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# 2SK2345

Silicon N-Channel MOS FET

## HITACHI

November 1996

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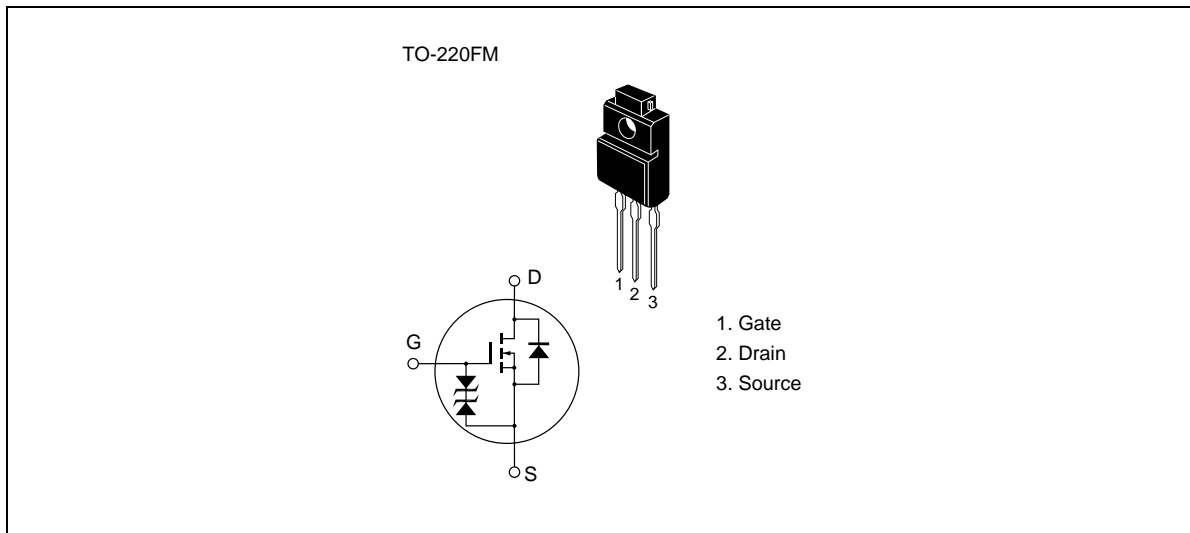
### Application

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



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## 2SK2345

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### Absolute Maximum Ratings (Ta = 25°C)

| Item                                      | Symbol              | Ratings     | Unit |
|---|---------------------|-------------|------|
| Drain to source voltage                   | $V_{DSS}$           | 350         | V    |
| Gate to source voltage                    | $V_{GSS}$           | ±30         | V    |
| Drain current                             | $I_D$               | 6           | A    |
| Drain peak current                        | $I_{D(pulse)}^{*1}$ | 24          | A    |
| Body to drain diode reverse drain current | $I_{DR}$            | 6           | A    |
| Channel dissipation                       | $P_{ch}^{*2}$       | 35          | W    |
| Channel temperature                       | Tch                 | 150         | °C   |
| Storage temperature                       | Tstg                | -55 to +150 | °C   |

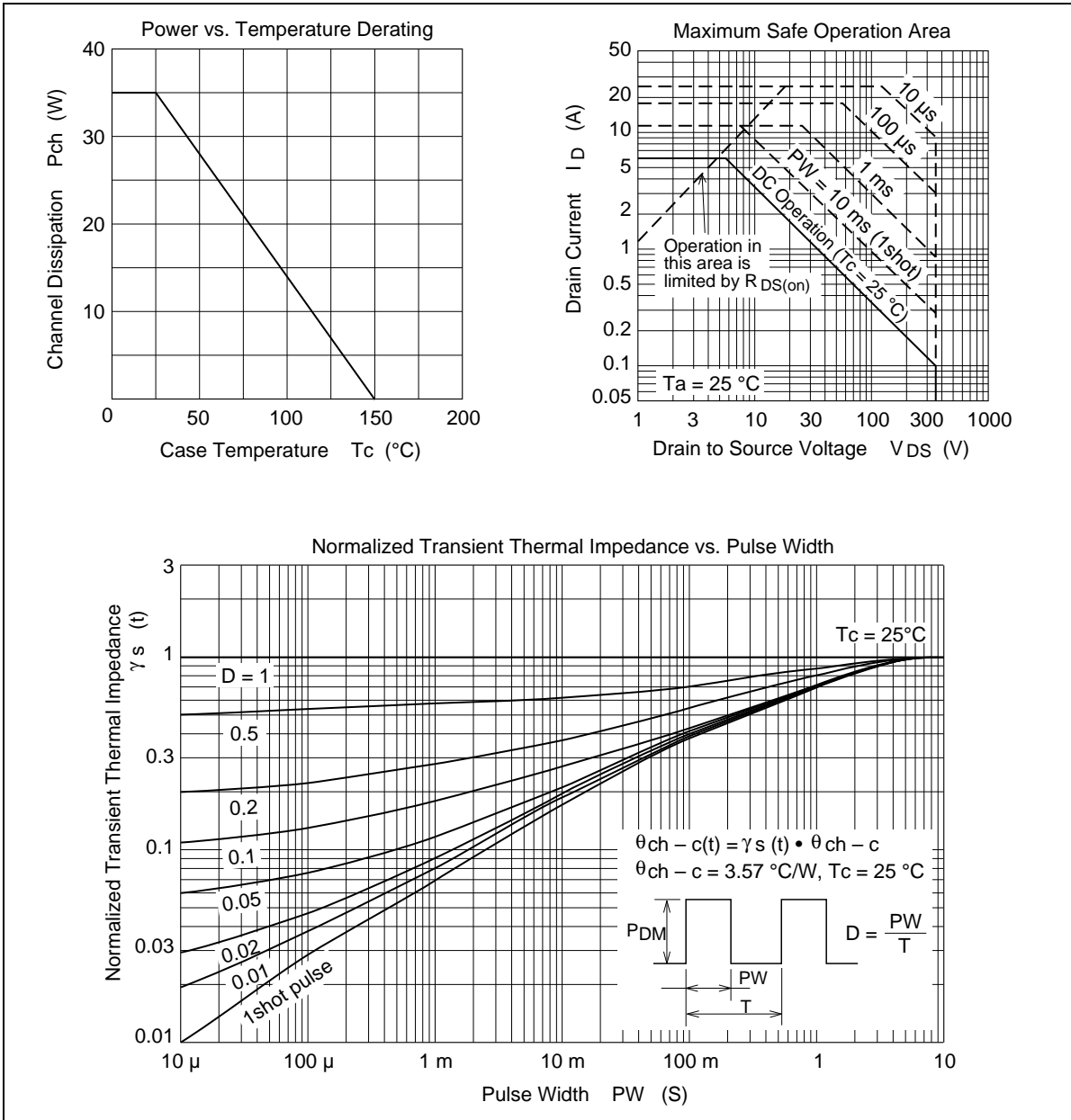
Notes 1.  $PW \leq 10 \mu s$ , duty cycle  $\leq 1 \%$   
2. Value at  $T_c = 25 \text{ }^\circ\text{C}$

## Electrical Characteristics (Ta = 25°C)

| Item                                       | Symbol        | Min      | Typ  | Max      | Unit          | Test Conditions  |
|--|---------------|----------|------|----------|---------------|--|
| Drain to source breakdown voltage          | $V_{(BR)DSS}$ | 350      | —    | —        | V             | $I_D = 10 \text{ mA}, V_{GS} = 0$  |
| Gate to source breakdown voltage           | $V_{(BR)GSS}$ | $\pm 30$ | —    | —        | V             | $I_G = \pm 100 \text{ }\mu\text{A}, V_{DS} = 0$                              |
| Gate to source leak current                | $I_{GSS}$     | —        | —    | $\pm 10$ | $\mu\text{A}$ | $V_{GS} = \pm 25 \text{ V}, V_{DS} = 0$                                      |
| Zero gate voltage drain current            | $I_{DSS}$     | —        | —    | 250      | $\mu\text{A}$ | $V_{DS} = 350 \text{ V}, V_{GS} = 0$   |
| 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 | $R_{DS(on)}$  | —        | 0.6  | 0.8      | $\Omega$      | $I_D = 3 \text{ A}$<br>$V_{GS} = 10 \text{ V}^{*1}$                          |
| Forward transfer admittance                | $ y_{fs} $    | 2.5      | 4.5  | —        | S             | $I_D = 3 \text{ A}$<br>$V_{DS} = 10 \text{ V}^{*1}$                          |
| Input capacitance                          | Ciss          | —        | 635  | —        | pF            | $V_{DS} = 10 \text{ V}$<br>$V_{GS} = 0$<br>$f = 1 \text{ MHz}$               |
| Output capacitance                         | Coss          | —        | 230  | —        | pF            |  |
| Reverse transfer capacitance               | Crss          | —        | 40   | —        | pF            |  |
| Turn-on delay time                         | $t_{d(on)}$   | —        | 10   | —        | ns            | $I_D = 3 \text{ A}$<br>$V_{GS} = 10 \text{ V}$<br>$R_L = 10 \text{ }\Omega$  |
| Rise time                                  | $t_r$         | —        | 40   | —        | ns            |  |
| Turn-off delay time                        | $t_{d(off)}$  | —        | 60   | —        | ns            |  |
| Fall time                                  | $t_f$         | —        | 35   | —        | ns            |  |
| Body to drain diode forward voltage        | $V_{DF}$      | —        | 0.95 | —        | V             | $I_F = 6 \text{ A}, V_{GS} = 0$  |
| Body to drain diode reverse recovery time  | $t_{rr}$      | —        | 230  | —        | ns            | $I_F = 6 \text{ A}, V_{GS} = 0,$<br>$diF / dt = 100 \text{ A} / \mu\text{s}$ |

Note 1. Pulse Test

See characteristic curves of 2SK1400A.



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