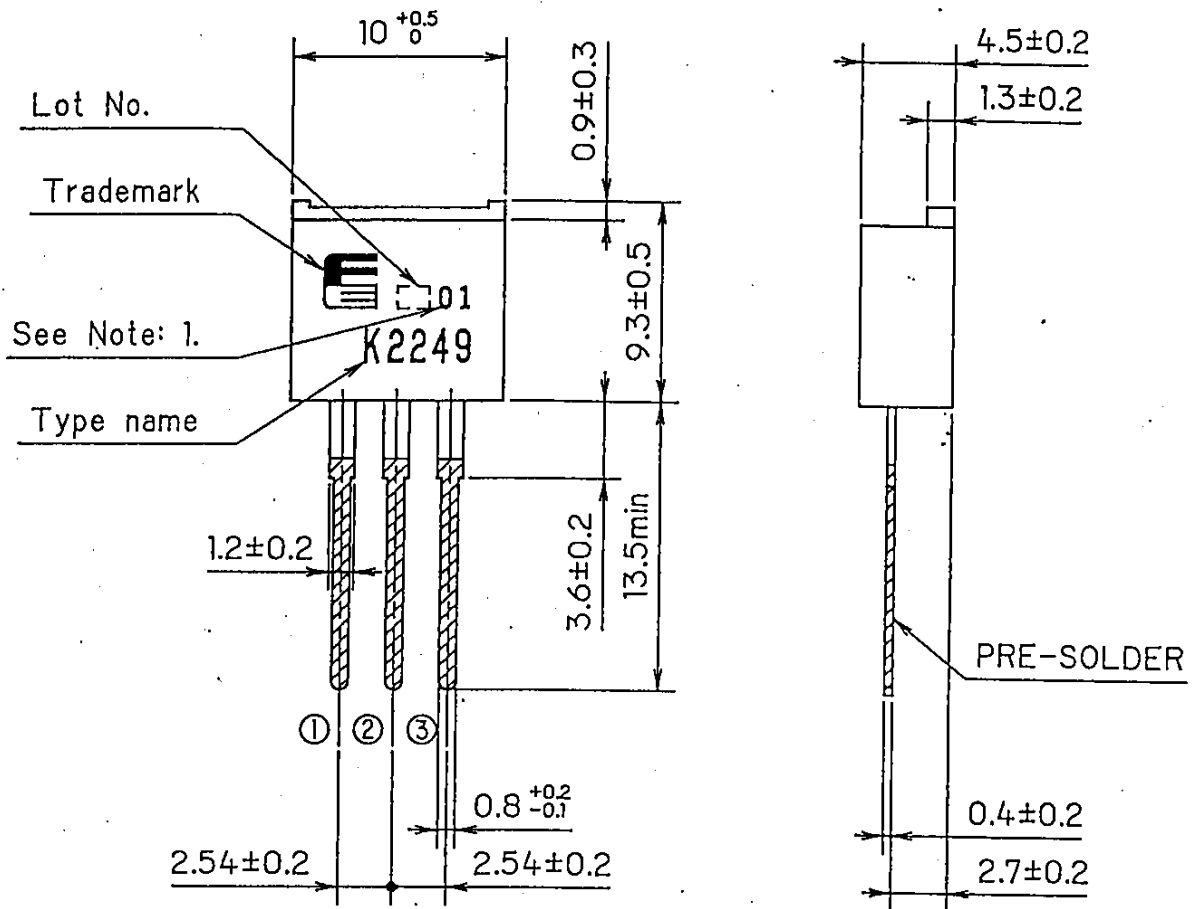


Fig.2 Operating waveforms



FUJI POWER MOS FET

TYPE : 2SK2249-01L



① ② ③

CONNECTION

- ① GATE
- ② DRAIN
- ③ SOURCE

Note: 1. Guaranteed mark of avalanche ruggedness.

DIMENSIONS ARE IN MILLIMETERS.

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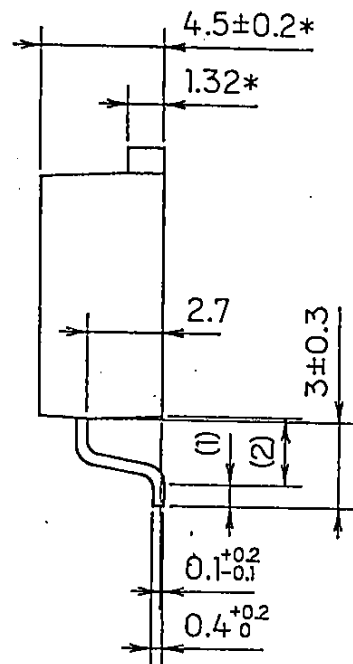
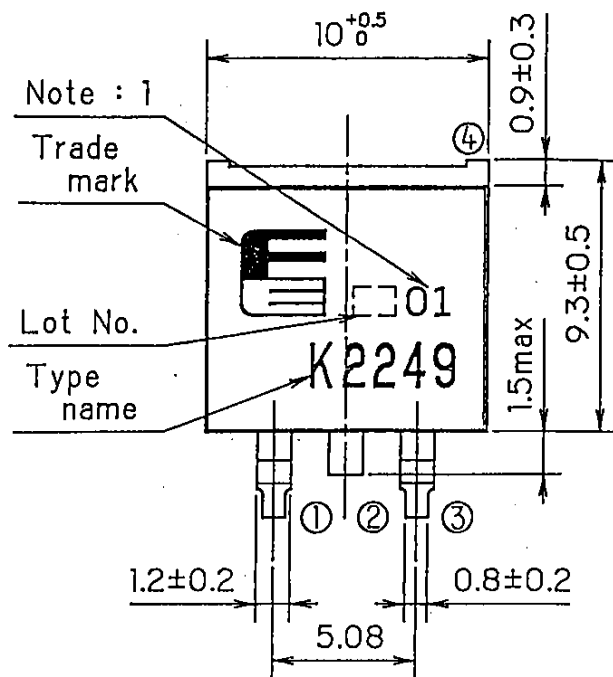
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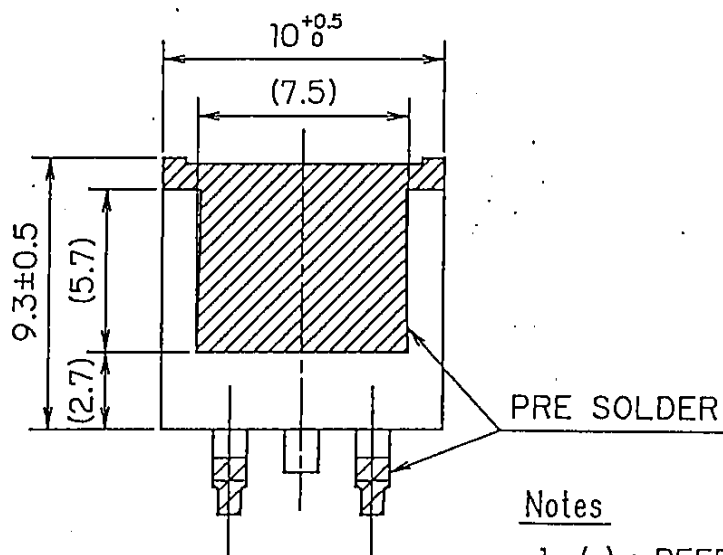
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TYPE : 2SK2249-01S



BOTTOM VIEW



CONNECTION

- ① GATE
- ④ ② DRAIN
- ③ SOURCE

Notes

Note 1. Guaranteed mark of avalanche ruggedness.

- 1. () : REFERENCE DIMENSIONS.
- 2. * : DO NOT INCLUDE SOLDER.

DIMENSIONS ARE IN MILLIMETERS.

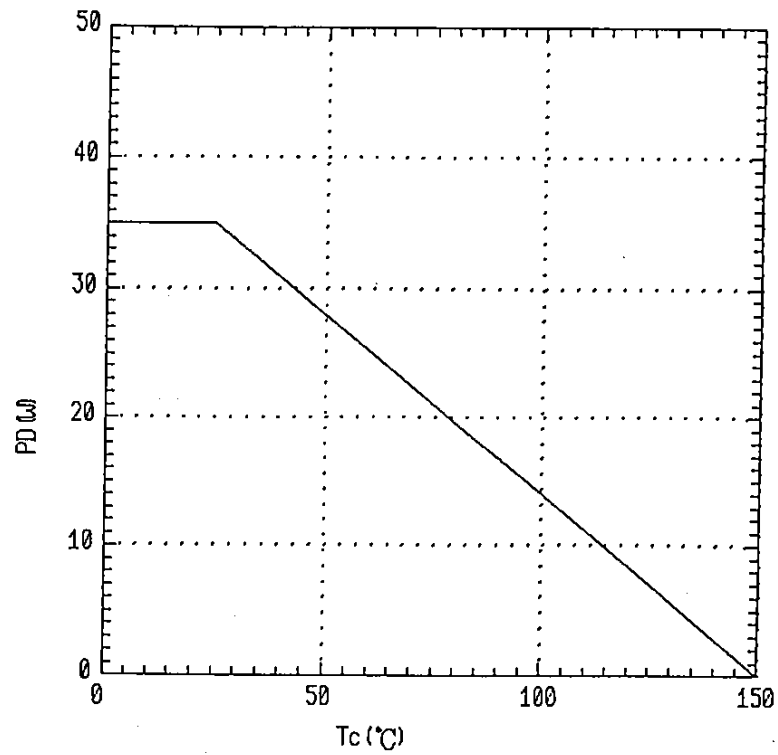
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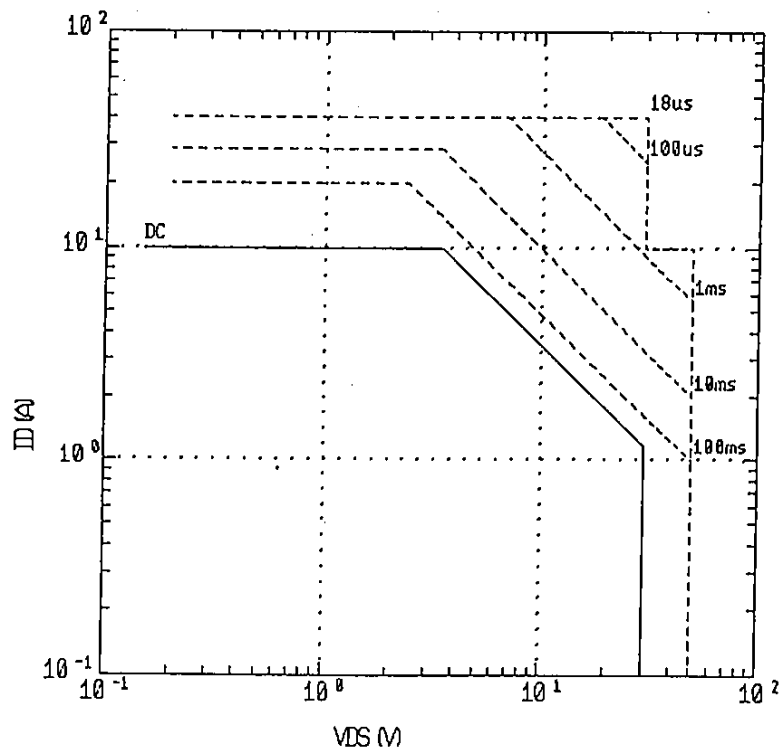
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Power Dissipation
 $PD=f(T_c)$



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



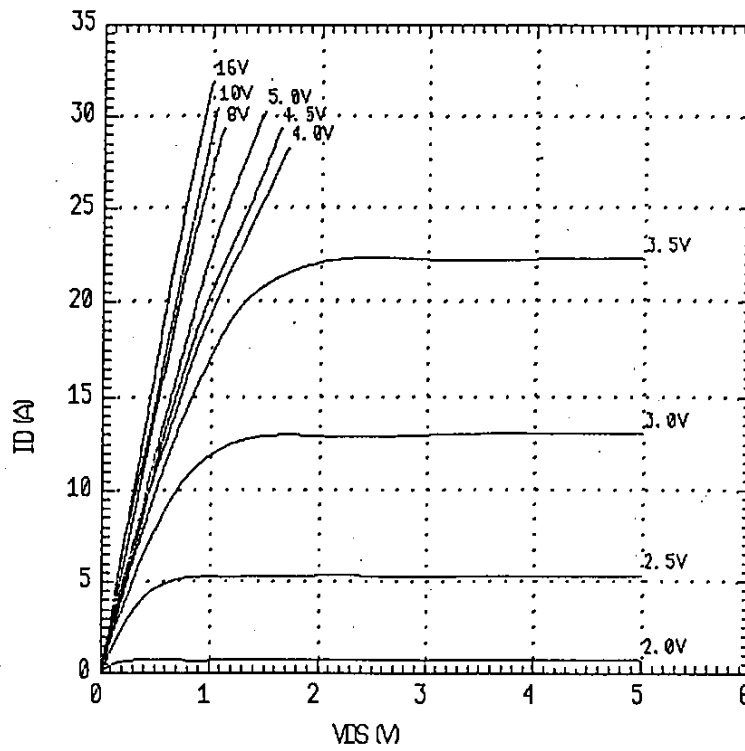
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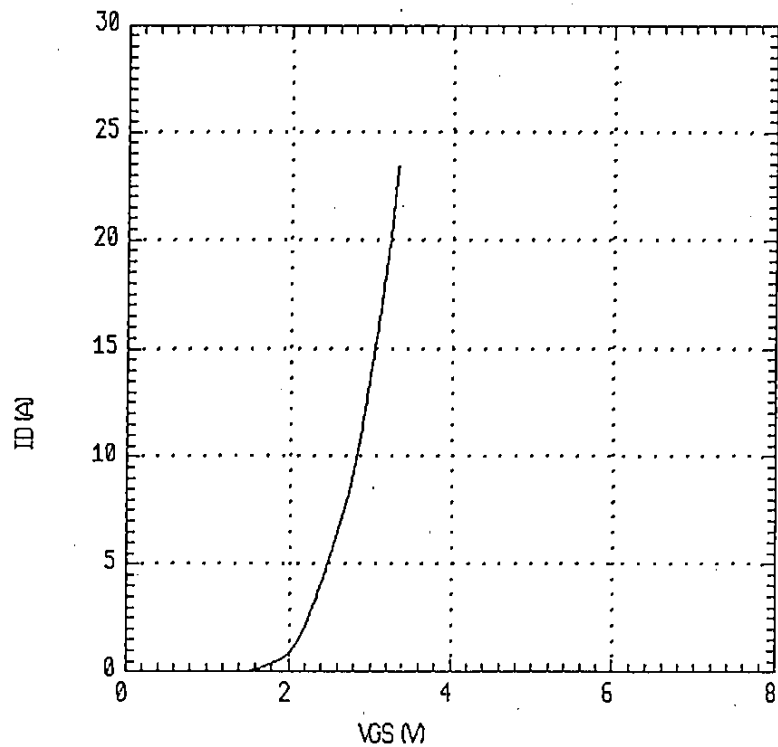
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Typical output characteristics
 $I_D = f(V_{DS})$: 80 μ s pulse test, $T_{ch} = 25^\circ\text{C}$

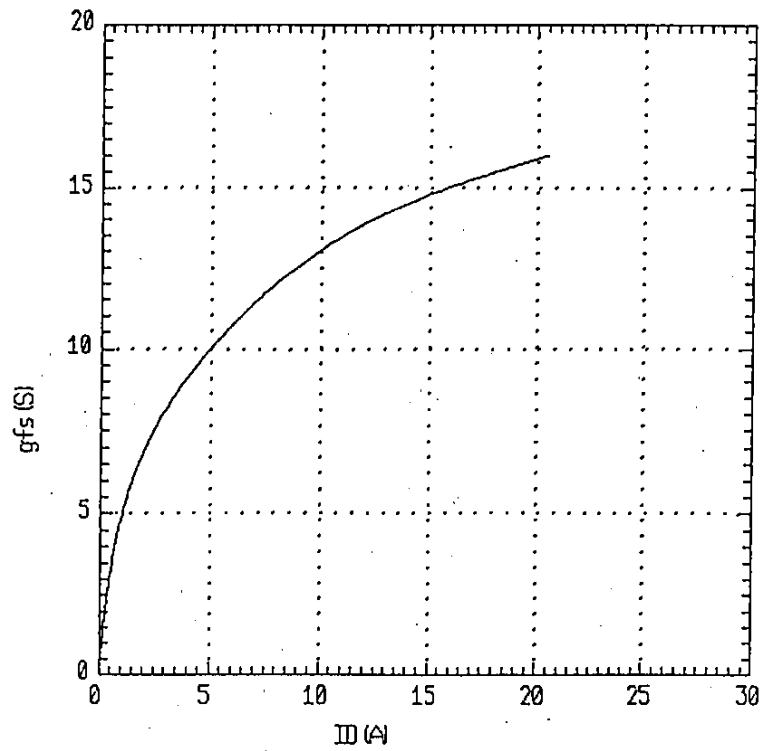


Typical Transfer Characteristics
 $I_D = f(V_{GS})$: 80 μ s pulse test, $V_{DS} = 10V$, $T_{ch} = 25^\circ\text{C}$



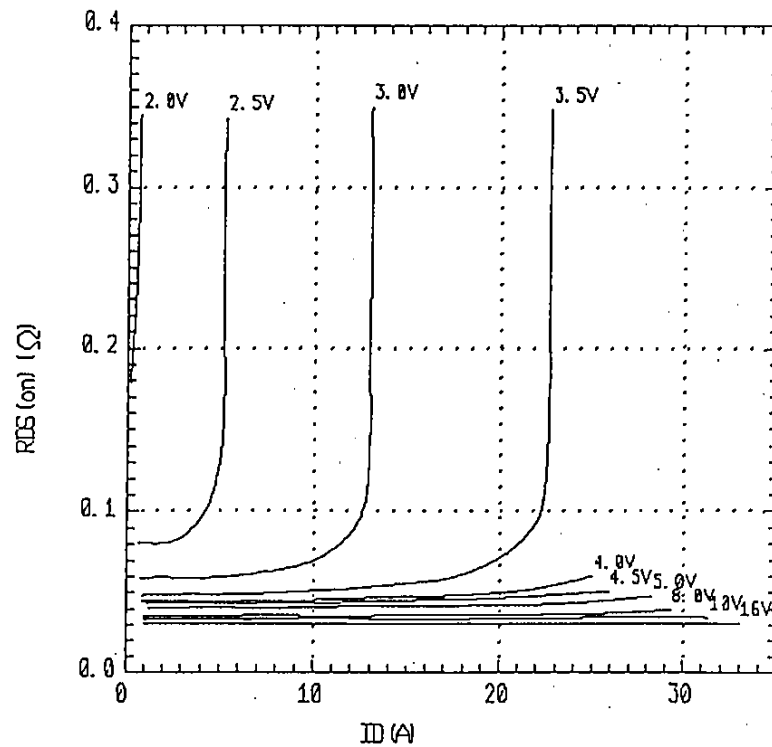
Typical Transconductance

$g_{fs}=f(I_D):80\mu s$ pulse test, $V_{DS}=10V$, $T_{ch}=25^\circ C$

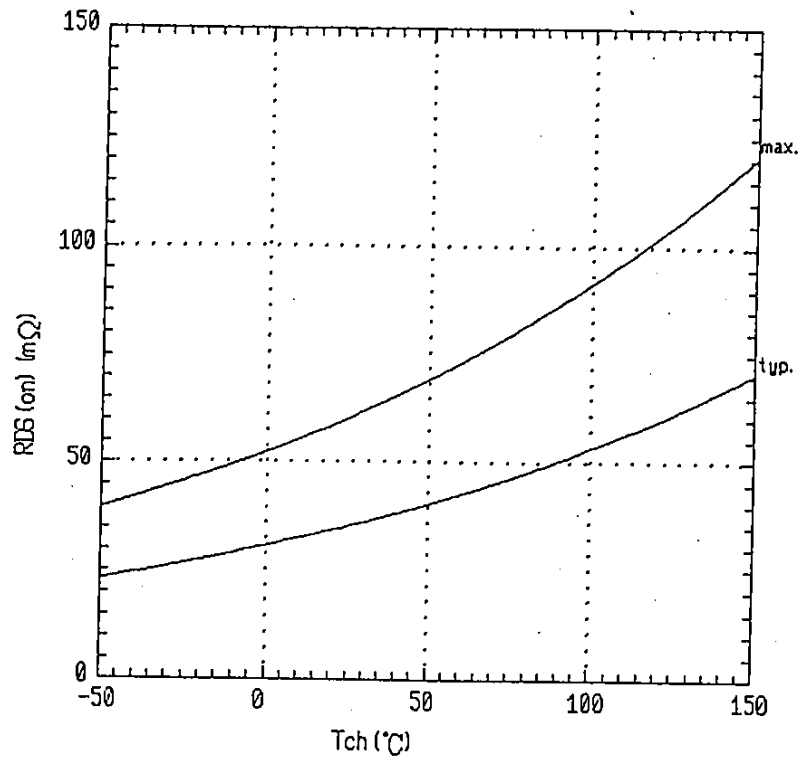


Typical Drain-source on-state resistance

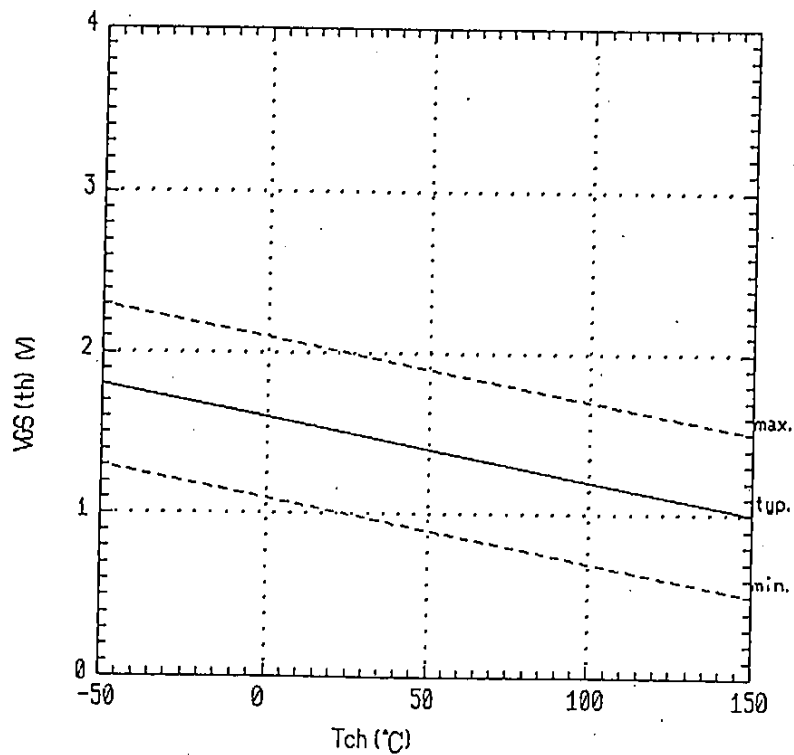
$R_{DS(on)}=f(I_D):80\mu s$ pulse test, $T_{ch}=25^\circ C$



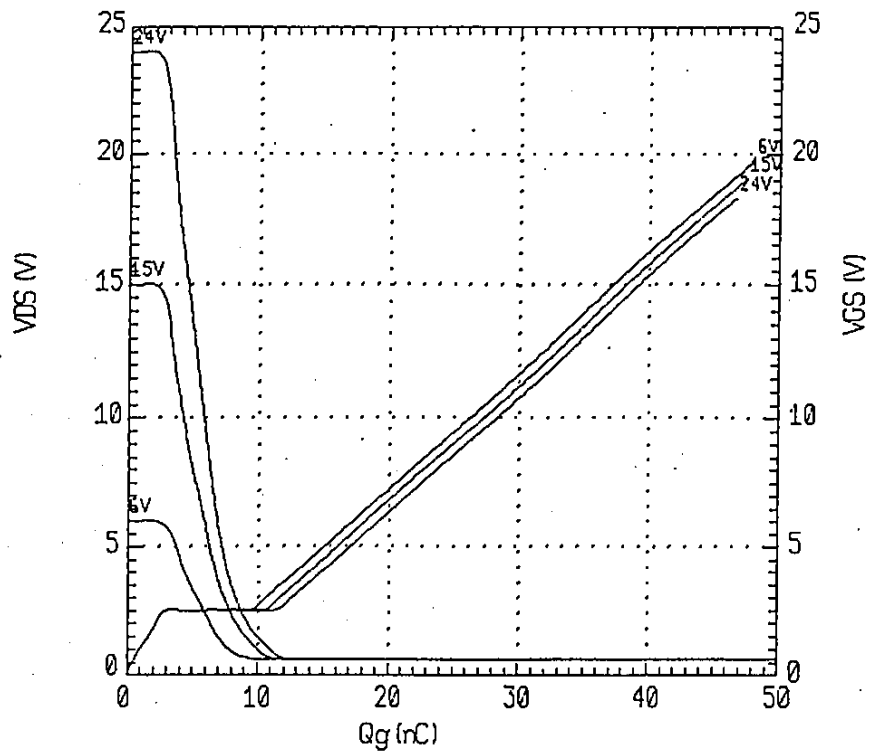
Drain-source on-state resistance
 $R_{DS(on)} = f(T_{ch}) : I_D = 5A, V_{GS} = 10V$



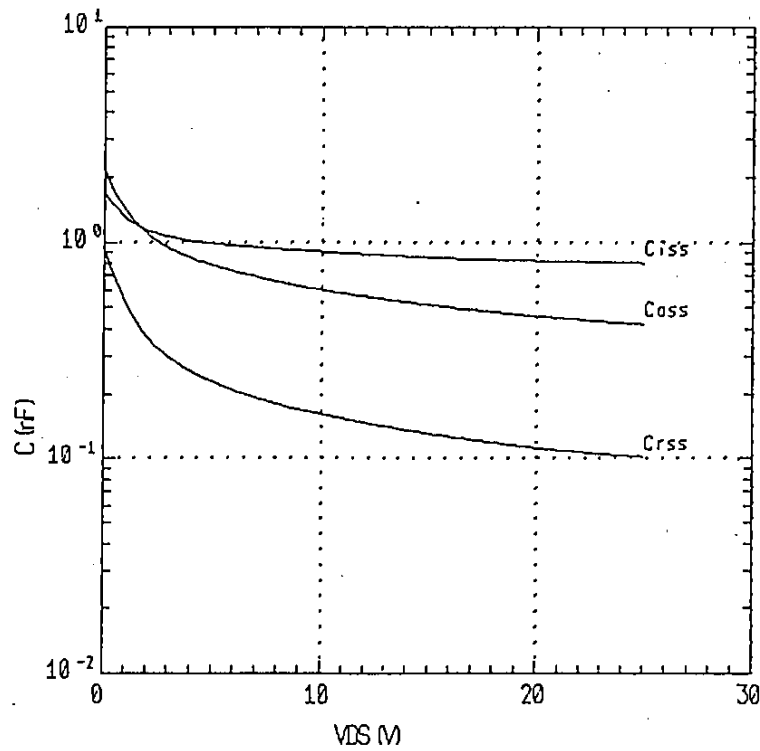
Gate threshold voltage
 $V_{GS(th)} = f(T_{ch}) : V_{DS} = V_{GS}, I_D = 1mA$



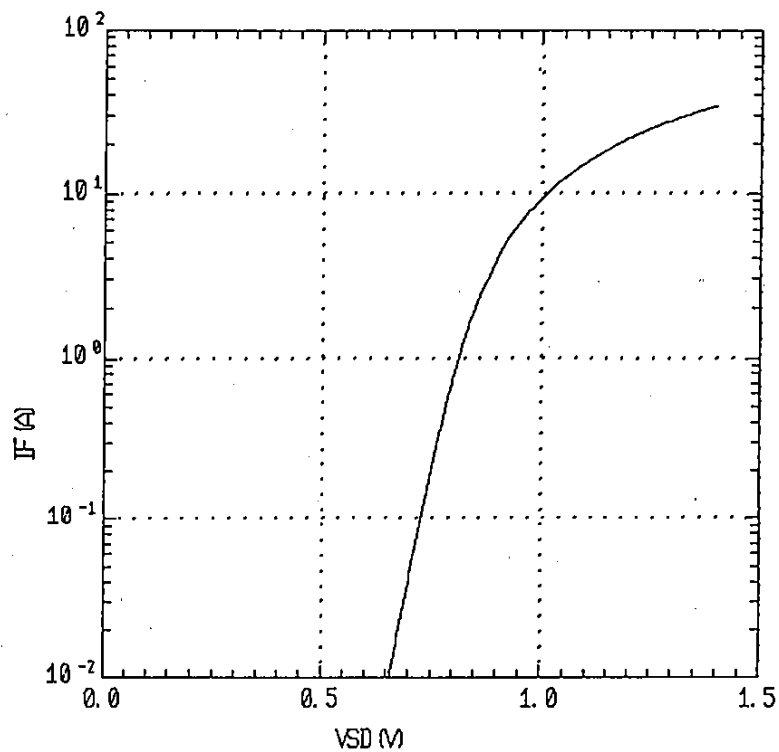
Typical gate charge characteristics
 $V_{GS} = f(Q_g) : I_D = 10A$



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



Forward characteristic of reverse diode
 $I_F = f(V_{SD}) : 80 \mu s$ pulse test



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

