

# 2SK3469-01MR

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

(Tc=25°C unless otherwise specified)

| Item                                    | Symbol               | Ratings              | Unit  |
|---|----------------------|----------------------|-------|
| Drain-source voltage                    | V <sub>DS</sub>      | 500                  | V     |
| Continuous drain current                | I <sub>D</sub>       | ±12                  | A     |
| Pulsed drain current                    | I <sub>D(puls)</sub> | ±48                  | A     |
| Gate-source voltage                     | V <sub>GS</sub>      | ±30                  | V     |
| Repetitive or non-repetitive            | IAR *2               | 12                   | A     |
| Maximum Avalanche Energy                | EAS *1               | 217                  | mJ    |
| Maximum Drain-Source dV/dt              | dV <sub>DS</sub> /dt | 20                   | kV/μs |
| Peak Diode Recovery dV/dt               | dV/dt *3             | 5                    | kV/μs |
| Max. power dissipation                  | P <sub>D</sub>       | T <sub>a</sub> =25°C | 2.16  |
|   |                      | T <sub>c</sub> =25°C | 50    |
| Operating and storage temperature range | T <sub>ch</sub>      | +150                 | °C    |
|   | T <sub>stg</sub>     | -55 to +150          | °C    |

\*1 L=2.77mH, V<sub>cc</sub>=50V \*2 T<sub>ch</sub>≤150°C \*3 I<sub>F</sub>≤-I<sub>D</sub>, -di/dt=50A/μs, V<sub>cc</sub>≤BV<sub>DSS</sub>, T<sub>ch</sub>≤150°C

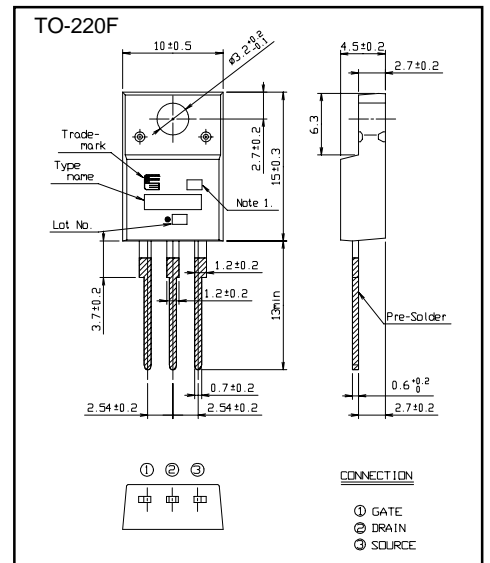
### Electrical characteristics (Tc =25°C unless otherwise specified)

| Item                             | Symbol               | Test Conditions   | Min. | Typ. | Max. | Units |
|----------------------------------|----------------------|---|------|------|------|-------|
| Drain-source breakdown voltage   | V <sub>(BR)DSS</sub> | I <sub>D</sub> =250μA V <sub>GS</sub> =0V                     | 500  |      |      | V     |
| Gate threshold voltage           | V <sub>GS(th)</sub>  | I <sub>D</sub> =250μA V <sub>DS</sub> =V <sub>GS</sub>        | 3.0  |      | 5.0  | V     |
| Zero gate voltage drain current  | I <sub>DSS</sub>     | V <sub>DS</sub> =500V V <sub>GS</sub> =0V                     |      |      | 25   | μA    |
|                                  |                      | V <sub>DS</sub> =400V V <sub>GS</sub> =0V                     |      |      | 250  |       |
| Gate-source leakage current      | I <sub>GSS</sub>     | V <sub>GS</sub> =±30V V <sub>DS</sub> =0V                     |      | 10   | 100  | nA    |
| Drain-source on-state resistance | R <sub>DS(on)</sub>  | I <sub>D</sub> =6A V <sub>GS</sub> =10V                       |      | 0.40 | 0.52 | Ω     |
| Forward transconductance         | g <sub>fs</sub>      | I <sub>D</sub> =6A V <sub>DS</sub> =25V                       | 5.5  | 11   |      | S     |
| Input capacitance                | C <sub>iss</sub>     | V <sub>DS</sub> =25V  |      | 1200 | 1800 | pF    |
| Output capacitance               | C <sub>oss</sub>     | V <sub>GS</sub> =0V   |      | 140  | 210  |       |
| Reverse transfer capacitance     | C <sub>rss</sub>     | f=1MHz  |      | 6.0  | 9.0  |       |
| Turn-on time t <sub>on</sub>     | td(on)               | V <sub>CC</sub> =300V I <sub>D</sub> =6A                      |      | 17   | 26   | ns    |
|                                  | t <sub>r</sub>       | V <sub>GS</sub> =10V  |      | 15   | 23   |       |
| Turn-off time t <sub>off</sub>   | td(off)              | R <sub>GS</sub> =10 Ω   |      | 34   | 51   |       |
|                                  | t <sub>r</sub>       |   |      | 7    | 11   |       |
| Total Gate Charge                | Q <sub>G</sub>       | V <sub>CC</sub> =250V   |      | 30   | 45   | nC    |
| Gate-Source Charge               | Q <sub>GS</sub>      | I <sub>D</sub> =12A   |      | 11   | 16.5 |       |
| Gate-Drain Charge                | Q <sub>GD</sub>      | V <sub>GS</sub> =10V  |      | 10   | 15   |       |
| Avalanche capability             | I <sub>AV</sub>      | L=2.77mH T <sub>ch</sub> =25°C                                | 12   |      |      | A     |
| Diode forward on-voltage         | V <sub>SD</sub>      | I <sub>F</sub> =12A V <sub>GS</sub> =0V T <sub>ch</sub> =25°C |      | 1.00 | 1.50 | V     |
| Reverse recovery time            | t <sub>rr</sub>      | I <sub>F</sub> =12A V <sub>GS</sub> =0V                       |      | 0.7  |      | μs    |
| Reverse recovery charge          | Q <sub>rr</sub>      | -di/dt=100A/μs T <sub>ch</sub> =25°C                          |      | 4.5  |      | μC    |

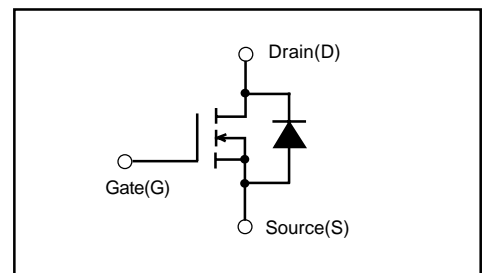
### Thermal characteristics

| Item               | Symbol                | Test Conditions    | Min. | Typ. | Max. | Units |
|--------------------|-----------------------|--------------------|------|------|------|-------|
| Thermal resistance | R <sub>th(ch-c)</sub> | channel to case    |      |      | 2.50 | °C/W  |
|                    | R <sub>th(ch-a)</sub> | channel to ambient |      |      | 58.0 | °C/W  |

### Outline Drawings

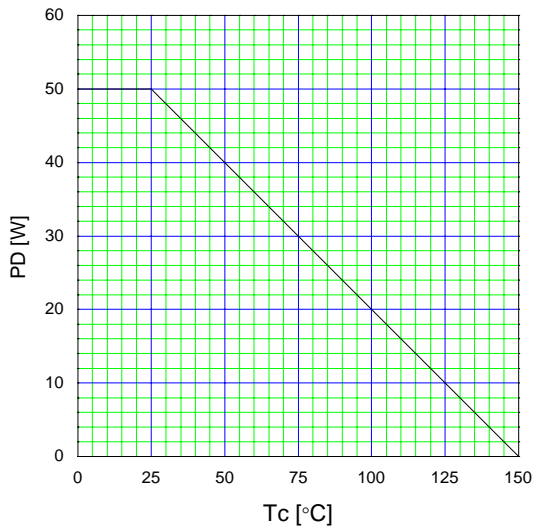


### Equivalent circuit schematic

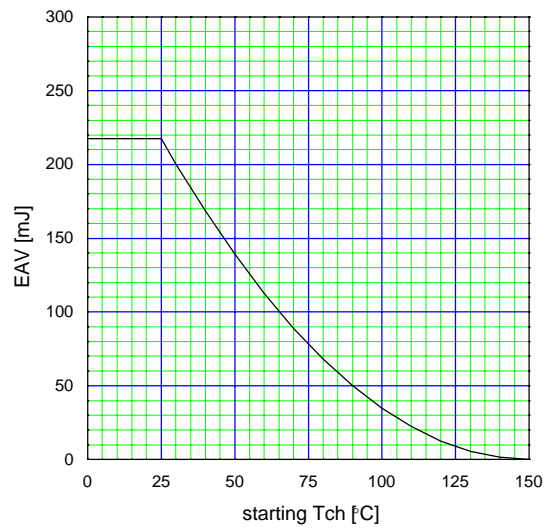


Characteristics

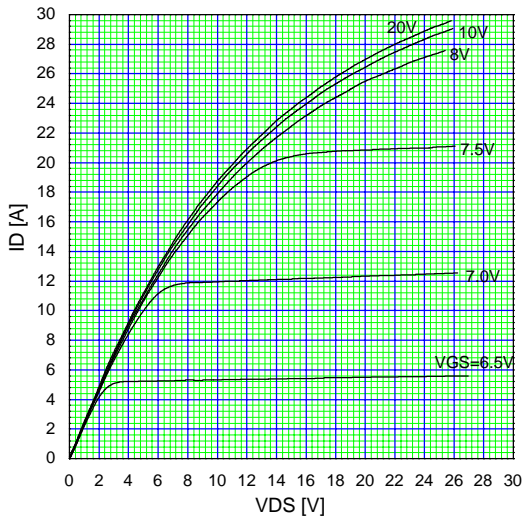
Allowable Power Dissipation  
 $PD=f(T_c)$



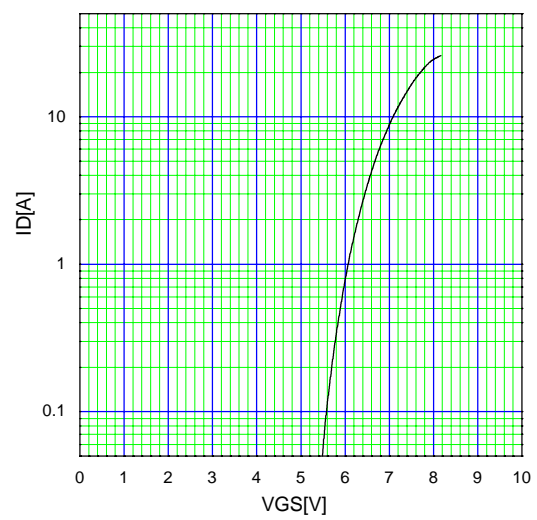
Maximum Avalanche Energy vs. starting T<sub>ch</sub>  
 $E(AV)=f(\text{starting } T_{ch}):V_{cc}=50V, I(AV)\leq 12A$



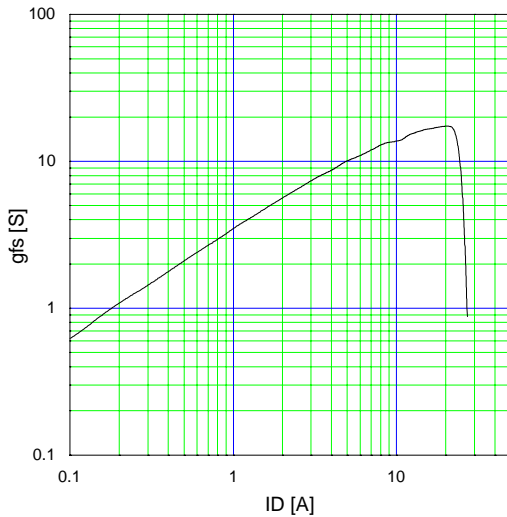
Typical Output Characteristics  
 $I_D=f(V_{DS}):80\mu s \text{ Pulse test}, T_{ch}=25^\circ C$



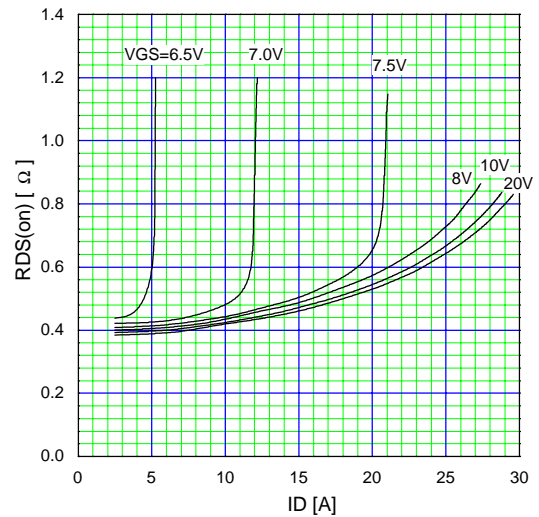
Typical Transfer Characteristic  
 $I_D=f(V_{GS}):80\mu s \text{ Pulse test}, V_{DS}=25V, T_{ch}=25^\circ C$



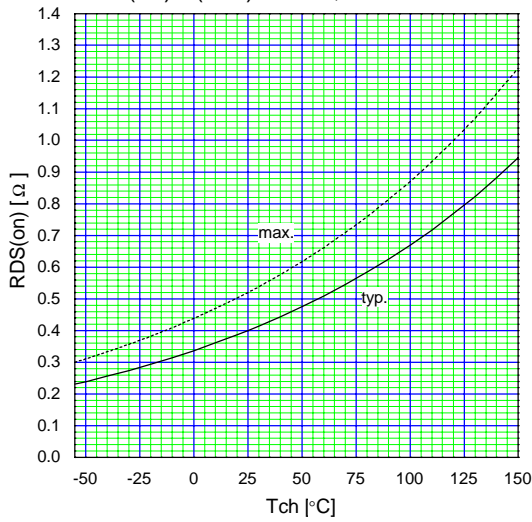
Typical Transconductance  
 $g_{fs}=f(I_D):80\mu s \text{ Pulse test}, V_{DS}=25V, T_{ch}=25^\circ C$



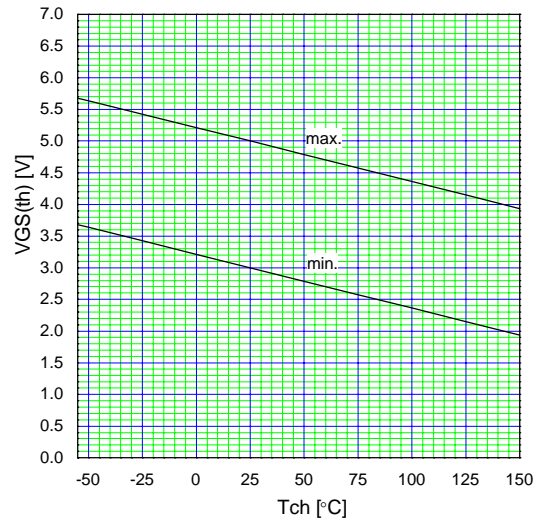
Typical Drain-Source on-state Resistance  
 $R_{DS(on)}=f(I_D):80\mu s \text{ Pulse test}, T_{ch}=25^\circ C$



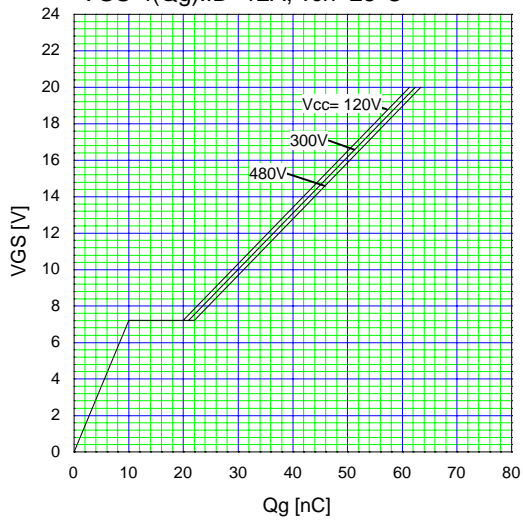
Drain-Source On-state Resistance  
 $R_{DS(on)}=f(T_{ch}):I_D=6A, V_{GS}=10V$



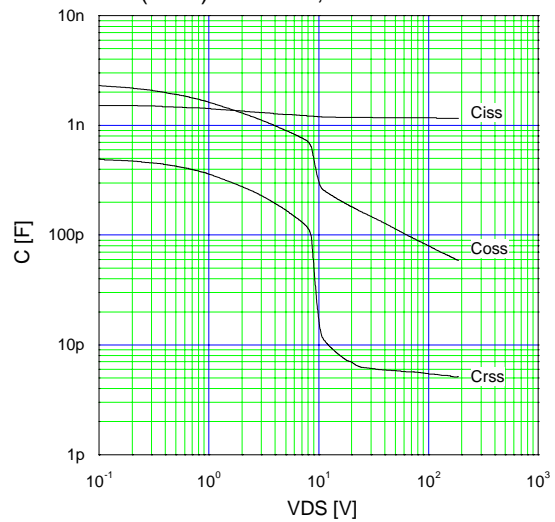
Gate Threshold Voltage vs.  $T_{ch}$   
 $V_{GS(th)}=f(T_{ch}):V_{DS}=V_{GS}, I_D=250\mu A$



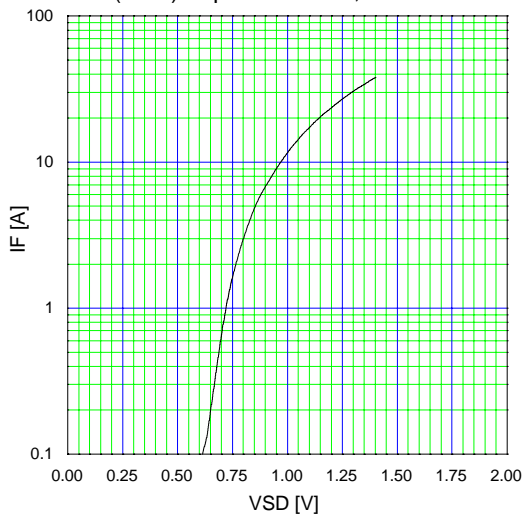
Typical Gate Charge Characteristics  
 $V_{GS}=f(Q_g):I_D=12A, T_{ch}=25^{\circ}C$



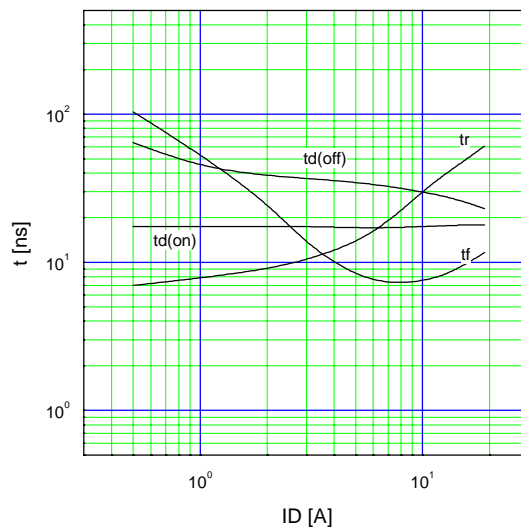
Typical Capacitance  
 $C=f(V_{DS}):V_{GS}=0V, f=1MHz$

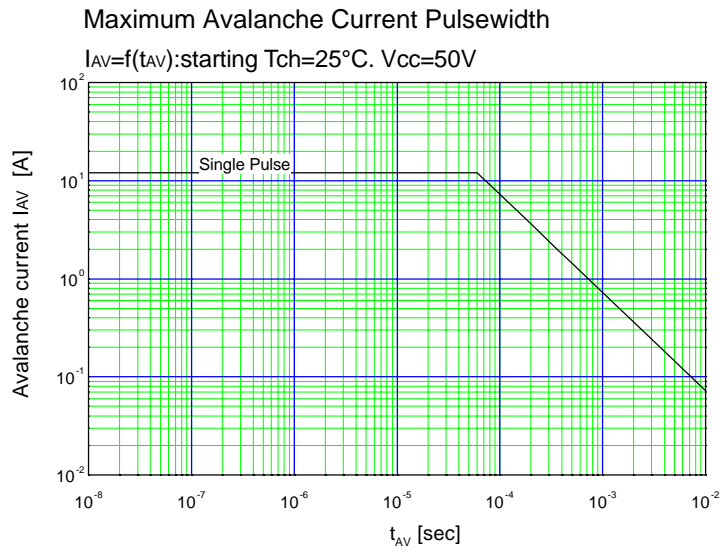
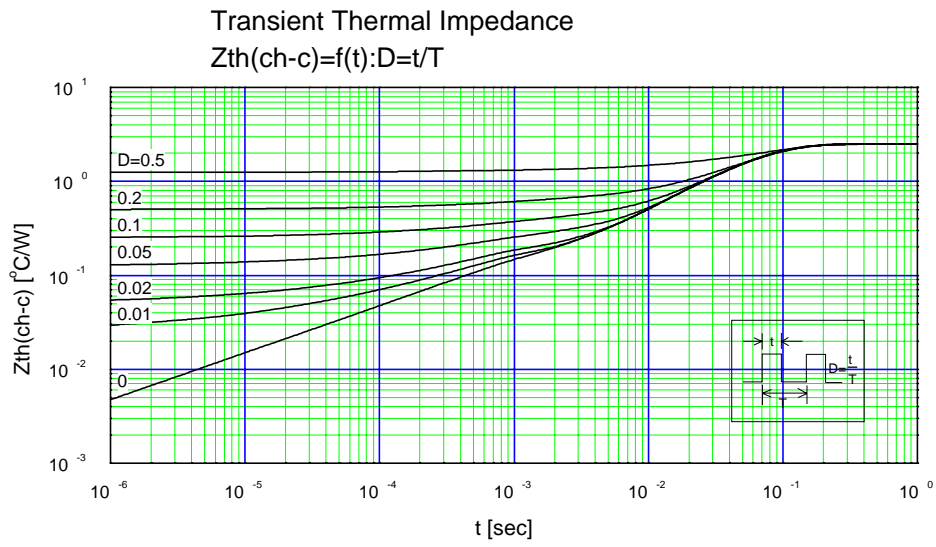


Typical Forward Characteristics of Reverse Diode  
 $I_F=f(V_{SD}):80\mu s$  Pulse test,  $T_{ch}=25^{\circ}C$



Typical Switching Characteristics vs.  $I_D$   
 $t=f(I_D):V_{CC}=300V, V_{GS}=10V, R_G=10\Omega$





This datasheet has been downloaded from:

[www.DatasheetCatalog.com](http://www.DatasheetCatalog.com)

Datasheets for electronic components.



LittleDiode supplies new, hard to find or obsolete electronic components and semiconductors all over the world.

With over two million different components listed you are sure to find the part you need.

Feel free to visit us today at our online store:

[LittleDiode.com](http://LittleDiode.com)

Looking forward to providing you with the best possible service.