
2SK1809

Silicon N-Channel MOS FET

HITACHI

Application

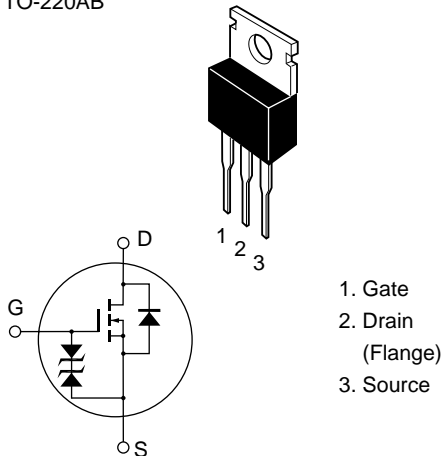
High speed power switching

Features

- Low on-resistance
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator, DC-DC converter

Outline

TO-220AB



Absolute Maximum Ratings (Ta = 25°C)

| Item | Symbol | Ratings | Unit |
|---|---------------------|-------------|------|
| Drain to source voltage | V_{DSS} | 600 | V |
| Gate to source voltage | V_{GSS} | ±30 | V |
| Drain current | I_D | 5 | A |
| Drain peak current | $I_{D(pulse)}^{*1}$ | 20 | A |
| Body to drain diode reverse drain current | I_{DR} | 5 | A |
| Channel dissipation | Pch^{*2} | 60 | W |
| Channel temperature | Tch | 150 | °C |
| Storage temperature | Tstg | -55 to +150 | °C |

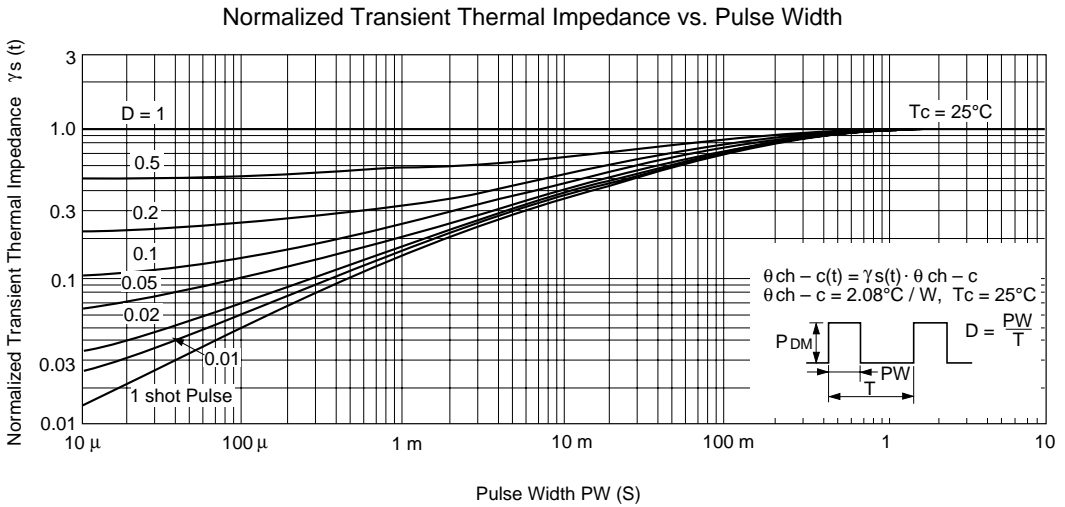
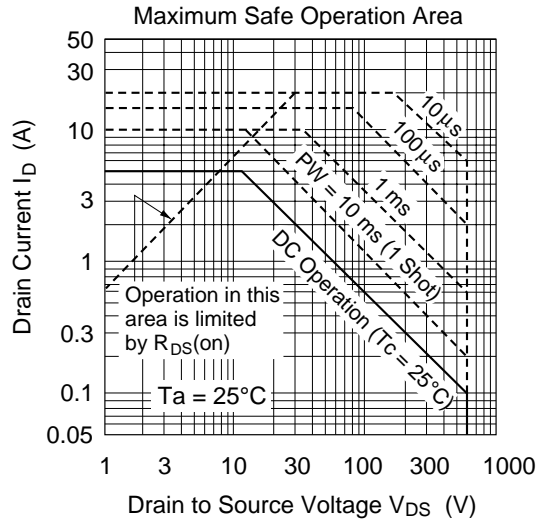
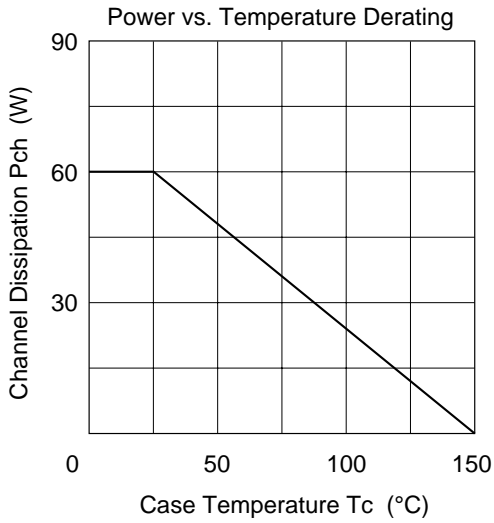
- Notes
1. $PW \leq 10 \mu s$, duty cycle $\leq 1 \%$
 2. Value at $T_c = 25 \text{ }^\circ\text{C}$

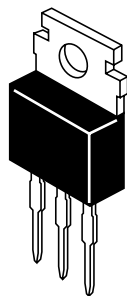
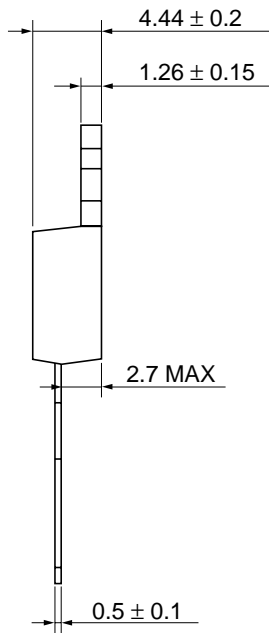
Electrical Characteristics (Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|--|---------------|----------|------|----------|---------------|---|
| Drain to source breakdown voltage | $V_{(BR)DSS}$ | 600 | — | — | V | $I_D = 10 \text{ mA}$, $V_{GS} = 0$ |
| Gate to source breakdown voltage | $V_{(BR)GSS}$ | ± 30 | — | — | V | $I_G = \pm 100 \text{ }\mu\text{A}$, $V_{DS} = 0$ |
| Gate to source leak current | I_{GSS} | — | — | ± 10 | μA | $V_{GS} = \pm 25 \text{ V}$, $V_{DS} = 0$ |
| Zero gate voltage drain current | I_{DSS} | — | — | 250 | μA | $V_{DS} = 500 \text{ V}$, $V_{GS} = 0$ |
| Gate to source cutoff voltage | $V_{GS(off)}$ | 2.0 | — | 3.0 | V | $I_D = 1 \text{ mA}$, $V_{DS} = 10 \text{ V}$ |
| Static drain to source on state resistance | $R_{DS(on)}$ | — | 1.1 | 1.5 | Ω | $I_D = 2.5 \text{ A}$ $V_{GS} = 10 \text{ V}^{*1}$ |
| Forward transfer admittance | $ y_{fs} $ | 3.0 | 5.0 | — | S | $I_D = 2.5 \text{ A}$ $V_{DS} = 10 \text{ V}^{*1}$ |
| Input capacitance | C_{iss} | — | 1000 | — | pF | $V_{DS} = 10 \text{ V}$ |
| Output capacitance | C_{oss} | — | 250 | — | pF | $V_{GS} = 0$ |
| Reverse transfer capacitance | C_{rss} | — | 45 | — | pF | $f = 1 \text{ MHz}$ |
| Turn-on delay time | $t_{d(on)}$ | — | 12 | — | ns | $I_D = 2.5 \text{ A}$ |
| Rise time | t_r | — | 45 | — | ns | $V_{GS} = 10 \text{ V}$ |
| Turn-off delay time | $t_{d(off)}$ | — | 105 | — | ns | $R_L = 12 \text{ }\Omega$ |
| Fall time | t_f | — | 55 | — | ns | |
| Body to drain diode forward voltage | V_{DF} | — | 0.9 | — | V | $I_F = 5 \text{ A}$, $V_{GS} = 0$ |
| Body to drain diode reverse recovery time | t_{rr} | — | 500 | — | ns | $I_F = 5 \text{ A}$, $V_{GS} = 0$, $di_F / dt = 100 \text{ A} / \mu\text{s}$ |

Note 1. Pulse Test

See characteristic curves of 2SK1404





| | |
|--------------------------|----------|
| Hitachi Code | TO-220AB |
| JEDEC | Conforms |
| EIAJ | Conforms |
| Weight (reference value) | 1.8 g |

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