

2SK3683-01MR

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

Maximum ratings and characteristic Absolute maximum ratings

(Tc=25°C unless otherwise specified)

| Item | Symbol | Rated | Unit | Remarks |
|--|----------------------|-------------|-------|-------------------------------------|
| Drain-source voltage | V _{DS} | 500 | V | |
| | V _{DSX} | 500 | V | V _{GS} =-30V |
| Continuous drain current | I _D | ±19 | A | |
| Pulsed drain current | I _{D(puls)} | ±76 | A | |
| Gate-source voltage | V _{GS} | ±30 | V | |
| Non-Repetitive Maximum avalanche current | I _{AS} | 19 | A | T _{ch} ≤150°C |
| Non-Repetitive Maximum avalanche energy | E _{AS} | 245.3 | mJ | L=1.25mH V _{CC} =50V *2 |
| Maximum Drain-Source dV/dt | dV _{DS} /dt | 20 | kV/s | V _{DS} ≤500V |
| Peak diode recovery dV/dt | dV/dt | 5 | kV/μs | *3 |
| Max. power dissipation | P _D | 2.16 | W | T _a =25°C |
| | | 97 | | T _c =25°C |
| Operating and storage temperature range | T _{ch} | +150 | °C | |
| | T _{stg} | -55 to +150 | °C | |
| Isolation voltage | V _{ISO} | 2 | kVrms | t=60sec, f=60Hz |

*2 See to Avalanche Energy Graph

*3 I_F≤ -I_D, -di/dt=50A/μs, V_{CC}≤BV_{DSS}, T_{ch}≤150°C

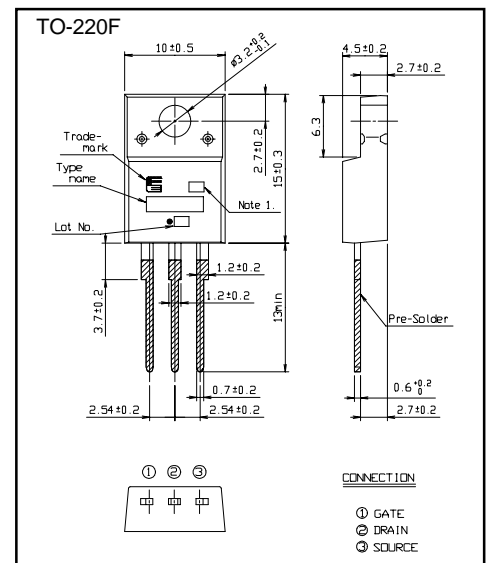
Electrical characteristics (Tc =25°C unless otherwise specified)

| Item | Symbol | Test Conditions | Min. | Typ. | Max. | Units |
|----------------------------------|----------------------|--|------|------|------|-------|
| Drain-source breakdown voltage | V(BR) _{DSS} | I _D =250μA V _{GS} =0V | 500 | | | 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} =500V V _{GS} =0V T _{ch} =25°C | | | 25 | μA |
| | | V _{DS} =400V V _{GS} =0V T _{ch} =125°C | | | 250 | |
| Gate-source leakage current | I _{GSS} | V _{GS} =±30V V _{DS} =0V | | 10 | 100 | nA |
| Drain-source on-state resistance | R _{DS(on)} | I _D =9.5A V _{GS} =10V | | 0.29 | 0.38 | Ω |
| Forward transconductance | g _{fs} | I _D =9.5A V _{DS} =25V | 7.5 | 15 | | S |
| Input capacitance | C _{iss} | V _{DS} =25V | | 1560 | 2340 | pF |
| Output capacitance | C _{oss} | V _{GS} =0V | | 230 | 345 | |
| Reverse transfer capacitance | C _{rss} | f=1MHz | | 8 | 12 | |
| Turn-on time t _{on} | t _{d(on)} | V _{CC} =300V I _D =9.5A | | 29 | 43.5 | ns |
| | t _r | V _{GS} =10V | | 13 | 19.5 | |
| Turn-off time t _{off} | t _{d(off)} | R _{GS} =10Ω | | 56 | 84 | |
| | t _f | | | 8 | 12 | |
| Total Gate Charge | Q _G | V _{CC} =250V | | 34 | 51 | nC |
| Gate-Source Charge | Q _{GS} | I _D =19A | | 13 | 19.5 | |
| Gate-Drain Charge | Q _{GD} | V _{GS} =10V | | 10 | 15 | |
| Avalanche capability | I _{AV} | L=1.25mH T _{ch} =25°C | 19 | | | A |
| Diode forward on-voltage | V _{SD} | I _F =19A V _{GS} =0V T _{ch} =25°C | | 1.20 | 1.50 | V |
| Reverse recovery time | t _{rr} | I _F =19A V _{GS} =0V | | 0.57 | | μs |
| Reverse recovery charge | Q _{rr} | -di/dt=100A/μs T _{ch} =25°C | | 7.0 | | μC |

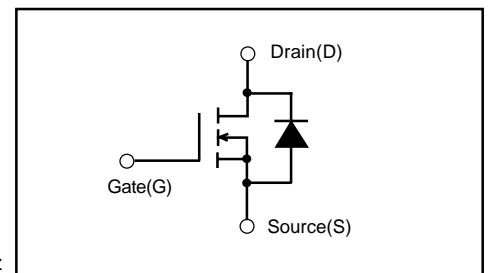
Thermal characteristics

| Item | Symbol | Test Conditions | Min. | Typ. | Max. | Units |
|--------------------|-----------------------|--------------------|------|------|-------|-------|
| Thermal resistance | R _{th(ch-c)} | channel to case | | | 1.289 | °C/W |
| | R _{th(ch-a)} | channel to ambient | | | 58.0 | °C/W |

Outline Drawings [mm]



Equivalent circuit schematic



Characteristics

