

2SK3770-01MR

N-CHANNEL SILICON POWER MOSFET

■ Outline Drawings (mm) 200407

FUJI POWER MOSFET Super FAP-G Series

■ Features

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

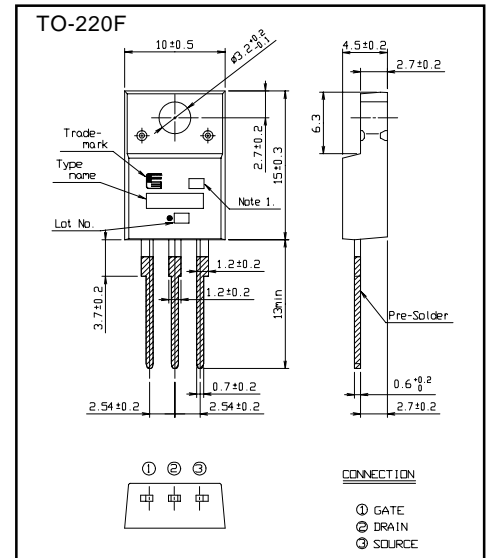
■ Applications

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

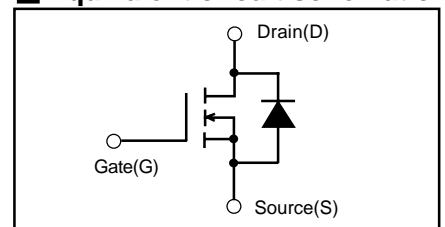
■ Maximum ratings and characteristic

- Absolute maximum ratings (T_c=25°C unless otherwise specified)

Item	Symbol	Ratings	Unit	Remarks
Drain-source voltage	V _{DS}	120	V	
	V _{DSX}	90	V	V _{GS} =-30V
Continuous Drain Current	I _D	26	A	
Pulsed Drain Current	I _{D(puls)}	±104	A	
Gate-Source Voltage	V _{GS}	±30	V	
Maximum Avalanche current	I _{AR}	26	A	Note *1
Non-Repetitive Maximum Avalanche Energy	E _{AS}	342.2	mJ	Note *2
Repetitive Maximum Avalanche Energy	E _{AR}	3.7	mJ	Note *3
Maximum Drain-Source dV/dt	dV _{DS} /dt	20	kV/μs	V _{DS} ≤120V
Peak Diode Recovery dV/dt	dV/dt	5	kV/μs	Note *4
Max. Power Dissipation	P _D	37	W	T _c =25°C
		2.16		T _a =25°C
Operating and Storage Temperature range	T _{ch}	+150	°C	
Isolation Voltage	V _{ISO}	-55 to +150	°C	
		2	kVrms	t=60sec. f=60Hz



■ Equivalent circuit schematic



Note *1: T_{ch} ≤ 150°C, Repetitive and Non-repetitive

Note *2: Starting T_{ch}=25°C, I_{AS}=11A, L=3.77mH,

V_{CC}=48V, R_G=50Ω

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

See to the 'Avalanche Energy' graph

Note *3: Repetitive rating: Pulse width limited by maximum channel temperature.

See to the 'Transient Thermal impedance' graph.

Note *4: I_F ≤ -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	120			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} =120V V _{GS} =0V			25	μA
		V _{DS} =96V V _{GS} =0V			250	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±30V V _{DS} =0V			100	nA
Drain-Source On-State Resistance	R _{DS(on)}	I _D =13A V _{GS} =10V		63	78	mΩ
Forward Transconductance	g _{fs}	I _D =13A V _{DS} =25V	6	12		S
Input Capacitance	C _{iss}	V _{DS} =75V		760	1140	pF
Output Capacitance	C _{oss}	V _{GS} =0V		170	255	
Reverse Transfer Capacitance	C _{rss}	f=1MH		11	17	
Turn-On Time t _{on}	td(on)	V _{CC} =48V		13	20	ns
	t _r	I _D =13A		5	7.5	
Turn-Off Time t _{off}	td(off)	V _{GS} =10V		20	30	
	t _f	R _{GS} =10 Ω		7.5	11	
Total Gate Charge	Q _G	V _{CC} =60V		26	39	nC
Gate-Source Charge	Q _{GS}	I _D =26A		12	18	
Gate-Drain Charge	Q _{GD}	V _{GS} =10V		7	11	
Diode forward on-voltage	V _{SD}	I _F =26A V _{GS} =0V T _{ch} =25°C		1.00	1.50	V
Reverse recovery time	t _{rr}	I _F =26A V _{GS} =0V		130		ns
Reverse recovery charge	Q _{rr}	-di/dt=100A/μs T _{ch} =25°C		0.7		μC

● Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-c)}	channel to case			3.378	°C/W
	R _{th(ch-a)}	channel to ambient			58	°C/W

Characteristics

