

# 2SK3637

## Silicon N-channel power MOSFET

For PDP/For high-speed switching

### ■ Features

- Low on-resistance, low  $Q_g$
- High avalanche resistance

### ■ Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

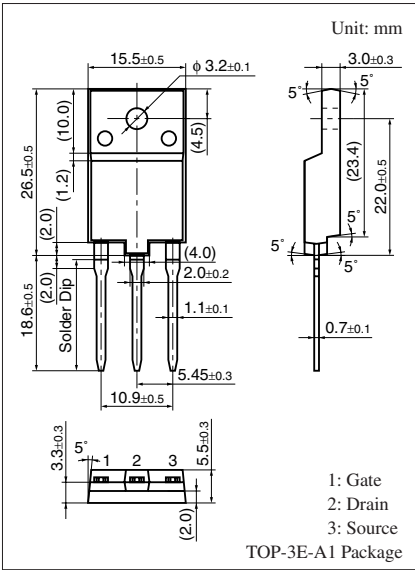
| Parameter                      | Symbol                   | Rating          | Unit             |
|--------------------------------|--------------------------|-----------------|------------------|
| Drain-source surrender voltage | $V_{DSS}$                | 200             | V                |
| Gate-source surrender voltage  | $V_{GSS}$                | $\pm 30$        | V                |
| Drain current                  | $I_D$                    | 50              | A                |
| Peak drain current             | $I_{DP}$                 | 200             | A                |
| Avalanche energy capability *  | EAS                      | 2000            | mJ               |
| Power dissipation              | $P_D$                    | 100             | W                |
|                                | $T_a = 25^\circ\text{C}$ | 3               |                  |
| Channel temperature            | $T_{ch}$                 | 150             | $^\circ\text{C}$ |
| Storage temperature            | $T_{stg}$                | $-55$ to $+150$ | $^\circ\text{C}$ |

Note) \*:  $L = 0.8$  mH,  $I_L = 50$  A,  $V_{DD} = 100$  V, 1 pulse,  $T_a = 25^\circ\text{C}$

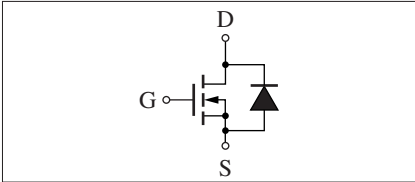
### ■ Electrical Characteristics $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

| Parameter                                                  | Symbol       | Conditions                                                             | Min | Typ  | Max     | Unit          |
|------------------------------------------------------------|--------------|------------------------------------------------------------------------|-----|------|---------|---------------|
| Gate-drain surrender voltage                               | $V_{DSS}$    | $I_D = 1$ mA, $V_{GS} = 0$                                             | 200 |      |         | V             |
| Diode forward voltage                                      | $V_{DSF}$    | $I_{DR} = 50$ A, $V_{GS} = 0$                                          |     |      | -1.5    | V             |
| Gate threshold voltage                                     | $V_{th}$     | $V_{DS} = 25$ V, $I_D = 10$ mA                                         | 2   |      | 4       | V             |
| Drain-source cutoff current                                | $I_{DSS}$    | $V_{DS} = 160$ V, $V_{GS} = 0$                                         |     |      | 100     | $\mu\text{A}$ |
| Gate-source cutoff current                                 | $I_{GSS}$    | $V_{GS} = \pm 30$ V, $V_{DS} = 0$                                      |     |      | $\pm 1$ | $\mu\text{A}$ |
| Drain-source on resistance                                 | $R_{DS(on)}$ | $V_{GS} = 10$ V, $I_D = 25$ A                                          |     | 29   | 40      | m $\Omega$    |
| Forward transfer admittance                                | $ Y_{fs} $   | $V_{DS} = 25$ V, $I_D = 25$ A                                          | 15  | 30   |         | S             |
| Short-circuit forward transfer capacitance (Common-source) | $C_{iss}$    | $V_{DS} = 25$ V, $V_{GS} = 0$ , $f = 1$ MHz                            |     | 4550 |         | pF            |
| Short-circuit output capacitance (Common-source)           | $C_{oss}$    |                                                                        |     | 750  |         | pF            |
| Reverse transfer capacitance (Common-source)               | $C_{rss}$    |                                                                        |     | 75   |         | pF            |
| Turn-on delay time                                         | $t_{d(on)}$  | $V_{DD} = 100$ V, $I_D = 25$ A<br>$R_L = 4$ $\Omega$ , $V_{GS} = 10$ V |     | 50   |         | ns            |
| Rise time                                                  | $t_r$        |                                                                        |     | 125  |         | ns            |
| Turn-off delay time                                        | $t_{d(off)}$ |                                                                        |     | 390  |         | ns            |
| Fall time                                                  | $t_f$        |                                                                        |     | 140  |         | ns            |
| Reverse recovery time                                      | $t_{rr}$     | $L = 230$ $\mu\text{H}$ , $V_{DD} = 100$ V                             |     | 210  |         | ns            |
| Reverse recovery charge                                    | $Q_{rr}$     |                                                                        |     | 820  |         | nC            |

Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.



### Internal Connection

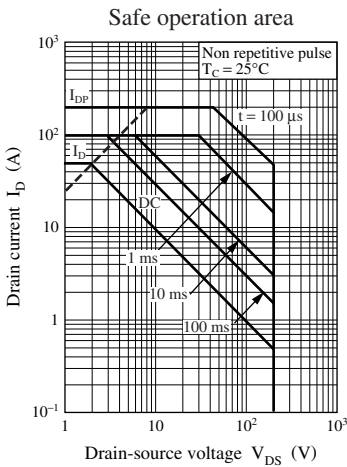


■ Electrical Characteristics (Continued)  $T_C = 25^{\circ}\text{C} \pm 3^{\circ}\text{C}$

| Parameter                          | Symbol         | Conditions                                                           | Min | Typ | Max  | Unit                        |
|------------------------------------|----------------|----------------------------------------------------------------------|-----|-----|------|-----------------------------|
| Total gate charge                  | $Q_g$          | $V_{DD} = 100\text{ V}, I_D = 25\text{ A}$<br>$V_{GS} = 10\text{ V}$ |     | 85  |      | nC                          |
| Gate-source charge                 | $Q_{gs}$       |                                                                      |     | 30  |      | nC                          |
| Gate-drain charge                  | $Q_{gd}$       |                                                                      |     | 12  |      | nC                          |
| Channel-case heat resistance       | $R_{th(ch-c)}$ |                                                                      |     |     | 1.25 | $^{\circ}\text{C}/\text{W}$ |
| Channel-atmosphere heat resistance | $R_{th(ch-a)}$ |                                                                      |     |     | 41.6 | $^{\circ}\text{C}/\text{W}$ |

Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

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