

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

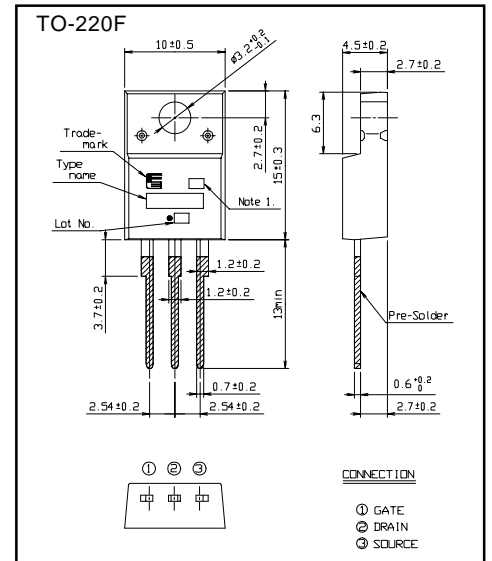
■ Applications

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

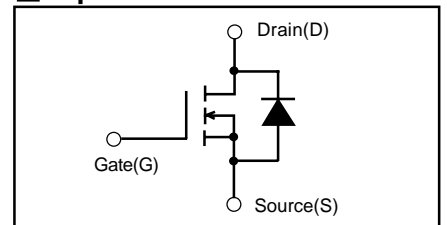
■ Maximum ratings and characteristic

● Absolute maximum ratings
(Tc=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

