

2SK3699-01MR

FUJI POWER MOSFET Super FAP-G Series

N-CHANNEL SILICON POWER MOSFET

■ Features

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

■ Applications

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

■ Maximum ratings and characteristic Absolute maximum ratings

● (Tc=25°C unless otherwise specified)

Item	Symbol	Rated	Unit
Drain-source voltage	V _{DS}	900	V
	V _{DSX} *5	900	V
Continuous drain current	I _D	±3.7	A
Pulsed drain current	I _{D(puls)}	±14.8	A
Gate-source voltage	V _{GS}	±30	V
Repetitive or non-repetitive	I _{AR} *2	3.7	A
Maximum Avalanche Energy	E _{AS} *1	171.1	mJ
Maximum Drain-Source dV/dt	dV _{DS} /dt *4	40	kV/μs
Peak Diode Recovery dV/dt	dV/dt *3	5	kV/μs
Max. power dissipation	P _D	T _a =25°C	2.16
		T _c =25°C	43
Operating and storage temperature range	T _{ch}	+150	°C
	T _{stg}	-55 to +150	°C
Isolation Voltage	V _{ISO} *6	2000	V _{rms}

*1 L=22.9mH, V_{CC}=90V, T_{ch}=25°C See to Avalanche Energy Graph *2 T_{ch} ≤ 150°C

*3 I_F ≤ -I_D, -di/dt=50A/μs, V_{CC} ≤ BV_{DSS}, T_{ch} ≤ 150°C *4 V_{DS} ≤ 900V *5 V_{GS}=-30V *6 f=60Hz, t=60sec.

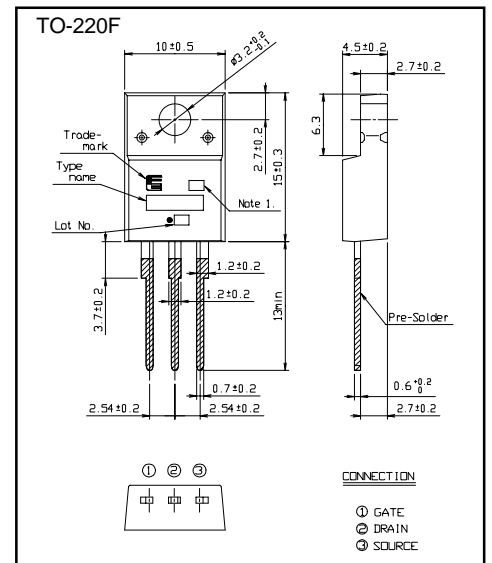
● Electrical characteristics (T_c =25°C unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	V _{(BR)DSS}	I _D = 250μA V _{GS} =0V	900			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} =900V V _{GS} =0V			25	μA
		V _{DS} =720V V _{GS} =0V			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 =1.85A V _{GS} =10V		3.31	4.30	Ω
Forward transconductance	g _{fs}	I _D =1.85A V _{DS} =25V	2	4		S
Input capacitance	C _{iss}	V _{DS} =25V		430	650	pF
Output capacitance	C _{oss}	V _{GS} =0V		60	90	
Reverse transfer capacitance	C _{rss}	f=1MHz		3.5	5	
Turn-on time t _{on}	td(on)	V _{CC} =600V I _D =1.85A		19	29	ns
	t _r	V _{GS} =10V		7	11	
Turn-off time t _{off}	td(off)	R _{GS} =10 Ω		32	48	
	t _f			17	26	
Total Gate Charge	Q _G	V _{CC} =450V		16.5	24.8	nC
Gate-Source Charge	Q _{GS}	I _D =3.7A		6.4	9.6	
Gate-Drain Charge	Q _{GD}	V _{GS} =10V		3.7	5.6	
Avalanche capability	I _{AV}	L=22.9mH T _{ch} =25°C	3.7			A
Diode forward on-voltage	V _{SD}	I _F =3.7A V _{GS} =0V T _{ch} =25°C		0.9	1.50	V
Reverse recovery time	t _{rr}	I _F =3.7A V _{GS} =0V		1.0		μs
Reverse recovery charge	Q _{rr}	-di/dt=100A/μs T _{ch} =25°C		4.0		μC

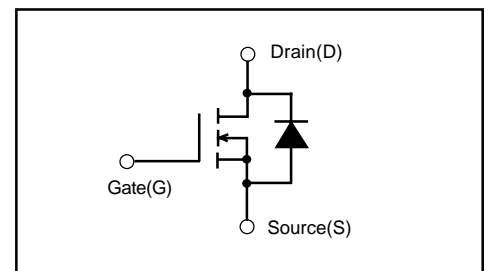
● Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-c)}	channel to case			2.907	°C/W
	R _{th(ch-a)}	channel to ambient			38.0	°C/W

■ Outline Drawings [mm]

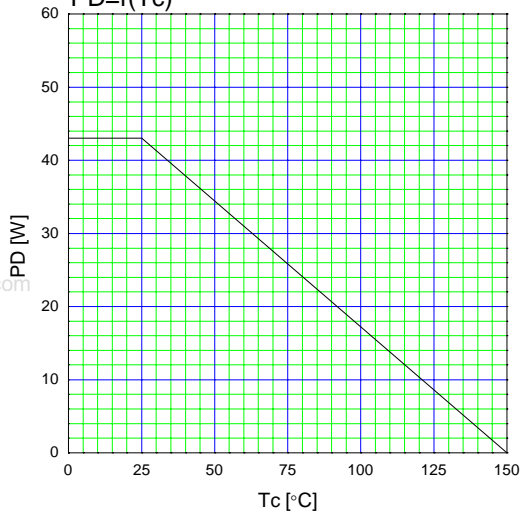


■ Equivalent circuit schematic

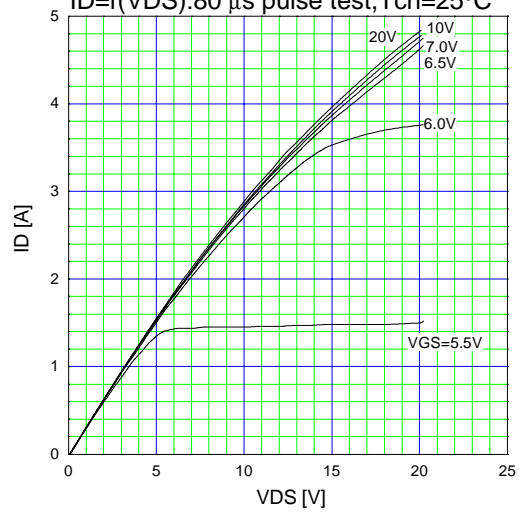


Characteristics

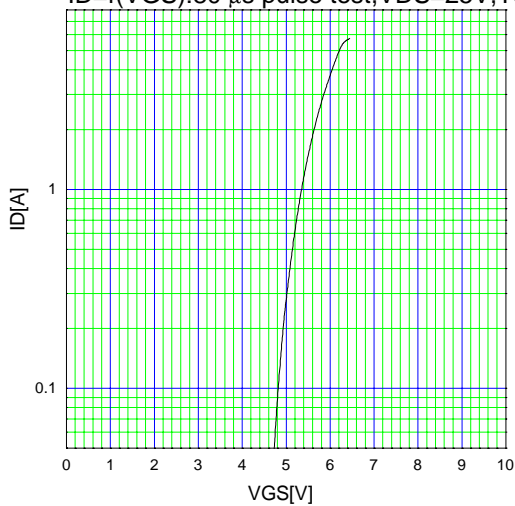
Allowable Power Dissipation
 $PD=f(T_c)$



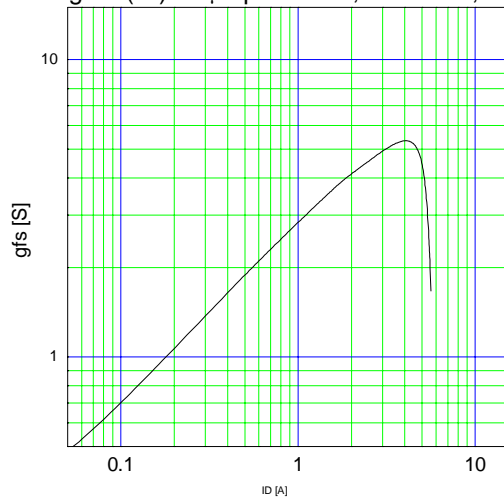
Typical Output Characteristics
 $ID=f(V_{DS}): 80 \mu s$ pulse test, $T_{ch}=25^\circ C$



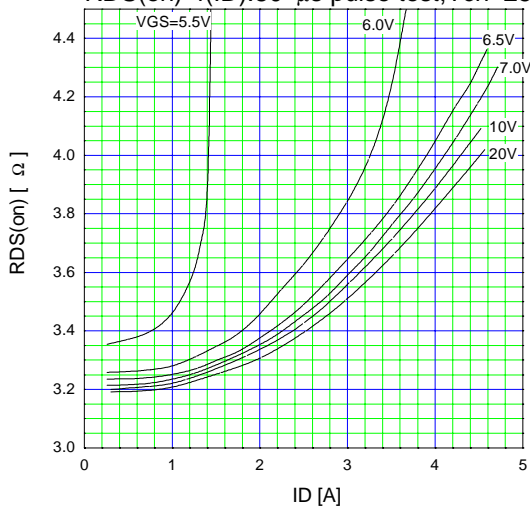
Typical Transfer Characteristic
 $ID=f(V_{GS}): 80 \mu s$ pulse test, $V_{DS}=25V$, $T_{ch}=25^\circ C$



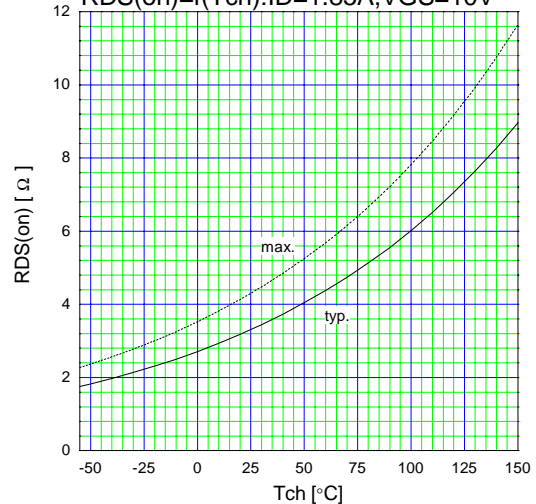
Typical Transconductance
 $g_{fs}=f(ID): 80 \mu s$ pulse test, $V_{DS}=25V$, $T_{ch}=25^\circ C$

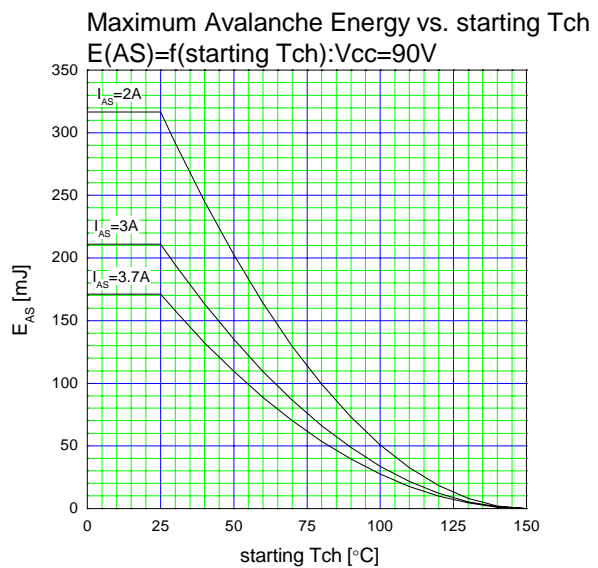
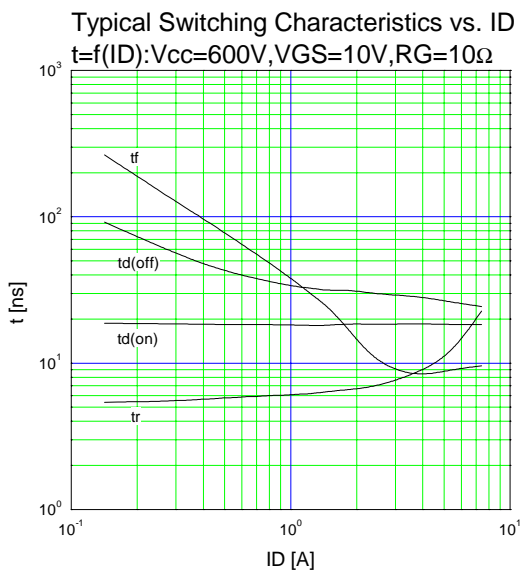
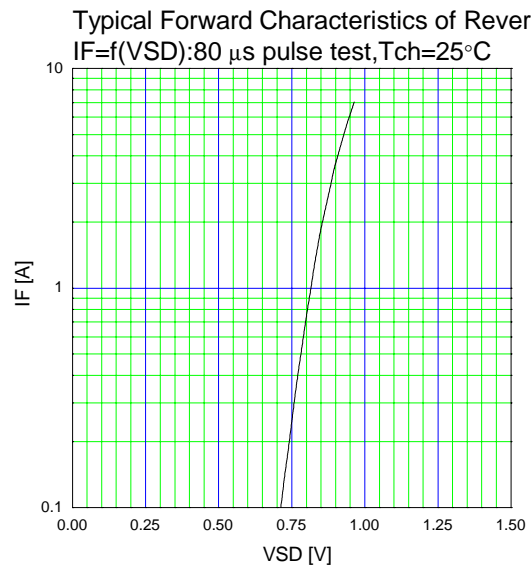
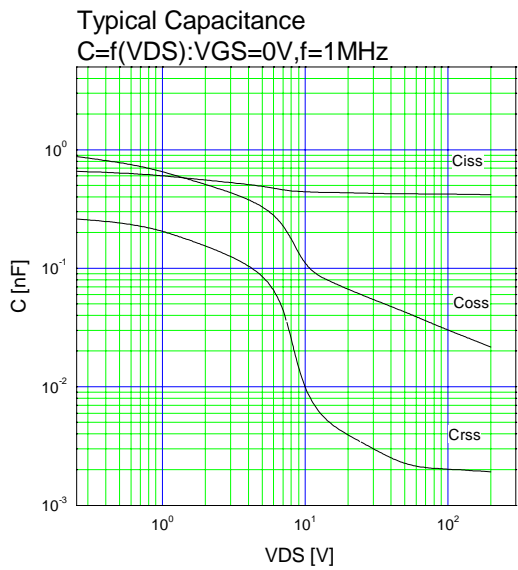
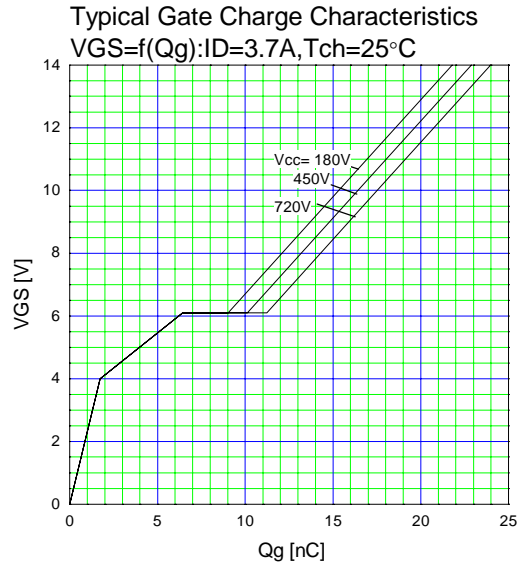
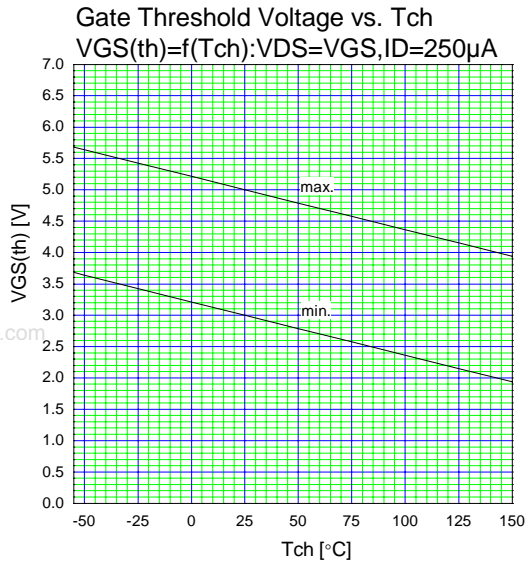


Typical Drain-Source on-state Resistance
 $R_{DS(on)}=f(ID): 80 \mu s$ pulse test, $T_{ch}=25^\circ C$



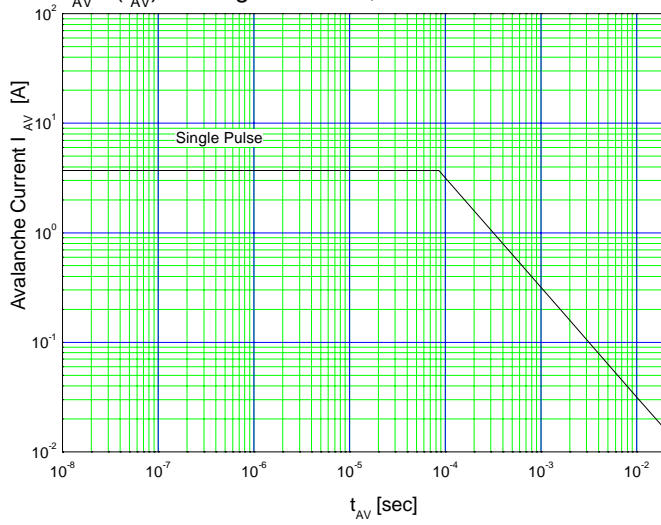
Drain-Source On-state Resistance
 $R_{DS(on)}=f(T_{ch}): ID=1.85A, V_{GS}=10V$





Maximum Avalanche Current Pulsewidth

$I_{AV} = f(t_{AV})$: starting $T_{ch} = 25^{\circ}C, V_{cc} = 90V$



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Maximum Transient Thermal Impedance

$Z_{th}(ch-c) = f(t)$: $D=0$

