2SK3726-01MR

FUJI ELECTRIC

200305

FUJI POWER MOSFET
Super FAP-G Series

N-CHANNEL SILICON POWER MOSFET

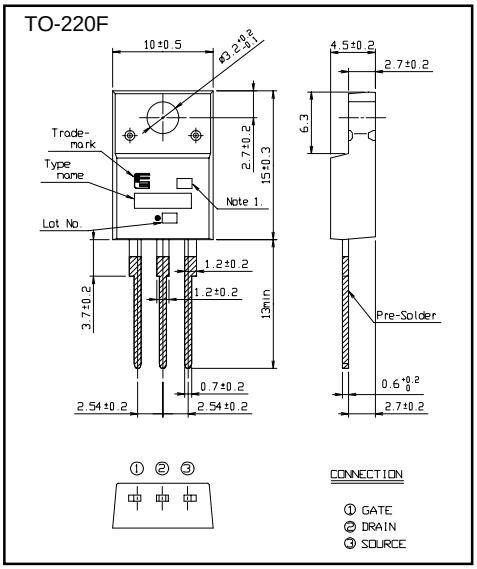
■ Features

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

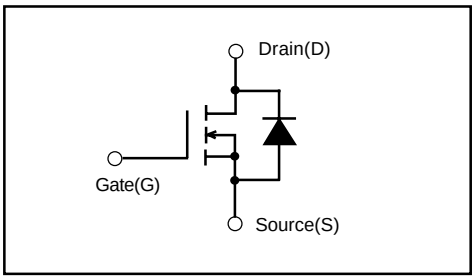
■ Applications

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

■ Outline Drawings [mm]



■ Equivalent circuit schematic



■ Maximum ratings and 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		±3	A
Pulsed drain current	$I_{D(puls)}$		±12	A
Gate-source voltage	V_{GS}		±30	V
Repetitive or non-repetitive	I_{AR} *2		3	A
Maximum Avalanche Energy	E_{AS} *1		92.8	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	17	
Operating and storage temperature range	T_{ch}		+150	°C
	T_{stg}		-55 to +150	°C
Isolation Voltage	V_{ISO} *6		2000	Vrms

*1 L=18.9mH, Vcc=45V, Tch=25°C See to Avalanche Energy Graph *2 Tch≦150°C
*3 I_F≦-I_D, -di/dt=50A/µs, Vcc≦BV_{DSS}, Tch≦150°C *4 VDS≦450V *6 f=60Hz, t=60sec.

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

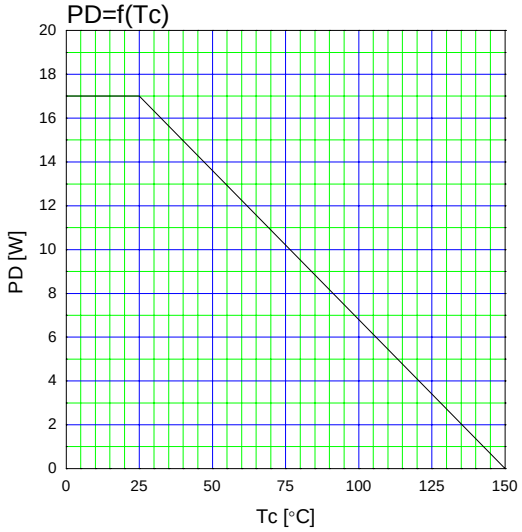
Item	Symbol	Test Conditions		Min.	Typ.	Max.	Units
Drain-source breakdown voltaget	$V_{(BR)DSS}$	I_D= 250µA V_{GS}=0V		450			V
Gate threshold voltage	$V_{GS(th)}$	I_D= 250µA V_{DS}=V_{GS}		3.0		5.0	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=450V V_{GS}=0V	T_{ch}=25°C			25	µA
		V_{DS}=360V V_{GS}=0V	T_{ch}=125°C			250	
Gate-source leakage current	I_{GSS}	V_{GS}=±30V V_{DS}=0V				100	nA
Drain-source on-state resistance	$R_{DS(on)}$	I_D=1.5A V_{GS}=10V			1.92	2.50	Ω
Forward transcondutance	g_{fs}	I_D=1.5A V_{DS}=25V		1.25	2.5		S
Input capacitance	C_{iss}	V_{DS}=25V			235	355	pF
Output capacitance	C_{oss}	V_{GS}=0V			42	65	
Reverse transfer capacitance	C_{rss}	f=1MHz			2	3	
Turn-on time t_{on}	$t_{d(on)}$	V_{CC}=300V I_D=1.5A			16	24	ns
	t_r	V_{GS}=10V			4	6	
Turn-off time t_{off}	$t_{d(off)}$	R_{GS}=10 Ω			23	35	
	t_f				6	9	
Total Gate Charge	Q_G	V_{CC}=225V			10.5	16	nC
Gate-Source Charge	Q_{GS}	I_D=3A			5.5	8.3	
Gate-Drain Charge	Q_{GD}	V_{GS}=10V			1.0	1.5	
Avalanche capability	I_{AV}	L=18.9mH T_{ch}=25°C		3			A
Diode forward on-voltage	V_{SD}	I_F=3A V_{GS}=0V T_{ch}=25°C			1.00	1.50	V
Reverse recovery time	t_{rr}	I_F=3A V_{GS}=0V			0.28		µs
Reverse recovery charge	Q_{rr}	-di/dt=100A/µs T_{ch}=25°C			1.4		µC

● Thermalcharacteristics

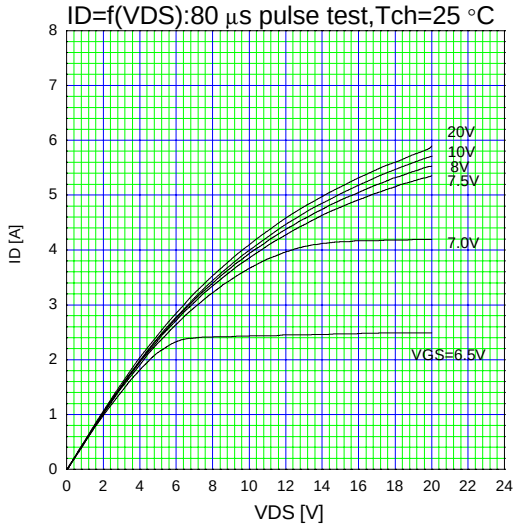
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$	channel to case			7.35	°C/W
	$R_{th(ch-a)}$	channel to ambient			58.0	°C/W

Characteristics

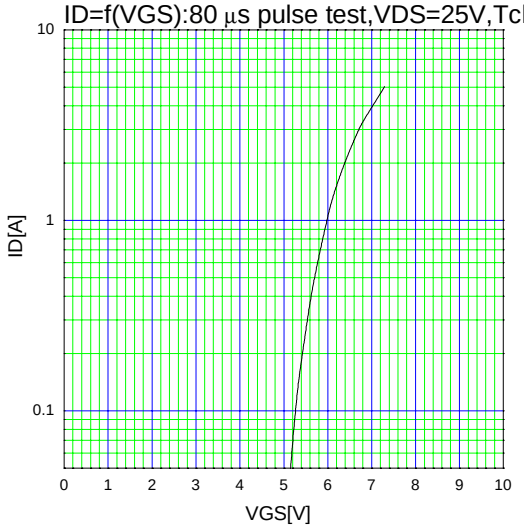
Allowable Power Dissipation
PD=f(Tc)



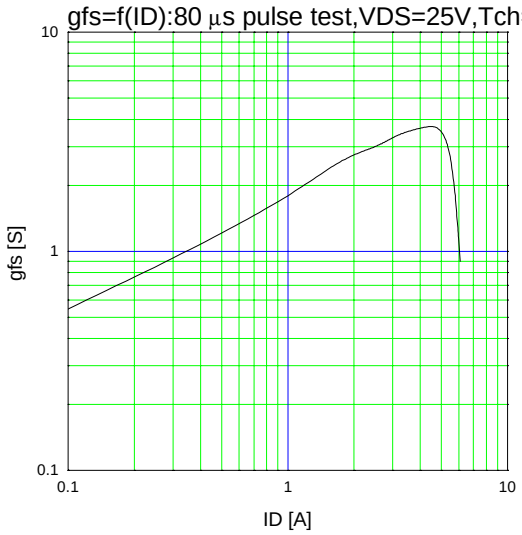
Typical Output Characteristics
ID=f(VDS):80 μs pulse test,Tch=25 °C



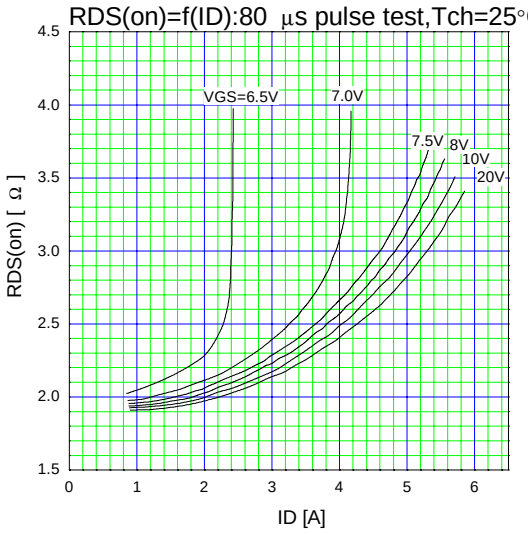
Typical Transfer Characteristic
ID=f(VGS):80 μs pulse test,VDS=25V,Tch=25°C



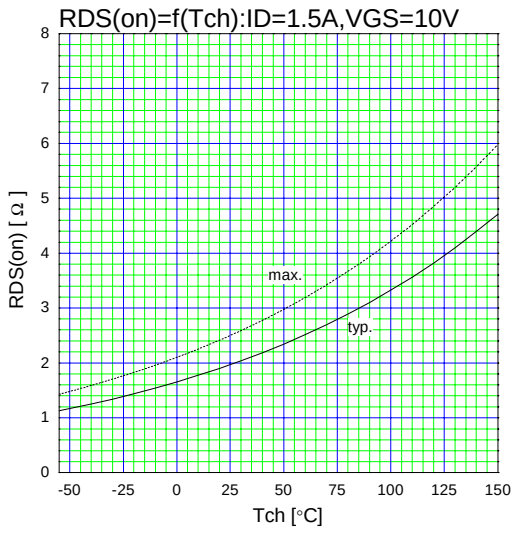
Typical Transconductance
gfs=f(ID):80 μs pulse test,VDS=25V,Tch=25°C



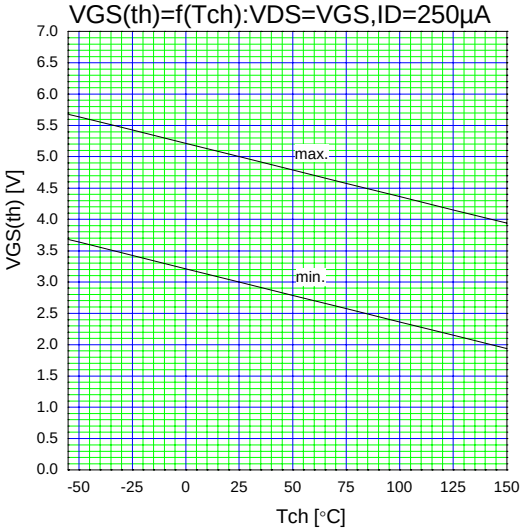
Typical Drain-Source on-state Resistance
RDS(on)=f(ID):80 μs pulse test,Tch=25°C



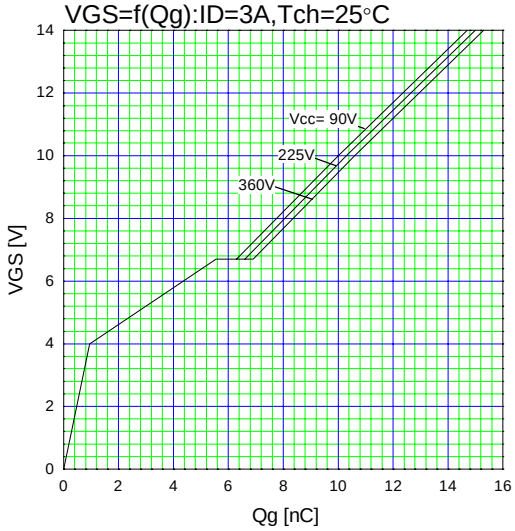
Drain-Source On-state Resistance
RDS(on)=f(Tch):ID=1.5A,VGS=10V



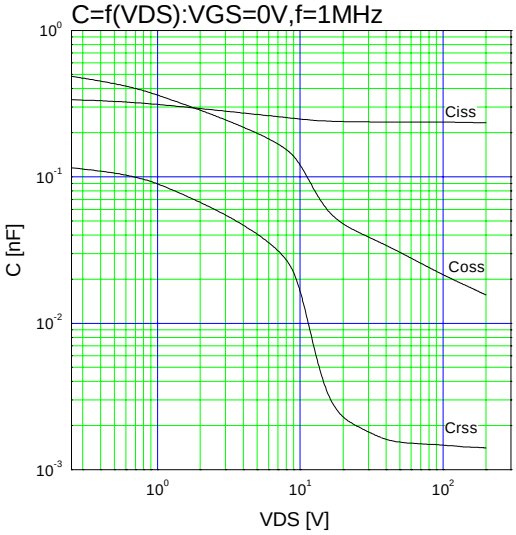
Gate Threshold Voltage vs. Tch
VGS(th)=f(Tch):VDS=VGS,ID=250μA



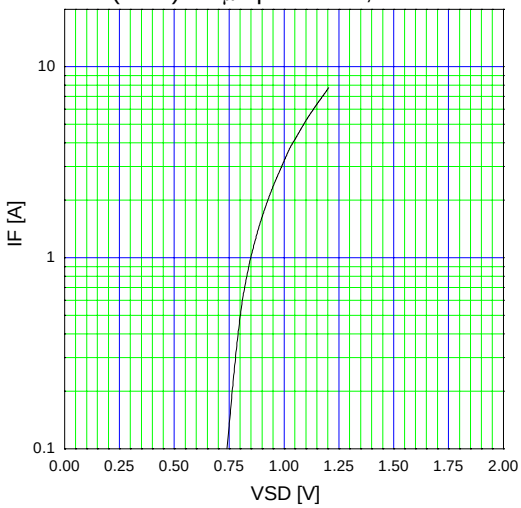
Typical Gate Charge Characteristics
VGS=f(Qg):ID=3A,Tch=25°C



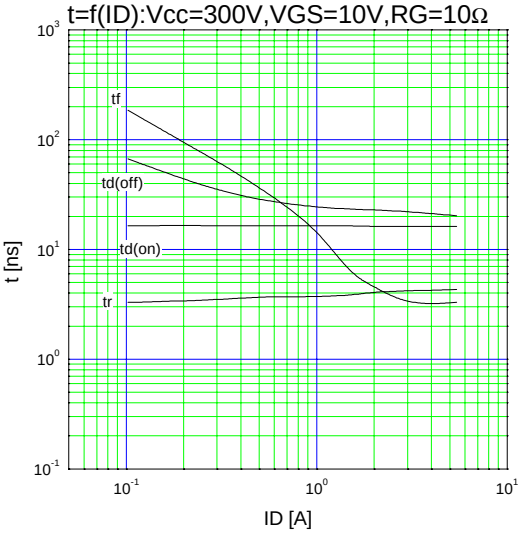
Typical Capacitance
C=f(VDS):VGS=0V,f=1MHz



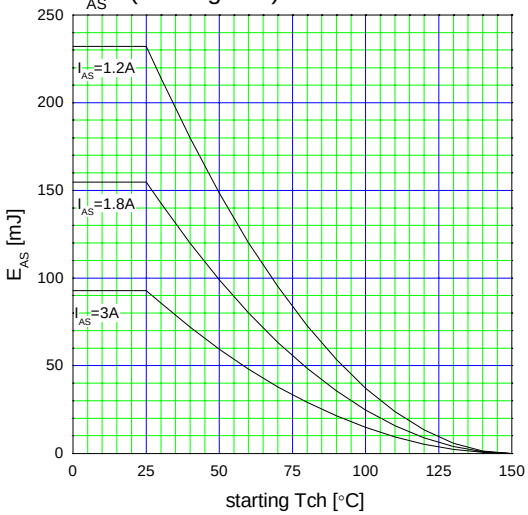
Typical Forward Characteristics of Reverse Diode
IF=f(VSD):80 μs pulse test,Tch=25°C



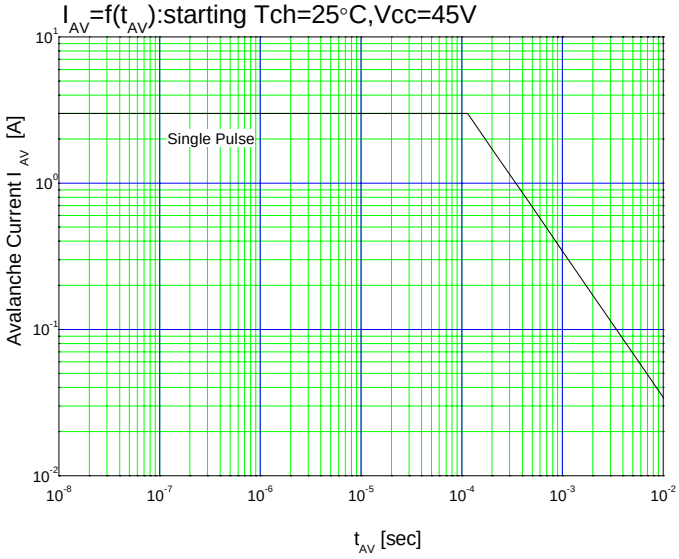
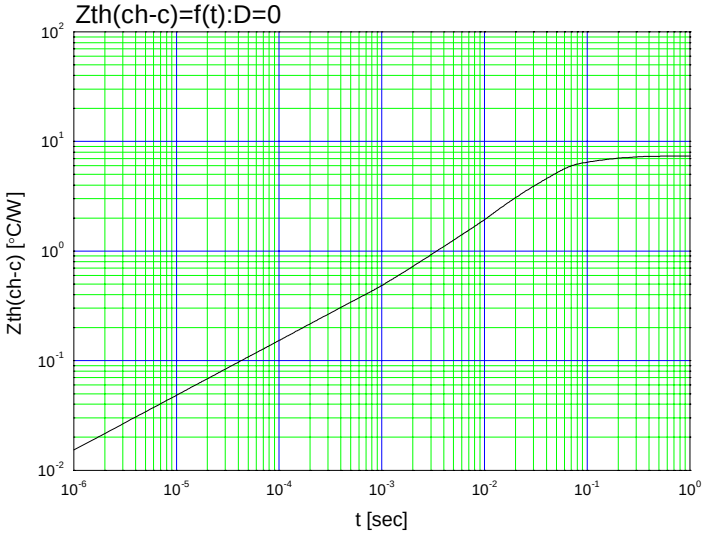
Typical Switching Characteristics vs. ID
t=f(ID):Vcc=300V,VGS=10V,RG=10Ω



Maximum Avalanche Energy vs. starting Tch
E_{AS}=f(starting Tch):Vcc=45V



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



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