

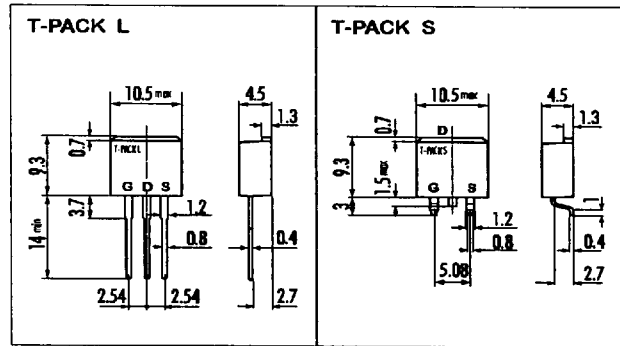
### > Features

- 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

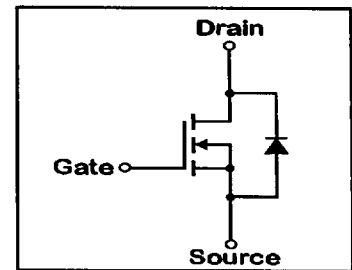


### > Maximum Ratings and Characteristics

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

| Item                                                       | Symbol        | Rating     | Unit       |
|------------------------------------------------------------|---------------|------------|------------|
| Drain-Source-Voltage                                       | $V_{DS}$      | 500        | V          |
| Continuous Drain Current                                   | $I_D$         | 10         | A          |
| Pulsed Drain Current                                       | $I_{D(puls)}$ | 40         | A          |
| Gate-Source-Voltage                                        | $V_{GS}$      | $\pm 30$   | V          |
| Repetitive or Non-Repetitive ( $T_{ch} \leq 150^\circ C$ ) | $I_{AR}$      | 10         | A          |
| Avalanche Energy                                           | $E_{AS}$      | 163        | 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                      | $V_{(BR)DSS}$ | $I_D=1mA$ $V_{GS}=0V$                         | 500  |      |      | 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                     | $I_{DSS}$     | $V_{DS}=500V$ $T_{ch}=25^\circ C$             |      | 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                    | $R_{DS(on)}$  | $I_D=5A$ $V_{GS}=10V$                         |      | 0,73 | 0,9  | $\Omega$ |
| Forward Transconductance                            | $g_{fs}$      | $I_D=5A$ $V_{DS}=25V$                         | 2,5  | 5    |      | S        |
| Input Capacitance                                   | $C_{iss}$     | $V_{DS}=25V$                                  |      | 950  | 1450 | pF       |
| Output Capacitance                                  | $C_{oss}$     | $V_{GS}=0V$                                   |      | 180  | 270  | pF       |
| Reverse Transfer Capacitance                        | $C_{rss}$     | $f=1MHz$                                      |      | 80   | 120  | pF       |
| Turn-On-Time $t_{on}$ ( $t_{on}=t_{d(on)}+t_r$ )    | $t_{d(on)}$   | $V_{CC}=300V$                                 |      | 25   | 40   | ns       |
|                                                     | $t_r$         | $I_D=10A$                                     |      | 70   | 110  | ns       |
|                                                     | $t_{d(off)}$  | $V_{GS}=10V$                                  |      | 70   | 110  | ns       |
| Turn-Off-Time $t_{off}$ ( $t_{on}=t_{d(off)}+t_f$ ) | $t_{d(off)}$  | $R_{GS}=10 \Omega$                            |      | 45   | 70   | ns       |
|                                                     | $t_f$         |                                               |      |      |      |          |
| Avalanche Capability                                | $I_{AV}$      | $L=100\mu H$ $T_{ch}=25^\circ C$              | 10   |      |      | A        |
| Diode Forward On-Voltage                            | $V_{SD}$      | $I_F=2I_{DR}$ $V_{GS}=0V$ $T_{ch}=25^\circ C$ |      | 1,1  | 1,65 | V        |
| Reverse Recovery Time                               | $t_{rr}$      | $I_F=I_{DR}$ $V_{GS}=0V$                      |      | 450  |      | ns       |
| Reverse Recovery Charge                             | $Q_{rr}$      | $-dI_F/dt=100A/\mu s$ $T_{ch}=25^\circ C$     |      | 5,5  |      | $\mu C$  |

### - Thermal Characteristics

| Item               | Symbol         | Test conditions | Min. | Typ. | Max. | Unit         |
|--------------------|----------------|-----------------|------|------|------|--------------|
| Thermal Resistance | $R_{th(ch-a)}$ | channel to air  |      |      | 75   | $^\circ C/W$ |
|                    | $R_{th(ch-c)}$ | channel to case |      |      | 1,56 | $^\circ C/W$ |

| N-channel MOS-FET |      |     |     |
|-------------------|------|-----|-----|
| 500V              | 0,9Ω | 10A | 80W |

# 2SK2758-01L,S

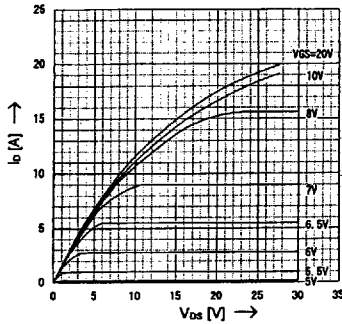
## FAP-IIS Series

**FUJI**  
ELECTRIC

### > Characteristics

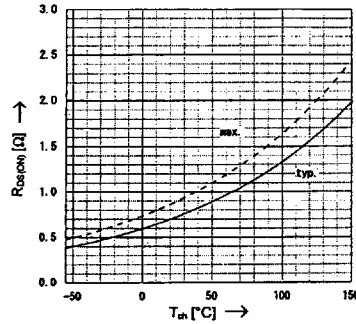
Typical Output Characteristics

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



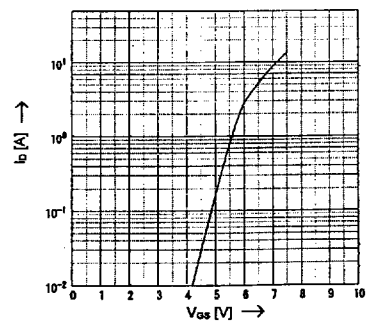
Drain-Source On-State Resistance vs.  $T_{ch}$

$R_{DS(on)} = f(T_{ch})$ ;  $I_D = 5A$ ;  $V_{GS} = 10V$



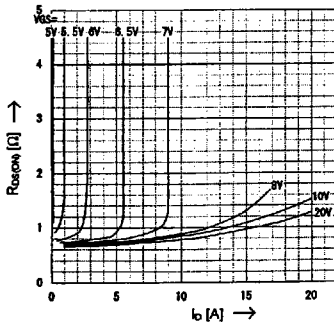
Typical Transfer Characteristics

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



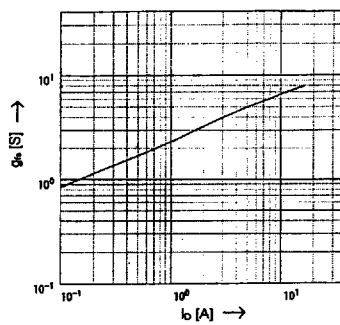
Typical Drain-Source On-State-Resistance vs.  $I_D$

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



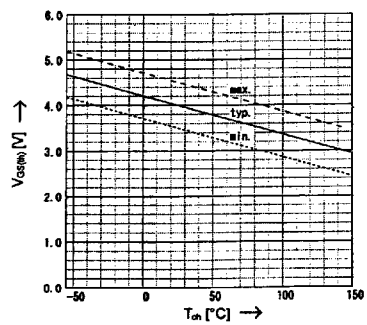
Typical Forward Transconductance vs.  $I_D$

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



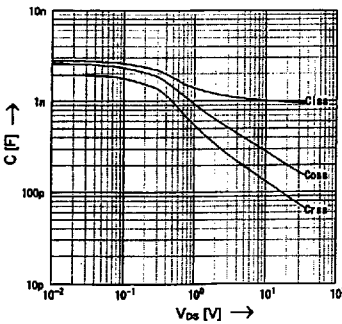
Gate Threshold Voltage vs.  $T_{ch}$

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



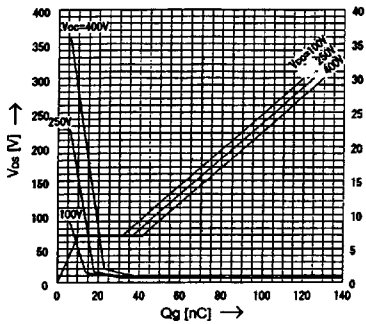
Typical Capacitances vs.  $V_{DS}$

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



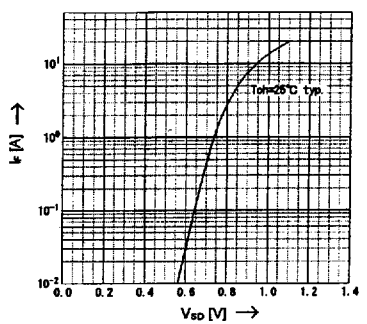
Typical Gate Charge Characteristic

$V_{GS} = f(Q_g)$ ;  $I_D = 10A$ ;  $T_C = 25^\circ\text{C}$



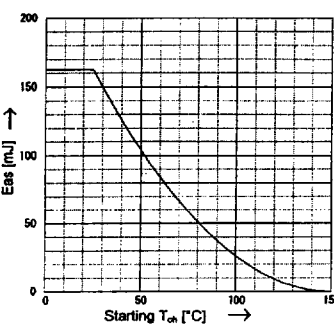
Forward Characteristics of Reverse Diode

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



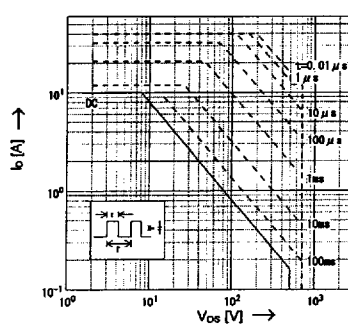
Avalanche Energy Derating

$E_{as} = f(\text{starting } T_{ch})$ ;  $V_{GS} = 50V$ ;  $I_{AS} = 10A$



Safe Operation Area

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

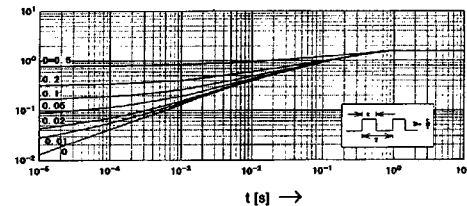


$\uparrow$

$Z_{th(\theta-ja)}$  [K/W]

Transient Thermal Impedance

$Z_{th(\theta-ja)} = f(t)$  parameter:  $D = 0.01$



This specification is subject to change without notice!

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