

2SK3775-01

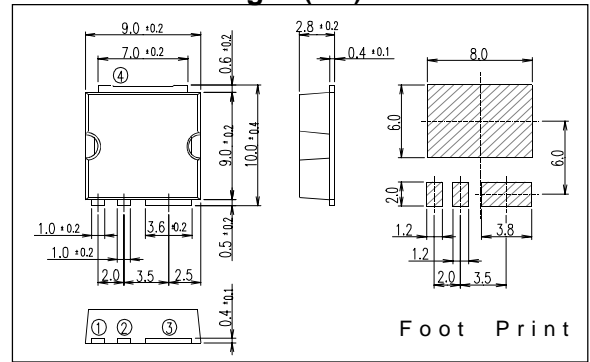


FUJI POWER MOSFET Super FAP-G Series

N-CHANNEL SILICON POWER MOSFET

■ Outline Drawings (mm)

200406



■ Features

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

■ Applications

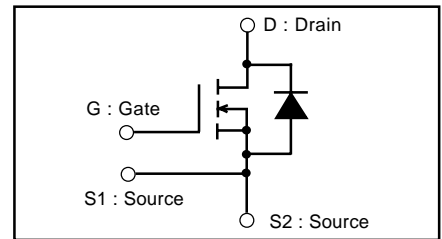
Switching regulators
UPS (Uninterruptible Power Supply)
DC-DC converters

■ Maximum ratings and characteristic

● Absolute maximum ratings (Tc=25°C unless otherwise specified)

Item	Symbol	Ratings	Unit	Remarks
Drain-source voltage	V _{DS}	300	V	
	V _{DSX}	300	V	V _{GS} =-30V
Continuous Drain Current	I _D	±32	A	
		±2.4	A	T _a =25°C
Pulsed Drain Current	I _{D(puls)}	±128	A	
Gate-Source Voltage	V _{GS}	±30	V	
Maximum Avalanche current	I _{AR}	32	A	Note *2
Non-Repetitive Maximum Avalanche Energy	E _{AS}	597.4	mJ	Note *3
Repetitive Maximum Avalanche Energy	E _{AR}	27	mJ	Note *4
Maximum Drain-Source dV/dt	dV _{DS} /dt	20	kV/μs	V _{DS} ≤300V
Peak Diode Recovery dV/dt	dV/dt	5	kV/μs	Note *5
Max. Power Dissipation	P _D	270	W	T _c =25°C
		2.40	W	T _a =25°C Note*1
Operating and Storage Temperature range	T _{ch}	+150	°C	
	T _{stg}	-55 to +150	°C	

■ Equivalent circuit schematic



Note *1: Surface mounted on 1000mm², t=1.6mm FR-4 PCB (Drain pad area: 500mm²)

Note *2: T_{ch} ≤ 150°C, Repetitive and Non-repetitive

Note *3: Starting T_{ch}=25°C, I_{AS}=13A, L=6.13mH, V_{CC}=48V, R_G=50Ω

E_{AS} limited by maximum channel temperature and Avalanche current.

See to the 'Avalanche Energy' graph

Note *4: Repetitive rating: Pulse width limited by maximum channel temperature.

See to the 'Transient Thermal impedance' graph.

Note *5: I_r ≤ -I_D, -di/dt=50A/μs, V_{CC} ≤ BV_{DSS}, T_{ch} ≤ 150°C

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

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA V _{GS} =0V	300			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} =300V V _{GS} =0V			25	μA
		V _{DS} =240V 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 =16A V _{GS} =10V		0.10	0.13	Ω
Forward Transconductance	g _{fs}	I _D =16A V _{DS} =25V	12	24		S
Input Capacitance	C _{iss}	V _{DS} =25V		1970	2955	pF
Output Capacitance	C _{oss}	V _{GS} =0V		335	502	
Reverse Transfer Capacitance	C _{rss}	f=1MHz		20	30	
Turn-On Time t _{on}	t _{d(on)}	V _{CC} =180V I _D =16A		29	44	ns
	t _r	V _{GS} =10V		7.5	11	
Turn-Off Time t _{off}	t _{d(off)}	R _G =10Ω		57	86	
	t _f			7	10.5	
Total Gate Charge	Q _G	V _{CC} =150V		44.5	67.0	nC
Gate-Source Charge	Q _{GS}	I _D =32A		18.0	27.0	
Gate-Drain Charge	Q _{GD}	V _{GS} =10V		13.5	20.5	
Diode forward on-voltage	V _{SD}	I _F =32A V _{GS} =0V T _{ch} =25°C		0.90	1.50	V
Reverse recovery time	t _{rr}	I _F =32A V _{GS} =0V		270		ns
Reverse recovery charge	Q _{rr}	-di/dt=100A/μs T _{ch} =25°C		3.0		μC

● Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-c)}	channel to case			0.463	°C/W
	R _{th(ch-a)}	channel to ambient			87.0	°C/W
	R _{th(ch-a)} *1	channel to ambient			52.0	°C/W

*1 Surface mounted on 1000mm², t=1.6mm FR-4 PCB (Drain pad area : 500mm²)

Characteristics

