

N-CHANNEL SILICON POWER MOSFET

FAP-IIS SERIES

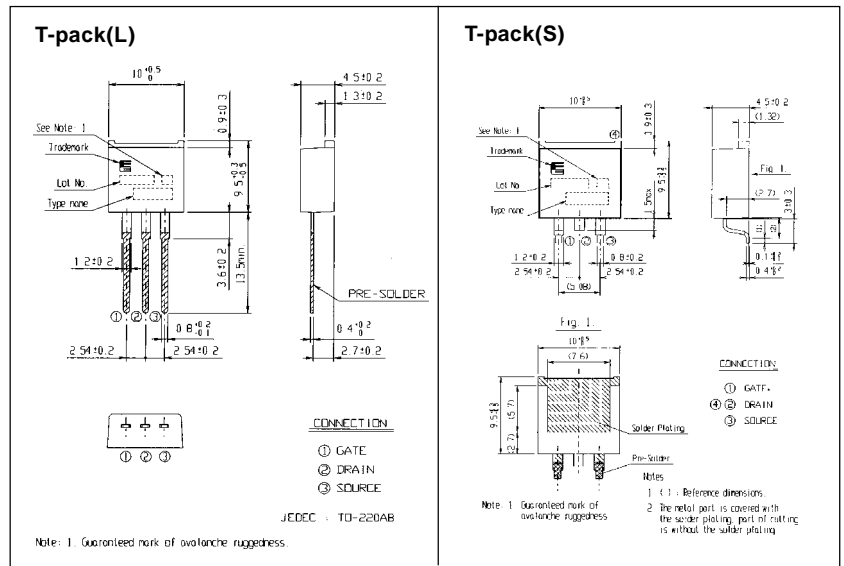
Features

- High speed switching
- Low on-resistance
- No secondary breakdown
- Low driving power
- High voltage
- Avalanche-proof

Applications

- Switching regulators
- DC-DC converters
- General purpose power amplifier

Outline Drawings

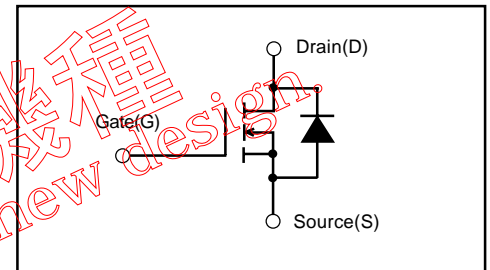


Maximum ratings and characteristics

Absolute maximum ratings (Tc=25°C unless otherwise specified)

| Item | Symbol | Rating | Unit | Remarks |
|---|-------------------------------------|---------------------|------|-------------------------|
| Drain-source voltage | V _{DS} | 450 | V | |
| Continuous drain current | I _D | ±8 | A | |
| Pulsed drain current | I _D [puls] | ±32 | A | |
| Gate-source peak voltage | V _{GS} | ±35 | V | |
| Repetitive or non-repetitive | I _{AV} | 8 | A | T _{ch} ≤ 150°C |
| Maximum avalanche energy | E _{AV} | 215.9 | mJ | |
| Maximum power dissipation | P _D | 60 | W | |
| Operating and storage temperature range | T _{ch} T _{stg} | +150 -55 to +150 | °C | |

Equivalent circuit schematic



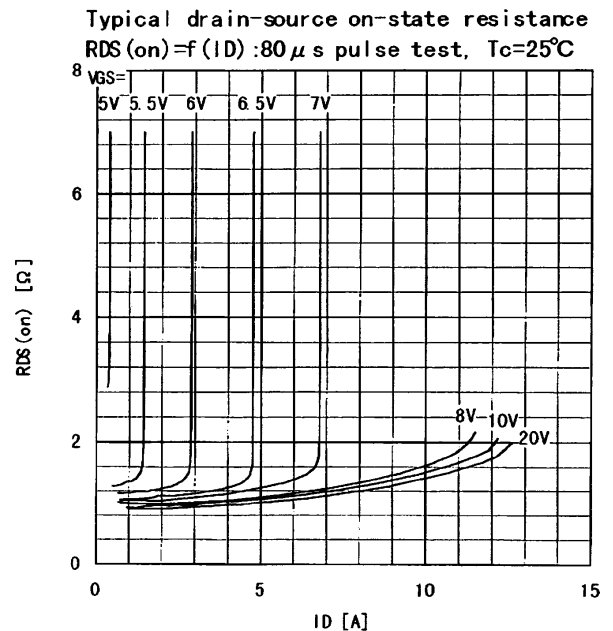
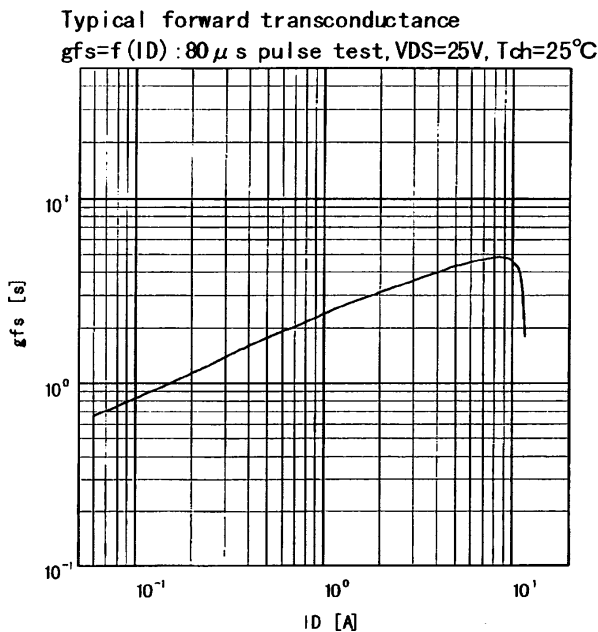
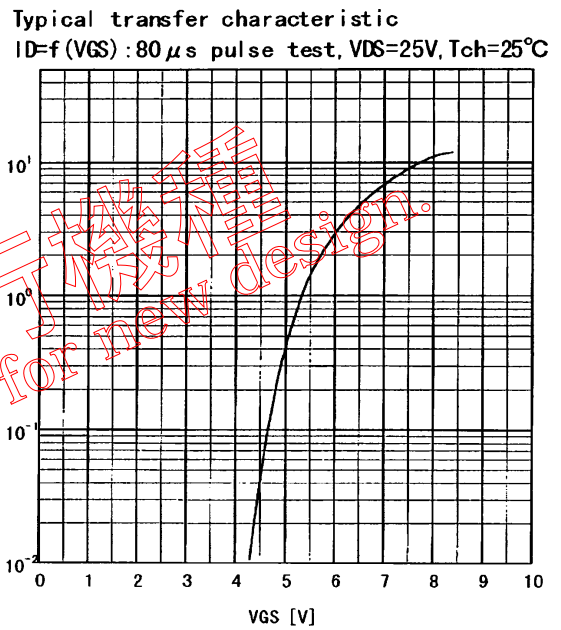
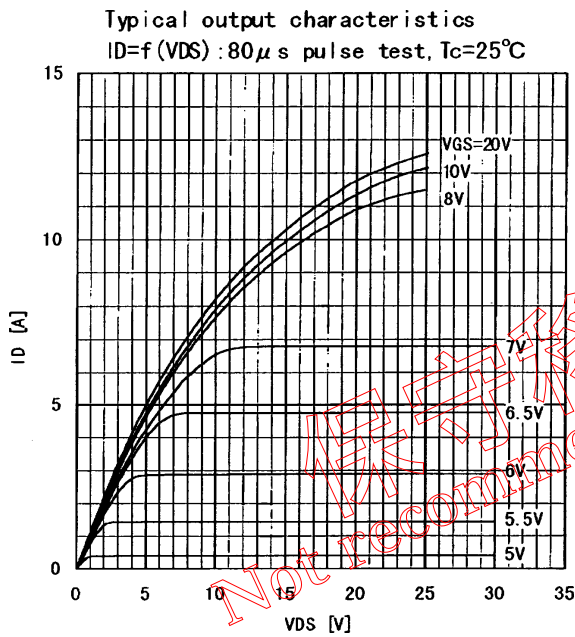
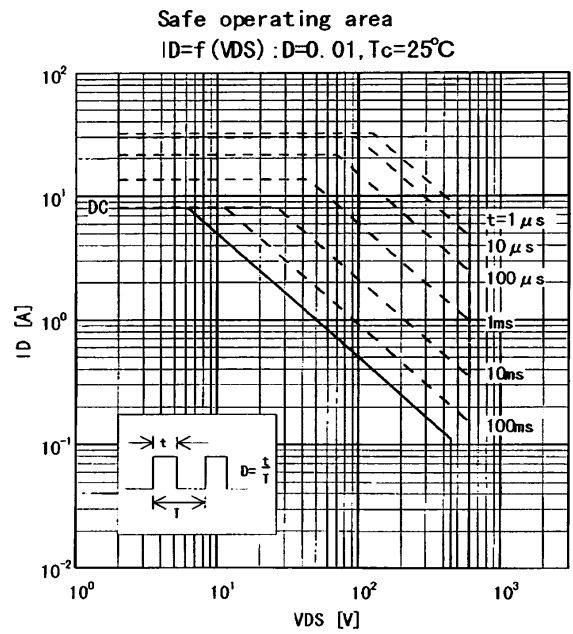
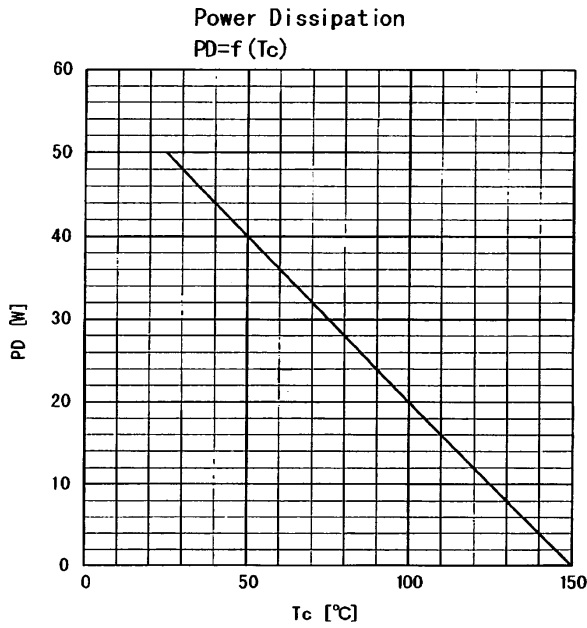
Electrical characteristics (Tc = 25°C unless otherwise specified)

| Item | Symbol | Test Conditions | Min. | Typ. | Max. | Units | |
|----------------------------------|----------------------|--|------------------------|------|------|-------|----|
| Drain-source breakdown voltage | V _{(BR)DSS} | I _D =1mA V _{GS} =0V | 450 | | | V | |
| Gate threshold voltage | V _{GS(th)} | I _D =1mA V _{DS} =V _{GS} | 3.5 | 4.0 | 4.5 | V | |
| Zero gate voltage drain current | I _{DSS} | V _{DS} =450V V _{GS} =0V | T _{ch} =25°C | | 10 | 500 | μA |
| | | | T _{ch} =125°C | | 0.2 | 1.0 | mA |
| Gate-source leakage current | I _{GSS} | V _{GS} =±35V V _{DS} =0V | | 10 | 100 | nA | |
| Drain-source on-state resistance | R _{DS(on)} | I _D =4A V _{GS} =10V V _{GS} =4V | | 1.0 | 1.2 | Ω | |
| Forward transconductance | g _{fs} | I _D =4A V _{DS} =25V | 2 | 4 | | S | |
| Input capacitance | C _{iss} | V _{DS} =25V | | 540 | 810 | pF | |
| Output capacitance | C _{oss} | V _{GS} =0V | | 100 | 150 | | |
| Reverse transfer capacitance | C _{rss} | f=1MHz | | 45 | 70 | | |
| Turn-on time | t _{d(on)} | V _{CC} =300V R _G =10 Ω | | 13 | 20 | ns | |
| | t _r | I _D =8A | | 45 | 70 | | |
| Turn-off time | t _{d(off)} | V _{GS} =10V | | 40 | 60 | | |
| | t _f | | | 25 | 40 | | |
| Avalanche capability | I _{AV} | L=6.19mH T _{ch} =25°C | 8 | | | A | |
| Diode forward on-voltage | V _{SD} | I _F =2I _{DR} V _{GS} =0V T _{ch} =25°C | | 1.10 | 1.65 | V | |
| Reverse recovery time | t _{rr} | I _F =I _{DR} V _{GS} =0V | | 450 | | ns | |
| Reverse recovery charge | Q _{rr} | -di/dt=100A/μs T _{ch} =25°C | | 3.7 | | μC | |

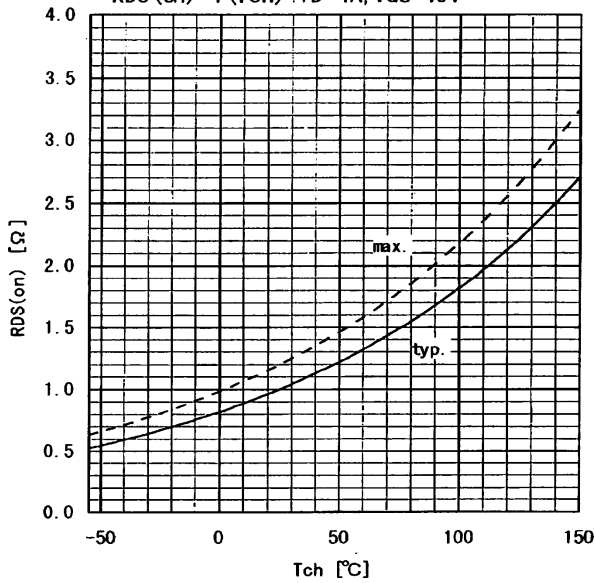
Thermal characteristics

| Item | Symbol | Min. | Typ. | Max. | Units |
|--------------------|-----------------------|------|------|-------|-------|
| Thermal resistance | R _{th(ch-c)} | | | 2.50 | °C/W |
| | R _{th(ch-a)} | | | 125.0 | °C/W |

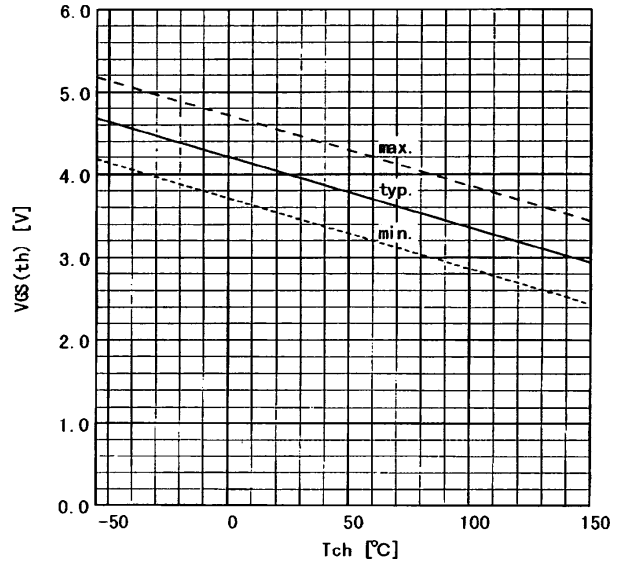
Characteristics



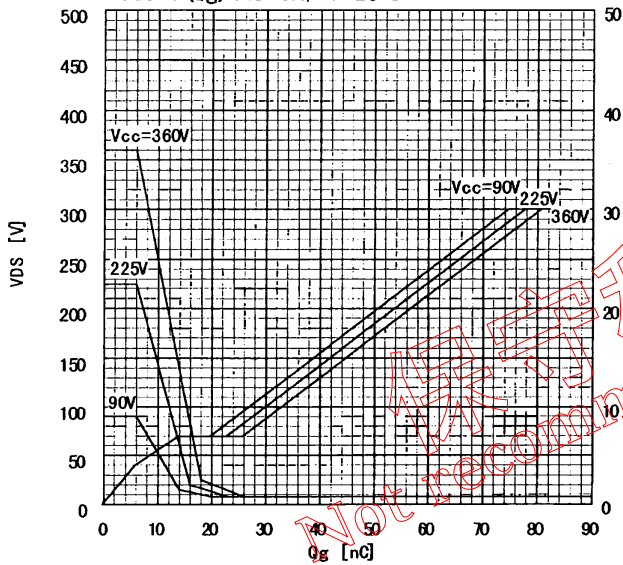
Drain-source on-state resistance
 $R_{DS(on)} = f(T_{ch}) : I_D = 4A, V_{GS} = 10V$



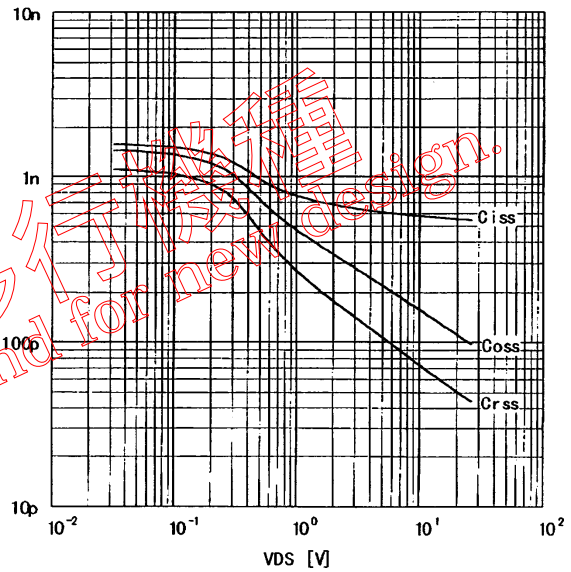
Gate threshold voltage
 $V_{GS(th)} = f(T_{ch}) : I_D = 1mA, V_{DS} = V_{GS}$



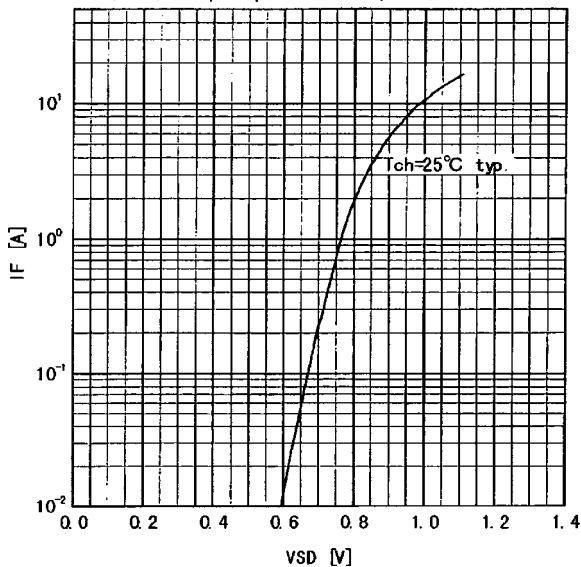
Typical gate charge characteristic
 $V_{GS} = f(Q_g) : I_D = 8A, T_c = 25°C$



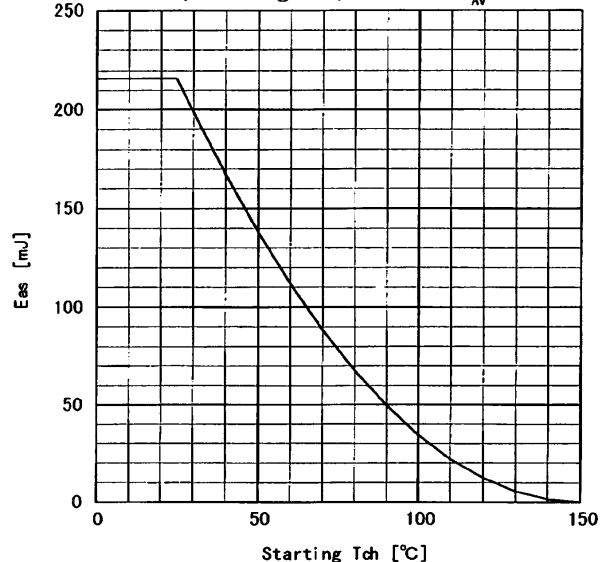
Typical capacitances
 $C = f(V_{DS}) : V_{GS} = 0V, f = 1MHz$

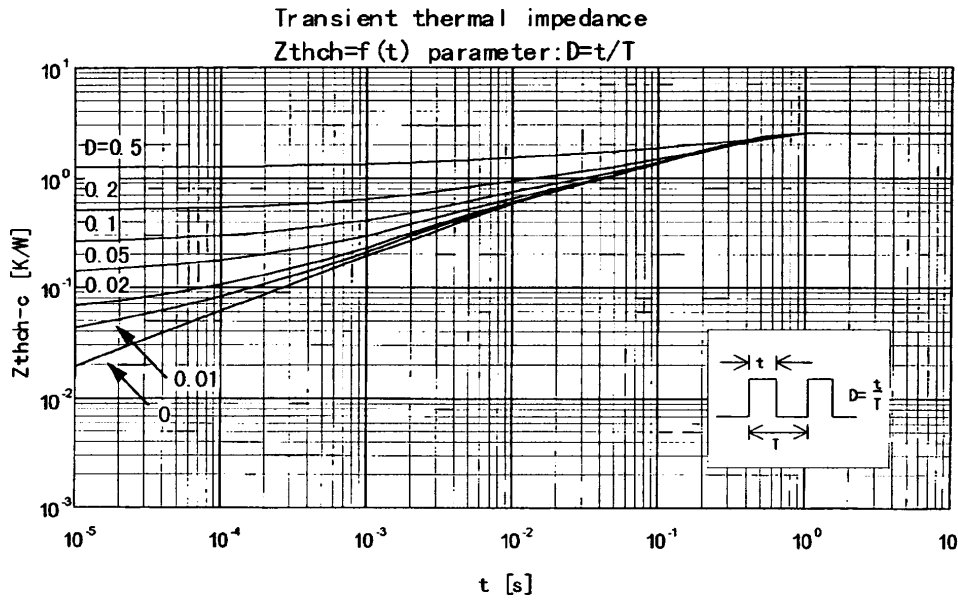


Forward characteristic of reverse of diode
 $I_F = f(V_{SD}) : 80 \mu s \text{ pulses test}, V_{GS} = 0V$



Avalanche energy derating
 $E_{as} = f(\text{starting } T_{ch}) : V_{CC} = 45V, I_{AV} = 8A$





保守移行機種
Not recommend for new design.