2SK2808-01MR FUJI POWER MOSFET

Fuji Electric

200509

N-CHANNEL SILICON POWER MOSFET

FAP-IIIB SERIES

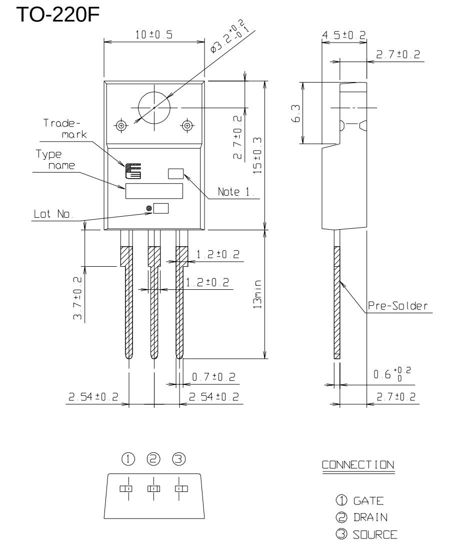
■ Features

- High speed switching
- Low on-resistance
- No secondary breakdown
- Low driving power
- High voltage
- Avalanche-proof

■ Applications

- Switching regulators
- DC-DC converters
- General purpose power amplifier

■ Outline Drawings



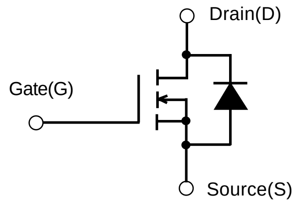
■ Maximum ratings and characteristics

● Absolute maximum ratings (Tc=25°C unless otherwise specified)

Item	Symbol	Rating	Unit	Remarks
Drain-source voltage	V_{DS}	30	V	
Continuous drain current	I_D	±35	A	
Pulsed drain current	$I_{D[puls]}$	±140	A	
Gate-source peak voltage	V_{GS}	±16	V	
Maximum avalanche energy	E_{AV}	129.3	mJ	*1
Maximum power dissipation	P_D	20	W	
Operating and storage temperature range	T_{ch}	+150	℃	
	T_{stg}	-55 to +150	℃	

*1 L=0.70mH, Vcc=12V

■ Equivalent circuit schematic



● Electrical characteristics (T_c =25°C unless otherwise specified)

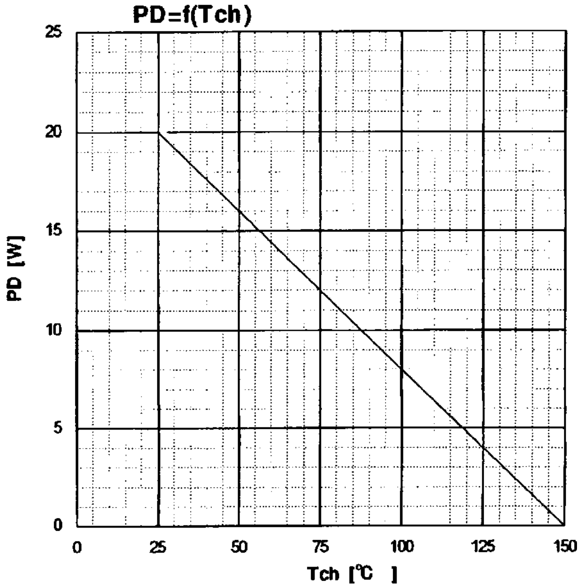
Item	Symbol	Test Conditions		Min.	Typ.	Max.	Units
Drain-source breakdown voltage	$V_{(BR)DSS}$	I_D=1mA V_{GS}=0V		30			V
Gate threshold voltage	$V_{GS(th)}$	I_D=1mA V_{DS}=V_{GS}		1.0	1.5	2.0	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=30V V_{GS}=0V	T_{ch}=25°C		10	500	µA
			T_{ch}=125°C		0.2	1.0	mA
Gate-source leakage current	I_{GSS}	V_{GS}=±16V V_{DS}=0V			10	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	I_D=17.5A V_{GS}=10V	V_{GS}=4V		22	30	mΩ
			V_{GS}=10V		14	20	mΩ
Forward transconductance	g_{fs}	I_D=17.5A V_{DS}=25V		16	33		S
Input capacitance	C_{iss}	V_{DS}=25V			1100	1650	pF
Output capacitance	C_{oss}	V_{GS}=0V			550	830	
Reverse transfer capacitance	C_{rss}	f=1MHz			240	360	
Turn-on time	$t_{d(on)}$	V_{CC}=15V R_G=10 Ω			9	15	ns
	t_r	I_D=35A			15	23	
Turn-off time	$t_{d(off)}$	V_{GS}=10V			75	115	
	t_f				50	75	
Avalanche capability	I_{AV}	L=100µH T_{ch}=25°C		35			A
Diode forward on-voltage	V_{SD}	I_F=2xI_{DR} V_{GS}=0V T_{ch}=25°C			0.98	1.71	V
Reverse recovery time	t_{rr}	I_F=2xI_{DR} V_{GS}=0V			50		ns
Reverse recovery charge	Q_{rr}	-di/dt=100A/µs T_{ch}=25°C			0.08		µC

● Thermal characteristics

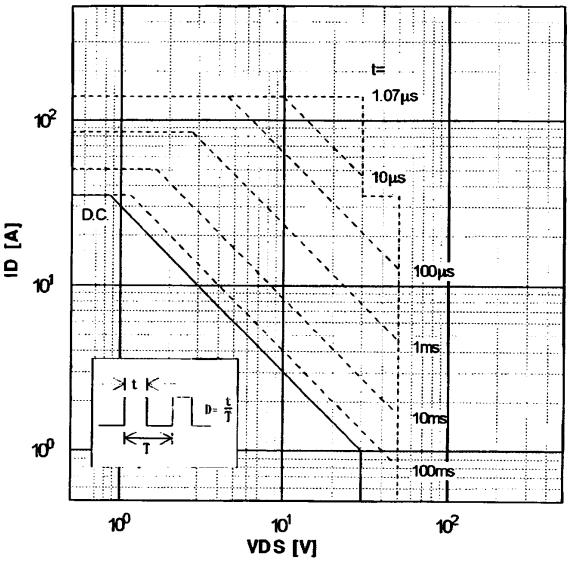
Item	Symbol	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$			6.25	°C/W
	$R_{th(ch-a)}$			62.5	°C/W

Characteristics

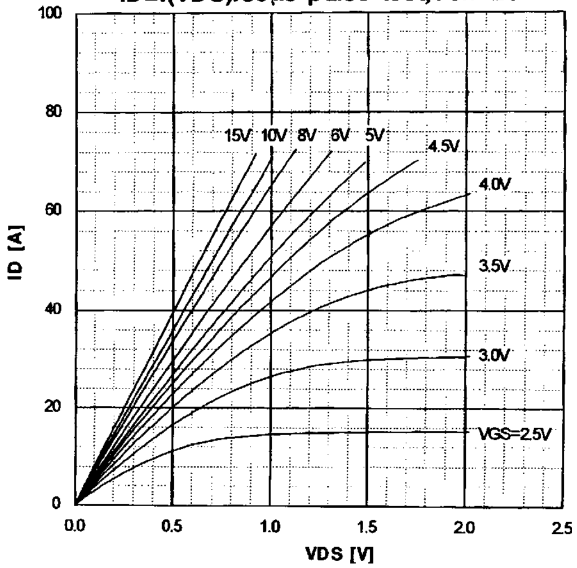
Allowable Power Dissipation vs. Tch
PD=f(Tch)



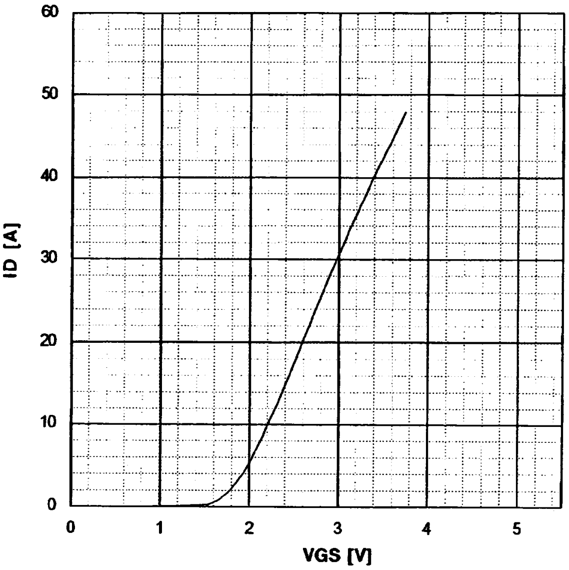
Safe operating area
ID=f(VDS):D=0.01,Tc=25℃



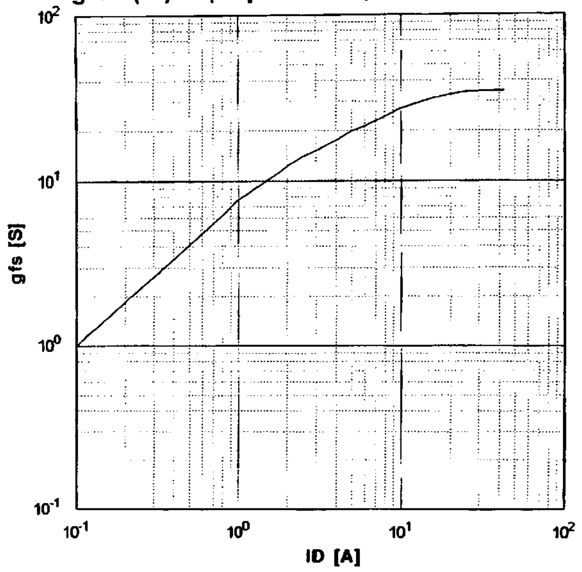
Typical Output Characteristics
ID=f(VDS):80μs pulse test,Tch=25℃



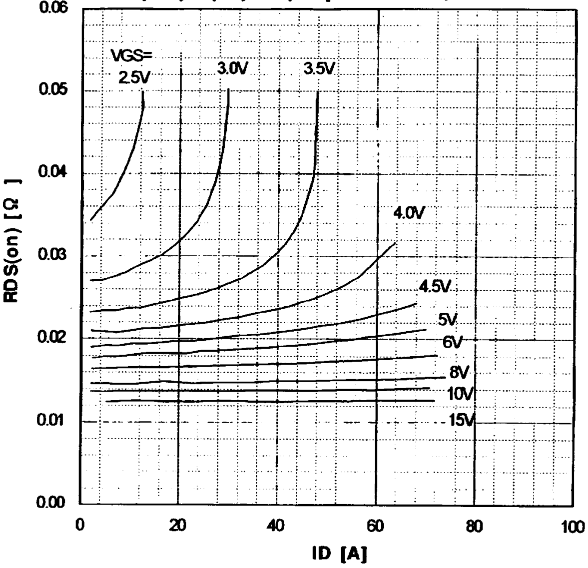
Typical Transfer Characteristic
ID=F(VGS):80μs pulse test,VDS=25V,Tch=25℃

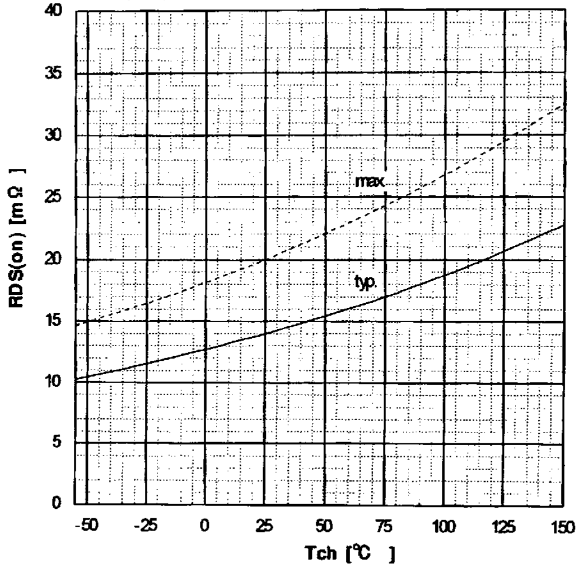


Typical Transconductance
gfs=f(ID):80μs pulse test,VDS=25V,Tch=25℃

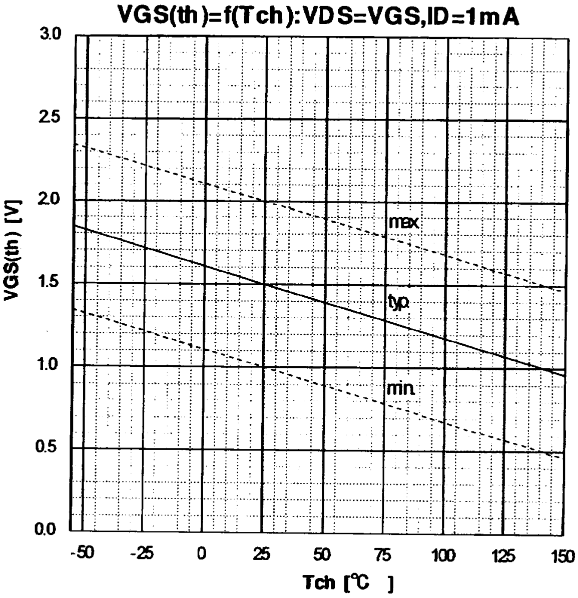


Typical Drain-Source on-state Resistance vs. ID
RDS(on)=f(ID):80μs pulse test,Tch=25℃

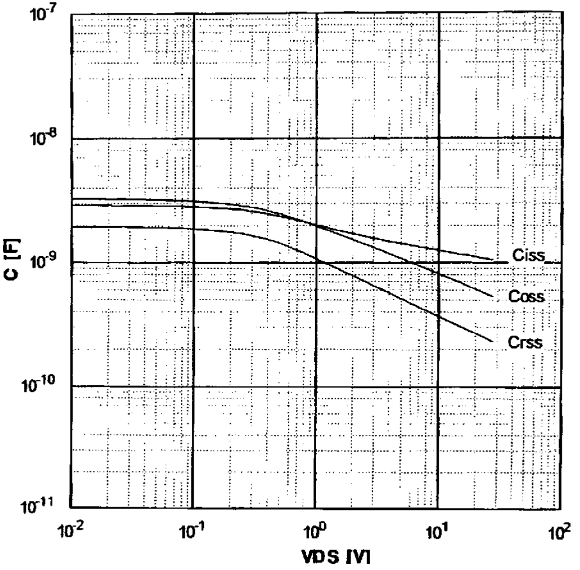




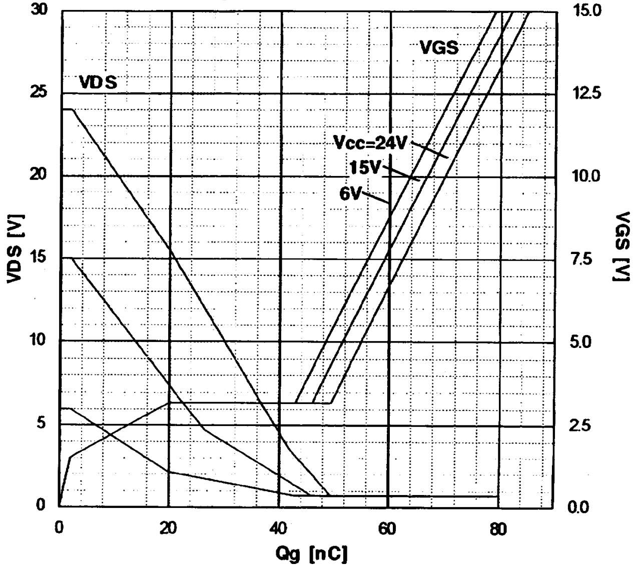
Drain-Source On-state Resistance vs. Tch
RDS(on)=f(Tch):ID=17.5A,VGS=10V



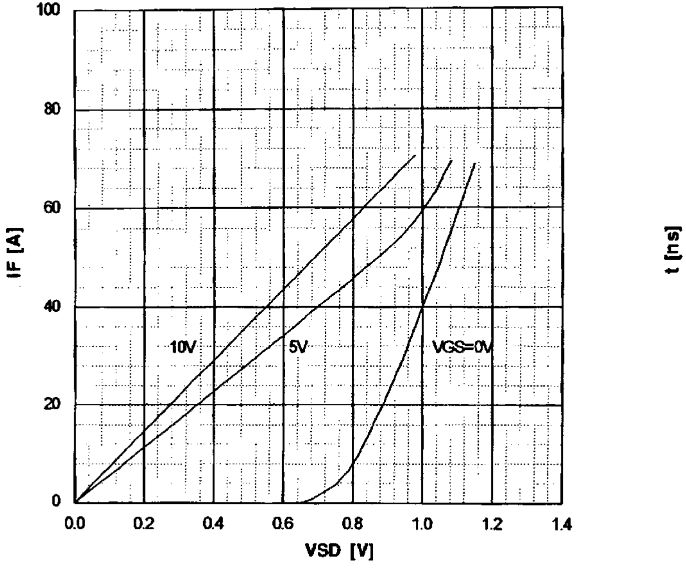
Gate Threshold Voltage vs. Tch
VGS(th)=f(Tch):VDS=VGS,ID=1mA



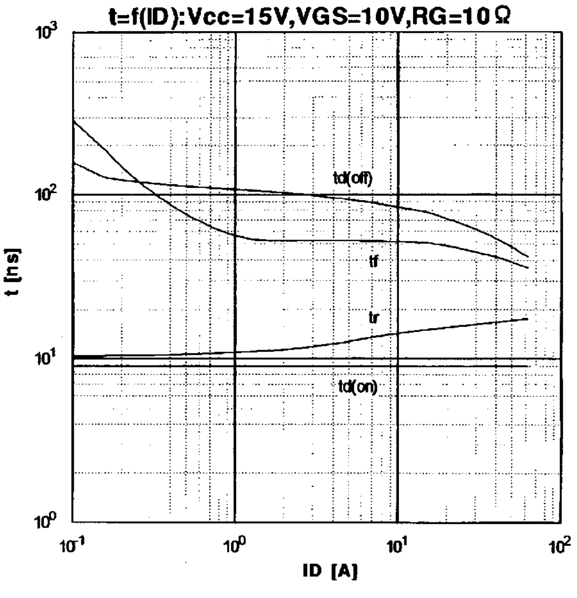
Typical Capacitances vs. VDS
C=f(VDS):VGS=0V,f=1MHz



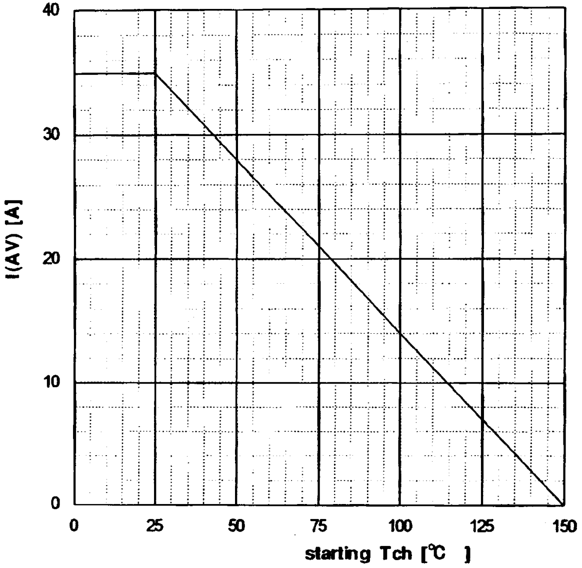
Typical Gate Charge Characteristics
VGS=f(Qg):ID=35A,Tch=25℃



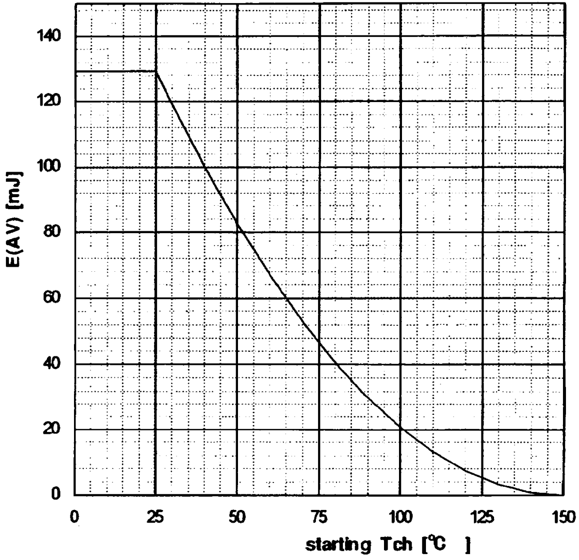
Typical Forward Characteristics of Reverse Diode
IF=f(VSD):80μs pulse test,Tch=25℃



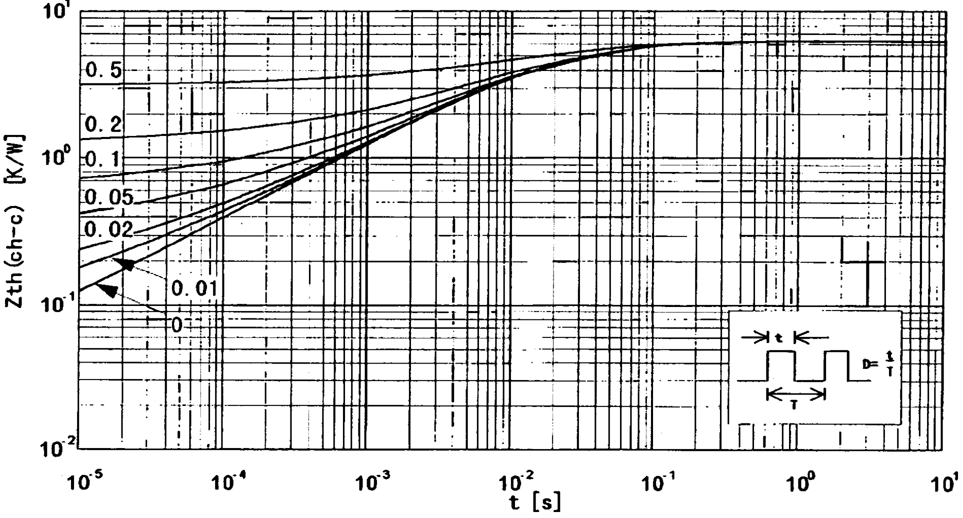
Typical Switching Characteristics vs. ID
t=f(ID):Vcc=15V,VGS=10V,RG=10Ω



Maximum Avalanche Current vs. starting Tch
I(AV)=f(starting Tch)



Maximum Avalanche Energy vs. starting Tch
E(AV)=f(starting Tch):Vcc=12V,I(AV)≦ 35A



Transient thermal impedande
Zth(ch-c)=f(t) parameter:D=t/T