# 2SK1614

## Silicon N-Channel Power F-MOS FET

### ■ Features

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

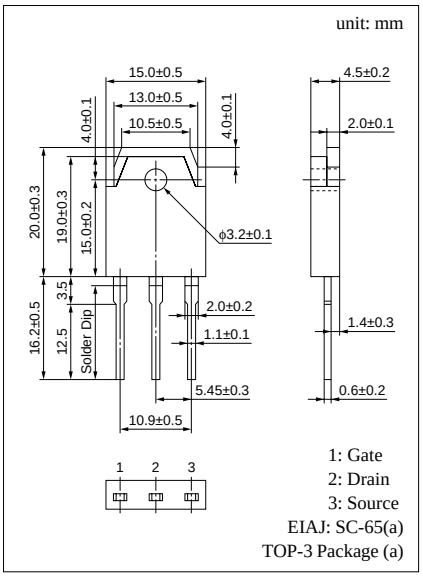
### ■ Applications

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

### ■ Absolute Maximum Ratings ($T_C$ = 25°C)

| Parameter | | Symbol | Ratings | Unit |
|---|---|---|---|---|
| Drain to Source breakdown voltage | | $V_{DSS}$ | 900 | V |
| Gate to Source voltage | | $V_{GSS}$ | ±30 | V |
| Drain current | DC | $I_D$ | ±8 | A |
| | Pulse | $I_{DP}$ | ±16 | A |
| Avalanche energy capacity | | EAS* | 60 | mJ |
| Allowable power dissipation | $T_C$ = 25°C | $P_D$ | 120 | W |
| | Ta = 25°C | | 2.5 | |
| Channel temperature | | $T_{ch}$ | 150 | °C |
| Storage temperature | | $T_{stg}$ | –55 to +150 | °C |

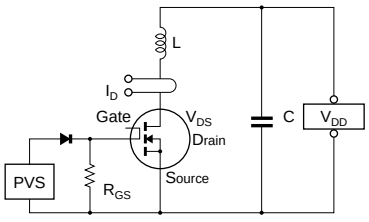
* Single pulse



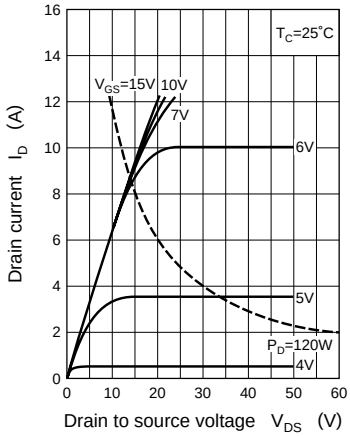

### ■ Electrical Characteristics ($T_C$ = 25°C)

| Parameter | Symbol | Conditions | min | typ | max | Unit |
|---|---|---|---|---|---|---|
| Drain to Source cut-off current | $I_{DSS}$ | $V_{DS}$ = 720V, $V_{GS}$ = 0 | | | 0.1 | mA |
| Gate to Source leakage current | $I_{GSS}$ | $V_{GS}$ = ±30V, $V_{DS}$ = 0 | | | ±1 | μA |
| Drain to Source breakdown voltage | $V_{DSS}$ | $I_D$ = 1mA, $V_{GS}$ = 0 | 900 | | | V |
| Avalanche energy capacity | EAS* | L = 1.9mH, $I_D$ = 8A, $V_{DD}$ = 50V | 60 | | | mJ |
| Gate threshold voltage | $V_{th}$ | $V_{DS}$ = 25V, $I_D$ = 1mA | 1 | | 5 | V |
| Drain to Source ON-resistance | $R_{DS(on)}$ | $V_{GS}$ = 10V, $I_D$ = 4A | | 1.3 | 1.7 | Ω |
| Forward transfer admittance | $\|Y_{fs}\|$ | $V_{DS}$ = 25V, $I_D$ = 4A | 3 | 5.5 | | S |
| Input capacitance (Common Source) | $C_{iss}$ | $V_{DS}$ = 20V, $V_{GS}$ = 0, f = 1MHz | | 1800 | | pF |
| Output capacitance (Common Source) | $C_{oss}$ | | | 200 | | pF |
| Reverse transfer capacitance (Common Source) | $C_{rss}$ | | | 90 | | pF |
| Turn-on time | $t_{on}$ | $V_{GS}$ = 10V, $I_D$ = 4A<br>$V_{DD}$ = 200V, $R_L$ = 50Ω | | 100 | | ns |
| Fall time | $t_f$ | | | 80 | | ns |
| Turn-off time (delay time) | $t_{d(off)}$ | | | 250 | | ns |

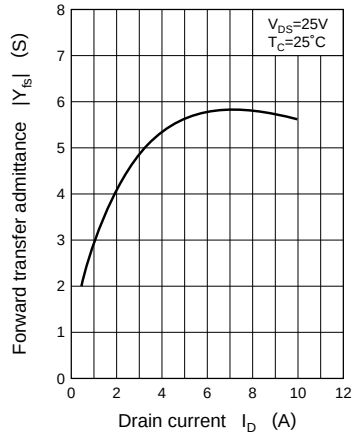
* Avalanche energy capacity test circuit



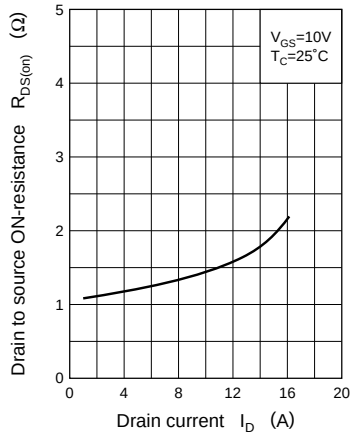
$I_D$ — $V_{DS}$



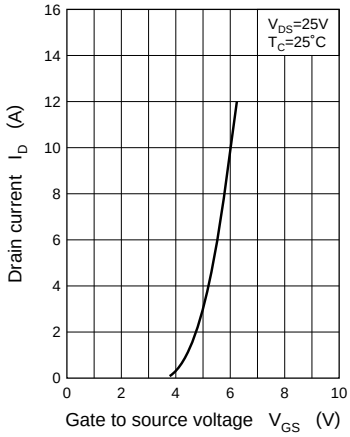

$|Y_{fs}|$ — $I_D$



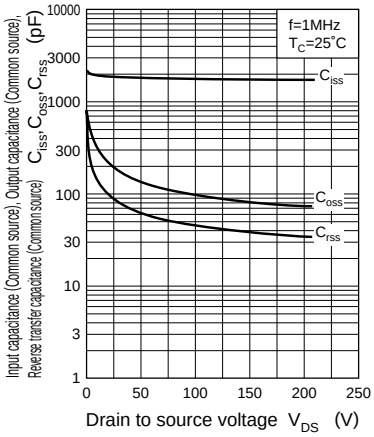

$R_{DS(on)}$ — $I_D$



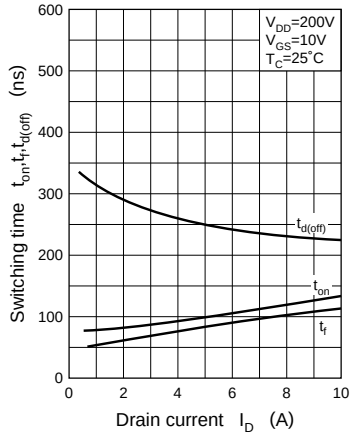

$I_D$ — $V_{GS}$



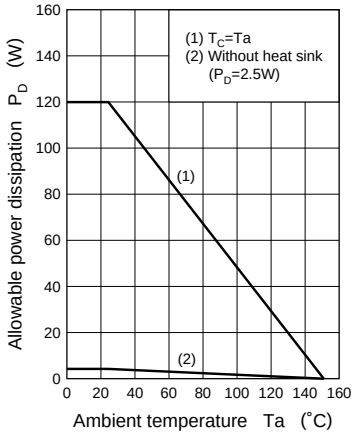

$C_{iss}$, $C_{oss}$, $C_{rss}$ — $V_{DS}$



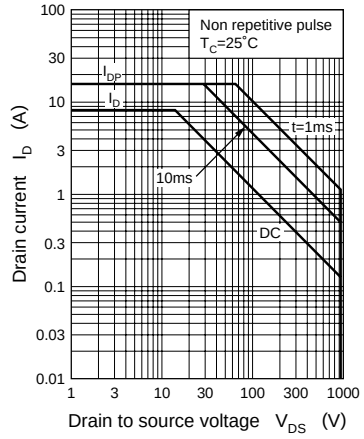

$t_{on}$, $t_f$, $t_{d(off)}$ — $I_D$




$P_D$ — Ta




Area of safe operation (ASO)




EAS — $T_j$