

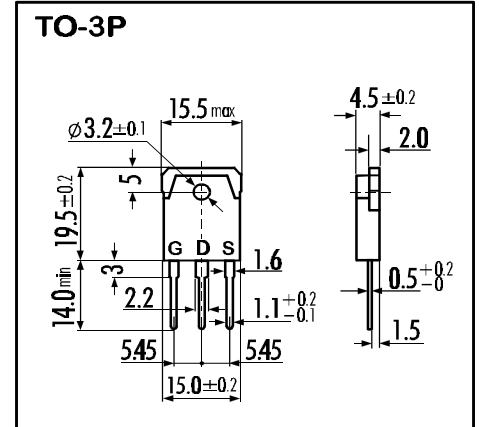
> **Features**

- 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**

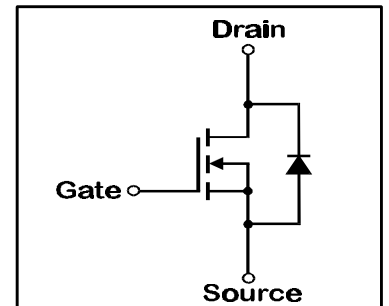


> **Maximum Ratings and Characteristics**

- 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          |
| Continous Drain Current                   | $I_D$         | 10         | A          |
| Pulsed Drain Current                      | $I_{D(puls)}$ | 40         | A          |
| Gate-Source-Voltage                       | $V_{GS}$      | $\pm 30$   | V          |
| Max. Power Dissipation                    | $P_D$         | 100        | 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                     | $R_{DS(on)}$  | $I_D=5A$ $V_{GS}=10V$                         |      | 0,6  | 0,76 | $\Omega$ |
| Forward Transconductance                             | $g_{fs}$      | $I_D=5A$ $V_{DS}=25V$                         | 5,0  | 10,0 |      | S        |
| Input Capacitance                                    | $C_{iss}$     | $V_{DS}=25V$                                  |      | 1500 | 2200 | pF       |
| Output Capacitance                                   | $C_{oss}$     | $V_{GS}=0V$                                   |      | 160  | 240  | pF       |
| Reverse Transfer Capacitance                         | $C_{rss}$     | $f=1MHz$                                      |      | 35   | 50   | pF       |
| Turn-On-Time $t_{on}$ ( $t_{on}=t_{d(on)}+t_r$ )     | $t_{d(on)}$   | $V_{CC}=300V$                                 |      | 15   | 25   | ns       |
|  |               | $I_D=10A$                                     |      | 40   | 60   | ns       |
| Turn-Off-Time $t_{off}$ ( $t_{off}=t_{d(off)}+t_f$ ) | $t_{d(off)}$  | $V_{GS}=10V$                                  |      | 70   | 100  | ns       |
|  |               | $R_{GS}=10\Omega$                             |      | 60   | 90   | ns       |
| Avalanche Capability                                 | $I_{AV}$      | $L = 100\mu H$ $T_{ch}=25^\circ C$            | 10   |      |      | A        |
| Continous Reverse Drain Current                      | $I_{DR}$      |   |      |      | 10   | A        |
| Pulsed Reverse Drain Current                         | $I_{DRM}$     |   |      |      | 40   | A        |
| Diode Forward On-Voltage                             | $V_{SD}$      | $I_F=2I_{DR}$ $V_{GS}=0V$ $T_{ch}=25^\circ C$ |      | 1,12 | 1,70 | V        |
| Reverse Recovery Time                                | $t_{rr}$      | $I_F=I_{DR}$ $V_{GS}=0V$                      |      | 450  |      | ns       |
| Reverse Recovery Charge                              | $Q_{rr}$      | $-dI_F/dt=100A/\mu s$ $T_{ch}=25^\circ C$     |      | 3    |      | $\mu C$  |

- 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 |      |      | 1,25 | $^\circ C/W$ |

|                   |       |     |      |
|-------------------|-------|-----|------|
| N-channel MOS-FET |       |     |      |
| 500V              | 0,76Ω | 10A | 100W |

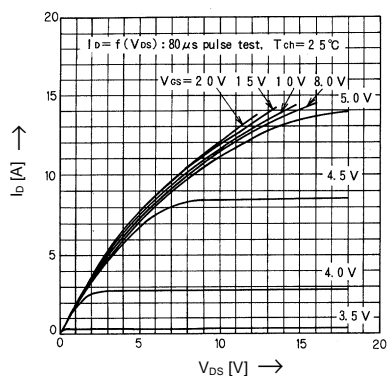
# 2SK1936-01

## FAP-IIA Series

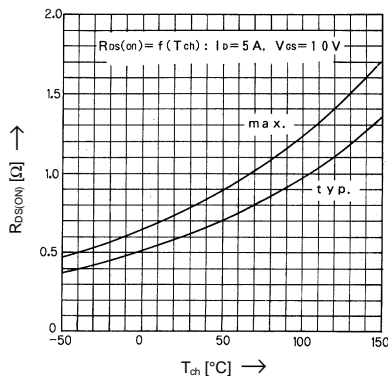


### > Characteristics

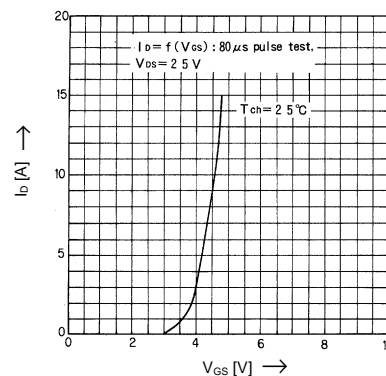
Typical Output Characteristics



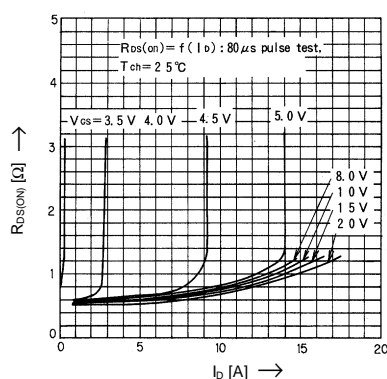
Drain-Source-On-State Resistance vs.  $T_{ch}$



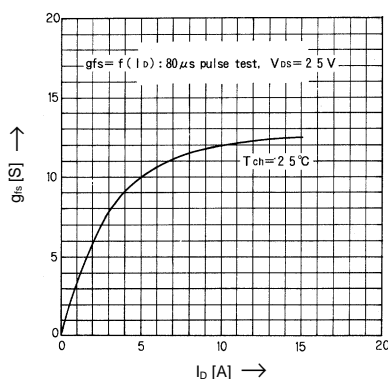
Typical Transfer Characteristics



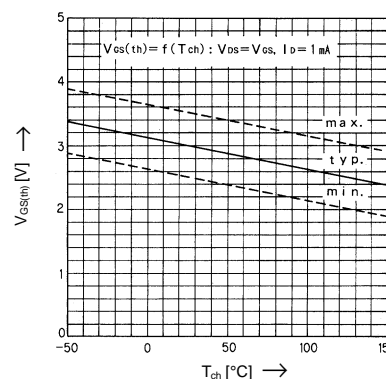
Typical Drain-Source-On-State-Resistance vs.  $I_D$



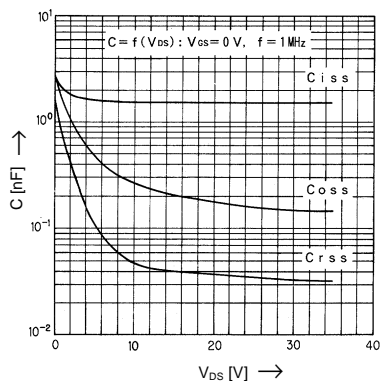
Typical Forward Transconductance vs.  $I_D$



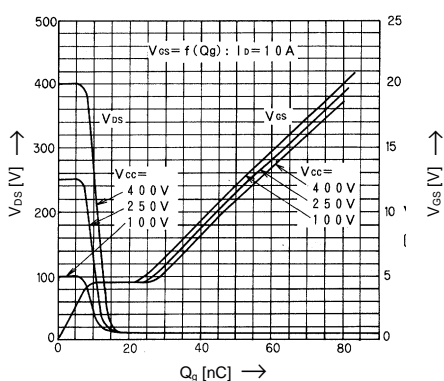
Gate Threshold Voltage vs.  $T_{ch}$



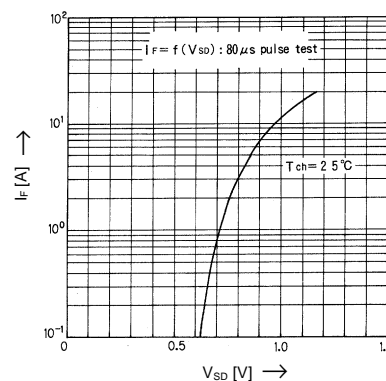
Typical Capacitance vs.  $V_{DS}$



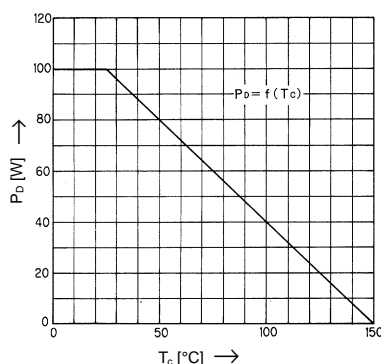
Typical Input Charge



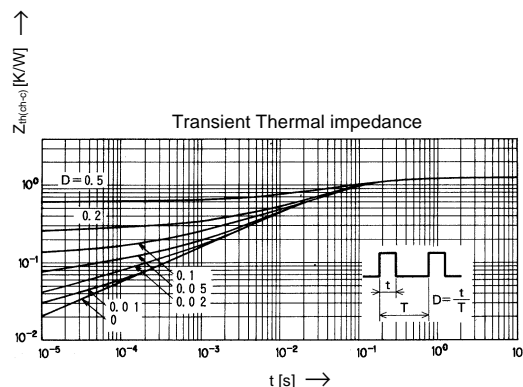
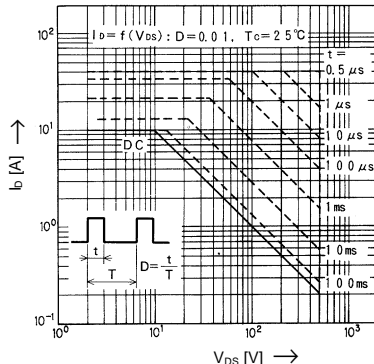
Forward Characteristics of Reverse Diode



Allowable Power Dissipation vs.  $T_c$



Safe operation area





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