

# 2SK1606

## Silicon N-Channel Power F-MOS FET

### ■ Features

- High avalanche energy capacity
- $V_{GS}$ : 30V guaranteed
- Low  $R_{DS(on)}$ , high-speed switching characteristic

### ■ Applications

- High-speed switching (switching power supply)
- For high-frequency power amplification

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

| Parameter                         | Symbol                   | Ratings     | Unit             |
|-----------------------------------|--------------------------|-------------|------------------|
| Drain to Source breakdown voltage | $V_{DSS}$                | 450         | V                |
| Gate to Source voltage            | $V_{GSS}$                | $\pm 30$    | V                |
| Drain current                     | DC                       | $I_D$       | A                |
|                                   | Pulse                    | $I_{DP}$    | A                |
| Avalanche energy capacity         | EAS*                     | 130         | mJ               |
| Allowable power dissipation       | $T_C = 25^\circ\text{C}$ | $P_D$       | 50               |
|                                   | $T_a = 25^\circ\text{C}$ |             | 2                |
| Channel temperature               | $T_{ch}$                 | 150         | $^\circ\text{C}$ |
| Storage temperature               | $T_{stg}$                | -55 to +150 | $^\circ\text{C}$ |

\* Single pulse

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

| Parameter                                    | Symbol       | Conditions                                                                               | min | typ  | max     | Unit          |
|----------------------------------------------|--------------|------------------------------------------------------------------------------------------|-----|------|---------|---------------|
| Drain to Source cut-off current              | $I_{DSS}$    | $V_{DS} = 360\text{V}$ , $V_{GS} = 0$                                                    |     |      | 0.1     | mA            |
| Gate to Source leakage current               | $I_{GSS}$    | $V_{GS} = \pm 30\text{V}$ , $V_{DS} = 0$                                                 |     |      | $\pm 1$ | $\mu\text{A}$ |
| Drain to Source breakdown voltage            | $V_{DSS}$    | $I_D = 1\text{mA}$ , $V_{GS} = 0$                                                        | 450 |      |         | V             |
| Avalanche energy capacity                    | EAS*         | $L = 4.1\text{mH}$ , $I_D = 8\text{A}$ , $V_{DD} = 50\text{V}$                           | 130 |      |         | mJ            |
| Gate threshold voltage                       | $V_{th}$     | $V_{DS} = 25\text{V}$ , $I_D = 1\text{mA}$                                               | 1   |      | 5       | V             |
| Drain to Source ON-resistance                | $R_{DS(on)}$ | $V_{GS} = 10\text{V}$ , $I_D = 4\text{A}$                                                |     | 0.56 | 0.75    | $\Omega$      |
| Forward transfer admittance                  | $ Y_{fs} $   | $V_{DS} = 25\text{V}$ , $I_D = 4\text{A}$                                                | 3   | 5    |         | S             |
| Input capacitance (Common Source)            | $C_{iss}$    | $V_{DS} = 20\text{V}$ , $V_{GS} = 0$ , $f = 1\text{MHz}$                                 |     | 1300 |         | pF            |
| Output capacitance (Common Source)           | $C_{oss}$    |                                                                                          |     | 160  |         | pF            |
| Reverse transfer capacitance (Common Source) | $C_{rss}$    |                                                                                          |     | 70   |         | pF            |
| Turn-on time                                 | $t_{on}$     | $V_{GS} = 10\text{V}$ , $I_D = 4\text{A}$<br>$V_{DD} = 150\text{V}$ , $R_L = 37.5\Omega$ |     | 70   |         | ns            |
| Fall time                                    | $t_f$        |                                                                                          |     | 50   |         | ns            |
| Turn-off time (delay time)                   | $t_{d(off)}$ |                                                                                          |     | 150  |         | ns            |

\* Avalanche energy capacity test circuit



