

### > Features

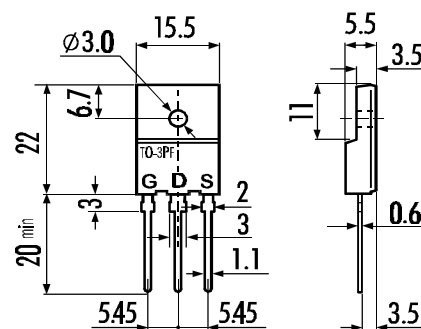
- High Speed Switching
- Low On-Resistance
- No Secondary Breakdown
- Low Driving Power
- High Voltage
- $V_{GS} = \pm 30V$  Guarantee
- Repetitive Avalanche Rated

### > Applications

- Switching Regulators
- UPS
- DC-DC converters
- General Purpose Power Amplifier

### > Outline Drawing

#### TO-3PF

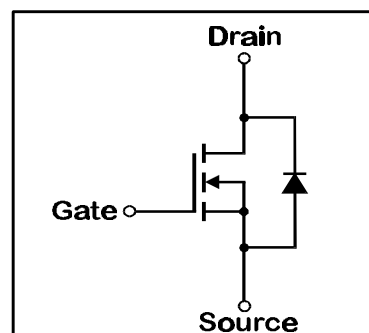


### > Maximum Ratings and Characteristics

- Absolute Maximum Ratings ( $T_C=25^\circ C$ ), unless otherwise specified

| Item                                                       | Symbol        | Rating     | Unit       |
|------------------------------------------------------------|---------------|------------|------------|
| Drain-Source-Voltage                                       | $V_{DS}$      | 800        | V          |
| Continuous Drain Current                                   | $I_D$         | 4          | A          |
| Pulsed Drain Current                                       | $I_{D(puls)}$ | 16         | A          |
| Gate-Source-Voltage                                        | $V_{GS}$      | $\pm 30$   | V          |
| Repetitive or Non-Repetitive ( $T_{ch} \leq 150^\circ C$ ) | $I_{AR}$      | 4          | A          |
| Avalanche Energy                                           | $E_{AS}$      | 254        | mJ         |
| Max. Power Dissipation                                     | $P_D$         | 80         | W          |
| Operating and Storage Temperature Range                    | $T_{ch}$      | 150        | $^\circ C$ |
|                                                            | $T_{stg}$     | -55 ~ +150 | $^\circ C$ |

### > Equivalent Circuit



- Electrical Characteristics ( $T_C=25^\circ C$ ), unless otherwise specified

| Item                                                 | Symbol        | Test conditions                                                       | Min. | Typ. | Max. | Unit     |
|------------------------------------------------------|---------------|-----------------------------------------------------------------------|------|------|------|----------|
| Drain-Source Breakdown-Voltage                       | $V_{(BR)DSS}$ | $I_D=1mA$ $V_{GS}=0V$                                                 | 800  |      |      | 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                      | $I_{DSS}$     | $V_{DS}=800V$ $T_{ch}=25^\circ C$                                     |      | 10   | 500  | $\mu A$  |
|                                                      |               | $V_{GS}=0V$ $T_{ch}=125^\circ C$                                      |      | 0.2  | 1.0  | mA       |
| Gate Source Leakage Current                          | $I_{GSS}$     | $V_{GS}=\pm 30V$ $V_{DS}=0V$                                          |      | 10   | 100  | nA       |
| Drain Source On-State Resistance                     | $R_{DS(on)}$  | $I_D=2A$ $V_{GS}=10V$                                                 |      | 3.19 | 4.0  | $\Omega$ |
| Forward Transconductance                             | $g_{fs}$      | $I_D=2A$ $V_{DS}=25V$                                                 |      | 2    |      | S        |
| Input Capacitance                                    | $C_{iss}$     | $V_{DS}=25V$                                                          |      | 450  |      | pF       |
| Output Capacitance                                   | $C_{oss}$     | $V_{GS}=0V$                                                           |      | 75   |      | pF       |
| Reverse Transfer Capacitance                         | $C_{rss}$     | $f=1MHz$                                                              |      | 40   |      | pF       |
| Turn-On-Time $t_{on}$ ( $t_{on}=t_{d(on)}+t_r$ )     | $t_{d(on)}$   | $V_{CC}=600V$<br>$I_D=4A$                                             |      | 20   |      | ns       |
|                                                      | $t_r$         |                                                                       |      | 40   |      | ns       |
| Turn-Off-Time $t_{off}$ ( $t_{off}=t_{d(off)}+t_f$ ) | $t_{d(off)}$  | $V_{GS}=10V$<br>$R_{GS}=10\Omega$                                     |      | 50   |      | ns       |
|                                                      | $t_f$         |                                                                       |      | 25   |      | ns       |
| Avalanche Capability                                 | $I_{AV}$      | $L=100\mu H$ $T_{ch}=25^\circ C$                                      | 4    |      |      | A        |
| Diode Forward On-Voltage                             | $V_{SD}$      | $I_F=2I_{DR}$ $V_{GS}=0V$ $T_{ch}=25^\circ C$                         |      | 1.0  |      | V        |
| Reverse Recovery Time                                | $t_{rr}$      | $I_F=I_{DR}$ $V_{GS}=0V$<br>$-dI_F/dt=100A/\mu s$ $T_{ch}=25^\circ C$ |      | 450  |      | ns       |
| Reverse Recovery Charge                              | $Q_{rr}$      |                                                                       |      | 3    |      | $\mu C$  |

- Thermal Characteristics

| Item               | Symbol         | Test conditions | Min. | Typ. | Max. | Unit         |
|--------------------|----------------|-----------------|------|------|------|--------------|
| Thermal Resistance | $R_{th(ch-a)}$ | channel to air  |      |      | 30   | $^\circ C/W$ |
|                    | $R_{th(ch-c)}$ | channel to case |      |      | 1.56 | $^\circ C/W$ |

| N-channel MOS-FET |    |    |     |
|-------------------|----|----|-----|
| 800V              | 4Ω | 4A | 80W |

# 2SK2764-01R

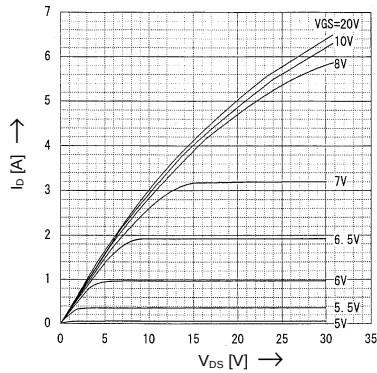
## FAP-IIS Series

**FUJII**  
ELECTRIC

### > Characteristics

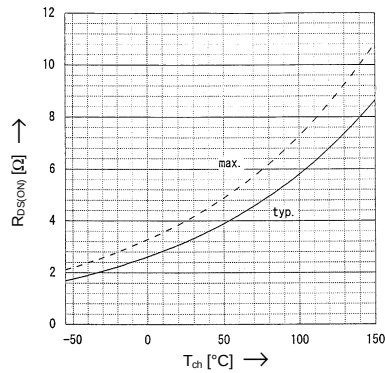
Typical Output Characteristics

$I_D = f(V_{DS})$ ; 80μs pulse test;  $T_C = 25^\circ\text{C}$



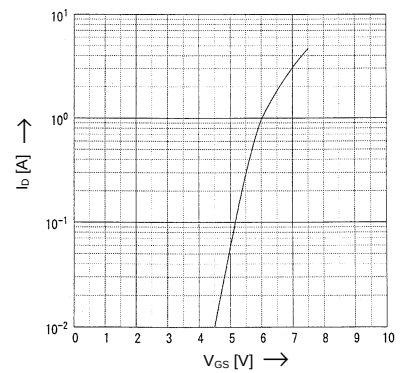
Drain-Source On-State Resistance vs.  $T_{ch}$

$R_{DS(on)} = f(T_{ch})$ ;  $I_D = 2A$ ;  $V_{GS} = 10V$



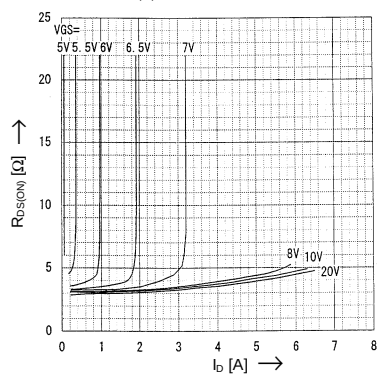
Typical Transfer Characteristics

$I_D = f(V_{GS})$ ; 80μs pulse test;  $V_{DS} = 25V$ ;  $T_{ch} = 25^\circ\text{C}$



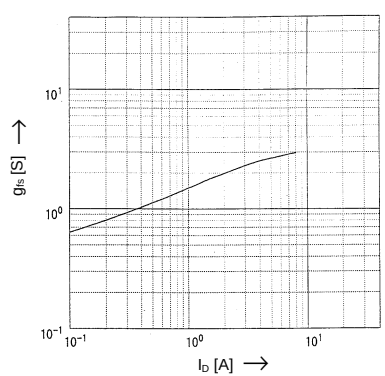
Typical Drain-Source On-State-Resistance vs.  $I_D$

$R_{DS(on)} = f(I_D)$ ; 80μs pulse test;  $T_C = 25^\circ\text{C}$



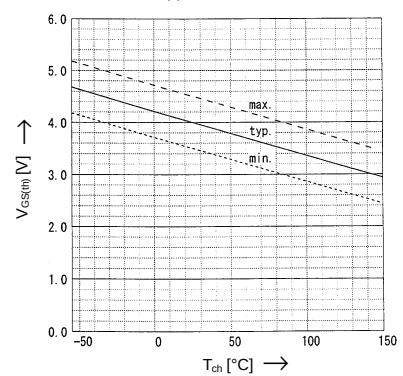
Typical Forward Transconductance vs.  $I_D$

$g_{fs} = f(I_D)$ ; 80μs pulse test;  $V_{DS} = 25V$ ;  $T_{ch} = 25^\circ\text{C}$



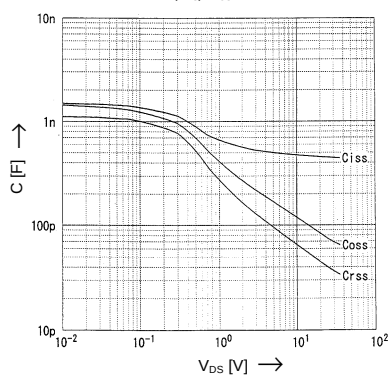
Gate Threshold Voltage vs.  $T_{ch}$

$V_{GS(th)} = f(T_{ch})$ ;  $I_D = 1mA$ ;  $V_{DS} = V_{GS}$



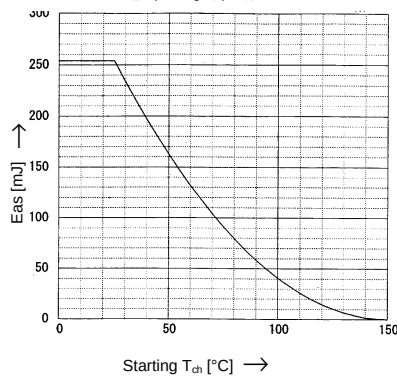
Typical Capacitances vs.  $V_{DS}$

$C = f(V_{DS})$ ;  $V_{GS} = 0V$ ;  $f = 1MHz$



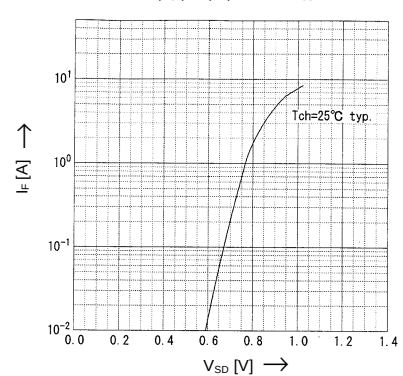
Avalanche Energy Derating

$E_{as} = f(\text{starting } T_{ch})$ ;  $V_{CC} = 80V$ ;  $I_{AV} = 4A$



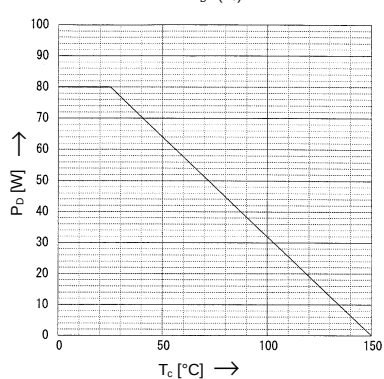
Forward Characteristics of Reverse Diode

$I_F = f(V_{SD})$ ; 80μs pulse test;  $V_{GS} = 0V$



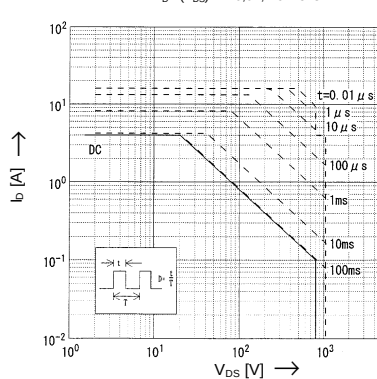
Allowable Power Dissipation vs.  $T_C$

$P_D = f(T_C)$



Safe Operation Area

$I_D = f(V_{DS})$ ;  $D = 0.01$ ;  $T_C = 25^\circ\text{C}$



$Z_{th(ch-e)} [K/W]$

Transient Thermal impedance

$Z_{thch} = f(t)$  parameter:  $D = t/T$

