

# 2SK1377

## FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE ( $\pi$ -MOS)

HIGH SPEED, HIGH VOLTAGE SWITCHING APPLICATIONS.  
SWITCHING REGULATOR, DC-DC CONVERTER AND MOTOR  
DRIVE APPLICATIONS.

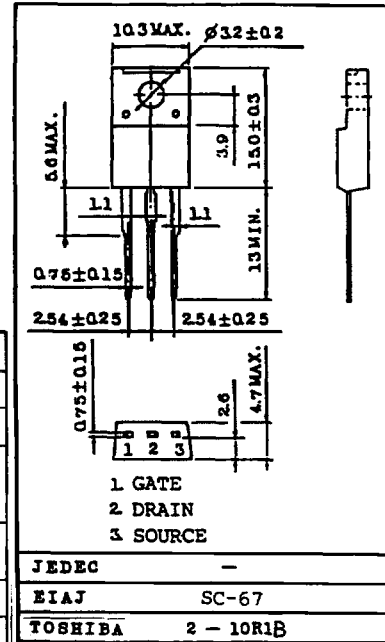
### FEATURES:

- High Breakdown Voltage :  $V_{(BR)DSS}=400V$
- High Forward Transfer Admittance :  $|Y_{fs}|=2.5S(Typ.)$
- Low Leakage Current :  $I_{DSS}=1mA(Max.) @ V_{DS}=400V$
- Enhancement-Mode :  $V_{th}=1.5 \sim 3.5V @ I_D=1mA$

### MAXIMUM RATINGS ( $T_a=25^\circ C$ )

| CHARACTERISTIC                                  | SYMBOL    | RATING         | UNIT       |
|---|-----------|----------------|------------|
| Drain-Source Voltage                            | $V_{DSX}$ | 400            | V          |
| Gate-Source Voltage                             | $V_{GSS}$ | $\pm 30$       | V          |
| Drain Current                                   | DC        | $I_D$          | 5.5        |
|   | Pulse     | $I_{DP}$       | 22         |
| Drain Power Dissipation<br>( $T_c=25^\circ C$ ) | $P_D$     | 40             | W          |
| Channel Temperature                             | $T_{ch}$  | 150            | $^\circ C$ |
| Storage Temperature Range                       | $T_{stg}$ | $-55 \sim 150$ | $^\circ C$ |

### INDUSTRIAL APPLICATIONS Unit in mm



### ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ C$ )

Weight: 2.0g

| CHARACTERISTIC                 | SYMBOL        | TEST CONDITION                 | MIN. | TYP. | MAX.      | UNIT     |     |    |
|--------------------------------|---------------|--------------------------------|------|------|-----------|----------|-----|----|
| Gate Leakage Current           | $I_{GSS}$     | $V_{GS}=\pm 25V, V_{DS}=0$     | -    | -    | $\pm 100$ | nA       |     |    |
| Drain Cut-off Current          | $I_{DSS}$     | $V_{DS}=400V, V_{GS}=0$        | -    | -    | 1.0       | mA       |     |    |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D=10mA, V_{GS}=0$           | 400  | -    | -         | V        |     |    |
| Gate Threshold Voltage         | $V_{th}$      | $V_{DS}=10V, I_D=1mA$          | 1.5  | -    | 3.5       | V        |     |    |
| Forward Transfer Admittance    | $ Y_{fs} $    | $V_{DS}=10V, I_D=3A$           | 1.0  | 2.5  | -         | S        |     |    |
| Drain-Source ON Resistance     | $R_{DS(ON)}$  | $I_D=3A, V_{GS}=10V$           | -    | 0.8  | 1.2       | $\Omega$ |     |    |
| Drain-Source ON Voltage        | $V_{DS(ON)}$  | $I_D=8A, V_{GS}=10V$           | -    | 10   | 18        | V        |     |    |
| Input Capacitance              | $C_{iss}$     | $V_{DS}=10V, V_{GS}=0, f=1MHz$ | -    | 670  | 900       | pF       |     |    |
| Reverse Transfer Capacitance   | $C_{rss}$     | $V_{DS}=10V, V_{GS}=0, f=1MHz$ | -    | 50   | 90        | pF       |     |    |
| Output Capacitance             | $C_{oss}$     | $V_{DS}=10V, V_{GS}=0, f=1MHz$ | -    | 180  | 250       | pF       |     |    |
| Switching Time                 | Rise Time     | $t_r$                          |      |      | -         | 25       | 50  | ns |
|                                | Turn-on Time  | $t_{on}$                       |      |      | -         | 40       | 80  | ns |
|                                | Fall Time     | $t_f$                          |      |      | -         | 35       | 70  | ns |
|                                | Turn-off Time | $t_{off}$                      |      |      | -         | 140      | 280 | ns |

THIS TRANSISTOR IS AN ELECTROSTATIC SENSITIVE DEVICE. PLEASE HANDLE WITH CAUTION.