

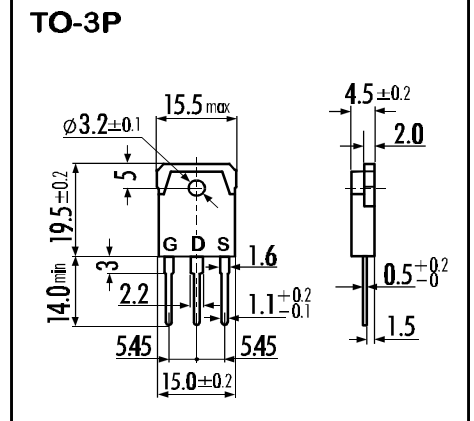
### > Features

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

### > Applications

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

### > Outline Drawing

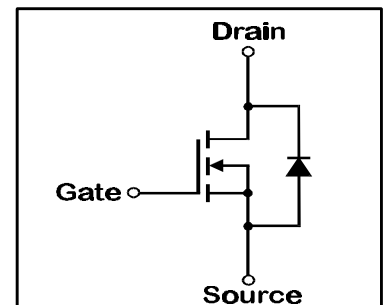


### > Maximum Ratings and Characteristics

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

| Item                                      | Symbol        | Rating     | Unit       |
|-------------------------------------------|---------------|------------|------------|
| Drain-Source-Voltage                      | $V_{DS}$      | 500        | V          |
| Drain-Gate-Voltage ( $R_{GS}=20K\Omega$ ) | $V_{DGR}$     | 500        | V          |
| Continuous Drain Current                  | $I_D$         | 17         | A          |
| Pulsed Drain Current                      | $I_{D(puls)}$ | 68         | A          |
| Gate-Source-Voltage                       | $V_{GS}$      | $\pm 30$   | V          |
| Max. Power Dissipation                    | $P_D$         | 150        | 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                               | $V_{GS(th)}$  | $I_D=1mA$ $V_{DS}=V_{GS}$                     | 2,5  | 3,0  | 3,5  | 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                     | $R_{DS(on)}$  | $I_D=9A$ $V_{GS}=10V$                         |      | 0,3  | 0,4  | $\Omega$ |
| Forward Transconductance                             | $g_{fs}$      | $I_D=9A$ $V_{DS}=25V$                         | 8    | 16   |      | S        |
| Input Capacitance                                    | $C_{iss}$     | $V_{DS}=25V$                                  |      | 3000 | 4500 | pF       |
| Output Capacitance                                   | $C_{oss}$     | $V_{GS}=0V$                                   |      | 300  | 450  | pF       |
| Reverse Transfer Capacitance                         | $C_{rss}$     | $f=1MHz$                                      |      | 70   | 110  | pF       |
| Turn-On-Time $t_{on}$ ( $t_{on}=t_{d(on)}+t_r$ )     | $t_{d(on)}$   | $V_{CC}=300V$                                 |      | 25   | 40   | ns       |
|                                                      | $t_r$         | $I_D=17A$                                     |      | 70   | 110  | ns       |
| Turn-Off-Time $t_{off}$ ( $t_{off}=t_{d(off)}+t_f$ ) | $t_{d(off)}$  | $V_{GS}=10V$                                  |      | 120  | 180  | ns       |
|                                                      | $t_f$         | $R_{GS}=10\Omega$                             |      | 75   | 120  | ns       |
| Avalanche Capability                                 | $I_{AV}$      | $L=100\mu H$ $T_{ch}=25^\circ C$              | 17   |      |      | A        |
| Continuous Reverse Drain Current                     | $I_{DR}$      |                                               |      |      | 17   | A        |
| Pulsed Reverse Drain Current                         | $I_{DRM}$     |                                               |      |      | 68   | A        |
| Diode Forward On-Voltage                             | $V_{SD}$      | $I_F=2I_{DR}$ $V_{GS}=0V$ $T_{ch}=25^\circ C$ |      | 1,5  | 2,3  | V        |
| Reverse Recovery Time                                | $t_{rr}$      | $I_F=I_{DR}$ $V_{GS}=0V$                      |      | 300  |      | ns       |
| Reverse Recovery Charge                              | $Q_{rr}$      | $-dI_F/dt=100A/\mu s$ $T_{ch}=25^\circ C$     |      | 3,5  |      | $\mu C$  |

- Thermal Characteristics

| Item               | Symbol         | Test conditions | Min. | Typ. | Max. | Unit         |
|--------------------|----------------|-----------------|------|------|------|--------------|
| Thermal Resistance | $R_{th(ch-a)}$ | channel to air  |      |      | 35   | $^\circ C/W$ |
|                    | $R_{th(ch-c)}$ | channel to case |      |      | 0,83 | $^\circ C/W$ |

| N-channel MOS-FET |      |     |      |
|-------------------|------|-----|------|
| 500V              | 0,4Ω | 17A | 150W |

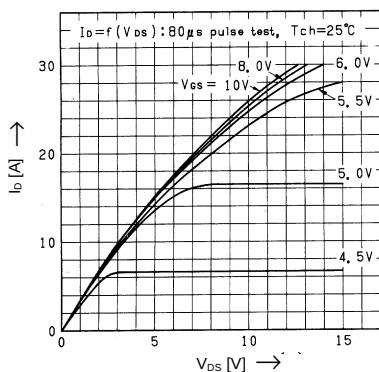
# 2SK2257-01

## FAP-IIA Series

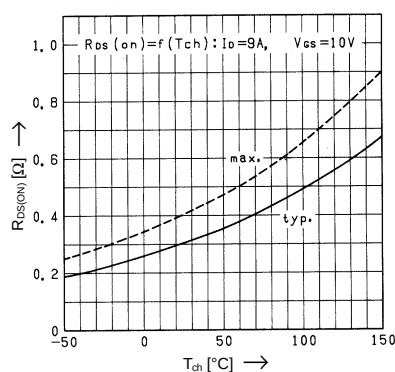
**FUJI**  
ELECTRIC

### > Characteristics

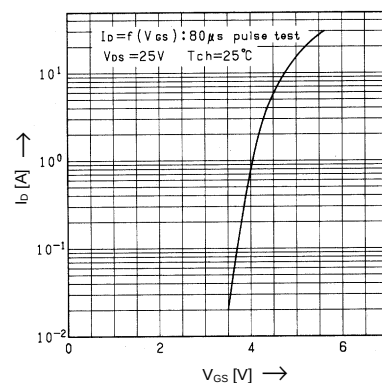
Typical Output Characteristics



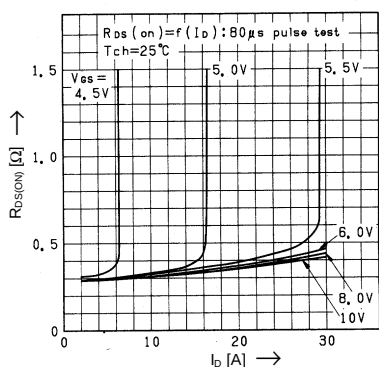
Drain-Source-On-State Resistance vs.  $T_{ch}$



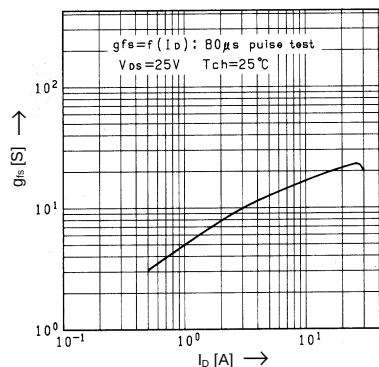
Typical Transfer Characteristics



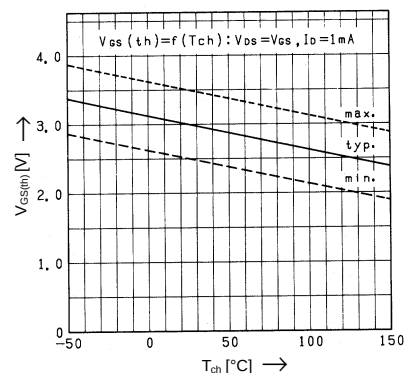
Typical Drain-Source-On-State-Resistance vs.  $I_D$



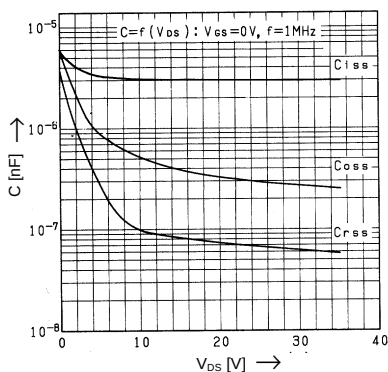
Typical Forward Transconductance vs.  $I_D$



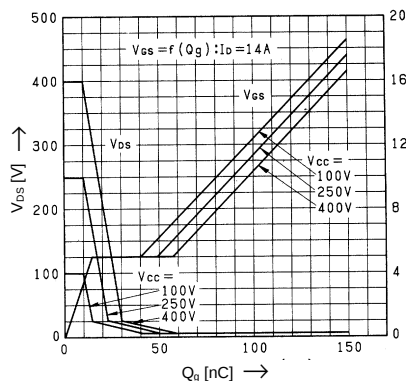
Gate Threshold Voltage vs.  $T_{ch}$



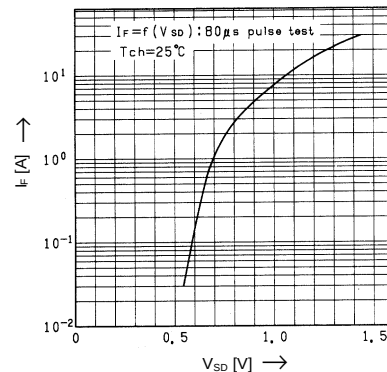
Typical Capacitance vs.  $V_{DS}$



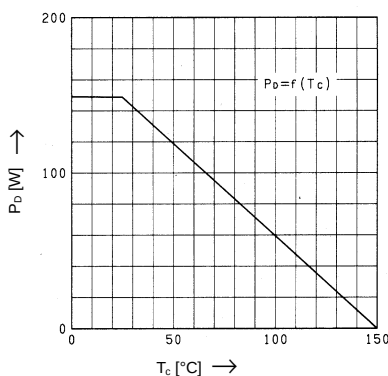
Typical Input Charge



Forward Characteristics of Reverse Diode



Allowable Power Dissipation vs.  $T_C$



Safe operation area

