

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

(T_c=25°C unless otherwise specified)

| Item | Symbol | Ratings | Unit |
|---|----------------------|----------------------|-------|
| Drain-source voltage | V _{DS} | 600 | V |
| Continuous drain current | I _D | ±13 | A |
| Pulsed drain current | I _{D(puls)} | ±52 | A |
| Gate-source voltage | V _{GS} | ±30 | V |
| Repetitive or non-repetitive | IAR *2 | 13 | A |
| Maximum Avalanche Energy | EAS *1 | 216.7 | mJ |
| Maximum Drain-Source dV/dt | dV _{DS} /dt | 20 | kV/μs |
| Peak Diode Recovery dV/dt | dV/dt *3 | 5 | kV/μs |
| Max. power dissipation | P _D | T _a =25°C | 2.02 |
| | | T _c =25°C | 225 |
| Operating and storage temperature range | T _{ch} | +150 | °C |
| | T _{stg} | -55 to +150 | °C |

*1 L=2.36mH, V_{CC}=60V 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

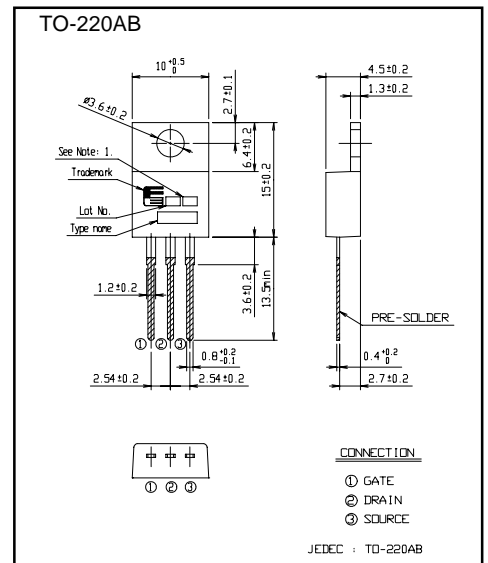
Electrical characteristics (T_c =25°C unless otherwise specified)

| Item | Symbol | Test Conditions | Min. | Typ. | Max. | Units |
|----------------------------------|----------------------|--|------------------------|------|------|-------|
| Drain-source breakdown voltage | V _{(BR)DSS} | I _D =250μA V _{GS} =0V | 600 | | | 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} =600V V _{GS} =0V | T _{ch} =25°C | | 25 | μA |
| | | | 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 =6A V _{GS} =10V | | 0.50 | 0.65 | Ω |
| Forward transconductance | g _{fs} | I _D =6A V _{DS} =25V | 5.5 | 11 | | S |
| Input capacitance | C _{iss} | V _{DS} =25V V _{GS} =0V f=1MHz | | 1600 | 2400 | pF |
| Output capacitance | C _{oss} | | | 160 | 240 | |
| Reverse transfer capacitance | C _{rss} | | | 7 | 10.5 | |
| Turn-on time t _{on} | td(on) | V _{CC} =300V I _D =6A V _{GS} =10V | | 18 | 27 | ns |
| | t _r | | | 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} =300V | | 34 | 51 | nC |
| Gate-Source Charge | Q _{GS} | I _D =12A | | 12.5 | 19 | |
| Gate-Drain Charge | Q _{GD} | V _{GS} =10V | | 11.5 | 17.5 | |
| Avalanche capability | I _{AV} | L=2.36mH T _{ch} =25°C | 13 | | | A |
| Diode forward on-voltage | V _{SD} | I _F =12A V _{GS} =0V T _{ch} =25°C | | 1.0 | 1.50 | V |
| Reverse recovery time | t _{rr} | I _F =12A V _{GS} =0V | | 0.75 | | μs |
| Reverse recovery charge | Q _{rr} | -di/dt=100A/μs T _{ch} =25°C | | 6.5 | | μC |

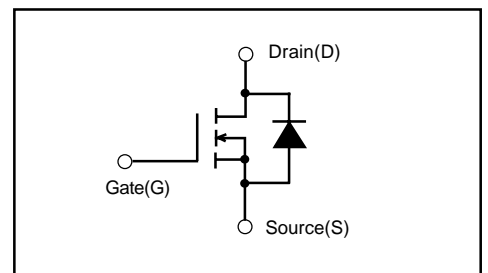
Thermal characteristics

| Item | Symbol | Test Conditions | Min. | Typ. | Max. | Units |
|--------------------|-----------------------|--------------------|------|------|-------|-------|
| Thermal resistance | R _{th(ch-c)} | channel to case | | | 0.556 | °C/W |
| | R _{th(ch-a)} | channel to ambient | | | 62.0 | °C/W |

Outline Drawings [mm]



Equivalent circuit schematic



Characteristics

