

# 2SK757

## Silicon N-channel Power F-MOS FET

### ■ Features

- Low ON resistance  $R_{DS(on)} : R_{DS(on)} = 0.22\Omega$  (typ.)
- High switching rate :  $t_f = 60\text{ns}$  (typ.)
- No secondary breakdown

### ■ Application

- DC-DC converter
- No contact relay
- Solenoid drive
- Motor drive

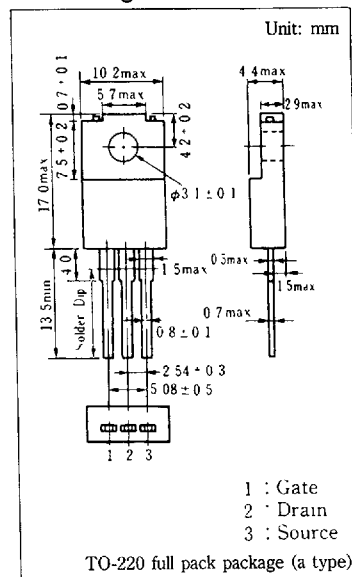
### ■ Absolute Maximum Ratings ( $T_c = 25^\circ\text{C}$ )

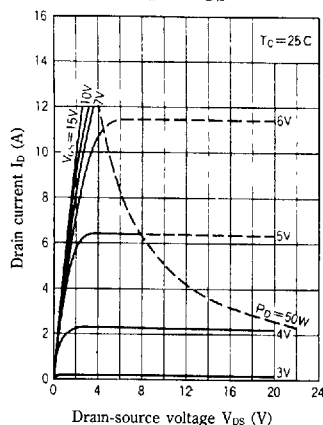
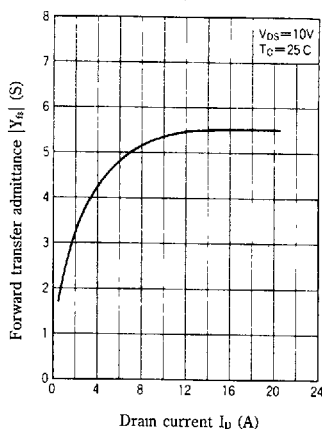
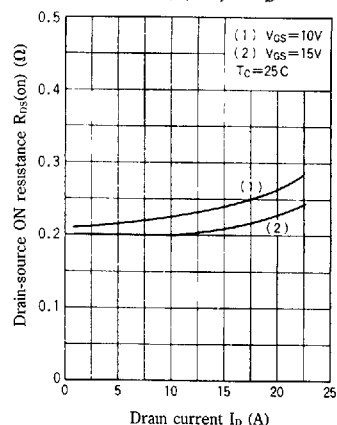
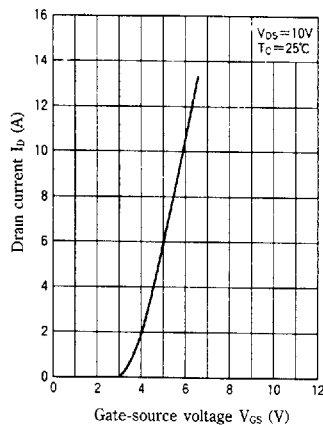
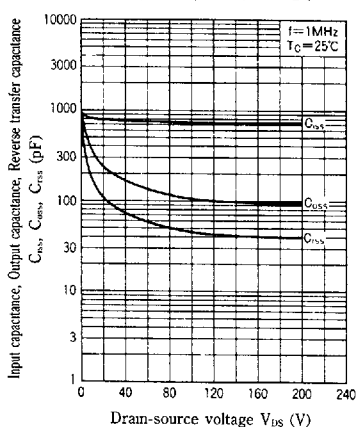
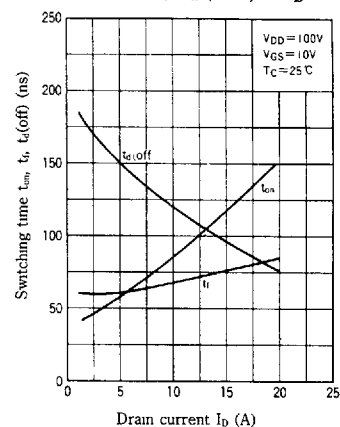
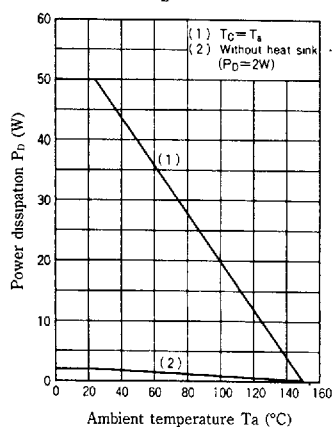
| Item                 | Symbol                   | Value           | Unit             |
|----------------------|--------------------------|-----------------|------------------|
| Drain-source voltage | $V_{DS}$                 | 200             | V                |
| Gate-source voltage  | $V_{GS}$                 | $\pm 20$        | V                |
| Drain current        | DC                       | $I_D$           | A                |
|                      | Peak-to-peak value       | $I_{DP}$        |                  |
| Power dissipation    | $T_c = 25^\circ\text{C}$ | $P_D$           | W                |
|                      | $T_a = 25^\circ\text{C}$ |                 |                  |
| Channel temperature  | $T_{ch}$                 | 150             | $^\circ\text{C}$ |
| Storage temperature  | $T_{stg}$                | $-55 \sim +150$ | $^\circ\text{C}$ |

### ■ Electrical Characteristics ( $T_c = 25^\circ\text{C}$ )

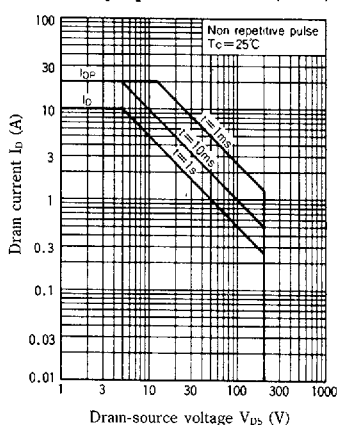
| Item                         | Symbol            | Condition                                                                        | min. | typ. | max.    | Unit          |
|------------------------------|-------------------|----------------------------------------------------------------------------------|------|------|---------|---------------|
| Drain current                | $I_{DS}$          | $V_{DS} = 160\text{V}, V_{GS} = 0$                                               |      |      | 0.1     | mA            |
| Gate-source current          | $I_{GSS}$         | $V_{GS} = \pm 20\text{V}, V_{DS} = 0$                                            |      |      | $\pm 1$ | $\mu\text{A}$ |
| Drain-source voltage         | $V_{DS}$          | $I_D = 1\text{mA}, V_{GS} = 0$                                                   | 200  |      |         | V             |
| Gate threshold voltage       | $V_{th}$          | $V_{DS} = 10\text{V}, I_D = 1\text{mA}$                                          | 1    |      | 5       | V             |
| Drain-source ON resistance   | $R_{DS(on)}$      | $V_{GS} = 10\text{V}, I_D = 5\text{A}$                                           |      | 0.22 | 0.33    | $\Omega$      |
| Forward transfer admittance  | $ Y_{fs} $        | $V_{GS} = 10\text{V}, I_D = 5\text{A}$                                           | 2.7  | 4.5  |         | S             |
| Input capacitance            | $C_{iss}$         | $V_{DS} = 10\text{V}, V_{GS} = 0, f = 1\text{MHz}$                               |      | 855  |         | pF            |
| Output capacitance           | $C_{oss}$         |                                                                                  |      | 330  |         | pF            |
| Reverse transfer capacitance | $C_{rss}$         |                                                                                  |      | 150  |         | pF            |
| Turn-on time                 | $t_{on}$          | $V_{GS} = 10\text{V}, I_D = 5\text{A}$<br>$V_{DD} = 100\text{V}, R_L = 20\Omega$ |      | 60   |         | ns            |
| Fall time                    | $t_f$             |                                                                                  |      | 60   |         | ns            |
| Delay time                   | $t_d(\text{off})$ |                                                                                  |      | 150  |         | ns            |

### ■ Package Dimensions



$I_D - V_{DS}$  $|Y_{fs}| - I_D$  $R_{DS(on)} - I_D$  $I_D - V_{GS}$  $C_{iss}, C_{oss}, C_{rss} - V_{DS}$  $t_{on}, t_r, t_d(\text{off}) - I_D$  $P_D - T_a$ 

Safety operation area (ASO)

 $R_{DS(on)} - I_D$ 