2SK3515-01MR

FUJI POWER MOSFET

Super FAP-G Series

N-CHANNEL SILICON POWER MOSFET

■ Features

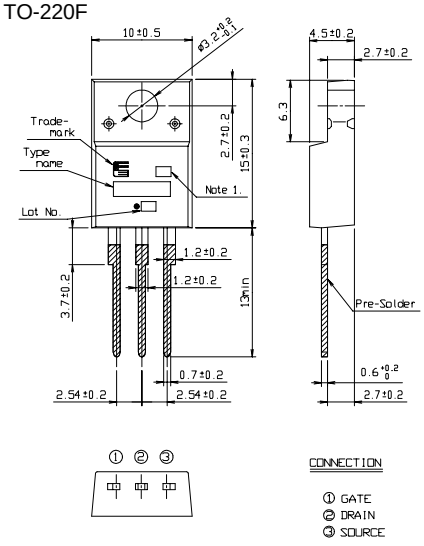
- High speed switching
- Low on-resistance
- No secondary breadown
- Low driving power
- Avalanche-proof

■ Applications

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

■ Outline Drawings

TO-220F



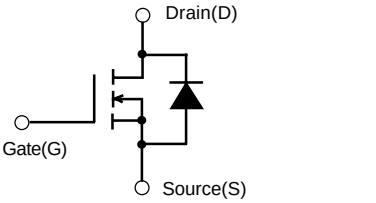
■ Maximum ratings and characteristic Absolute maximum ratings

● (Tc=25°C unless otherwise specified)

Item	Symbol		Ratings	Unit
Drain-source voltage	V_{DS}		450	V
Continuous drain current	I_D		±8	A
Pulsed drain current	$I_{D(puls)}$		±32	A
Gate-source voltage	V_{GS}		±30	V
Repetitive or non-repetitive	I_{AR}	*2	8	A
Maximum Avalanche Energy	E_{AS}	*1	193	mJ
Maximum Drain-Source dV/dt	dV_{DS}/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	35	
Operating and storage temperature range	T_{ch}		+150	°C
	T_{stg}		-55 to +150	°C

*1 L=5.53mH, Vcc=45V *2 Tch≦150°C *3 IF≦-ID, -di/dt=50A/µs, Vcc≦BVDSS, Tch≦150°C
*4 VDS≦450V

■ Equivalent circuit schematic



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

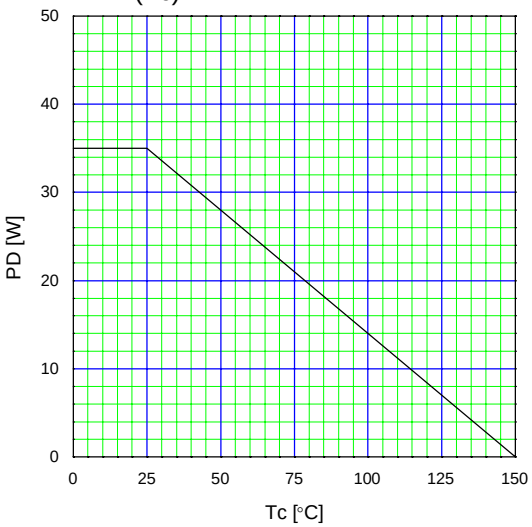
Item	Symbol	Test Conditions		Min.	Typ.	Max.	Units
Drain-source breakdown voltaget	$V_{(BR)DSS}$	I_D= 250µA V_{GS}=0V		450			V
Gate threshold voltage	$V_{GS(th)}$	I_D= 250µA V_{DS}=V_{GS}		3.0		5.0	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=450V V_{GS}=0V	Tch=25°C			25	µA
		V_{DS}=360V V_{GS}=0V	Tch=125°C			250	
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=4A V_{GS}=10V			0.50	0.65	Ω
Forward transcondutance	g_{fs}	I_D=4A V_{DS}=25V		4	8		S
Input capacitance	Ciss	V_{DS}=25V			800	1200	pF
Output capacitance	Coss	V_{GS}=0V			120	150	
Reverse transfer capacitance	Crss	f=1MHz			4.5	7	
Turn-on time t_{on}	td(on)	V_{CC}=300V I_D=4A			15	23	ns
	tr	V_{GS}=10V			12	18	
Turn-off time t_{off}	td(off)	R_{GS}=10 Ω			25	38	
	tf				7	11	
Total Gate Charge	Q_G	V_{CC}=225V			22	33	nC
Gate-Source Charge	Q_{GS}	I_D=8A			9.5	14.5	
Gate-Drain Charge	Q_{GD}	V_{GS}=10V			6.5	10	
Avalanche capability	I_{AV}	L=5.53mH Tch=25°C		8			A
Diode forward on-voltage	V_{SD}	I_F=8A V_{GS}=0V Tch=25°C			1.00	1.50	V
Reverse recovery time	trr	I_F=8A V_{GS}=0V			0.7		µs
Reverse recovery charge	Qrr	-di/dt=100A/µs Tch=25°C			3.5		µC

● Thermalcharacteristics

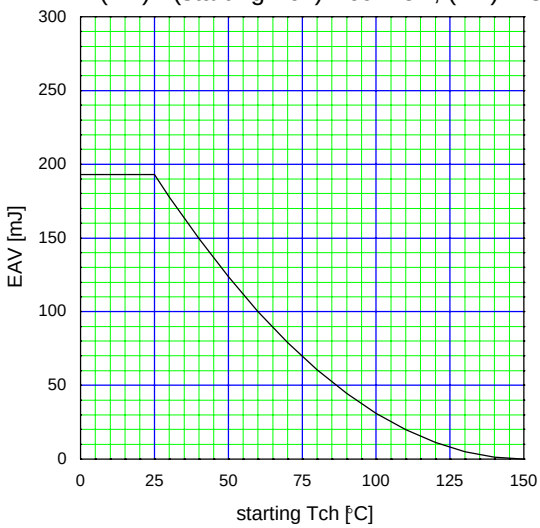
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$	channel to case			3.57	°C/W
	$R_{th(ch-a)}$	channel to ambient			58.0	°C/W

Characteristics

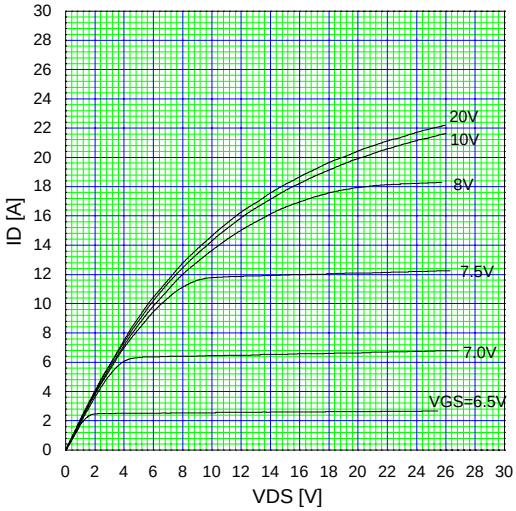
Allowable Power Dissipation
PD=f(Tc)



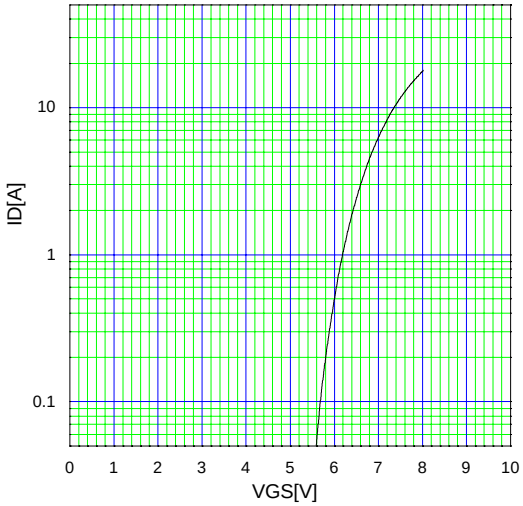
Maximum Avalanche Energy vs. starting Tch
E(AV)=f(starting Tch):Vcc=45V,I(AV)<=8A



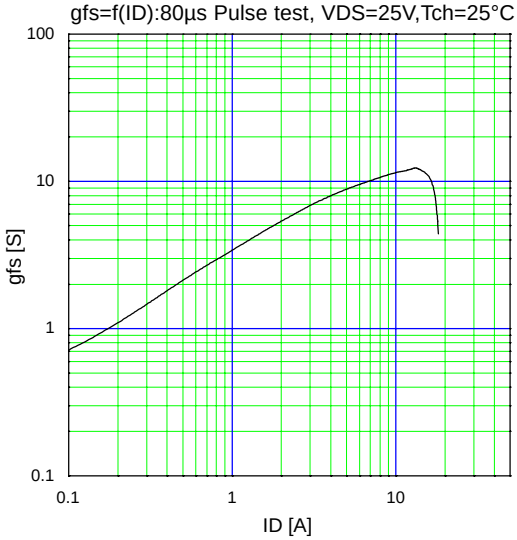
Typical Output Characteristics
ID=f(VDS):80µs Pulse test,Tch=25°C



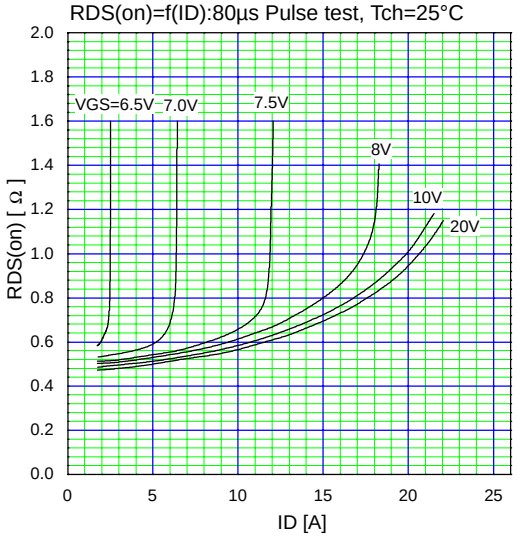
Typical Transfer Characteristic
ID=f(VGS):80µs Pulse test, VDS=25V,Tch=25°C



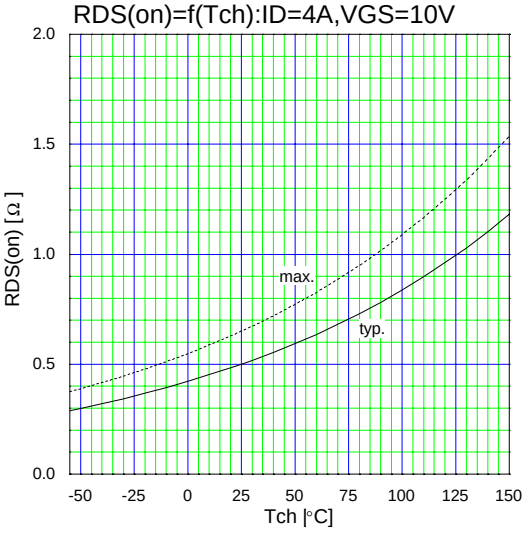
Typical Transconductance
gfs=f(ID):80µs Pulse test, VDS=25V,Tch=25°C



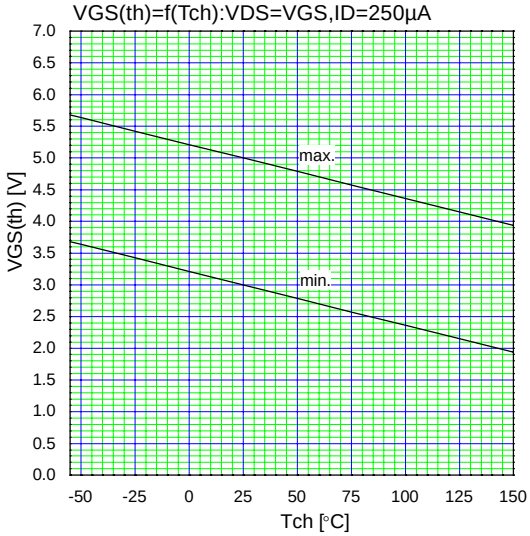
Typical Drain-Source on-state Resistance
RDS(on)=f(ID):80µs Pulse test, Tch=25°C



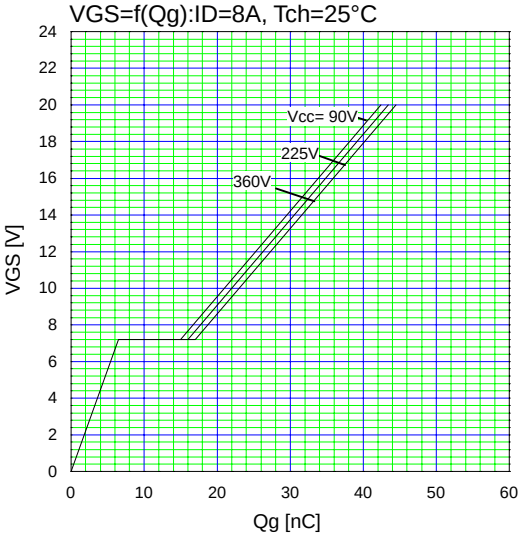
Drain-Source On-state Resistance
RDS(on)=f(Tch):ID=4A,VGS=10V



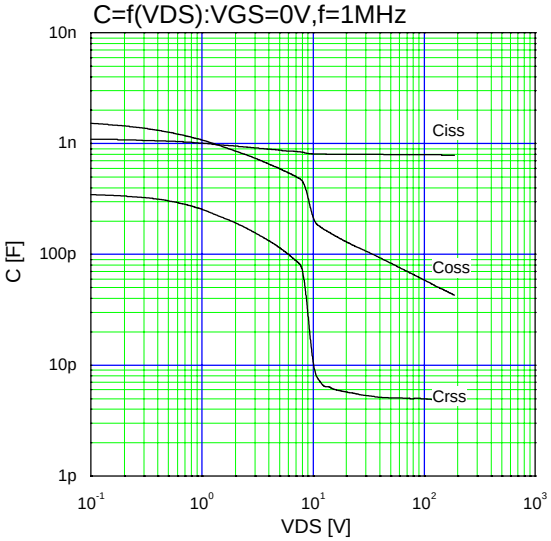
Gate Threshold Voltage vs. Tch
VGS(th)=f(Tch):VDS=VGS,ID=250μA



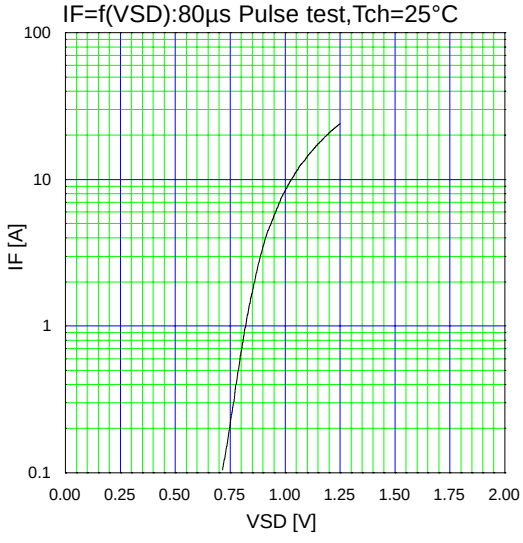
Typical Gate Charge Characteristics
VGS=f(Qg):ID=8A, Tch=25°C



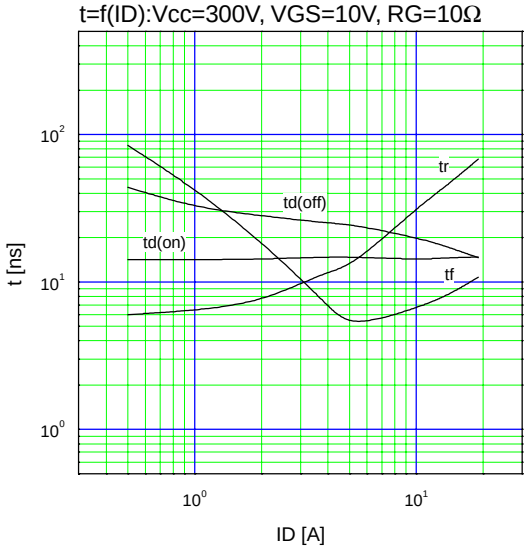
Typical Capacitance
C=f(VDS):VGS=0V,f=1MHz



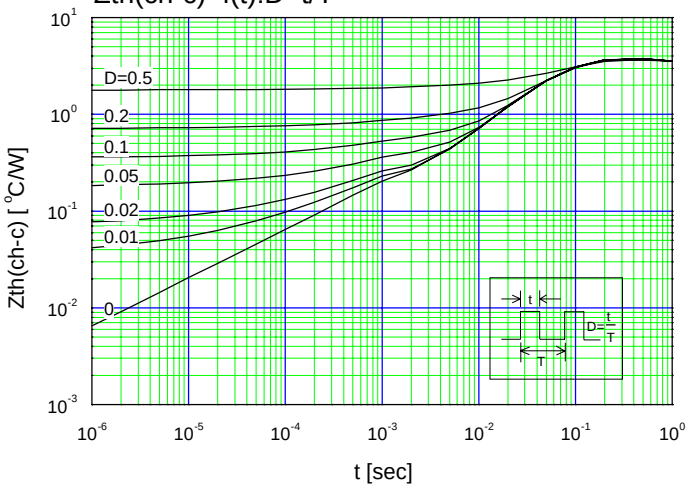
Typical Forward Characteristics of Reverse Diode
IF=f(VSD):80μs Pulse test,Tch=25°C



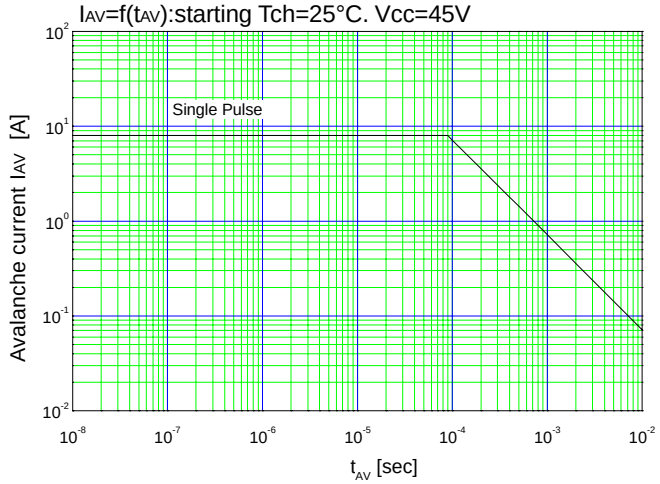
Typical Switching Characteristics vs. ID
t=f(ID):Vcc=300V, VGS=10V, RG=10Ω



Transient Thermal Impedance
Zth(ch-c)=f(t):D=t/T



Maximum Avalanche Current Pulsewidth
I_{AV}=f(t_{AV}):starting Tch=25°C. Vcc=45V



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