

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

Maximum ratings and characteristic Absolute maximum ratings

($T_c=25^\circ\text{C}$ unless otherwise specified)

| Item | Symbol | Ratings | Unit |
|---|--------------------|------------------------|-------------------|
| Drain-source voltage | V_{DS} | 900 | V |
| | V_{DSX}^*5 | 900 | V |
| Continuous drain current | I_D | ± 7 | A |
| Pulsed drain current | $I_D(\text{puls})$ | ± 28 | A |
| Gate-source voltage | V_{GS} | ± 30 | V |
| Repetitive or non-repetitive | I_{AR}^*2 | 7 | A |
| Maximum Avalanche Energy | E_{AS}^*1 | 269.5 | mJ |
| Maximum Drain-Source dV/dt | dV_{DS}/dt^*4 | 40 | kV/ μs |
| Peak Diode Recovery dV/dt | dV/dt^*3 | 5 | kV/ μs |
| Max. power dissipation | P_D | $T_a=25^\circ\text{C}$ | 2.50 |
| | | $T_c=25^\circ\text{C}$ | 195 |
| Operating and storage temperature range | T_{ch} | +150 | $^\circ\text{C}$ |
| | T_{stg} | -55 to +150 | $^\circ\text{C}$ |

*1 $L=10.1\text{mH}$, $V_{CC}=90\text{V}$, $T_{ch}=25^\circ\text{C}$. See to Avalanche Energy Graph *2 $T_{ch}\leq 150^\circ\text{C}$

*3 $I_F=\bar{I}_D$, $-di/dt=50\text{A}/\mu\text{s}$, $V_{CC}\leq BV_{DSS}$, $T_{ch}\leq 150^\circ\text{C}$ *4 $V_{DS}\leq 900\text{V}$ *5 $V_{GS}=-30\text{V}$

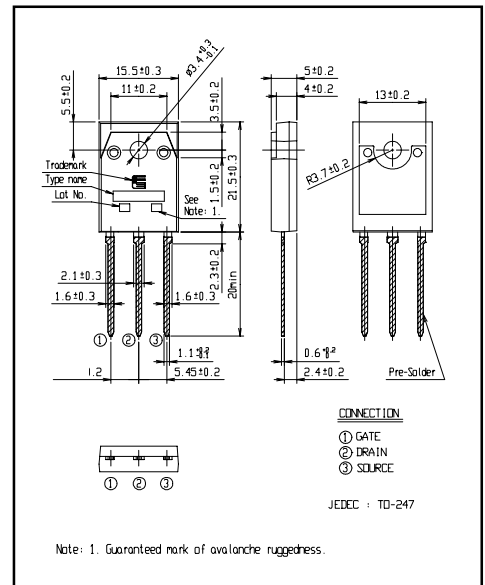
Electrical characteristics ($T_c=25^\circ\text{C}$ unless otherwise specified)

| Item | Symbol | Test Conditions | Min. | Typ. | Max. | Units |
|----------------------------------|---------------|--|------|------|------|---------------|
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $I_D=250\mu\text{A}$ $V_{GS}=0\text{V}$ | 900 | | | V |
| Gate threshold voltage | $V_{GS(th)}$ | $I_D=250\mu\text{A}$ $V_{DS}=V_{GS}$ | 3.0 | | 5.0 | V |
| Zero gate voltage drain current | I_{DSS} | $V_{DS}=900\text{V}$ $V_{GS}=0\text{V}$ | | | 25 | μA |
| | | $V_{DS}=720\text{V}$ $V_{GS}=0\text{V}$ | | | 250 | μA |
| Gate-source leakage current | I_{GSS} | $V_{GS}=\pm 30\text{V}$ $V_{DS}=0\text{V}$ | | | 100 | nA |
| Drain-source on-state resistance | $R_{DS(on)}$ | $I_D=3.5\text{A}$ $V_{GS}=10\text{V}$ | | 1.54 | 2.00 | Ω |
| Forward transconductance | g_{fs} | $I_D=3.5\text{A}$ $V_{DS}=25\text{V}$ | 4.1 | 8.2 | | S |
| Input capacitance | C_{iss} | $V_{DS}=25\text{V}$ | | 920 | 1380 | pF |
| Output capacitance | C_{oss} | $V_{GS}=0\text{V}$ | | 115 | 175 | pF |
| Reverse transfer capacitance | C_{rss} | $f=1\text{MHz}$ | | 6.6 | 10 | pF |
| Turn-on time t_{on} | $t_{d(on)}$ | $V_{CC}=600\text{V}$ $I_D=3.5\text{A}$ | | 22 | 33 | ns |
| | t_r | $V_{GS}=10\text{V}$ | | 8.0 | 12 | ns |
| Turn-off time t_{off} | $t_{d(off)}$ | $R_{GS}=10\Omega$ | | 45 | 67.5 | ns |
| | t_f | | | 10.5 | 16 | ns |
| Total Gate Charge | Q_G | $V_{CC}=450\text{V}$ | | 25 | 37.5 | nC |
| Gate-Source Charge | Q_{GS} | $I_D=7\text{A}$ | | 4 | 6 | nC |
| Gate-Drain Charge | Q_{GD} | $V_{GS}=10\text{V}$ | | 8.5 | 13 | nC |
| Avalanche capability | I_{AV} | $L=10.1\text{mH}$ $T_{ch}=25^\circ\text{C}$ | 7 | | | A |
| Diode forward on-voltage | V_{SD} | $I_F=7\text{A}$ $V_{GS}=0\text{V}$ $T_{ch}=25^\circ\text{C}$ | | 0.90 | 1.50 | V |
| Reverse recovery time | t_{rr} | $I_F=7\text{A}$ $V_{GS}=0\text{V}$ | | 2.6 | | μs |
| Reverse recovery charge | Q_{rr} | $-di/dt=100\text{A}/\mu\text{s}$ $T_{ch}=25^\circ\text{C}$ | | 8.0 | | μC |

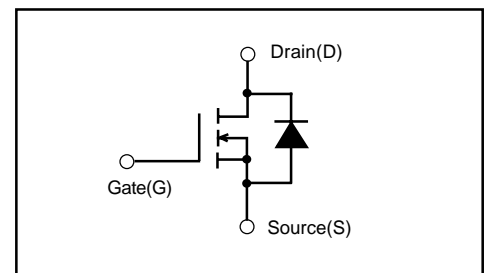
Thermal characteristics

| Item | Symbol | Test Conditions | Min. | Typ. | Max. | Units |
|--------------------|----------------|--------------------|------|------|-------|---------------------------|
| Thermal resistance | $R_{th(ch-c)}$ | channel to case | | | 0.640 | $^\circ\text{C}/\text{W}$ |
| | $R_{th(ch-a)}$ | channel to ambient | | | 50.0 | $^\circ\text{C}/\text{W}$ |

Outline Drawings [mm]



Equivalent circuit schematic



Characteristics

