

2SK2225

Silicon N-Channel MOS FET

HITACHI

ADE-208-140
1st. Edition

Application

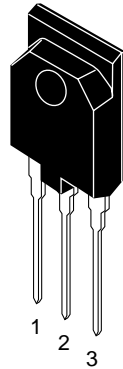
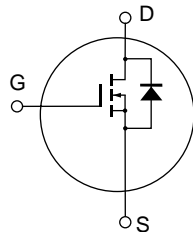
High speed power switching

Features

- High breakdown voltage ($V_{DSS} = 1500\text{ V}$)
- High speed switching
- Low drive current
- No Secondary Breakdown
- Suitable for Switching regulator, DC-DC converter

Outline

TO-3PFM



1. Gate
2. Drain
3. Source

Absolute Maximum Ratings (Ta = 25°C)

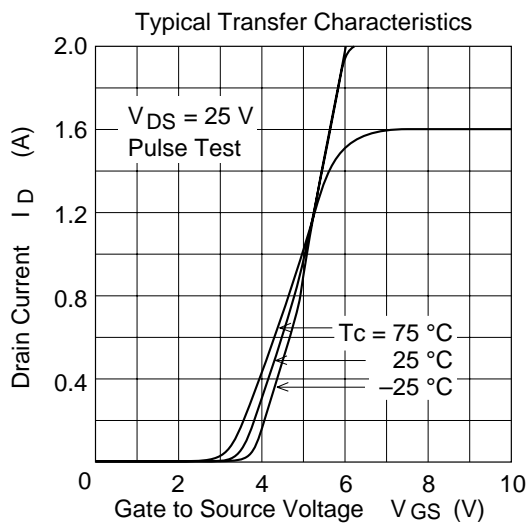
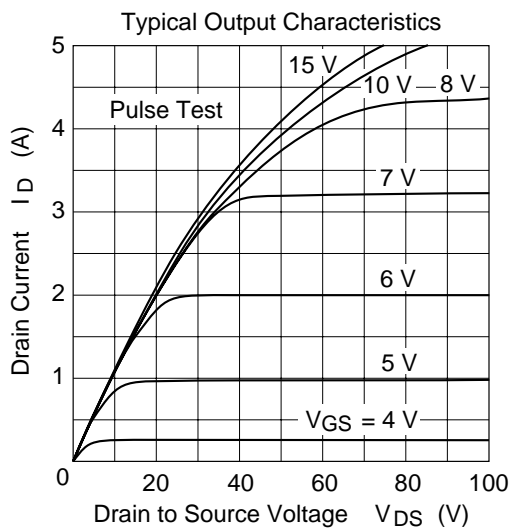
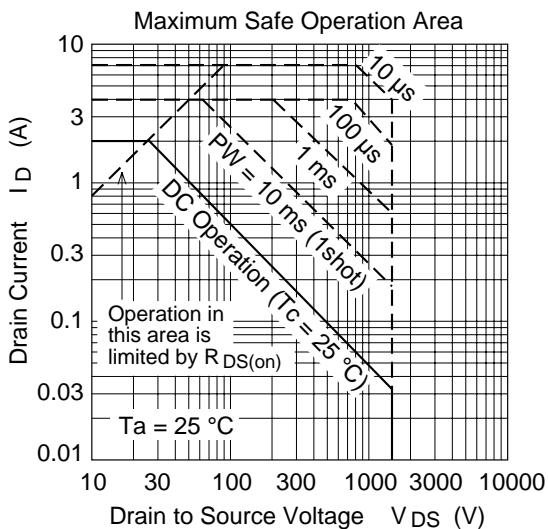
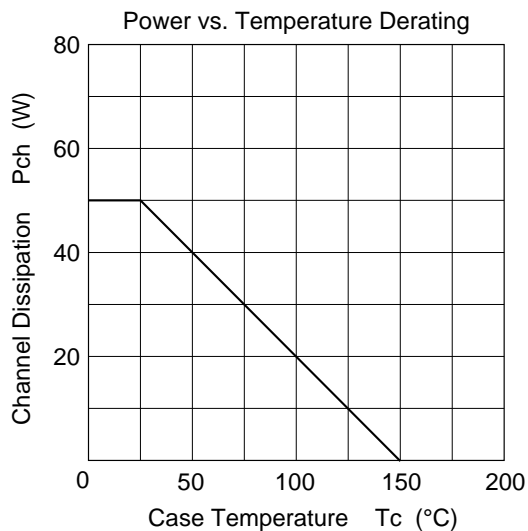
| Item | Symbol | Ratings | Unit |
|---|---------------------|-------------|------|
| Drain to source voltage | V_{DSS} | 1500 | V |
| Gate to source voltage | V_{GSS} | ±20 | V |
| Drain current | I_D | 2 | A |
| Drain peak current | $I_{D(pulse)}^{*1}$ | 7 | A |
| Body to drain diode reverse drain current | I_{DR} | 2 | A |
| Channel dissipation | Pch^{*2} | 50 | W |
| Channel temperature | Tch | 150 | °C |
| Storage temperature | Tstg | -55 to +150 | °C |

Notes 1. $PW \leq 10 \mu s$, duty cycle $\leq 1 \%$
 2. Value at $T_c = 25 \text{ }^\circ\text{C}$

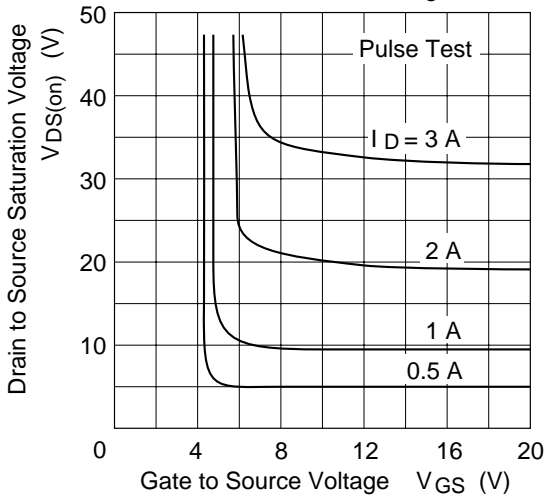
Electrical Characteristics (Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test conditions |
|--|---------------|------|------|-----|------|--|
| Drain to source breakdown voltage | $V_{(BR)DSS}$ | 1500 | — | — | V | $I_D = 10 \text{ mA}$, $V_{GS} = 0$ |
| Gate to source leak current | I_{GSS} | — | — | ±1 | μA | $V_{GS} = \pm 20 \text{ V}$, $V_{DS} = 0$ |
| Zero gate voltage drain current | I_{DSS} | — | — | 500 | μA | $V_{DS} = 1200 \text{ V}$, $V_{GS} = 0$ |
| Gate to source cutoff voltage | $V_{GS(off)}$ | 2.0 | — | 4.0 | V | $I_D = 1 \text{ mA}$, $V_{DS} = 10 \text{ V}$ |
| Static drain to source on state resistance | $R_{DS(on)}$ | — | 9 | 12 | Ω | $I_D = 1 \text{ A}$ $V_{GS} = 15 \text{ V}^{*1}$ |
| Forward transfer admittance | $ y_{fs} $ | 0.45 | 0.75 | — | S | $I_D = 1 \text{ A}$ $V_{DS} = 20 \text{ V}^{*1}$ |
| Input capacitance | Ciss | — | 990 | — | pF | $V_{DS} = 10 \text{ V}$ |
| Output capacitance | Coss | — | 125 | — | pF | $V_{GS} = 0$ |
| Reverse transfer capacitance | Crss | — | 60 | — | pF | $f = 1 \text{ MHz}$ |
| Turn-on delay time | $t_{d(on)}$ | — | 17 | — | ns | $I_D = 1 \text{ A}$ |
| Rise time | t_r | — | 50 | — | ns | $V_{GS} = 10 \text{ V}$ |
| Turn-off delay time | $t_{d(off)}$ | — | 150 | — | ns | $R_L = 30 \text{ } \Omega$ |
| Fall time | t_f | — | 50 | — | ns | |
| Body to drain diode forward voltage | V_{DF} | — | 0.9 | — | V | $I_F = 2 \text{ A}$, $V_{GS} = 0$ |
| Body to drain diode reverse recovery time | t_{rr} | — | 1750 | — | ns | $I_F = 20 \text{ A}$, $V_{GS} = 0$, $di_F / dt = 100 \text{ A} / \mu s$ |

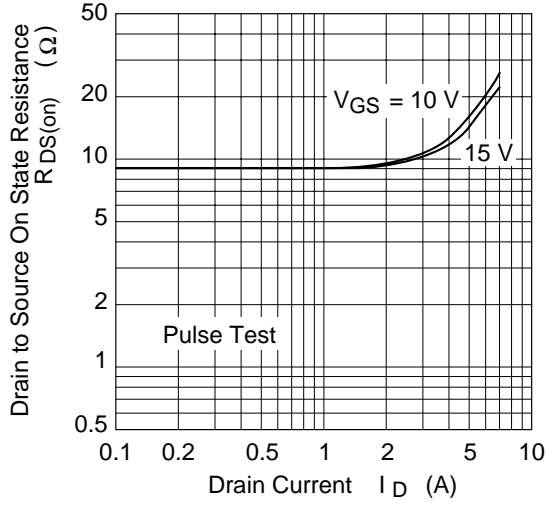
Note 1. Pulse Test



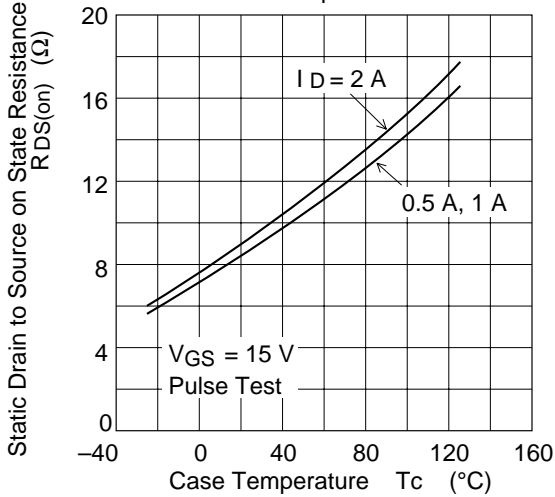
Drain to Source Saturation Voltage vs. Gate to Source Voltage



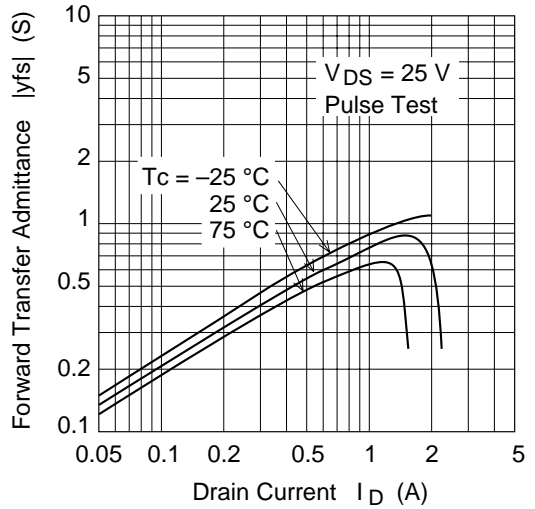
Static Drain to Source State Resistance vs. Drain Current

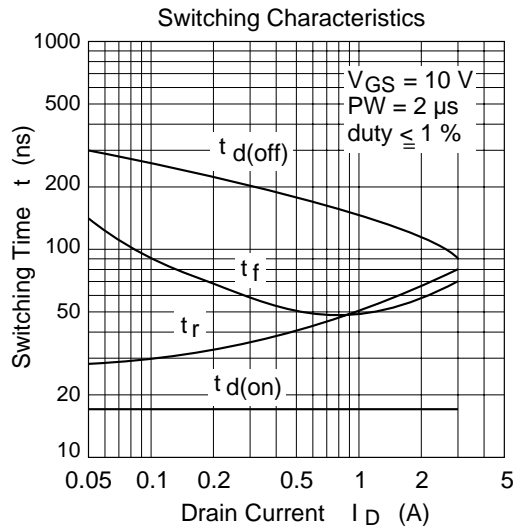
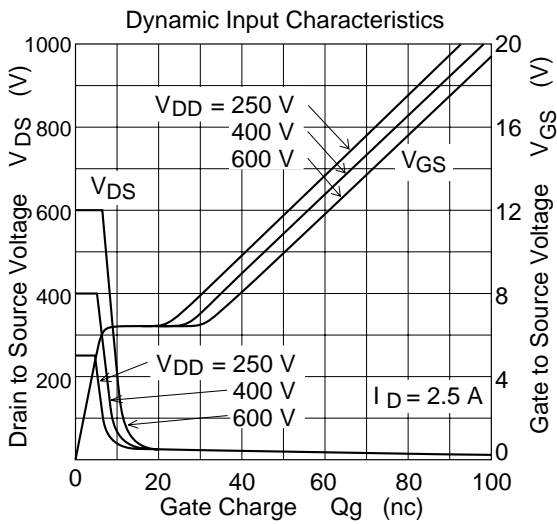
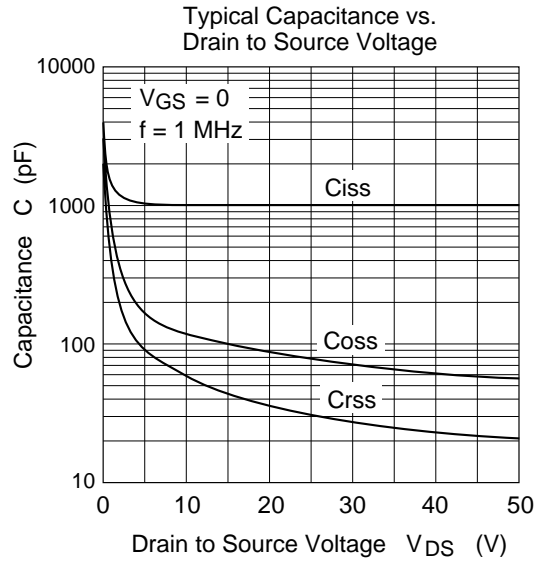
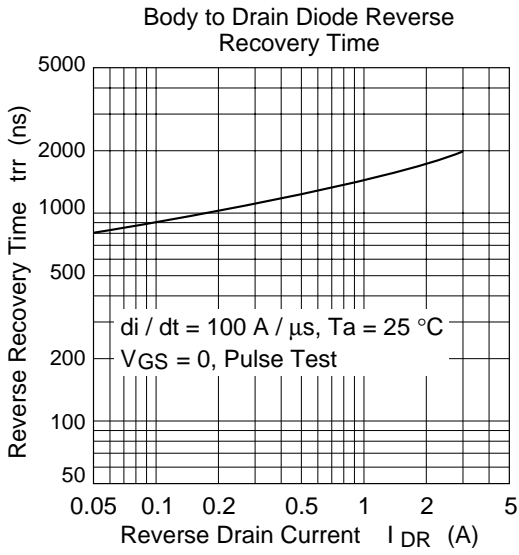


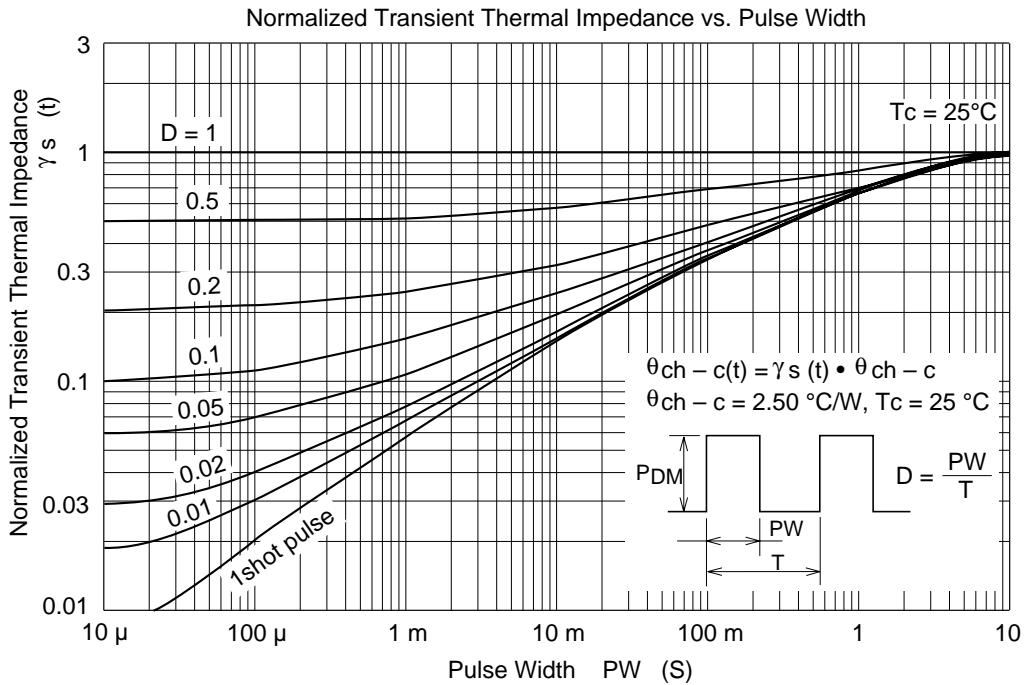
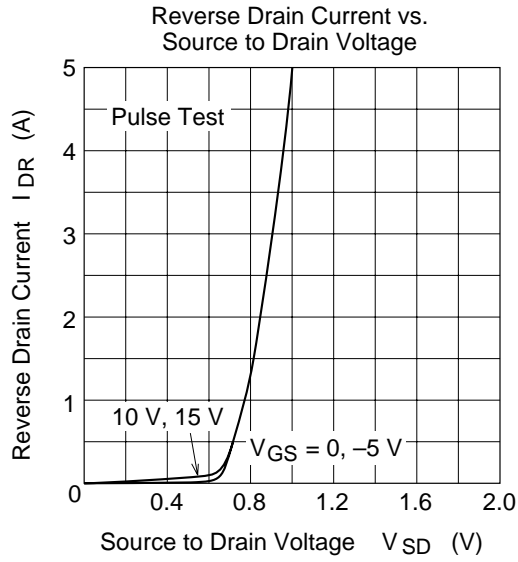
Static Drain to Source on State Resistance vs. Temperature



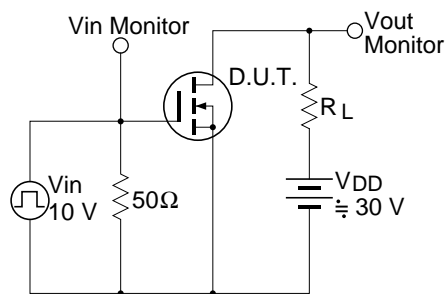
Forward Transfer Admittance vs. Drain Current



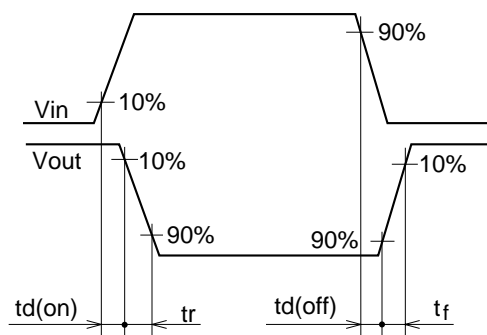


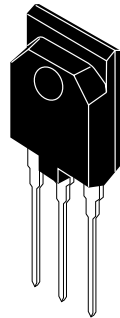
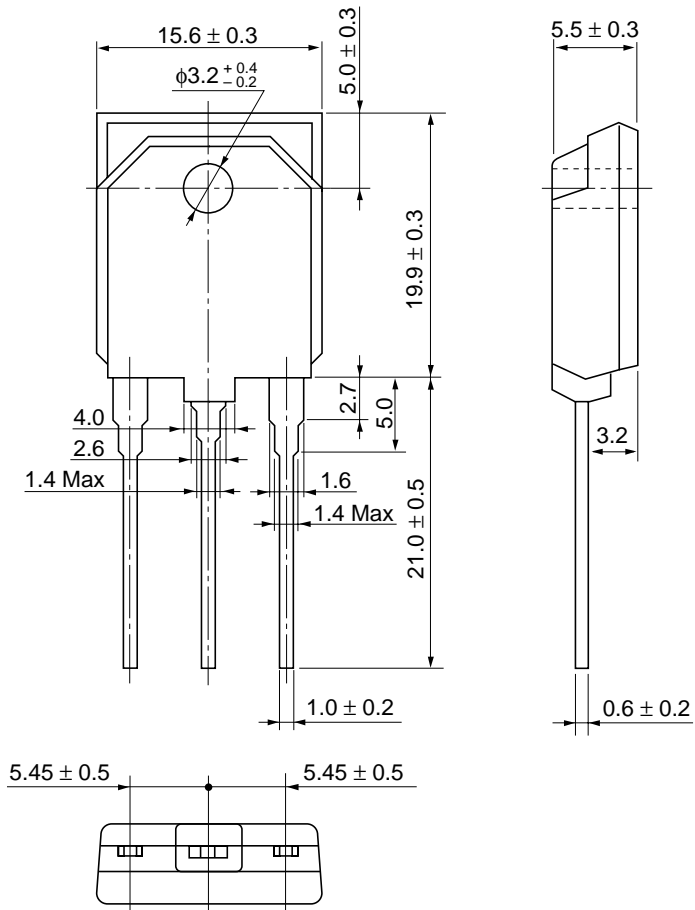


Switching Time Test Circuit



Waveform





| | |
|--------------------------|---------|
| Hitachi Code | TO-3PFB |
| JEDEC | — |
| EIAJ | — |
| Weight (reference value) | 5.6 g |

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