# 2SK1835

**Silicon N Channel MOS FET**

## Application

High speed power switching

## Features

- High breakdown voltage ($V_{DSS}$ = 1500V)
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switchingregulator

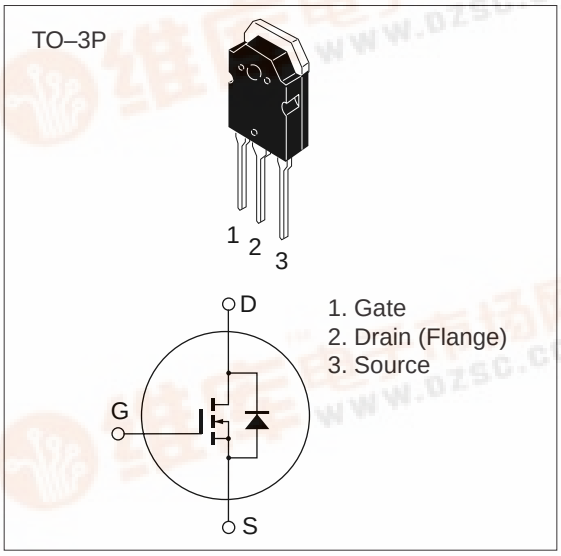



**Table 1 Absolute Maximum Ratings** (Ta = 25°C)

| Item | Symbol | Ratings | Unit |
|---|---|---|---|
| Drain to source voltage | $V_{DSS}$ | 1500 | V |
| Gate to source voltage | $V_{GSS}$ | ±20 | V |
| Drain current | $I_D$ | 4 | A |
| Drain peak current | $I_{D(pulse)}$* | 10 | A |
| Body–drain diode reverse drain current | $I_{DR}$ | 4 | A |
| Channel dissipation | Pch** | 125 | W |
| Channel temperature | Tch | 150 | °C |
| Storage temperature | Tstg | –55 to +150 | °C |

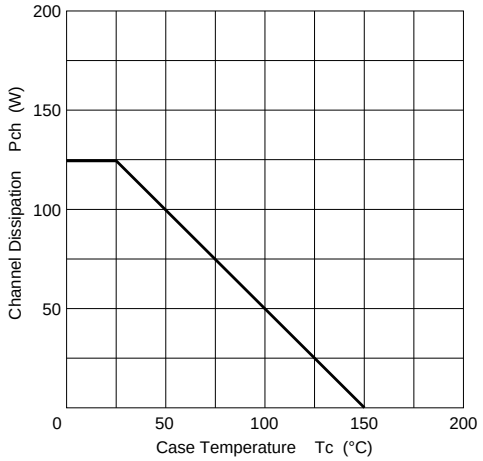
* PW ≤ 10 µs, duty cycle ≤ 1 %
** Value at Tc = 25 °C

**Table 2 Electrical Characteristics** (Ta = 25°C)

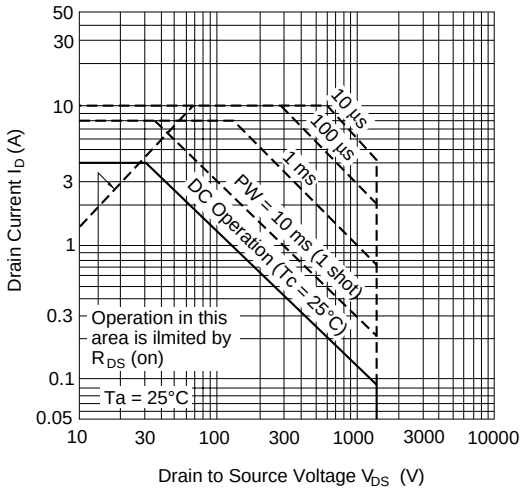
| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|---|---|---|---|---|---|---|
| Drain to source breakdown voltage | $V_{(BR)DSS}$ | 1500 | — | — | V | $I_D$ = 10 mA, $V_{GS}$ = 0 |
| Gate to source leak current | $I_{GSS}$ | — | — | ±1 | µA | $V_{GS}$ = ±20 V, $V_{DS}$ = 0 |
| Zero gate voltage drain current | $I_{DSS}$ | — | — | 500 | µA | $V_{DS}$ = 1200 V, $V_{GS}$ = 0 |
| Gate to source cutoff voltage | $V_{GS(off)}$ | 2.0 | — | 4.0 | V | $I_D$ = 1 mA, $V_{DS}$ = 10 V |
| Static drain to source on state resistance | $R_{DS(on)}$ | — | 4.6 | 7.0 | Ω | $I_D$ = 2 A<br>$V_{GS}$ = 15 V * |
| Forward transfer admittance | $\|y_{fs}\|$ | 0.9 | 1.4 | — | S | $I_D$ = 2 A<br>$V_{DS}$ = 20V * |
| Input capacitance | Ciss | — | 1700 | — | pF | $V_{DS}$ = 10 V |
| Output capacitance | Coss | — | 230 | — | pF | $V_{GS}$ = 0 |
| Reverse transfer capacitance | Crss | — | 100 | — | pF | f = 1 MHz |
| Turn–on delay time | $t_{d(on)}$ | — | 25 | — | ns | $I_D$ = 2A |
| Rise time | $t_r$ | — | 80 | — | ns | $V_{GS}$ = 10 V |
| Turn–off delay time | $t_{d(off)}$ | — | 230 | — | ns | $R_L$ = 15 Ω |
| Fall time | $t_f$ | — | 80 | — | ns | |
| Body–drain diode forward voltage | $V_{DF}$ | — | 0.85 | — | V | $I_F$ = 4 A, $V_{GS}$ = 0 |
| Body–drain diode reverse recovery time | $t_{rr}$ | — | 2500 | — | ns | $I_F$ = 4 A, $V_{GS}$ = 0,<br>$di_F$ / dt = 100 A / µs |

* Pulse Test

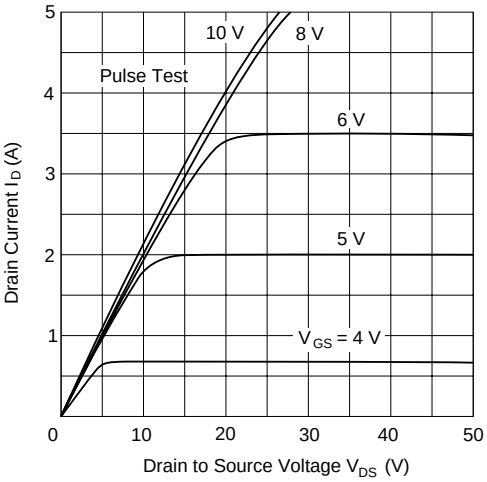
Power vs. Temperature Derating



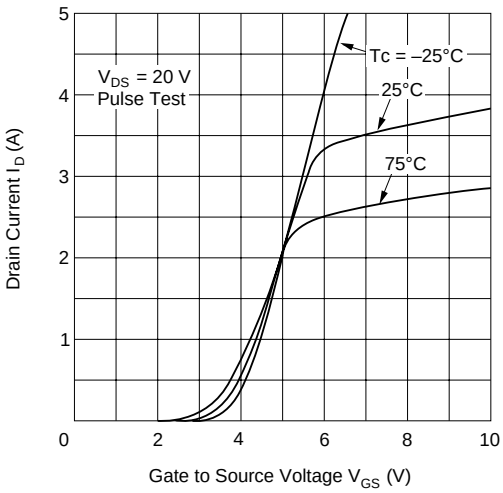

Maximum Safe Operation Area



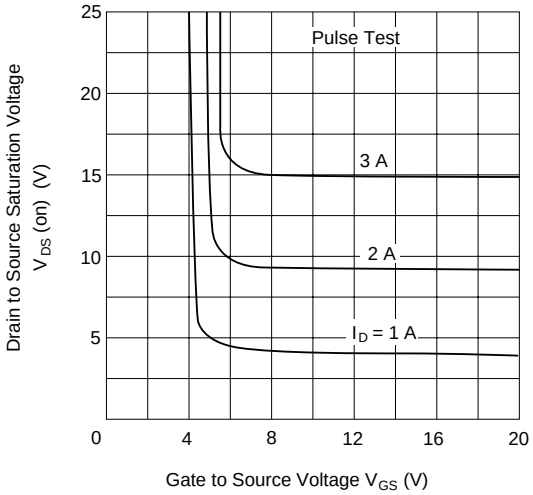

Typical Output Characteristics



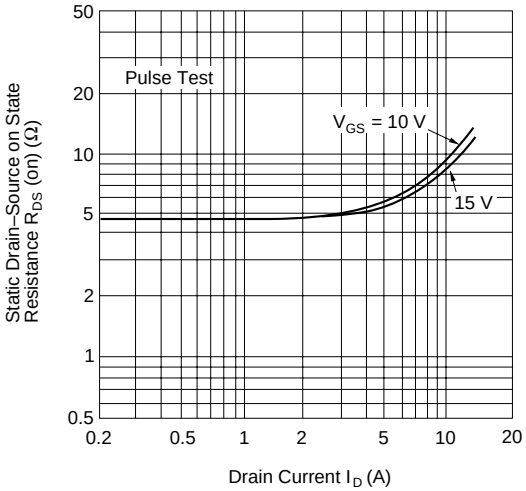

Typical Transfer Characteristics



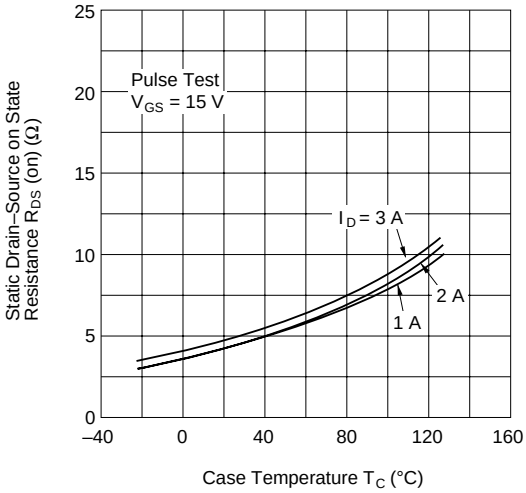
Drain-Source Saturation Voltage vs. Gate-Source Voltage



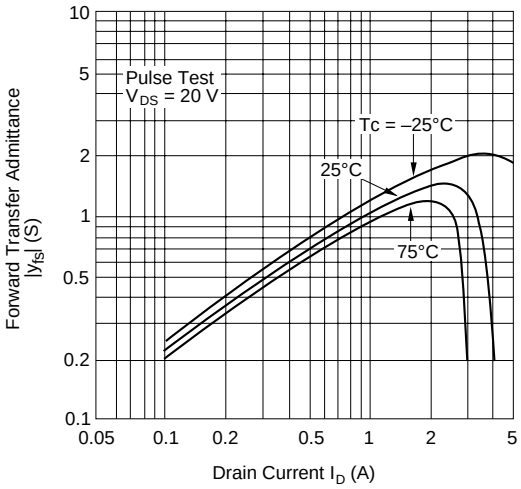

Static Drain-Source on State Resistance vs. Drain Current



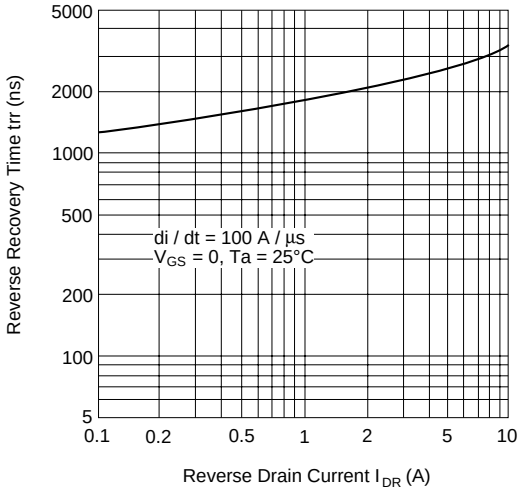

Static Drain-Source on State Resistance vs. Temperature



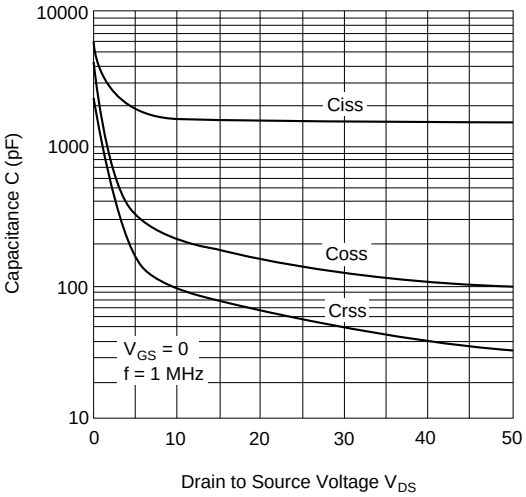

Forward Transfer Admittance vs. Drain Current



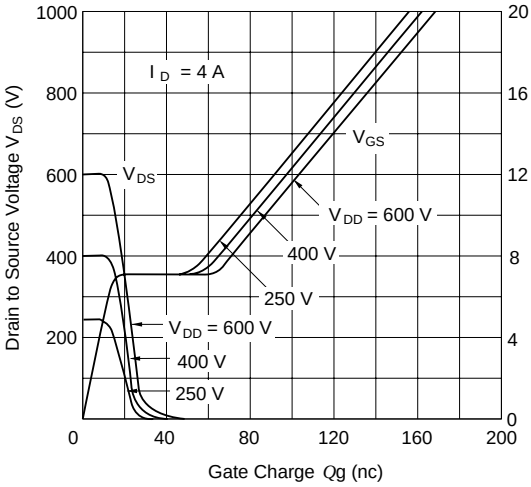
Body-Drain Diode Reverse Recovery Time



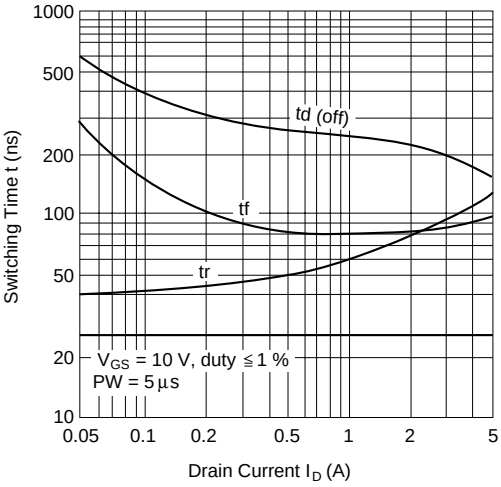

Typical Capacitance vs. Drain-Source Voltage



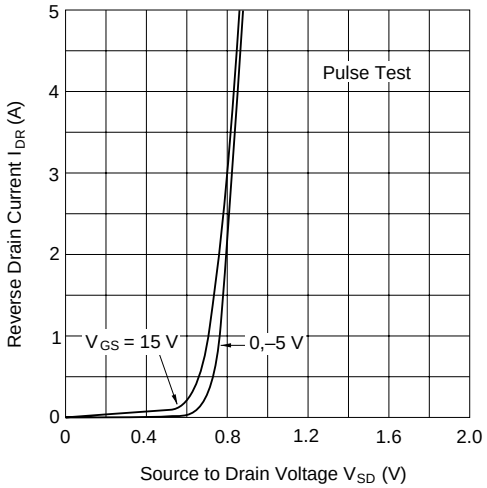

Dynamic Input Characteristics



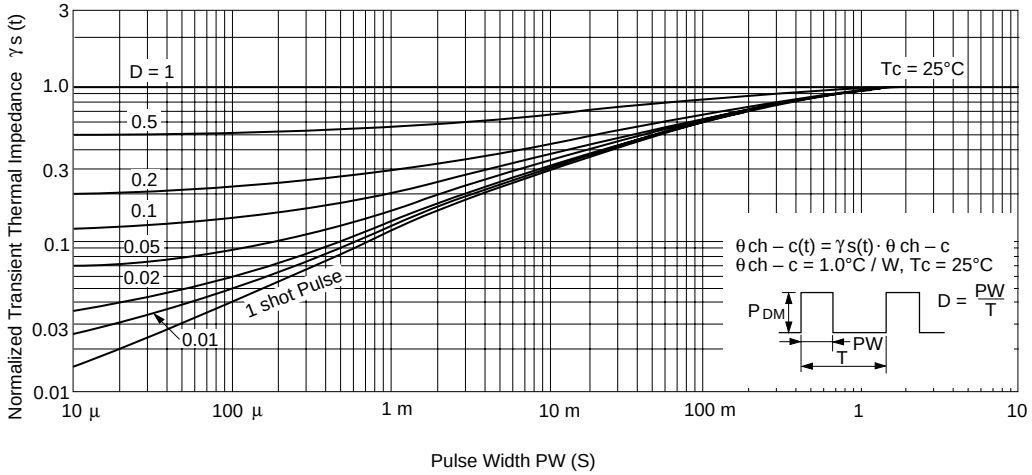

Switching Characteristics



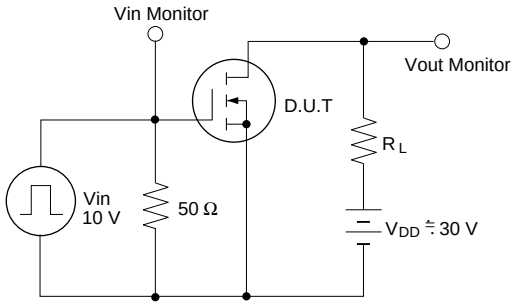
Reverse Drain Current vs.
Source to Drain Voltage




Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit




Waveforms