SPECIFICATION

DEVICE NAME : Power MOSFET

TYPE NAME : 2SK1938-01R

SPEC. No. :

Fuji Electric Co.,Ltd.

This Specification is subject to change without notice.

	DATE	NAME	APPROVED
DRAWN			
CHECKED			

Fuji Electric Co.,Ltd.

DWG.NO.

Y 0257-R-004a

1. Scope
This specifies Fuji power MOSFET 2SK1938-01R

2. Construction N-channel enhancement mode power MOSFET

3. Application for switching

4. Outview TO-3PF See to 5/11 page

5. Absolute maximum ratings at Tc=25℃ (unless otherwise specified)

Description	Symbol	Characteristics	Unit	Remarks
Drain-source voltage	V_{DS}	500	V	
Drain-gate voltage	V_{DGR}	500	V	R_{GS}=20KΩ
Continuous Drain current	I_D	± 18	A	
Pulsed drain current	I_{Dpulse}	± 72	A	
Gate-source voltage	V_{GS}	± 30	V	
Maximum power dissipation	P_D	100	W	
Operating and storage temperature range	T_{ch}	150	℃	
	T_{stg}	-55 ~ +150	℃	

6. Electrical characteristics at Tc=25℃ (unless otherwise specified)
Static ratings

Description	Symbol	Conditions		Characteristics			Unit
				Min.	Typ.	Max.	
Drain-source breakdown voltage	BV_{DSS}	I_D=1mA V_{GS}=0V		500			V
Gate threshold voltage	$V_{GS(th)}$	I_D=1mA V_{DS}=V_{GS}		2.5	3.0	3.5	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=500V V_{GS}= 0V	T_{ch}= 25℃		10	500	μA
	I_{DSS}		T_{ch}=125℃		0.2	1.0	mA
Gate-source leakage current	I_{GSS}	V_{GS}=±30V V_{DS}= 0V			10	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	I_D = 9A V_{GS}= 10V			0.25	0.35	Ω

Dynamic ratings

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Forward transconductance	gfs	I_D = 9A V_{DS} = 25V	9	18		S
Input capacitance	Ciss	V_{DS} = 25V V_{GS} = 0V f = 1MHz		3300	4950	pF
Output capacitance	Coss			340	510	pF
Reverse transfer capacitance	Crss			80	120	pF
Turn-on time	td(on)	V_{CC} = 300V I_D = 18A V_{GS} = 10V R_{GS} = 10Ω		35	55	ns
	tr			80	120	ns
Turn-off time	td(off)			190	285	ns
	tf			120	180	ns

Reverse diode

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Avalanche capability	I_{AV}	L=100μH, Tch=25℃ *see Fig1 and 2	18			A
Diode forward on-voltage	V_{SD}	I_F = 2 × I_{DR} V_{GS}=0V, T_{ch} = 25℃		1.0	1.5	V
Reverse recovery time	t_{rr}	I_F = I_{DR} V_{GS}=0V -dI_F/dt=-100A/μs T_{ch} = 25℃		500		ns
Reverse recovery charge	Q_{rr}			4.0		μC

7. Thermal resistance

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Thermal resistance	$R_{th(ch-c)}$				1.25	℃/W
	$R_{th(ch-a)}$				30.0	℃/W

Fig.1 Test circuit

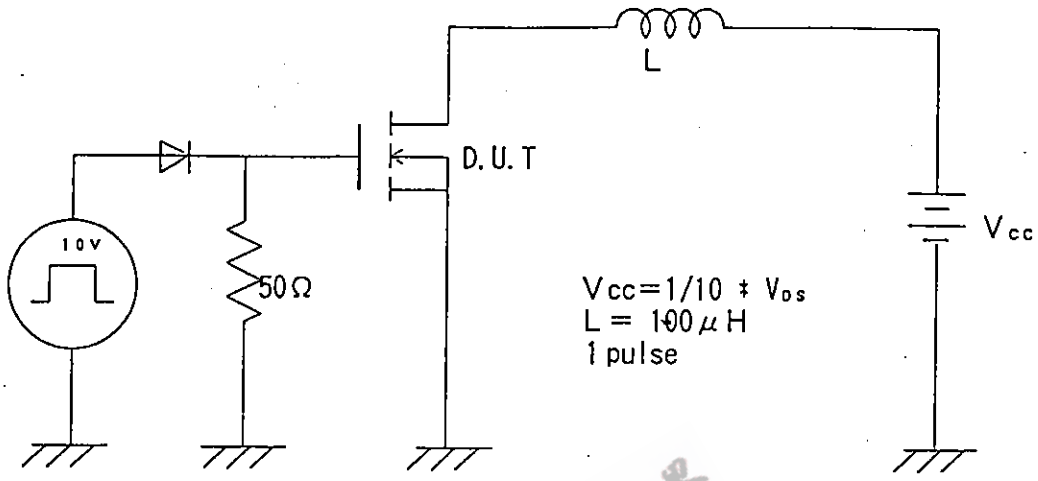
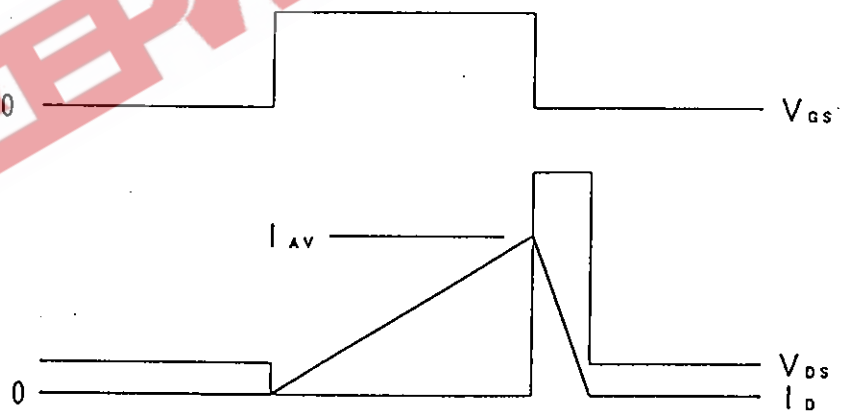


Fig.2 Operating waveforms



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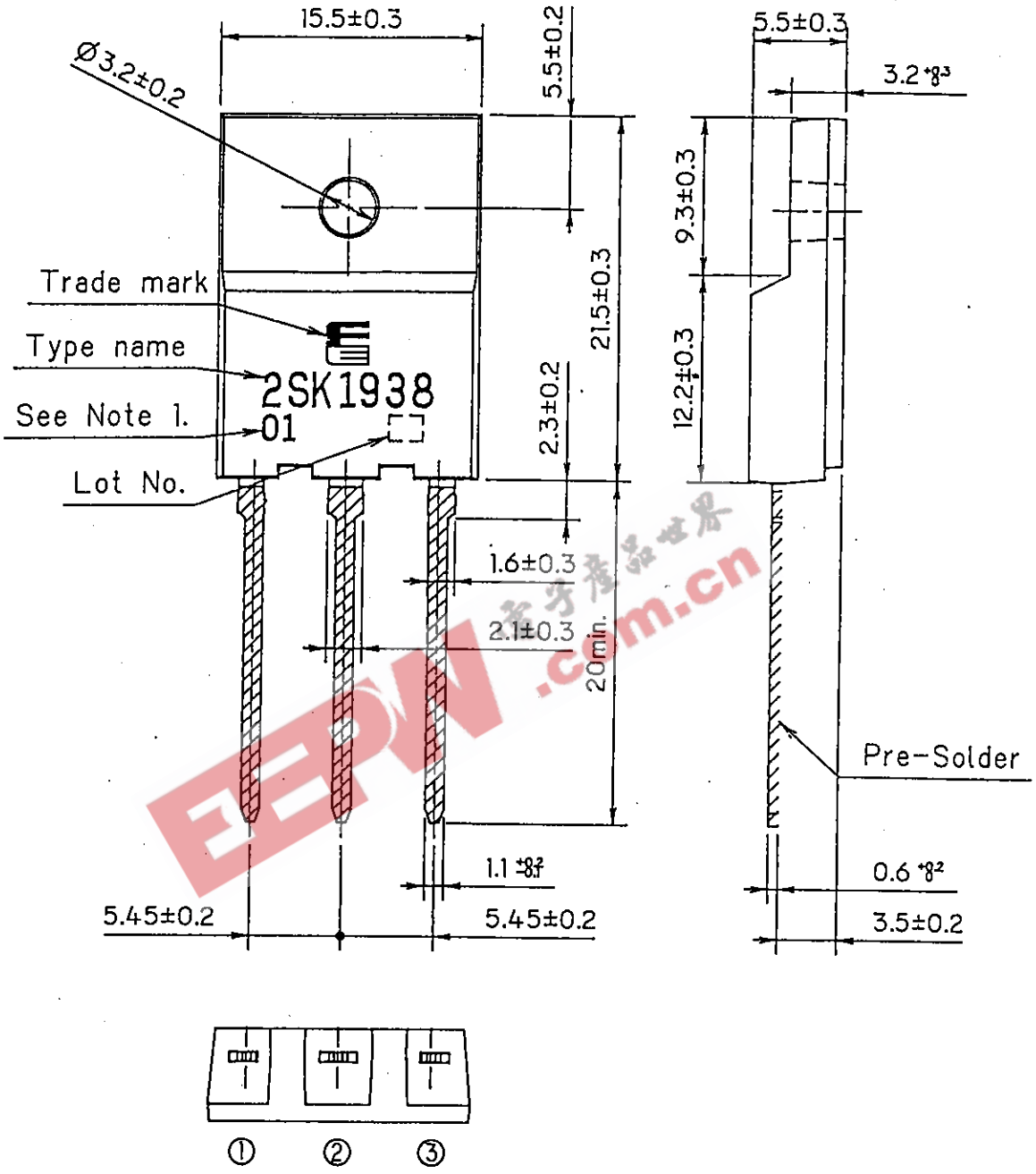
TYPE : 2SK1938-01R



CONNECTION

① GATE
② DRAIN
③ SOURCE

Note 1. Guaranteed mark of avalanche ruggedness.

DIMENSIONS ARE IN MILLIMETERS.

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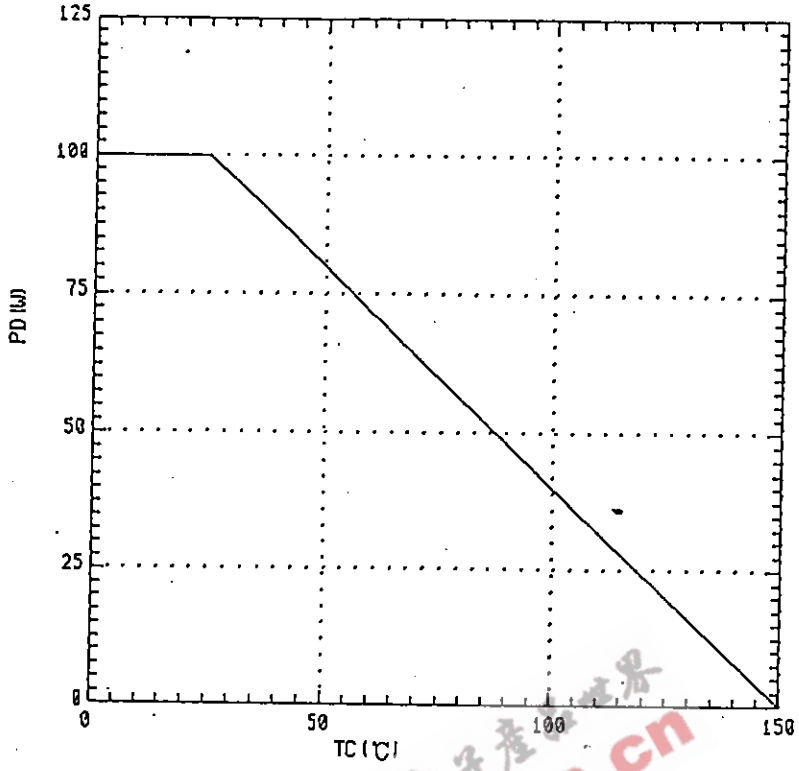
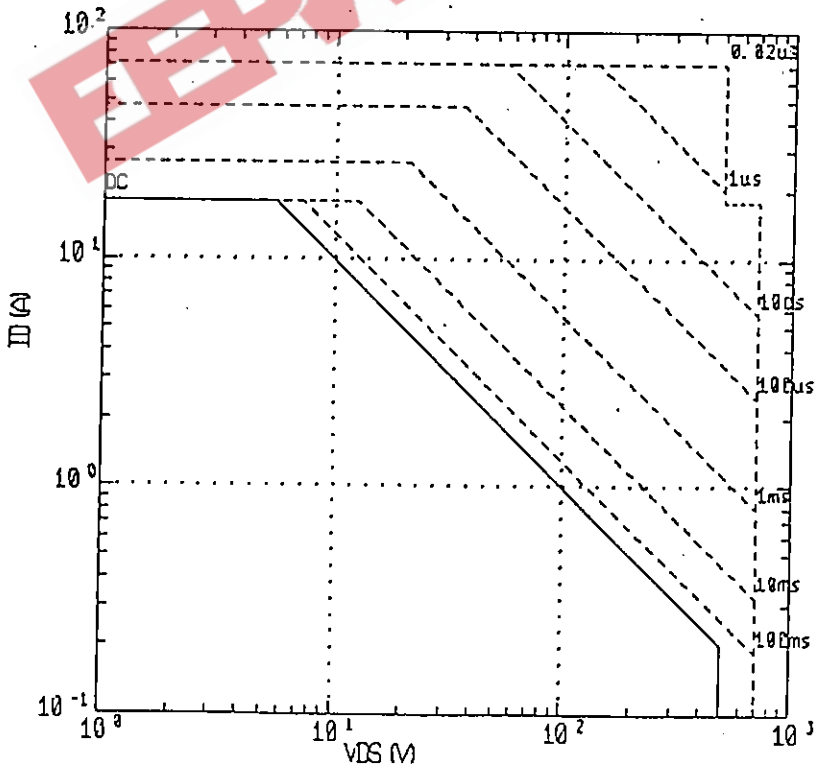
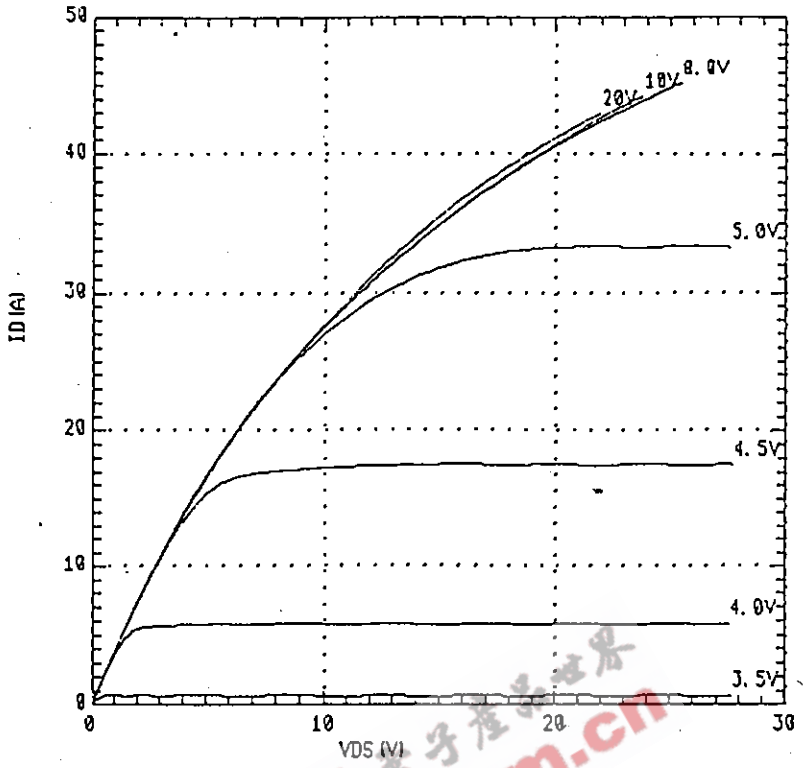
Power Dissipation
PD=f(TC)



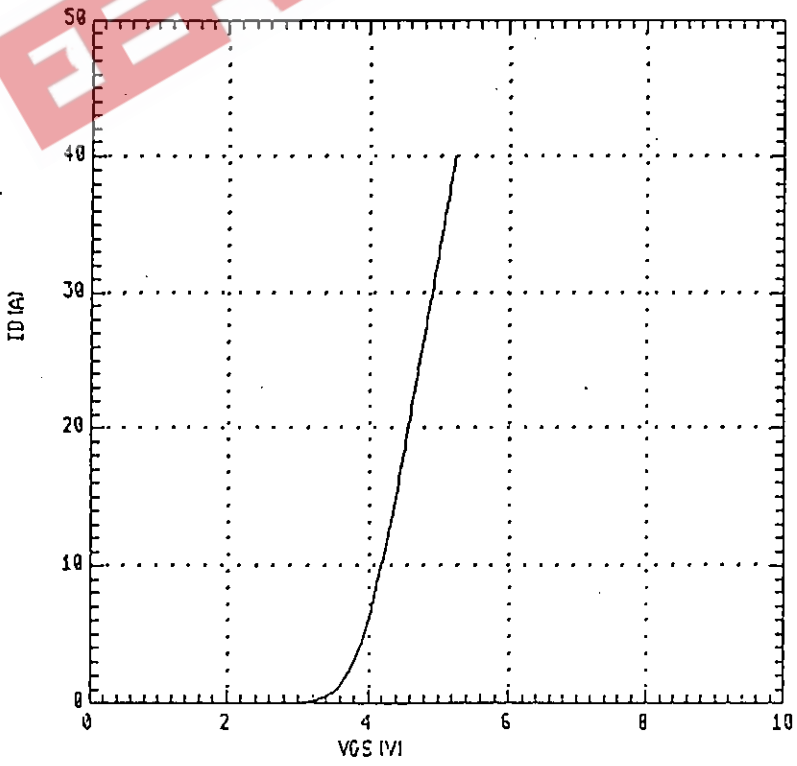
Safe operating area
ID=f(VDS):D=0.01,Tc=25℃



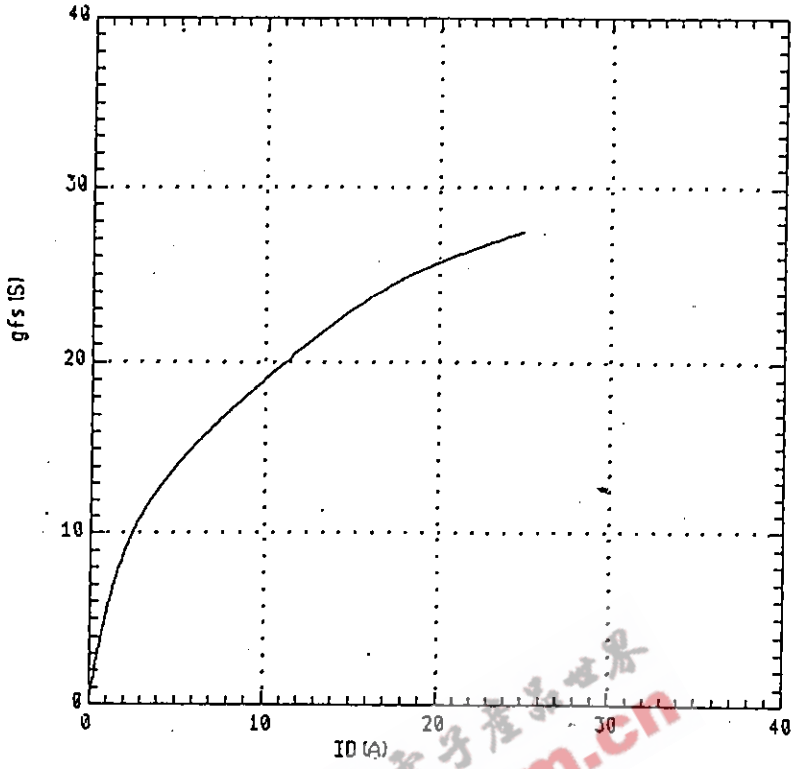
Typical output characteristics
ID=f(VDS):80μs pulse test,Tch=25°C



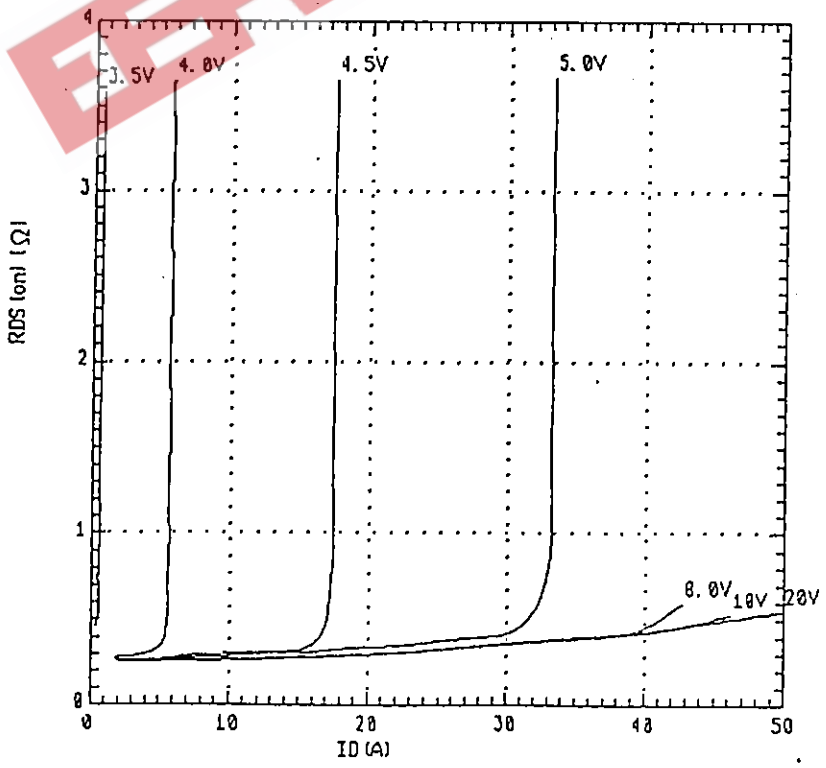
Typical Transfer Characteristic
ID=f(VGS):80μs pulse test,VDS=25V



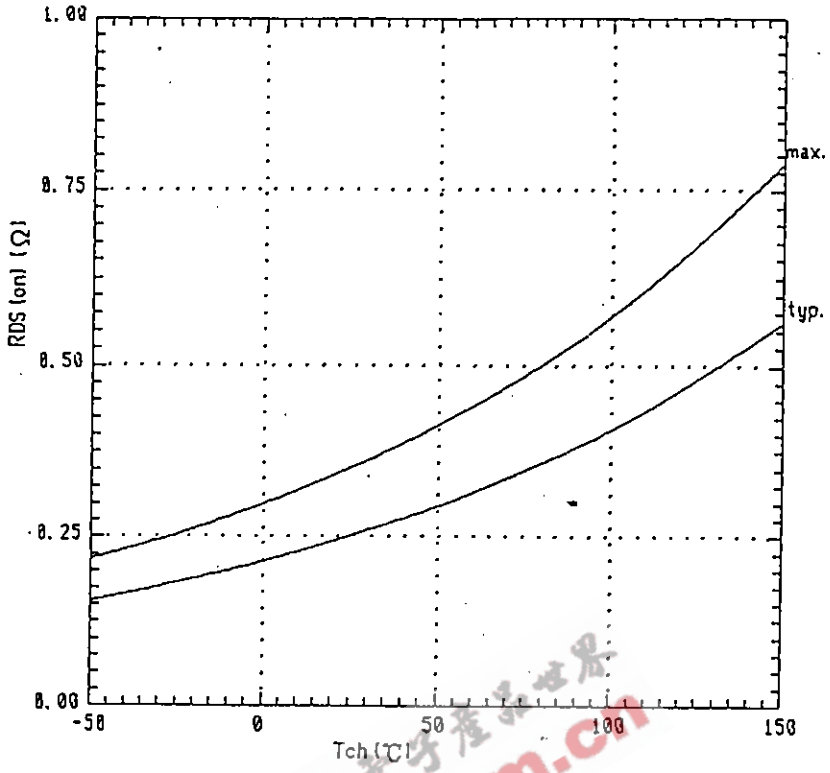
Typical Transconductance
gfs=f(ID):80μs pulse test, VDS=25V, Tch=25℃



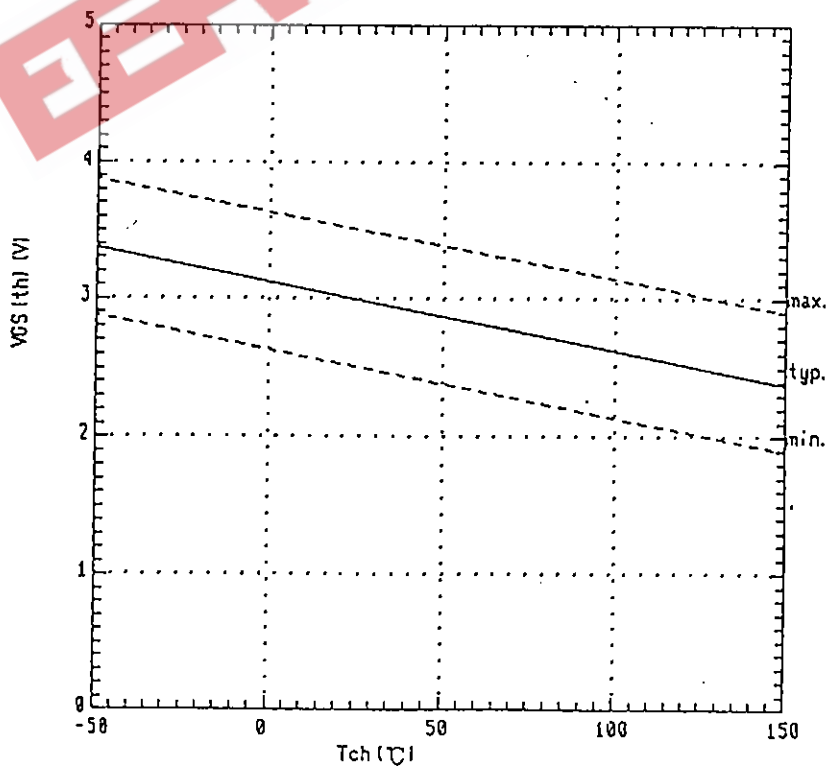
Typical Drain-source on-state resistance
RDS(on)=f(ID):80μs pulse test, Tch=25℃



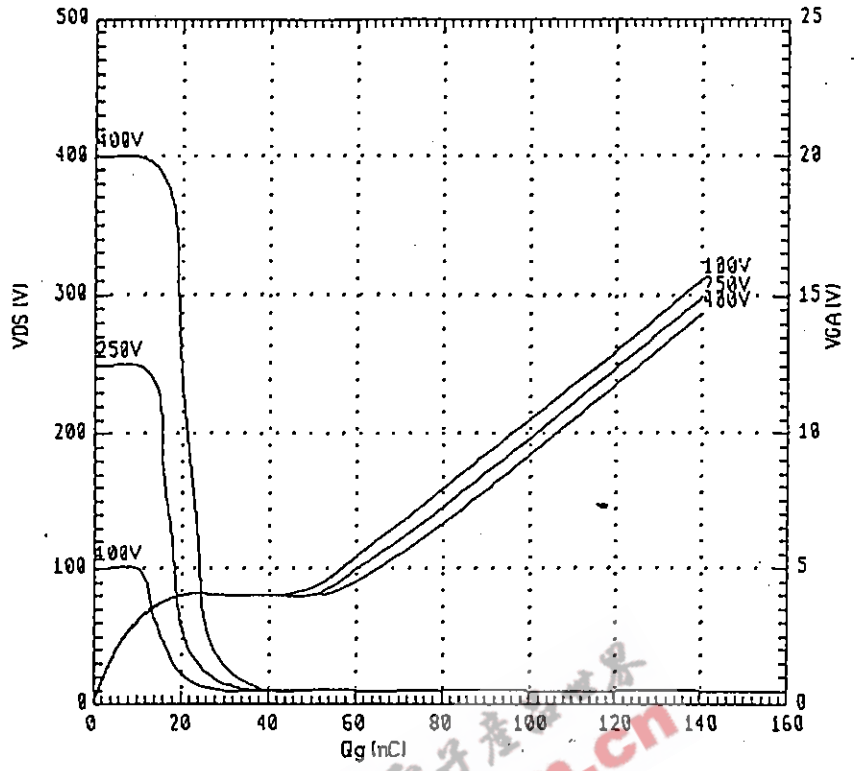
Drain-source on-state resistanse
RDS(on)=f(Tch):ID=9A,VGS=10V



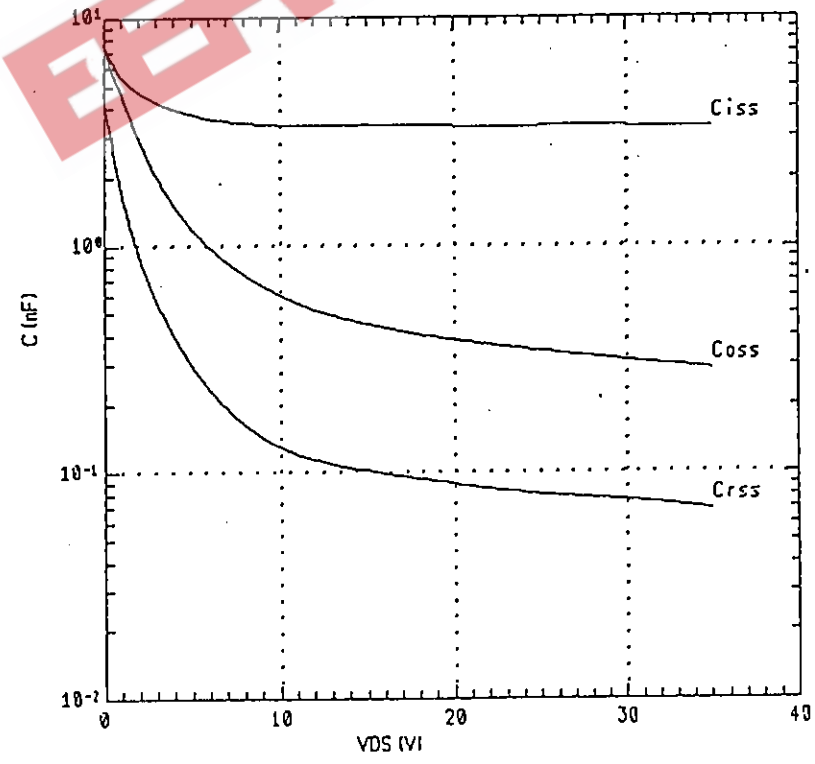
Gate threshold voltage
VGS(th)=f(Tch):VDS=VGS,ID=1mA



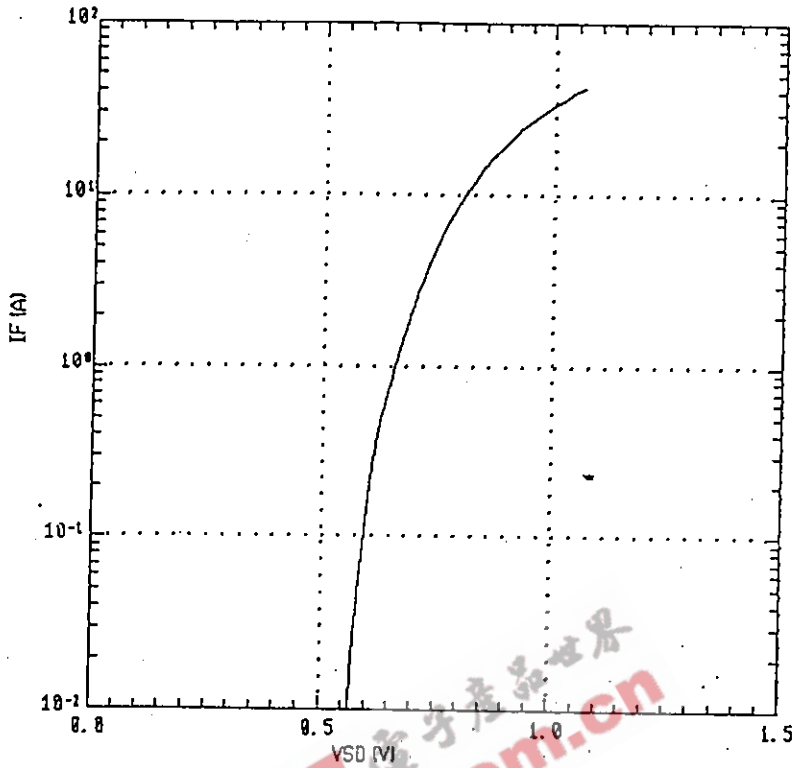
Typical gate charge characteristics
VGS=f(Qg):ID=18A



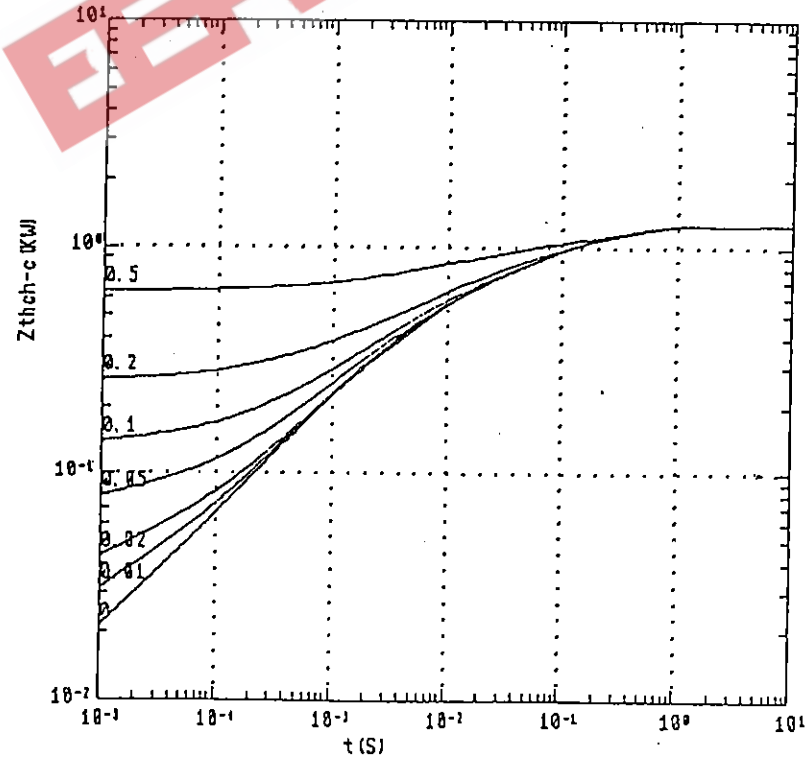
Typical capacitances
C=f(VDS):VGS=0V, f=1MHz



Farward characteristic of reverse diode
IF=f(VSD):80μs pulse test



Transient thermal
impedance Zthch-c=f(t) parameter:D=t/T



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