

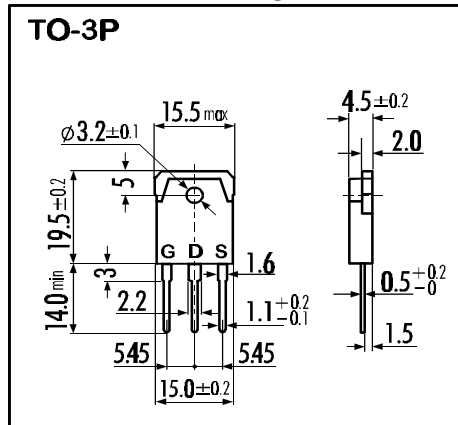
### > Features

- Include Fast Recovery Diode
- High Voltage
- Low Driving Power

### > Applications

- Motor Control
- Inverters
- Choppers

### > Outline Drawing

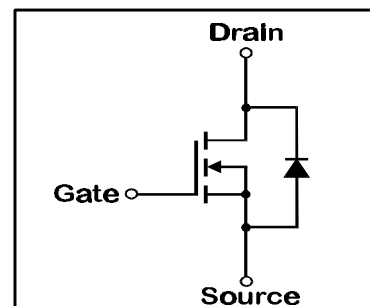


### > Maximum Ratings and Characteristics

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

| Item                                    | Symbol        | Rating     | Unit             |
|-----------------------------------------|---------------|------------|------------------|
| Drain-Source-Voltage                    | $V_{DS}$      | 500        | V                |
| Continuous Drain Current                | $I_D$         | 15         | A                |
| Pulsed Drain Current                    | $I_{D(puls)}$ | 60         | A                |
| Continuous Reverse Drain Current        | $I_{DR}$      | 15         | A                |
| Gate-Source-Voltage                     | $V_{GS}$      | $\pm 20$   | V                |
| Max. Power Dissipation                  | $P_D$         | 125        | W                |
| Operating and Storage Temperature Range | $T_{ch}$      | 150        | $^\circ\text{C}$ |
|                                         | $T_{stg}$     | -55 ~ +150 | $^\circ\text{C}$ |

### > Equivalent Circuit



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

| Item                                                 | Symbol        | Test conditions                                                                      | Min. | Typ. | Max. | Unit          |
|------------------------------------------------------|---------------|--------------------------------------------------------------------------------------|------|------|------|---------------|
| Drain-Source Breakdown-Voltage                       | $V_{(BR)DSS}$ | $I_D=1\text{mA}$ $V_{GS}=0\text{V}$                                                  | 500  |      |      | V             |
| Gate Threshold Voltage                               | $V_{GS(th)}$  | $I_D=10\text{mA}$ $V_{DS}=V_{GS}$                                                    | 2,1  | 3,0  | 4,0  | V             |
| Zero Gate Voltage Drain Current                      | $I_{DSS}$     | $V_{DS}=500\text{V}$ $T_{ch}=25^\circ\text{C}$<br>$V_{GS}=0\text{V}$                 |      | 10   | 500  | $\mu\text{A}$ |
| Gate Source Leakage Current                          | $I_{GSS}$     | $V_{GS}=\pm 20\text{V}$ $V_{DS}=0\text{V}$                                           |      | 10   | 100  | nA            |
| Drain Source On-State Resistance                     | $R_{DS(on)}$  | $I_D=8\text{A}$ $V_{GS}=10\text{V}$                                                  |      | 0,4  | 0,58 | $\Omega$      |
| Forward Transconductance                             | $g_{fs}$      | $I_D=8\text{A}$ $V_{DS}=25\text{V}$                                                  | 7    | 13   |      | S             |
| Input Capacitance                                    | $C_{iss}$     | $V_{DS}=25\text{V}$                                                                  |      | 2000 | 3000 | pF            |
| Output Capacitance                                   | $C_{oss}$     | $V_{GS}=0\text{V}$                                                                   |      | 270  | 400  | pF            |
| Reverse Transfer Capacitance                         | $C_{rss}$     | $f=1\text{MHz}$                                                                      |      | 140  | 210  | pF            |
| Turn-On-Time $t_{on}$ ( $t_{on}=t_{d(on)}+t_r$ )     | $t_{d(on)}$   | $V_{CC}=300\text{V}$<br>$I_D=15\text{A}$<br>$V_{GS}=10\text{V}$<br>$R_{GS}=25\Omega$ |      | 30   | 45   | ns            |
|                                                      | $t_r$         |                                                                                      |      | 100  | 150  | ns            |
| Turn-Off-Time $t_{off}$ ( $t_{off}=t_{d(off)}+t_f$ ) | $t_{d(off)}$  |                                                                                      |      | 400  | 600  | ns            |
|                                                      | $t_f$         |                                                                                      |      | 160  | 240  | ns            |
| Diode Forward On-Voltage                             | $V_{SD}$      | $I_F=I_{DR}$ $V_{GS}=0\text{V}$ $T_{ch}=25^\circ\text{C}$                            |      | 0,95 | 1,8  | V             |
| Reverse Recovery Time                                | $t_{rr}$      | $I_F=I_{DR}$ $V_{GS}=0\text{V}$                                                      |      | 150  | 200  | ns            |
|                                                      |               | $-di_F/dt=100\text{A}/\mu\text{s}$ $T_{ch}=25^\circ\text{C}$                         |      |      |      |               |

- Thermal Characteristics

| Item               | Symbol         | Test conditions | Min. | Typ. | Max. | Unit                      |
|--------------------|----------------|-----------------|------|------|------|---------------------------|
| Thermal Resistance | $R_{th(ch-a)}$ | channel to air  |      |      | 35   | $^\circ\text{C}/\text{W}$ |
|                    | $R_{th(ch-c)}$ | channel to case |      |      | 1,0  | $^\circ\text{C}/\text{W}$ |

# N-channel MOS-FET

500V 0,58Ω 15A 125W

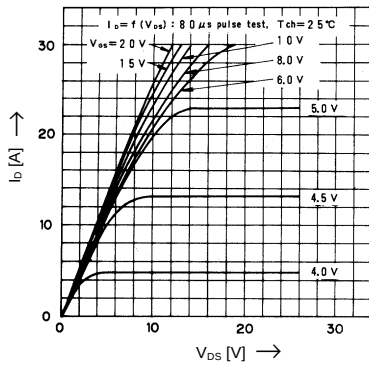
## 2SK1279

### F-V Series

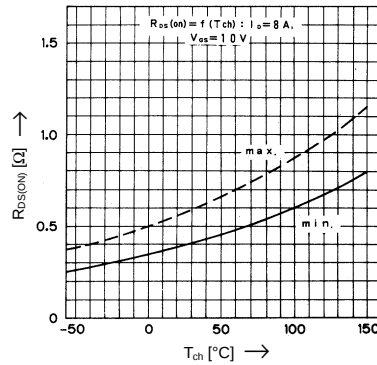
**FUJI**  
ELECTRIC

### > Characteristics

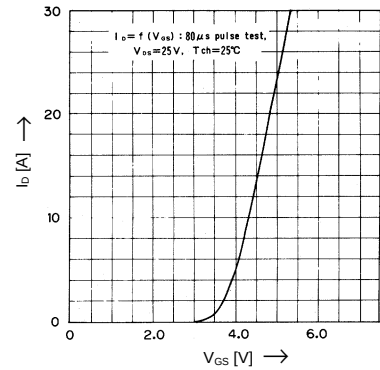
Typical Output Characteristics



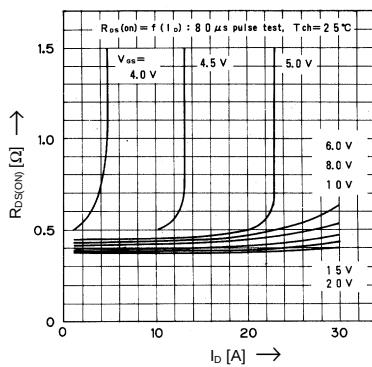
Drain-Source-On-State Resistance vs.  $T_{ch}$



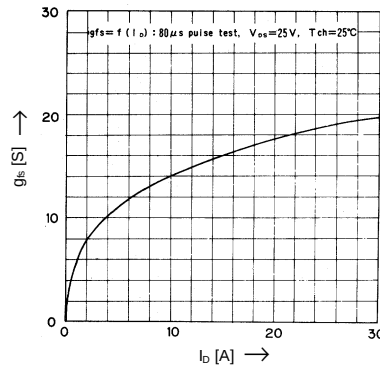
Typical Transfer Characteristics



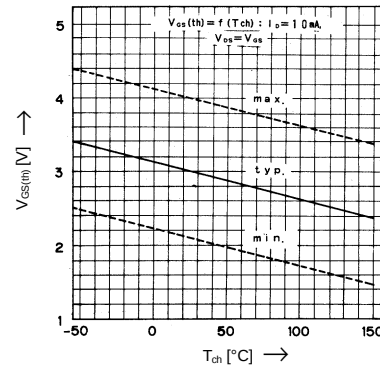
Typical Drain-Source-On-State-Resistance vs.  $I_D$



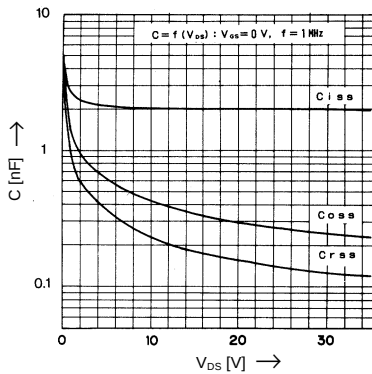
Typical Forward Transconductance vs.  $I_D$



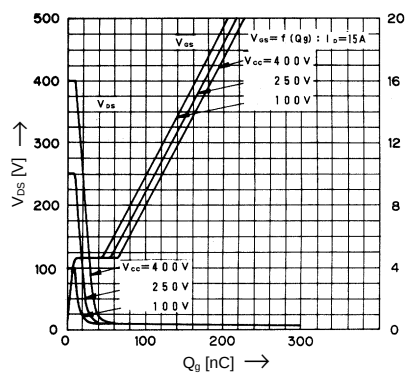
Gate Threshold Voltage vs.  $T_{ch}$



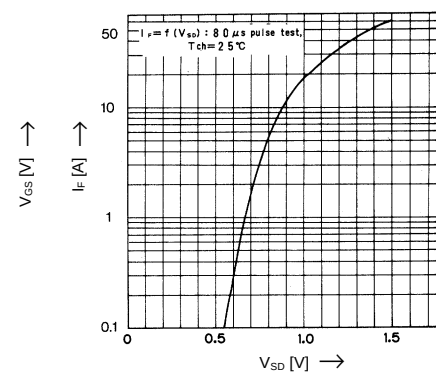
Typical Capacitance vs.  $V_{DS}$



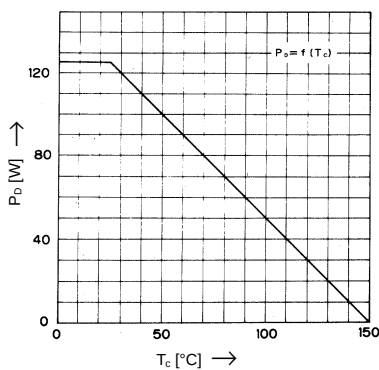
Typical Input Charge



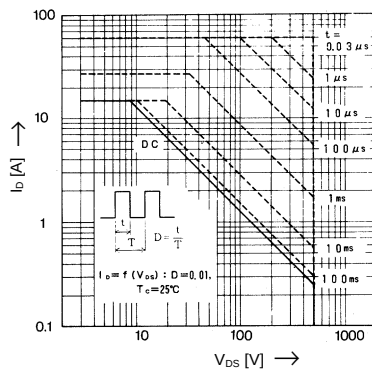
Forward Characteristics of Reverse Diode



Allowable Power Dissipation vs.  $T_c$



Safe operation area



$Z_{th(j-c)}$  [K/W]

Transient Thermal impedance

