2SK3537-01MR

200304

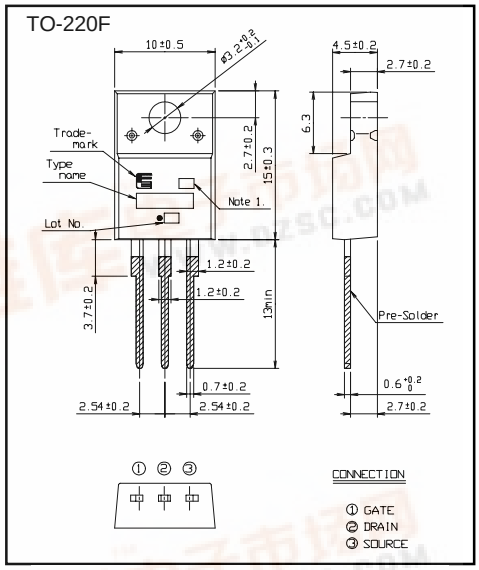
FUJI POWER MOSFET
Super FAP-G Series

N-CHANNEL SILICON POWER MOSFET

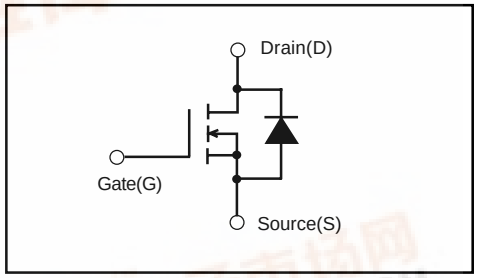
■ Features
- High speed switching
- Low on-resistance
- No secondary breadown
- Low driving power
- Avalanche-proof

■ Applications
- Switching regulators
- UPS (Uninterruptible Power Supply)
- DC-DC converters

■ Outline Drawings [mm]



■ Equivalent circuit schematic



■ Maximum ratings and characteristicAbsolute maximum ratings

● (Tc=25°C unless otherwise specified)

Item	Symbol		Ratings	Unit
Drain-source voltage	V_{DS}		150	V
	V_{DSX} *5		130	V
Continuous drain current	I_D		±33	A
Pulsed drain current	$I_{D(puls)}$		±132	A
Gate-source voltage	V_{GS}		±20	V
Repetitive or non-repetitive	I_{AR} *2		33	A
Maximum Avalanche Energy	E_{AS} *1		169	mJ
Maximum Drain-Source dV/dt	dVDS/dt *4		20	kV/μs
Peak Diode Recovery dV/dt	dV/dt *3		5	kV/μs
Max. power dissipation	P_D	Ta=25°C	2.16	W
		Tc=25°C	53	
Operating and storage temperature range	T_{ch}		+150	°C
	T_{stg}		-55 to +150	°C

*1 L=0.228mH, Vcc=48V,Tch=25°C, See to Avalanche Energy Graph *2 Tch≦150°C
*3 IF≦-ID, -di/dt=50A/μs, Vcc≦BVDSS, Tch≦150°C *4 VDS≦150V *5 VGS=-20V

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

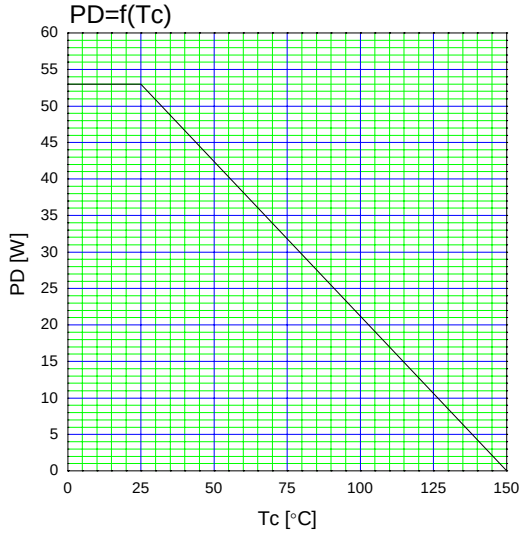
Item	Symbol	Test Conditions		Min.	Typ.	Max.	Units
Drain-source breakdown voltaget	$V_{(BR)DSS}$	I_D=250μA V_{GS}=0V		150			V
Gate threshold voltage	$V_{GS(th)}$	I_D= 250μA V_{DS}=V_{GS}		1.0		2.5	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=150V V_{GS}=0V	T_{ch}=25°C			25	μA
		V_{DS}=120V V_{GS}=0V	T_{ch}=125°C			250	
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=11.5A	V_{GS}=4V		65	90	mΩ
			V_{GS}=5V		60	81	
			V_{GS}=10V		54	70	
Forward transcondutance	g_{fs}	I_D=11.5A V_{DS}=25V		12	24		S
Input capacitance	C_{iss}	V_{DS}=75V V_{GS}=0V f=1MHz			1900	2850	pF
Output capacitance	C_{oss}				200	300	
Reverse transfer capacitance	C_{rss}				17	25.5	
Turn-on time t_{on}	$t_{d(on)}$	V_{CC}=48V I_D=11.5A V_{GS}=10V R_{GS}=10Ω			10	15	ns
	t_r				15	23	
Turn-off time t_{off}	$t_{d(off)}$				85	128	
	t_f				12	18	
Total Gate Charge	Q_G	V_{CC}=48V I_D=23A V_{GS}=10V			46	70	nC
Gate-Source Charge	Q_{GS}				8	12	
Gate-Drain Charge	Q_{GD}				12.5	19	
Avalanche capability	I_{AV}	L=228μH T_{ch}=25°C		33			A
Diode forward on-voltage	V_{SD}	I_F=23A V_{GS}=0V T_{ch}=25°C			1.10	1.65	V
Reverse recovery time	t_{rr}	I_F=23A V_{GS}=0V -di/dt=100A/μs T_{ch}=25°C			0.13		μs
Reverse recovery charge	Q_{rr}				0.6		μC

● Thermalcharacteristics

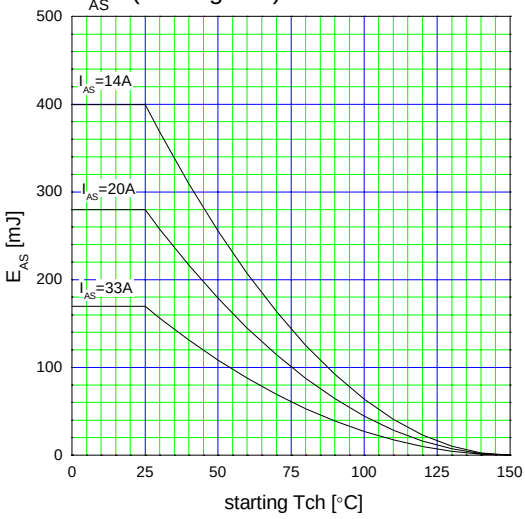
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$	channel to case			2.359	°C/W
	$R_{th(ch-a)}$	channel to ambient			62.5	°C/W

Characteristics

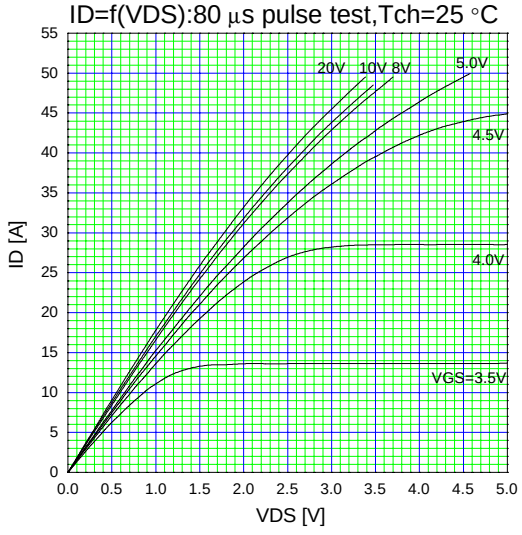
Allowable Power Dissipation
PD=f(Tc)



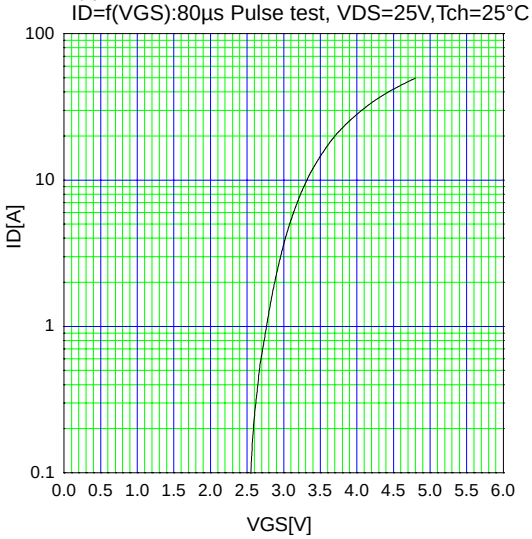
Maximum Avalanche Energy vs. starting Tch
E_{AS}=f(starting Tch):Vcc=48V



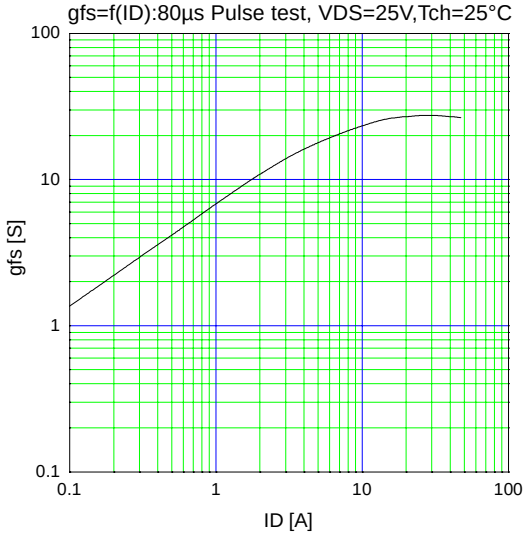
Typical Output Characteristics
ID=f(VDS):80 μs pulse test,Tch=25 °C



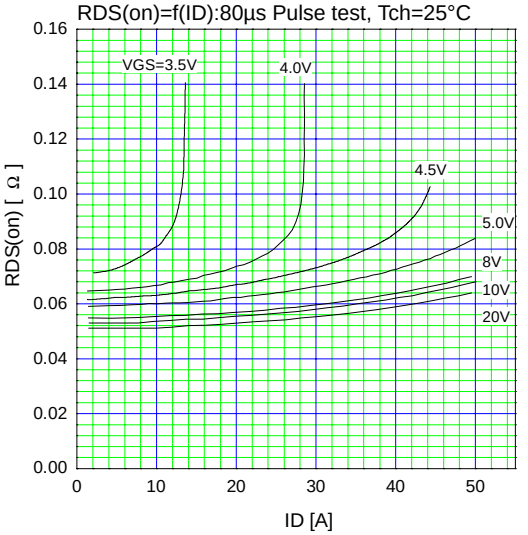
Typical Transfer Characteristic
ID=f(VGS):80μs Pulse test, VDS=25V,Tch=25°C



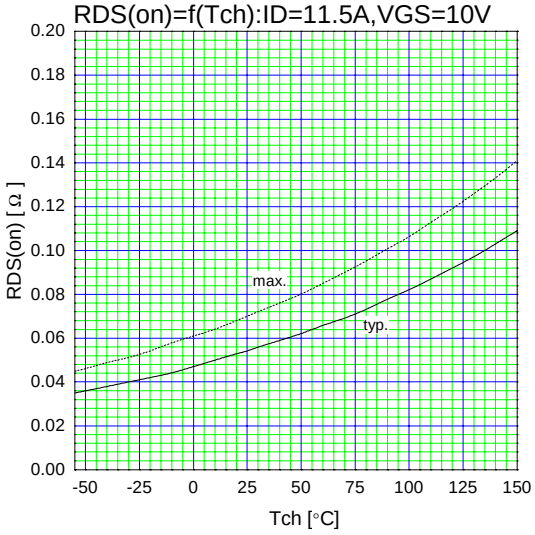
Typical Transconductance
gfs=f(ID):80μs Pulse test, VDS=25V,Tch=25°C



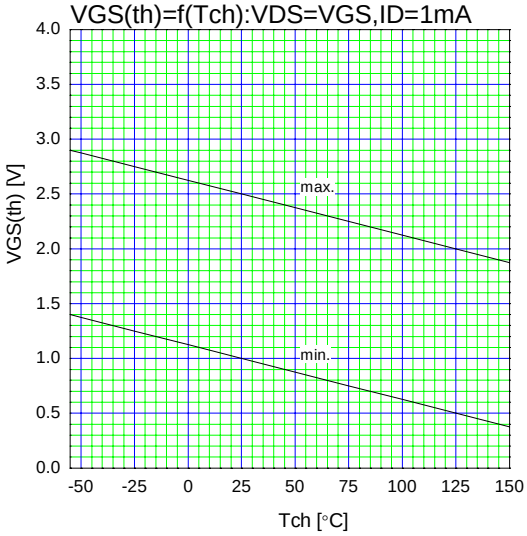
Typical Drain-Source on-state Resistance
RDS(on)=f(ID):80μs Pulse test, Tch=25°C



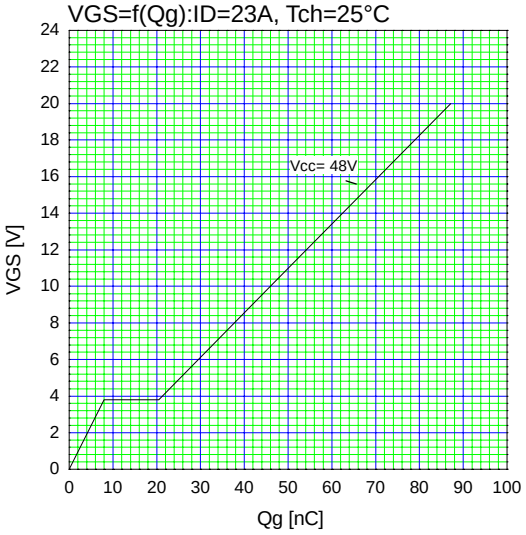
Drain-Source On-state Resistance
RDS(on)=f(Tch):ID=11.5A,VGS=10V



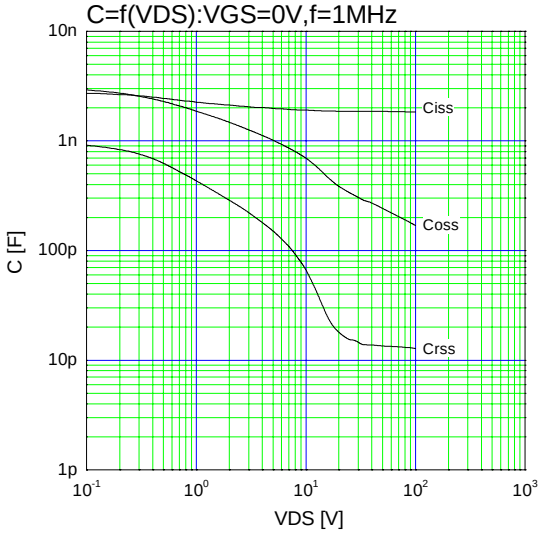
Gate Threshold Voltage vs. Tch
VGS(th)=f(Tch):VDS=VGS,ID=1mA



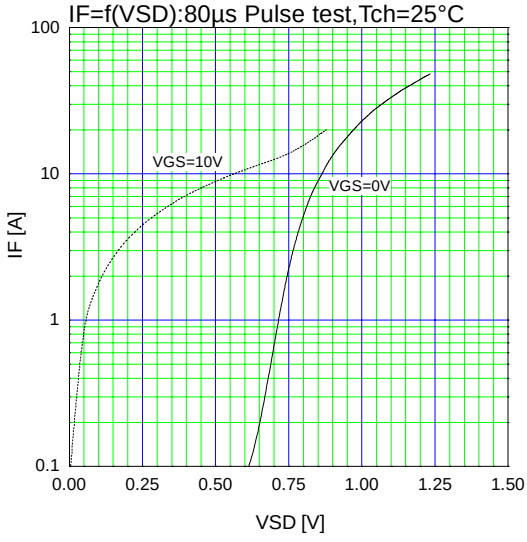
Typical Gate Charge Characteristics
VGS=f(Qg):ID=23A, Tch=25°C



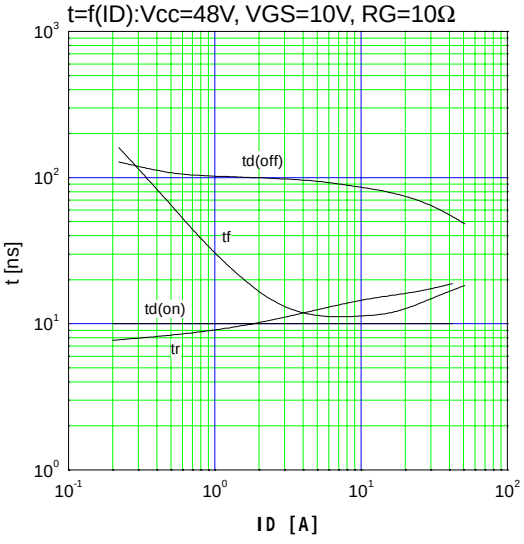
Typical Capacitance
C=f(VDS):VGS=0V,f=1MHz



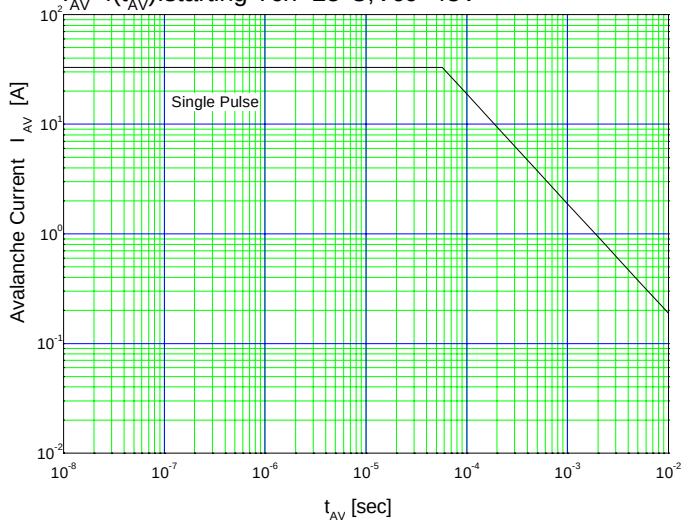
Typical Forward Characteristics of Reverse Diode
IF=f(VSD):80µs Pulse test,Tch=25°C



Typical Switching Characteristics vs. ID
t=f(ID):Vcc=48V, VGS=10V, RG=10Ω



Maximum Avalanche Current Pulsewidth
I_{AV}=f(t_{AV}):starting Tch=25°C,Vcc=48V



Maximum Transient Thermal Impedance
Zth(ch-c)=f(t):D=0