

2SK3673-01MR

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	Ratings	Unit
Drain-source voltage	V _{DS}	700	V
	V _{DSX} *5	700	V
Continuous drain current	I _D	±10	A
Pulsed drain current	I _{D(puls)}	±40	A
Gate-source voltage	V _{GS}	±30	V
Repetitive or non-repetitive	I _{AR} *2	10	A
Maximum Avalanche Energy	E _{AS} *1	242.2	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	80
Operating and storage temperature range	T _{ch}	+150	°C
	T _{stg}	-55 to +150	°C
Isolation Voltage	V _{iso} *6	2	kVrms

*1 L=4.45mH, V_{CC}=70V, 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}≤700V *5 V_{GS}=-30V *6 t=60sec, f=60Hz

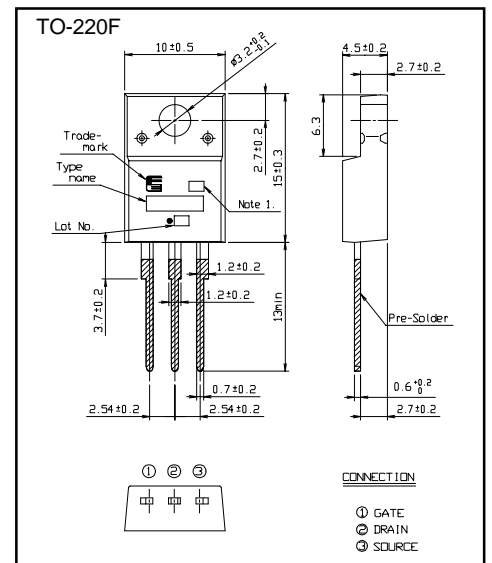
Electrical characteristics (Tc =25°C unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	V(BR) _{DSS}	I _D =250μA V _{GS} =0V	700			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} =700V V _{GS} =0V			25	μA
		V _{DS} =560V 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 =5A V _{GS} =10V		0.91	1.18	Ω
Forward transconductance	g _{fs}	I _D =5A V _{DS} =25V	5	9.5		S
Input capacitance	C _{iss}	V _{DS} =25V V _{GS} =0V f=1MHz		900	1350	pF
Output capacitance	C _{oss}			140	210	
Reverse transfer capacitance	C _{rss}			8	12	
Turn-on time t _{on}	t _{d(on)}	V _{CC} =300V I _D =5A V _{GS} =10V		22	33	ns
			t _r		6	
Turn-off time t _{off}	t _{d(off)}	R _{GS} =10 Ω		40	60	
			t _f		9	
Total Gate Charge	Q _G	V _{CC} =350V		25	37.5	nC
Gate-Source Charge	Q _{GS}	I _D =10A		4	6	
Gate-Drain Charge	Q _{GD}	V _{GS} =10V		8.5	13	
Avalanche capability	I _{AV}	L=4.45mH T _{ch} =25°C	10			A
Diode forward on-voltage	V _{SD}	I _F =10A V _{GS} =0V T _{ch} =25°C		0.90	1.50	V
Reverse recovery time	t _{rr}	I _F =10A V _{GS} =0V		2.75		μs
Reverse recovery charge	Q _{rr}	-di/dt=100A/μs T _{ch} =25°C		14.0		μC

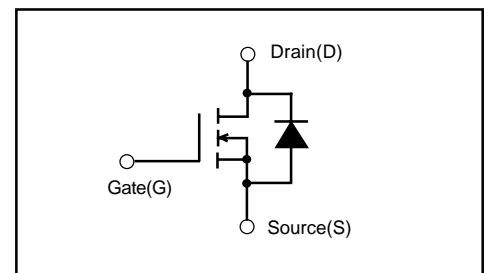
Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-c)}	channel to case			1.563	°C/W
	R _{th(ch-a)}	channel to ambient			38.0	°C/W

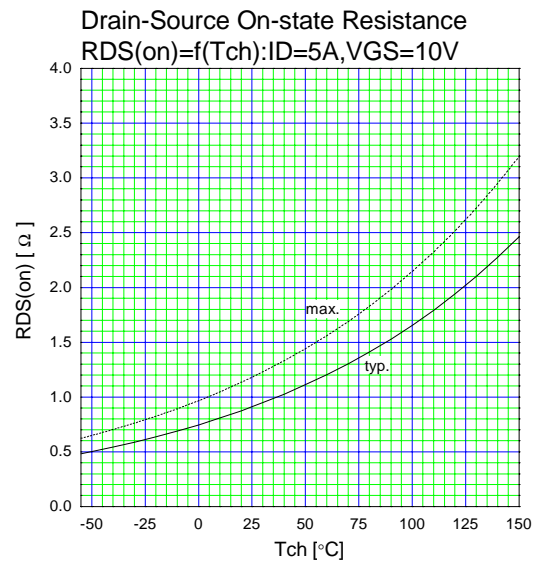
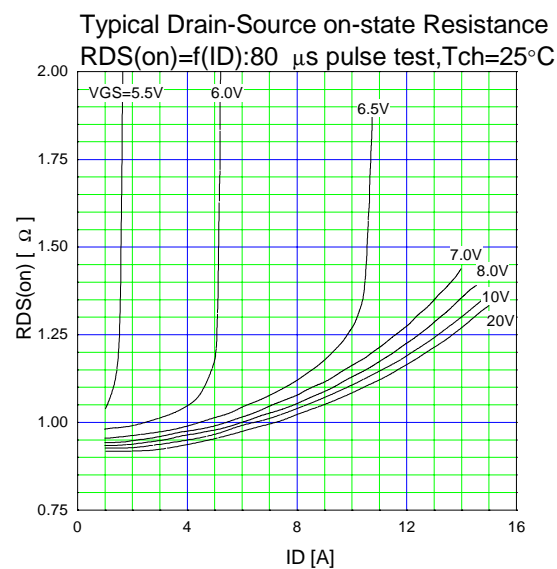
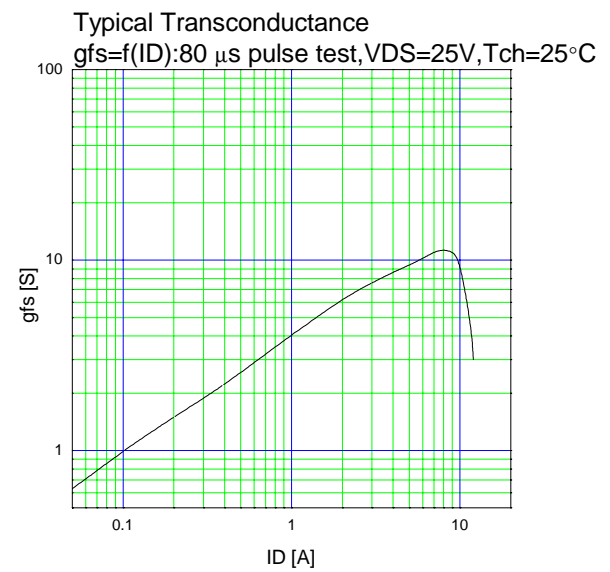
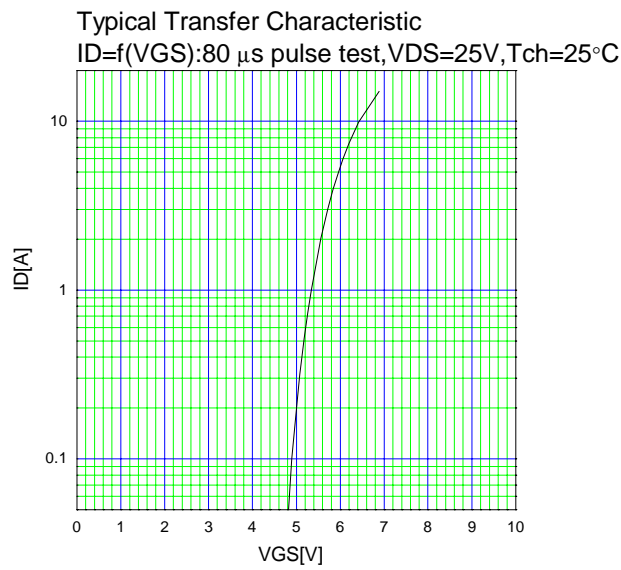
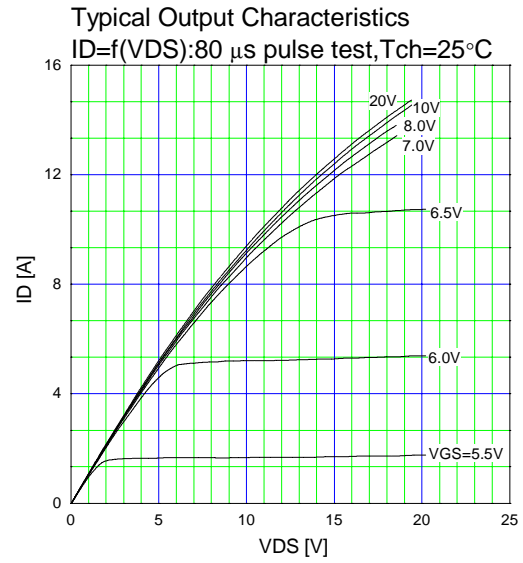
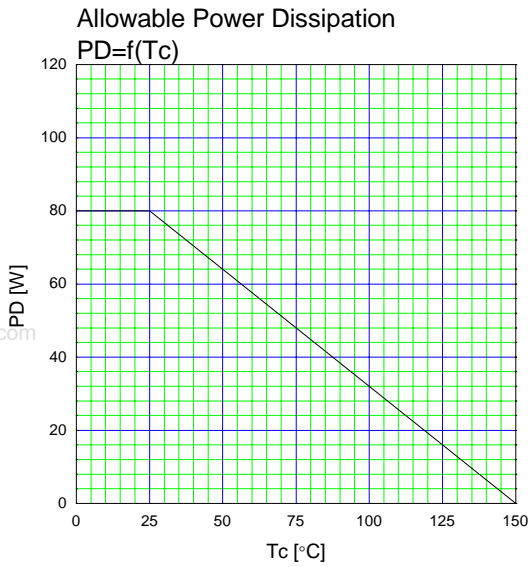
Outline Drawings [mm]



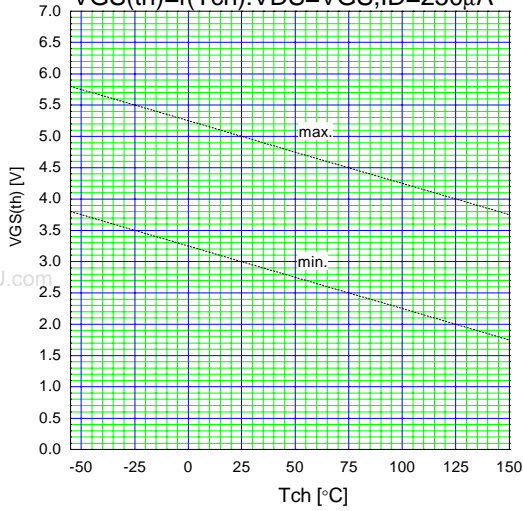
Equivalent circuit schematic



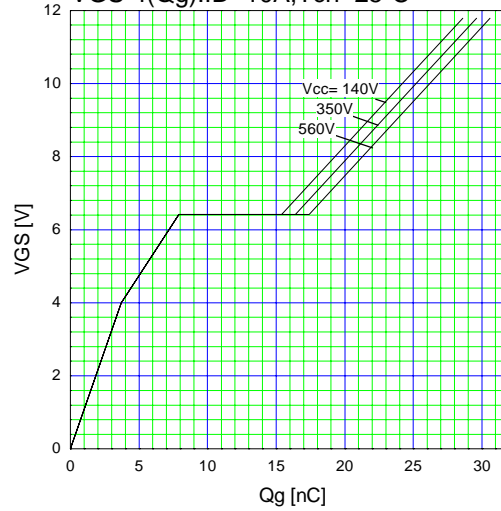
Characteristics



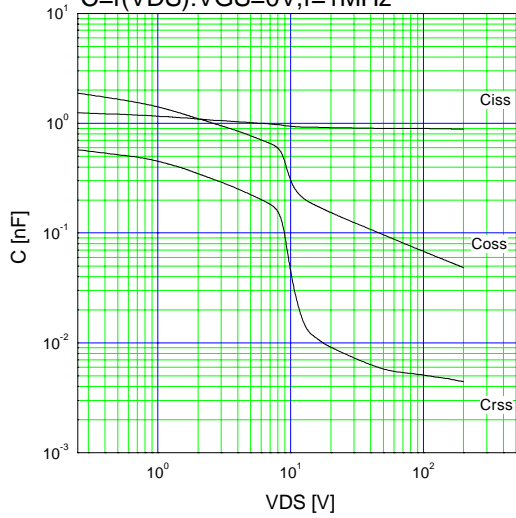
Gate Threshold Voltage vs. T_{ch}
 $V_{GS(th)} = f(T_{ch}) : V_{DS} = V_{GS}, I_D = 250\mu A$



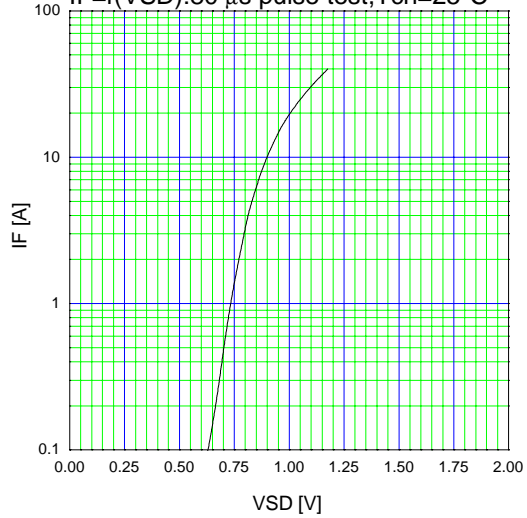
Typical Gate Charge Characteristics
 $V_{GS} = f(Q_g) : I_D = 10A, T_{ch} = 25^\circ C$



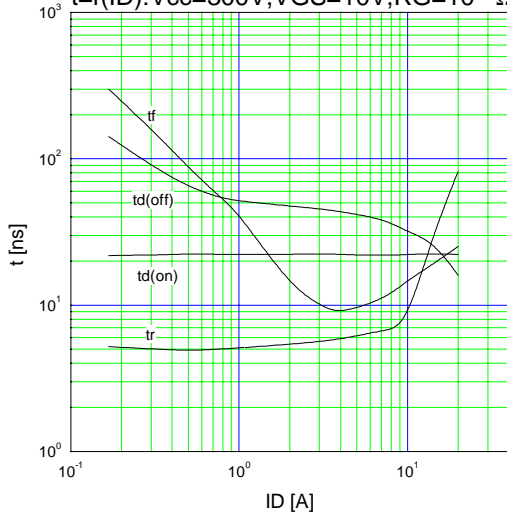
Typical Capacitance
 $C = f(V_{DS}) : V_{GS} = 0V, f = 1MHz$



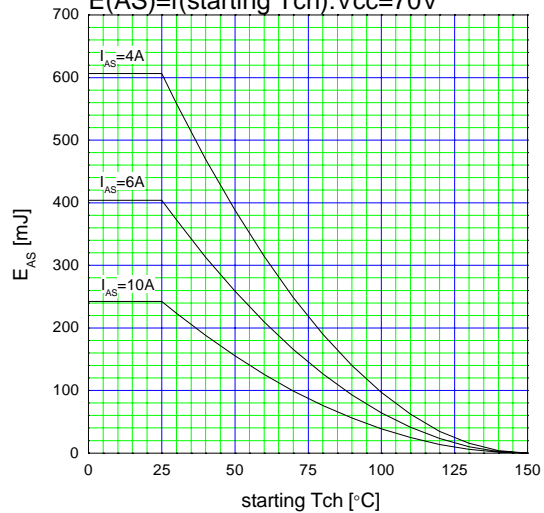
Typical Forward Characteristics of Reverse Diode
 $I_F = f(V_{SD}) : 80\mu s \text{ pulse test}, T_{ch} = 25^\circ C$



Typical Switching Characteristics vs. I_D
 $t = f(I_D) : V_{cc} = 300V, V_{GS} = 10V, R_G = 10\Omega$

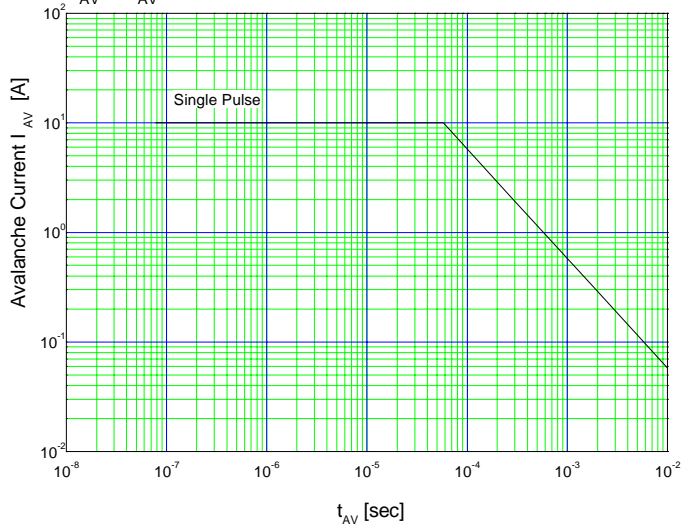


Maximum Avalanche Energy vs. starting T_{ch}
 $E_{(AS)} = f(\text{starting } T_{ch}) : V_{cc} = 70V$



Maximum Avalanche Current Pulsewidth

$I_{AV} = f(t_{AV})$: starting $T_{ch} = 25^{\circ}C, V_{CC} = 70V$



Maximum Transient Thermal Impedance

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

