

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 | Remarks |
|---|----------------------|-------------|-------|-------------------------|
| Drain-source voltage | V _{DS} | 600 | V | |
| | V _{DSX} | 600 | V | V _{GS} =-30V |
| 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 | I _{AR} | 16 | A | T _{ch} ≤ 150°C |
| Maximum avalanche energy | E _{AS} | 242.7 | mJ | *1 |
| Maximum drain-source dV/dt | dV _{DS} /dt | 20 | kV/μs | V _{DS} ≤ 600V |
| Peak diode recovery dV/dt | dV/dt | 5 | kV/μs | *2 |
| Max. power dissipation | P _D | 1.67 | W | T _a =25°C |
| | | 270 | | 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 |

*1 L=1.74mH, V_{CC}=60V, See to Avalanche Energy Graph

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

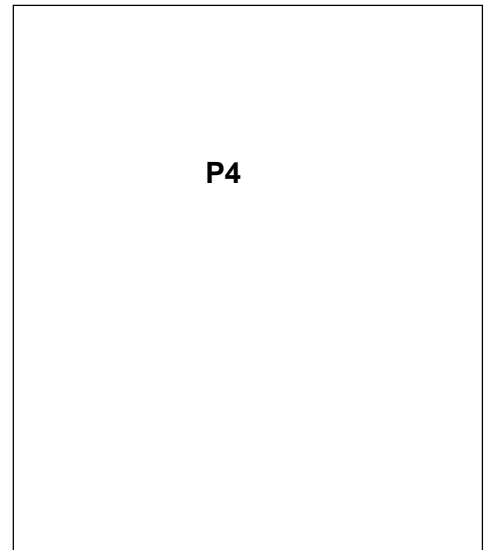
Electrical characteristics (Tc =25°C unless otherwise specified)

| Item | Symbol | Test Conditions | | | | |
|----------------------------------|----------------------|---|-----|------|------|----|
| 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 | | | 25 | μA |
| | | V _{DS} =480V 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 =8A V _{GS} =10V | | 0.42 | 0.57 | Ω |
| Forward transconductance | g _{fs} | I _D =8A V _{DS} =25V | 6.5 | 13 | | S |
| Input capacitance | C _{iss} | V _{DS} =25V | | 1590 | 2390 | pF |
| Output capacitance | C _{oss} | V _{GS} =0V | | 200 | 300 | |
| Reverse transfer capacitance | C _{rss} | f=1MHz | | 11 | 17 | |
| Turn-on time t _{on} | t _{d(on)} | V _{CC} =300V I _D =8A | | 29 | 43.5 | ns |
| | t _r | V _{GS} =10V | | 16 | 24 | |
| Turn-off time t _{off} | t _{d(off)} | R _{GS} =10 Ω | | 58 | 87 | |
| | t _r | | | 8 | 12 | |
| Total Gate Charge | Q _G | V _{CC} =300V | | 34 | 51 | nC |
| Gate-Source Charge | Q _{GS} | I _D =16A | | 12 | 18 | |
| Gate-Drain Charge | Q _{GD} | V _{GS} =10V | | 10 | 15 | |
| Avalanche capability | I _{AV} | L=1.74mH T _{ch} =25°C | 16 | | | A |
| Diode forward on-voltage | V _{SD} | I _F =16A V _{GS} =0V T _{ch} =25°C | | 1.00 | 1.50 | V |
| Reverse recovery time | t _{rr} | I _F =16A V _{GS} =0V | | 0.68 | | μs |
| Reverse recovery charge | Q _{rr} | -di/dt=100A/μs T _{ch} =25°C | | 7.8 | | μC |

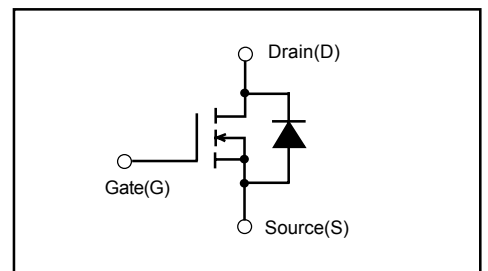
Thermal characteristics

| Item | Symbol | Test Conditions | Min. | Typ. | Max. | Units |
|--------------------|-----------------------|--------------------|------|------|-------|-------|
| Thermal resistance | R _{th(ch-c)} | channel to case | | | 0.463 | °C/W |
| | R _{th(ch-a)} | channel to ambient | | | 75.0 | °C/W |

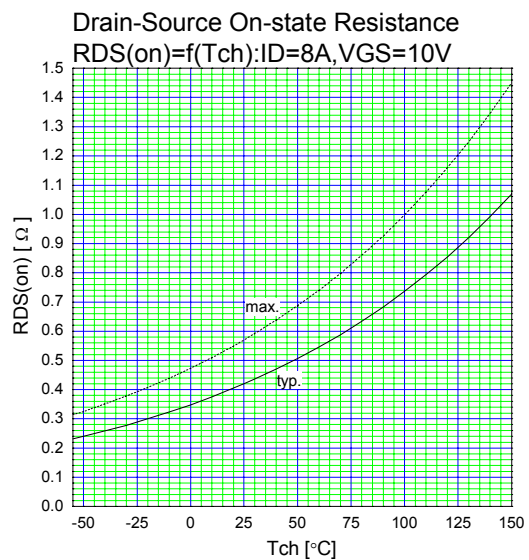
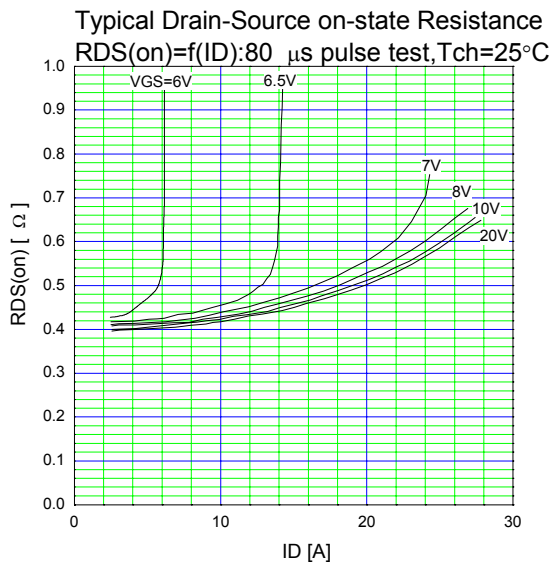
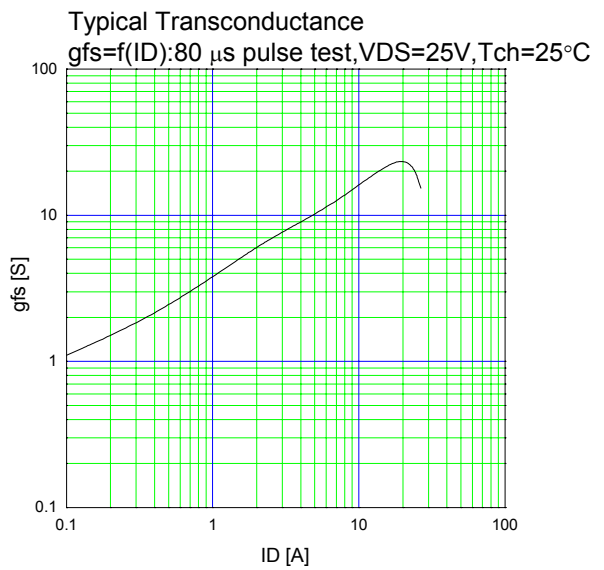
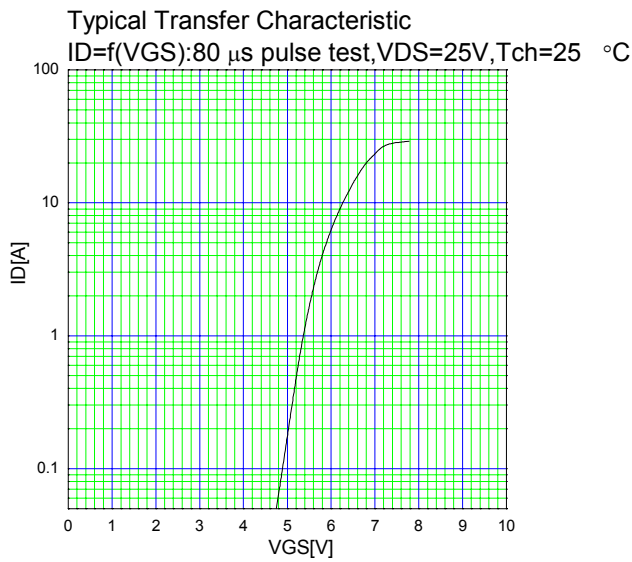
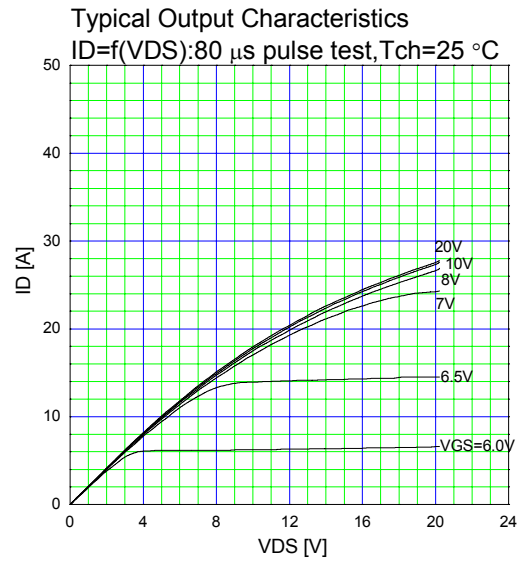
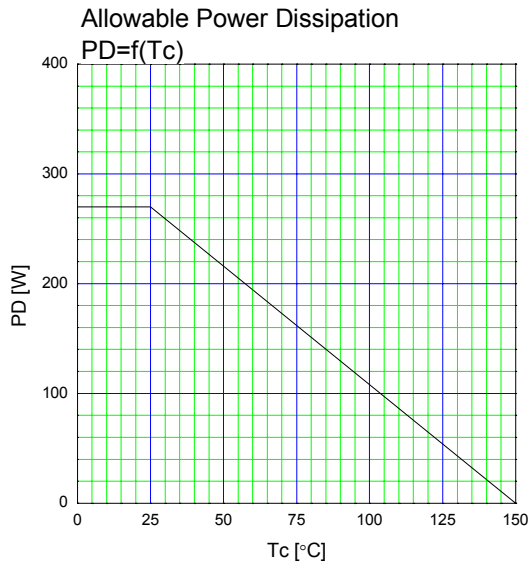
Outline Drawings [mm]

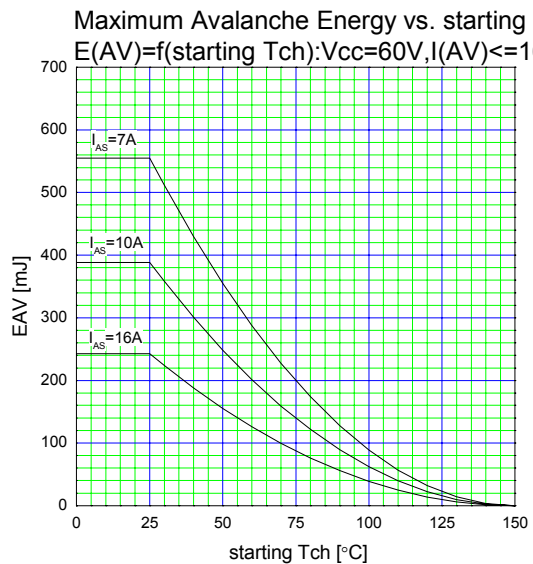
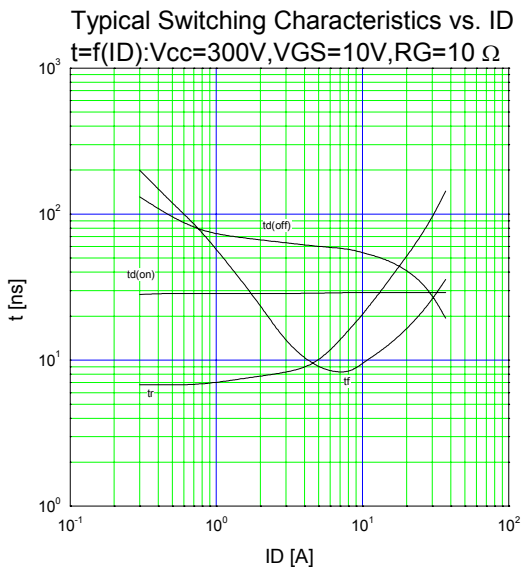
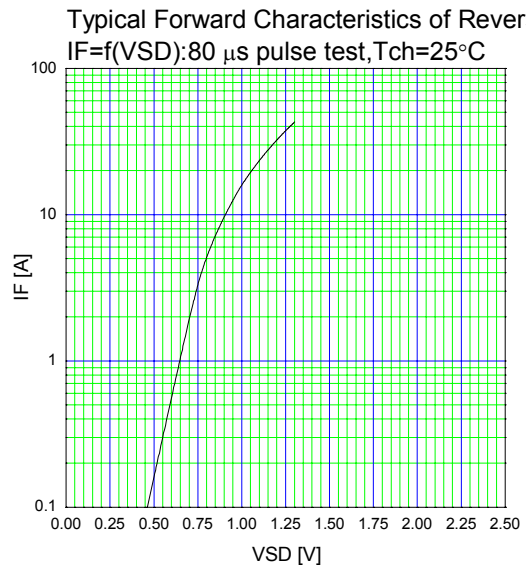
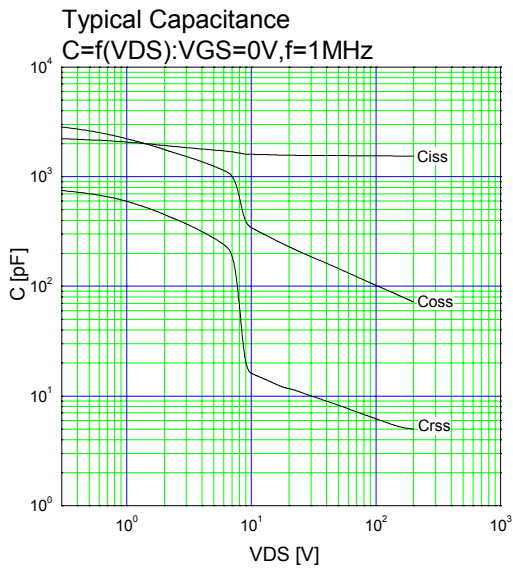
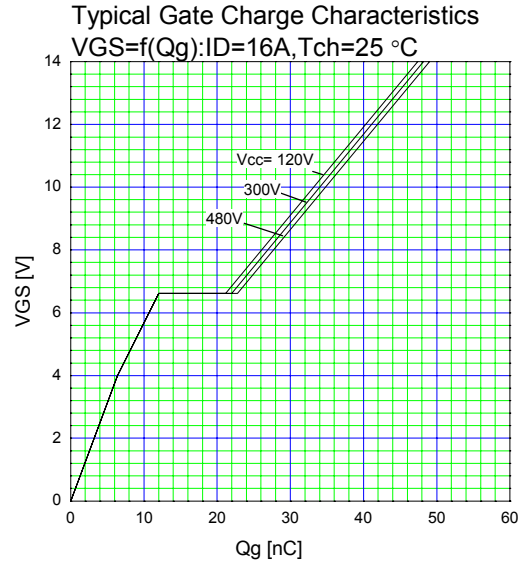
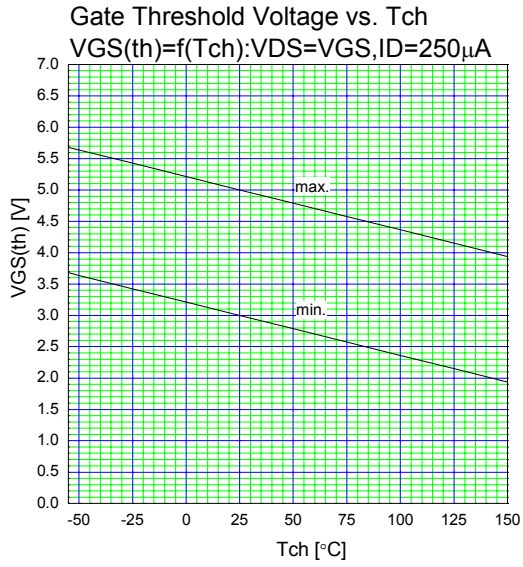


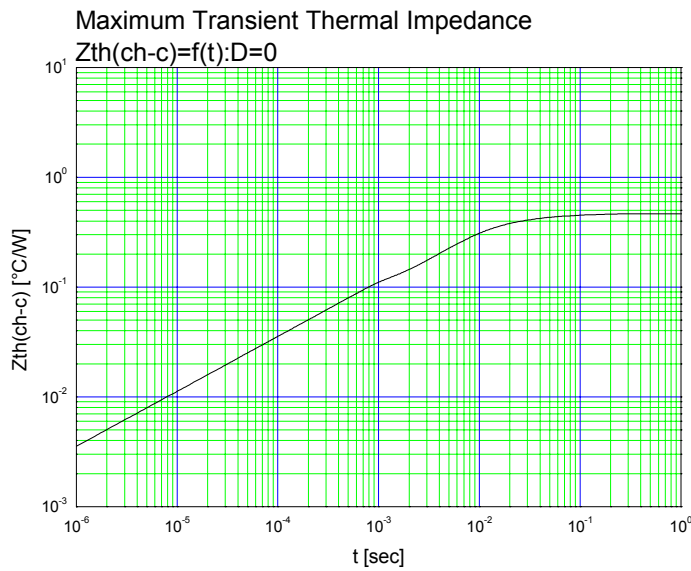
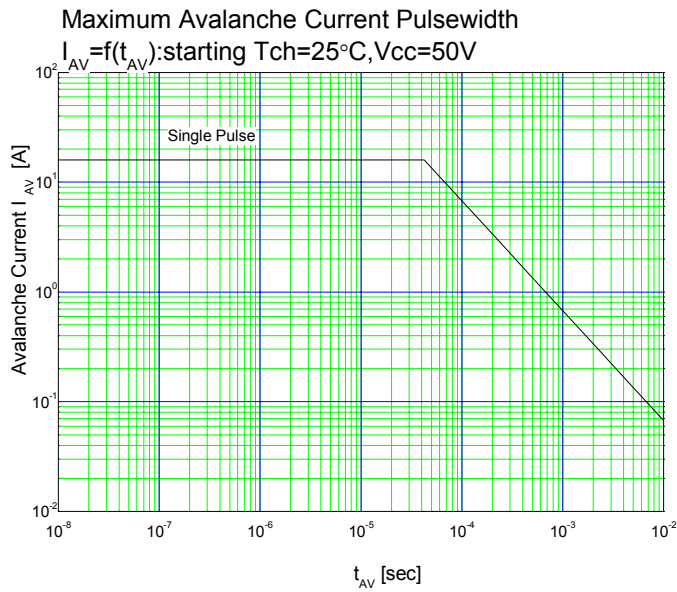
Equivalent circuit schematic



Characteristics

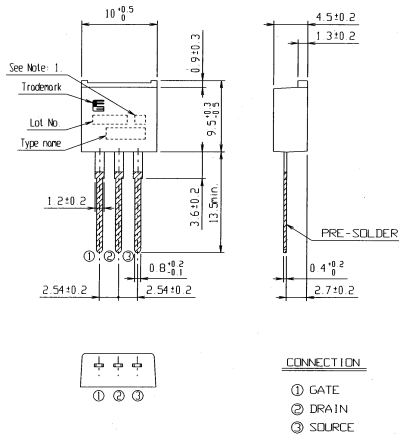






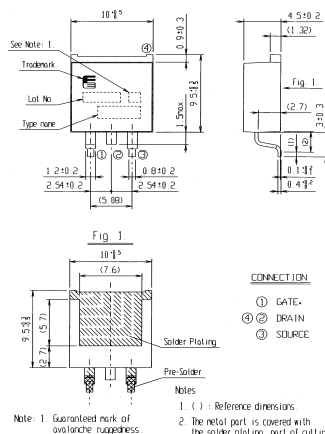
■ Outline Drawings [mm]

T-pack(L)



Note: 1. Guaranteed mark of avalanche ruggedness.

T-pack(S)



T-pack(SJ) [D2-pack]

