

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} | 500 | V |
| Continuous drain current | I _D | ±16 | A |
| Pulsed drain current | I _{D(puls)} | ±64 | A |
| Gate-source voltage | V _{GS} | ±30 | V |
| Repetitive or non-repetitive | IAR *2 | 16 | A |
| Maximum Avalanche Energy | EAS *1 | 183 | mJ |
| Maximum Drain-Source dV/dt | dV _{DS} /dt *4 | 20 | 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} *5 | 2 | kVrms |

*1 L=1.53mH, V_{CC}=50V, 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}≤500V *5 t=60sec, f=60Hz

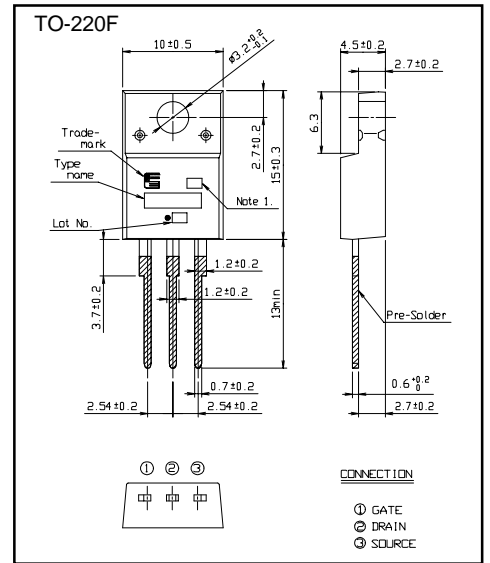
Electrical characteristics (Tc =25°C unless otherwise specified)

| Item | Symbol | Test Conditions | Min. | Typ. | Max. | Units |
|----------------------------------|----------------------|---|------|------|------|-------|
| Drain-source breakdown voltage | V _{(BR)DSS} | I _D =250μA V _{GS} =0V | 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 | | | 25 | μA |
| | | V _{DS} =400V V _{GS} =0V | | | 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 =7A V _{GS} =10V | | 0.35 | 0.46 | Ω |
| Forward transconductance | g _{fs} | I _D =7A V _{DS} =25V | 7 | 14 | | S |
| Input capacitance | C _{iss} | V _{DS} =25V | | 1600 | 2400 | pF |
| Output capacitance | C _{oss} | V _{GS} =0V | | 160 | 240 | |
| Reverse transfer capacitance | C _{rss} | f=1MHz | | 7 | 10.5 | |
| Turn-on time t _{on} | td(on) | V _{CC} =300V I _D =7A | | 18 | 27 | ns |
| | t _r | V _{GS} =10V | | 16 | 24 | |
| Turn-off time t _{off} | td(off) | R _{GS} =10 Ω | | 35 | 50 | |
| | t _r | | | 8 | 15 | |
| Total Gate Charge | Q _G | V _{CC} =250V | | 33 | 50 | nC |
| Gate-Source Charge | Q _{GS} | I _D =14A | | 12.5 | 19 | |
| Gate-Drain Charge | Q _{GD} | V _{GS} =10V | | 10.5 | 16 | |
| Avalanche capability | I _{AV} | L=1.53mH T _{ch} =25°C | 16 | | | A |
| Diode forward on-voltage | V _{SD} | I _F =14A V _{GS} =0V T _{ch} =25°C | | 1.00 | 1.50 | V |
| Reverse recovery time | t _{rr} | I _F =14A V _{GS} =0V | | 0.65 | | μs |
| Reverse recovery charge | Q _{rr} | -di/dt=100A/μs T _{ch} =25°C | | 6.0 | | μC |

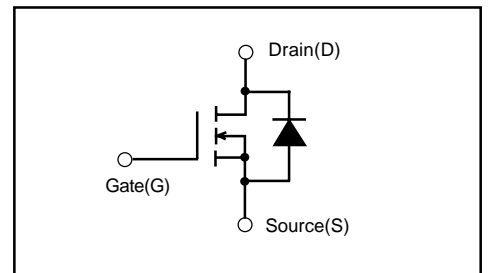
Thermal characteristics

| Item | Symbol | Test Conditions | Min. | Typ. | Max. | Units |
|--------------------|-----------------------|--------------------|------|------|------|-------|
| Thermal resistance | R _{th(ch-c)} | channel to case | | | 1.56 | °C/W |
| | R _{th(ch-a)} | channel to ambient | | | 62.0 | °C/W |

Outline Drawings [mm]



Equivalent circuit schematic



Characteristics

