SPECIFICATION

DEVICE NAME : Power MOSFET

TYPE NAME : 2SK1390-R

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.

1. Scope
   This specifies Fuji power MOSFET 2SK1390-R

2. Construction N-channel enhancement mode power MOSFET

3. Application for switching

4. Outview TO-3PF Outview See to 4/10 page

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

Description	Symbol	Characteristics	Unit	Remarks
Drain-source voltage	V_{DS}	60	V	
Drain-gate voltage	V_{DGR}	60	V	R_{GS}=20KΩ
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	80	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		60			V
Gate threshold voltage	$V_{GS}(th)$	I_D =1mA $V_{DS}=V_{GS}$		1.0	1.5	2.5	V
Zero gate voltage drain current	I_{DSS}	V_{DS}= 60V 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}=±20V V_{DS}= 0V			10	100	nA
Drain-source on-state resistance	$R_{DS}(on)$	I_D = 25A	V_{GS}= 4V		0.022	0.040	Ω
			V_{GS}= 10V		0.015	0.025	

Dynamic ratings

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Forward transconductance	g f s	I_D = 25A V_{DS} = 25V	20	36		S
Input capacitance	C iss	V_{DS}=25V V_{GS}= 0V f =1MHz		2600	3900	pF
Output capacitance	Coss			800	1200	pF
Reverse transfer capacitance	Crss			400	600	pF
Turn-on time	t d(on)	V_{CC}= 30V V_{GS}= 10V I_D = 50A R_{GS}= 25Ω		20	30	ns
	t r			130	200	ns
Turn-off time	t d(off)			400	600	ns
	t f			170	250	ns

Reverse diode

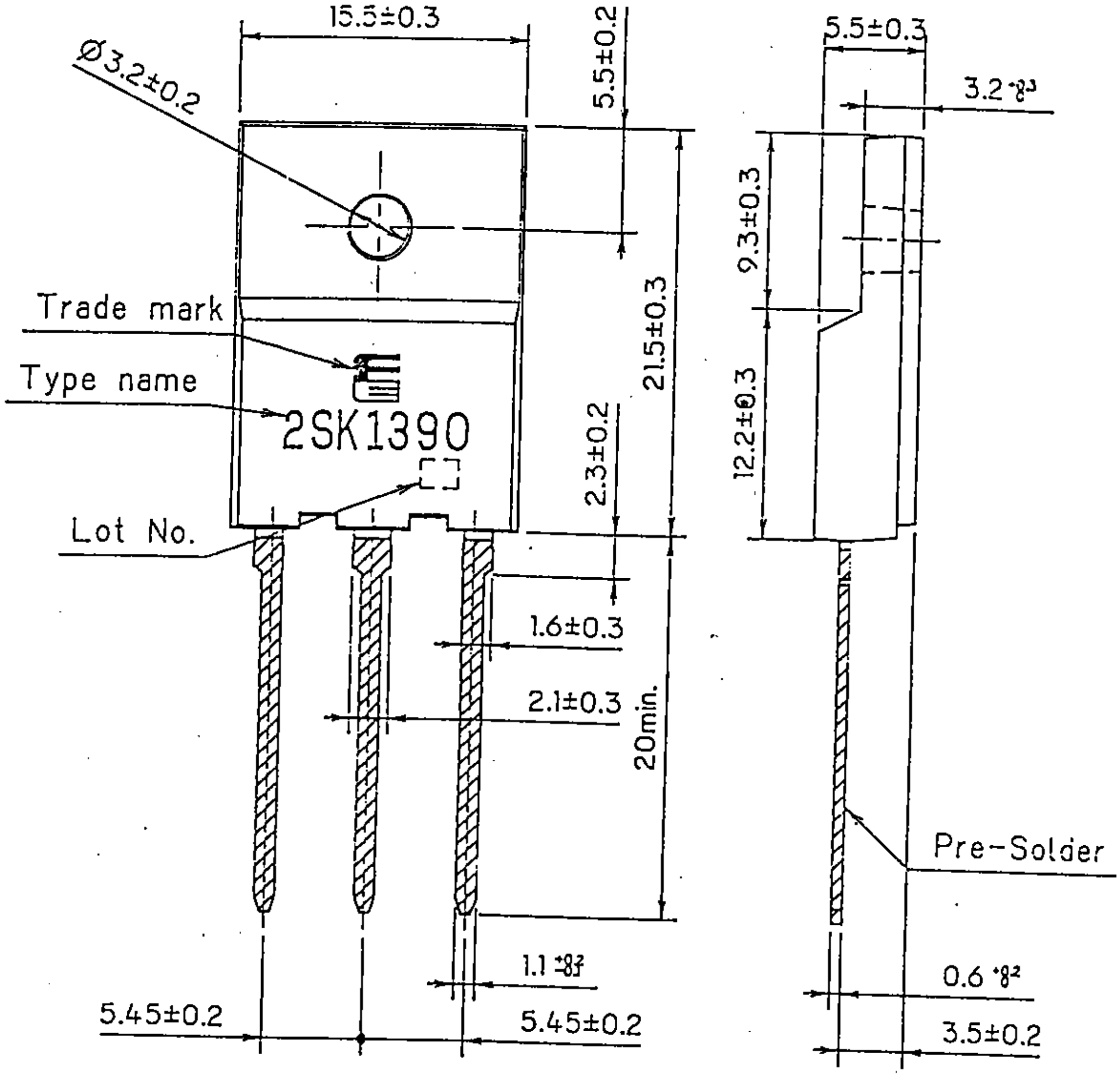
Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Diode forward on-voltage	V_{SD}	I_F = 2 × I_{DR} V_{GS}=0V, T_{ch}=25℃		1.35	2.00	V
Reverse recovery time	t_{rr}	I_F = I_{DR} V_{GS}=0V $-dI_F/dt$=100A/μs T_{ch}=25℃		100		ns
Reverse recovery charge	Q_{rr}			0.5		μC

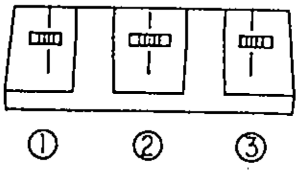
7. Thermal resistance

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Thermal resistance	Rth_{ch}-c				1.56	℃/W
	Rth_{ch}-a				30.0	℃/W

FUJI POWER MOSFET

TYPE : 2SK1390-R





CONNECTION

① GATE
② DRAIN
③ SOURCE

DIMENSIONS ARE IN MILLIMETERS.

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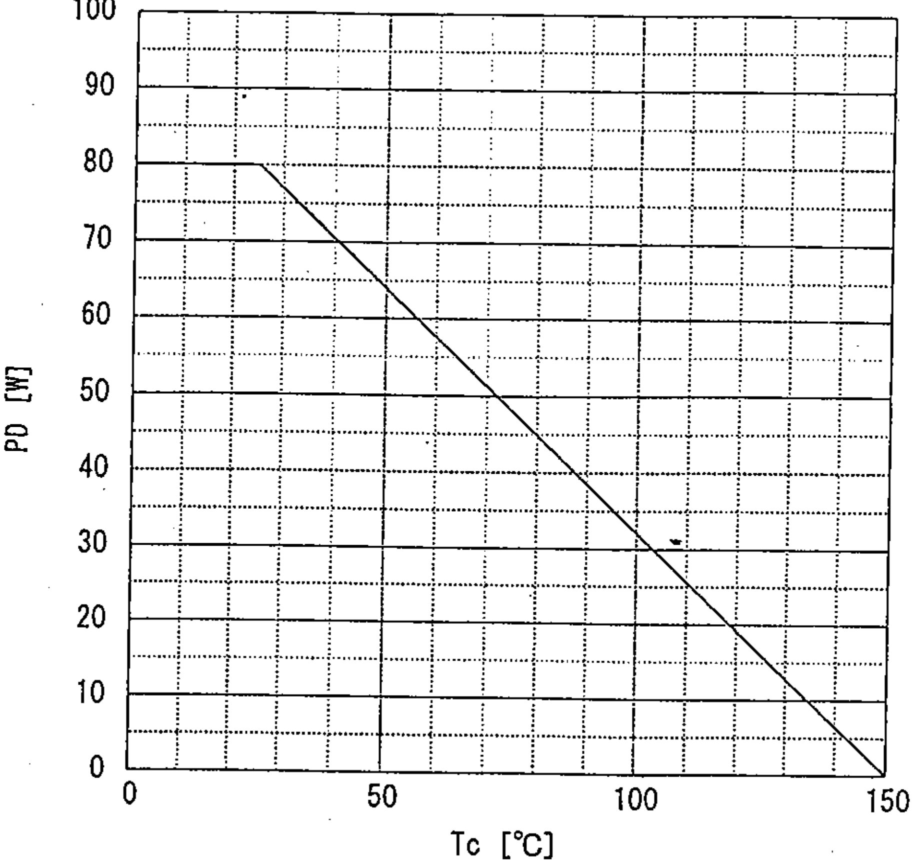
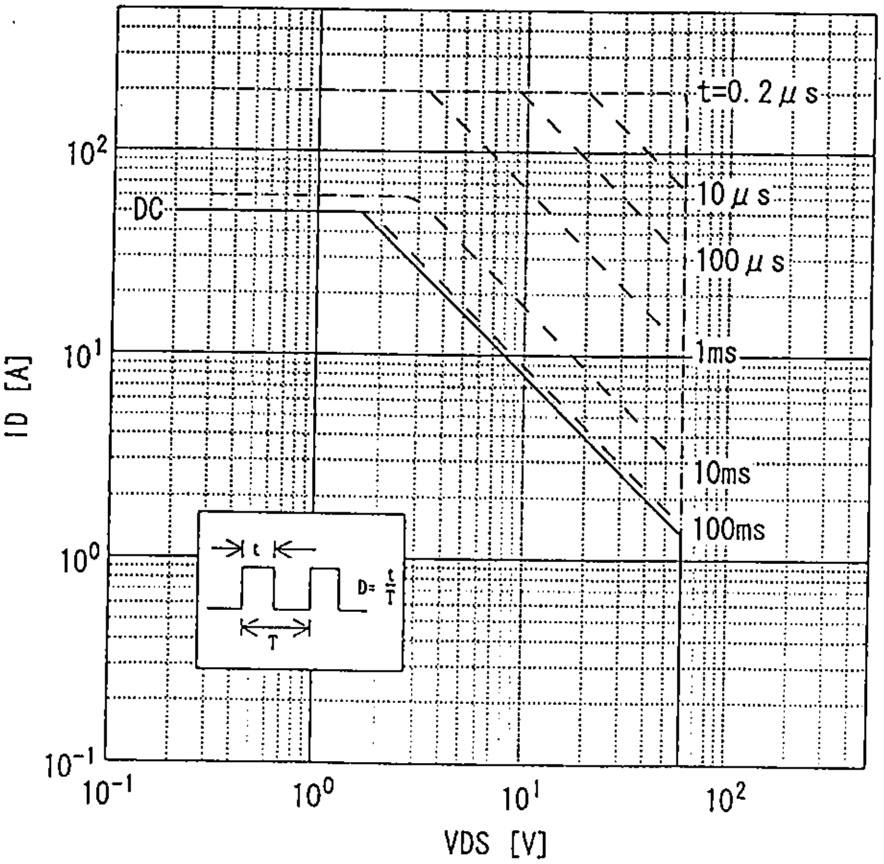
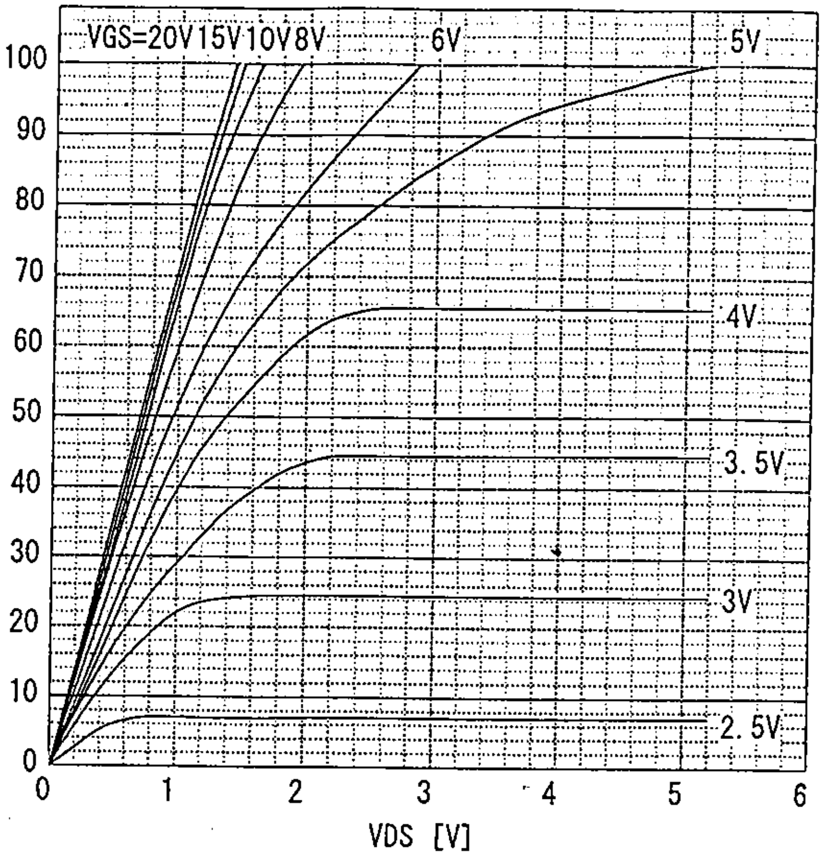
Power Dissipation
PD=f(Tc)



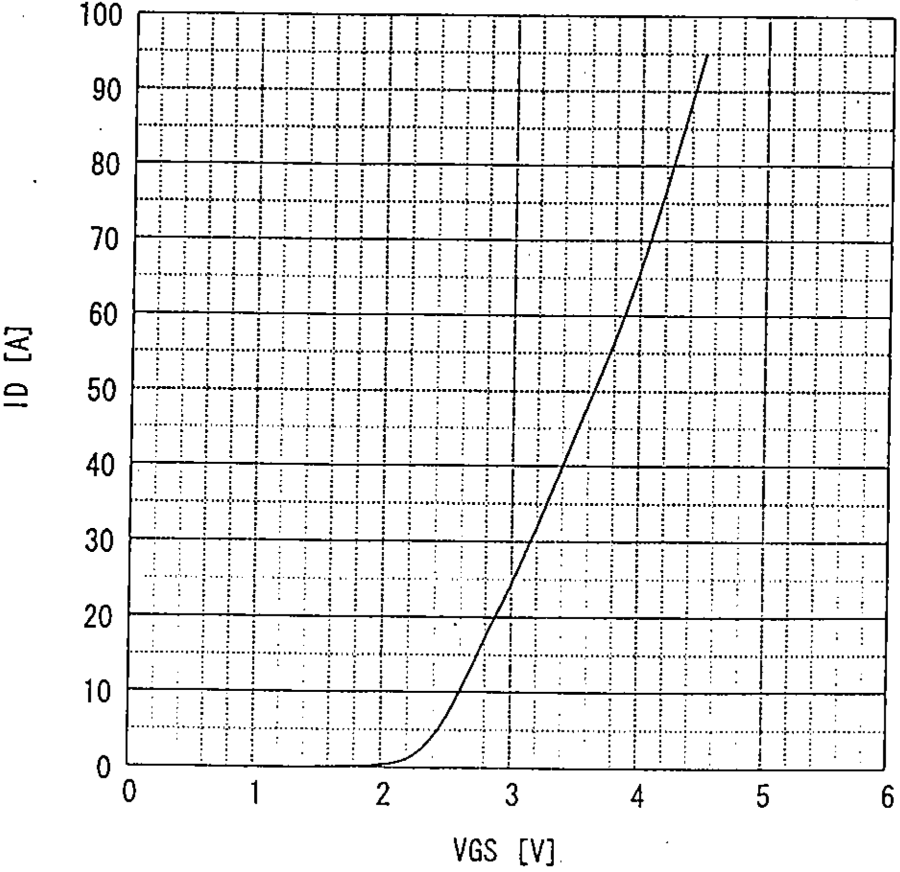
Safe operating area
ID=f(VDS):D=0.01, Tc=25℃



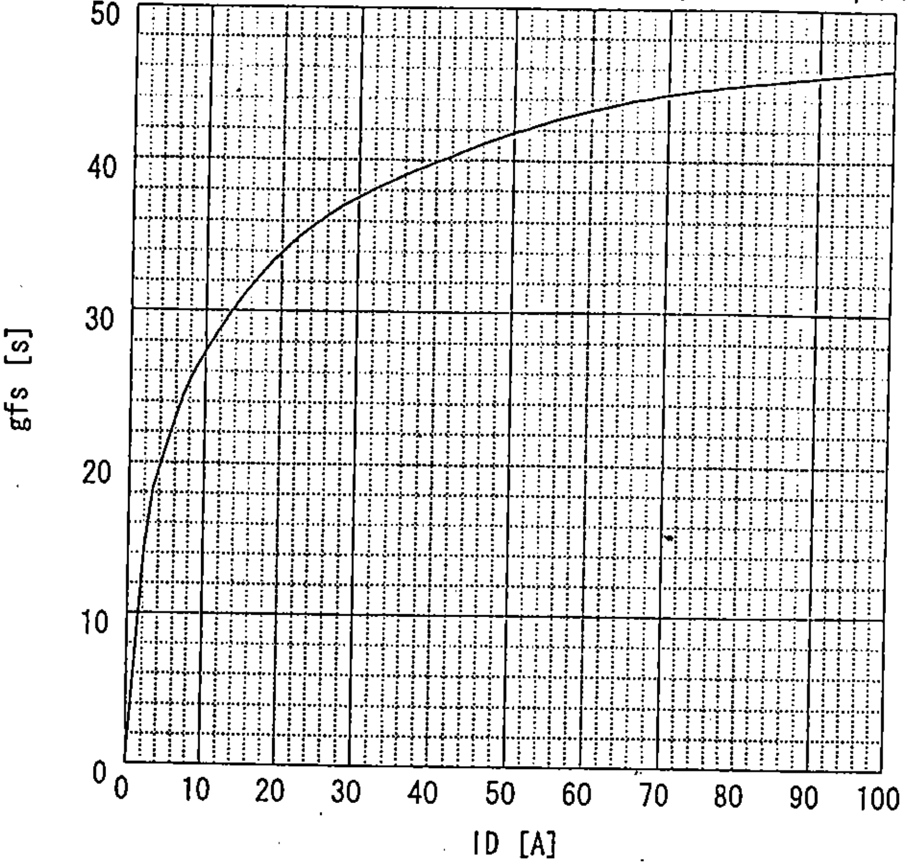
Typical output characteristics
ID=f(VDS):80μs pulse test, Tc=25℃



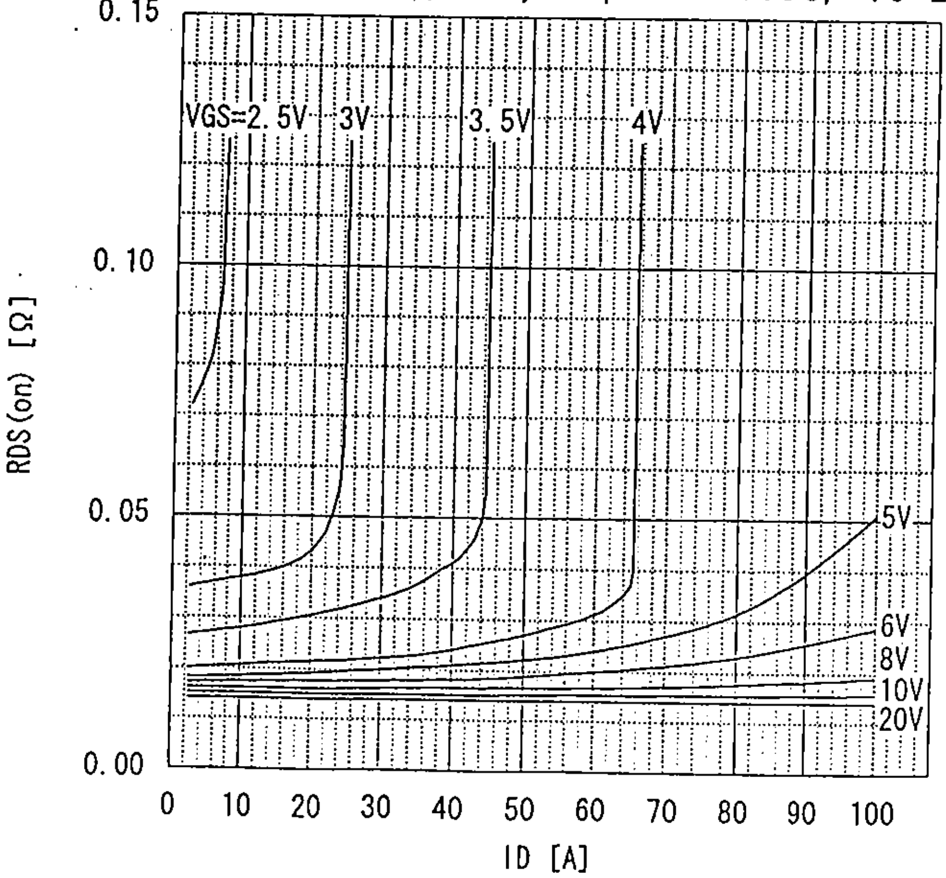
Typical transfer characteristic
ID=f(VGS):80μs pulse test, VDS=25V, Tch=25℃



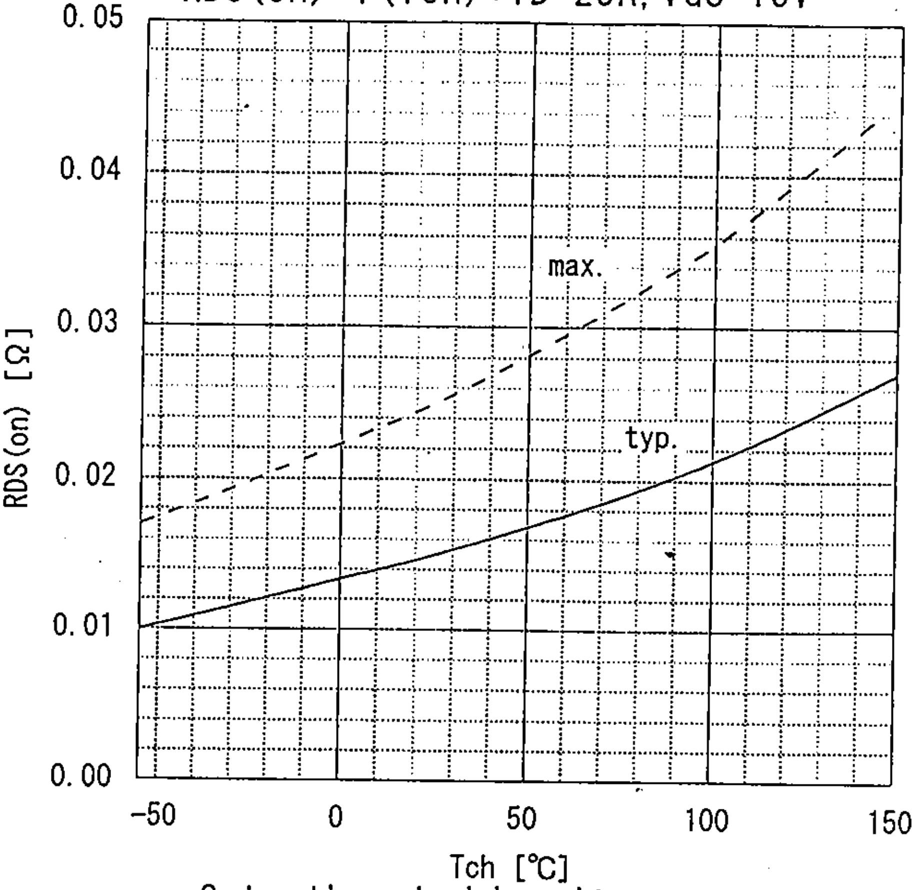
Typical forward transconductance
gfs=f(ID):80μs pulse test, VDS=25V, Tch=25℃



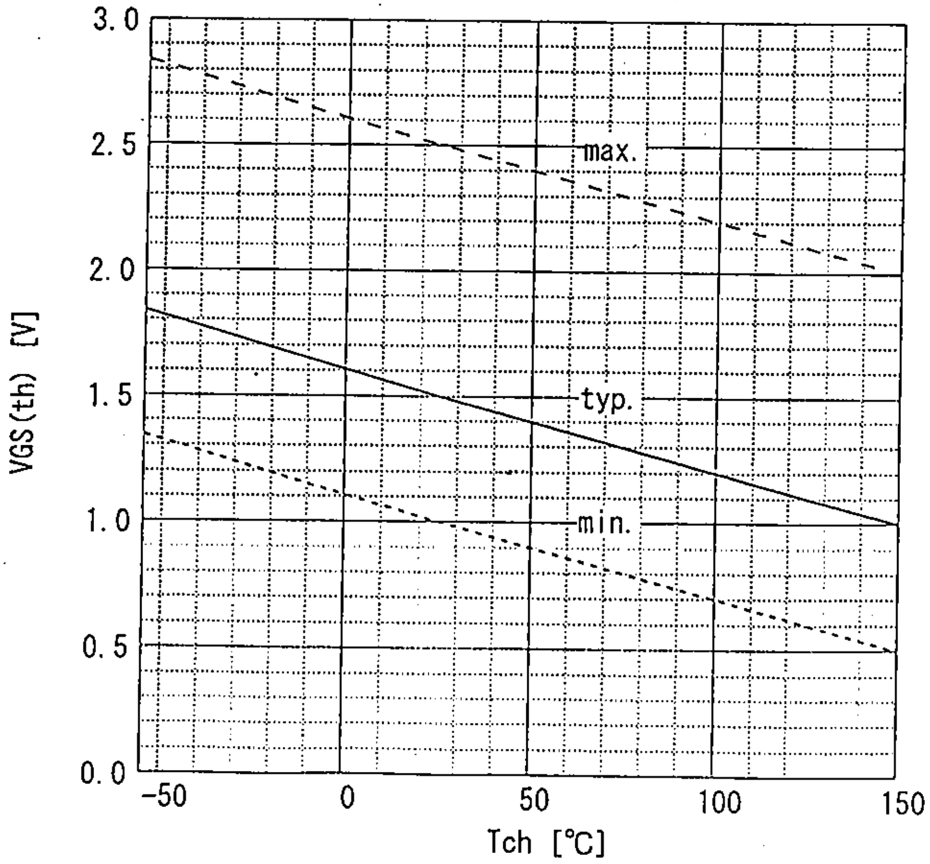
Typical drain-source on-state resistance
RDS(on)=f(ID):80μs pulse test, Tc=25℃



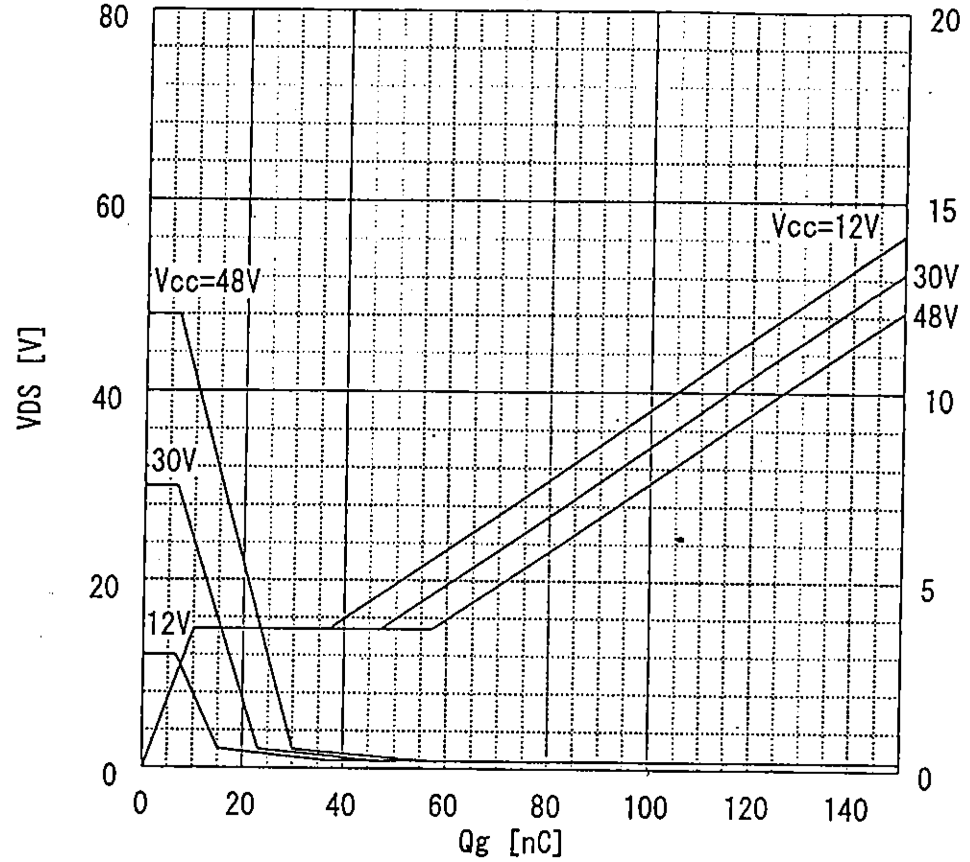
Drain-source on-state resistance
RDS(on)=f(Tch):ID=25A, VGS=10V



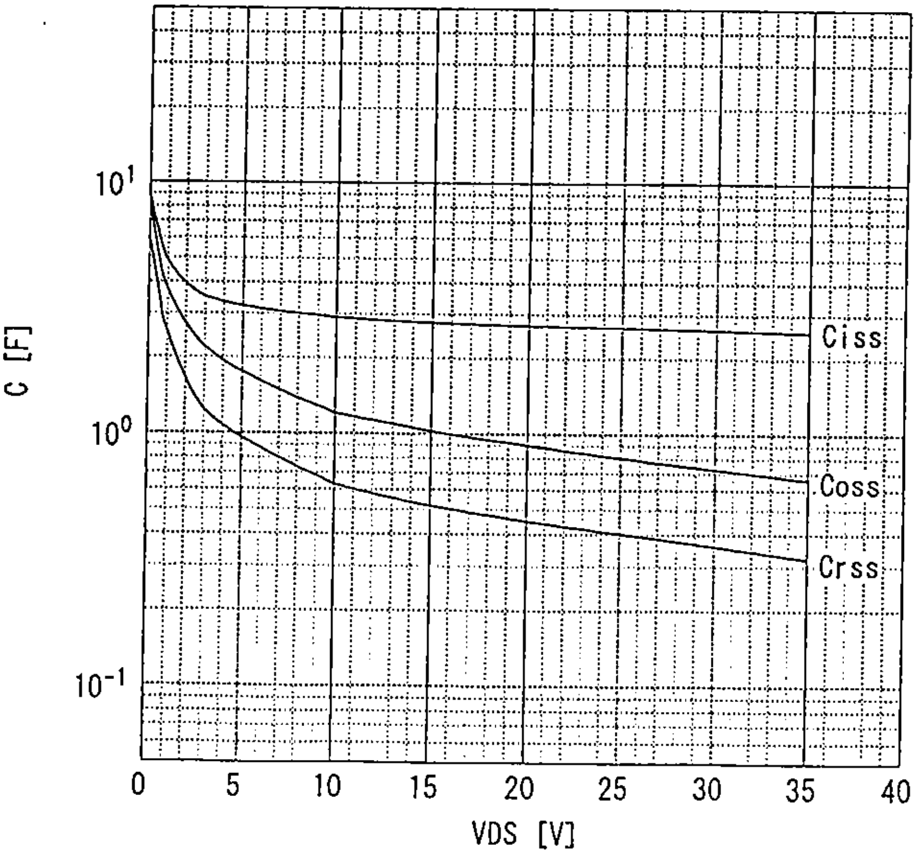
Gate threshold voltage
VGS(th)=f(Tch):ID=1mA, VDS=VGS



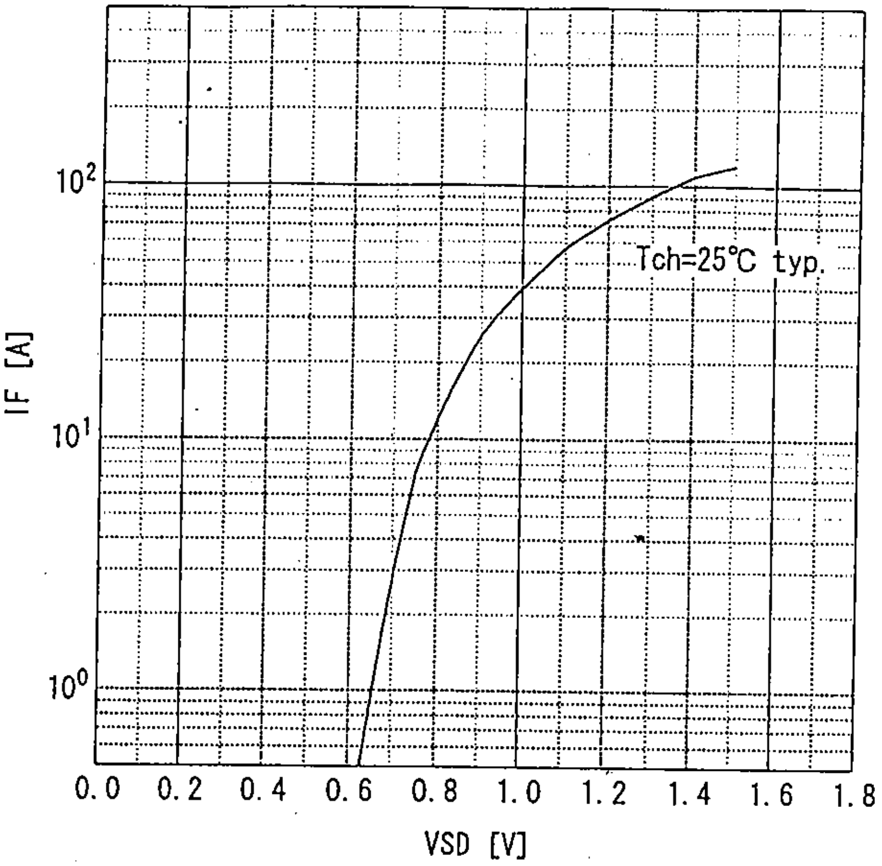
Typical gate charge characteristic
VGS=f(Qg):ID=50A, Tc=25℃



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



Forward characteristic of reverse of diode
IF=f(VSD):80μs pules test,VGS=0V



Transient thermal impedande
Zthch=f(t) parameter:D=t/T