

# 2SK2737

Silicon N Channel MOS FET  
High Speed Power Switching

# HITACHI

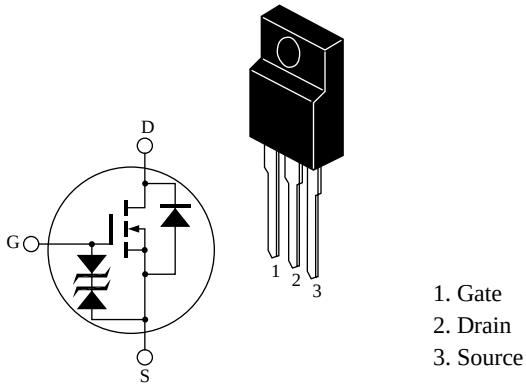
ADE-208-533B(Z)  
3rd. Edition  
Jun 1998

## Features

- Low on-resistance  
 $R_{DS(on)} = 10\text{ m}\Omega$  typ.
- 4V gate drive devices.
- High speed switching

## Outline

TO-220CFM



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

| Item                                   | Symbol                          | Ratings     | Unit |
|----------------------------------------|---------------------------------|-------------|------|
| Drain to source voltage                | $V_{DSS}$                       | 30          | V    |
| Gate to source voltage                 | $V_{GSS}$                       | ±20         | V    |
| Drain current                          | $I_D$                           | 45          | A    |
| Drain peak current                     | $I_{D(pulse)}$ <sup>Note1</sup> | 180         | A    |
| Body-drain diode reverse drain current | $I_{DR}$                        | 45          | A    |
| Channel dissipation                    | Pch <sup>Note2</sup>            | 30          | W    |
| Channel temperature                    | Tch                             | 150         | °C   |
| Storage temperature                    | Tstg                            | –55 to +150 | °C   |

Note: 1.  $PW \leq 10\mu s$ , duty cycle  $\leq 1\%$ 

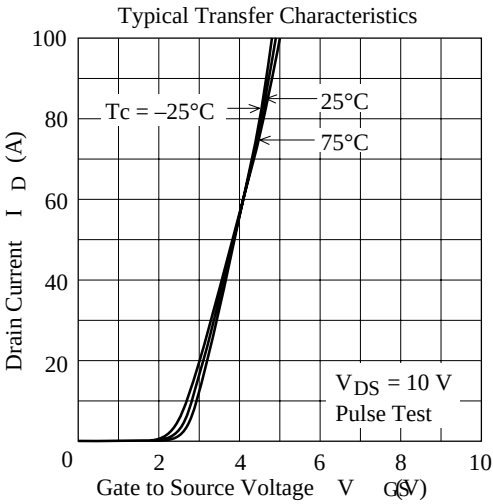
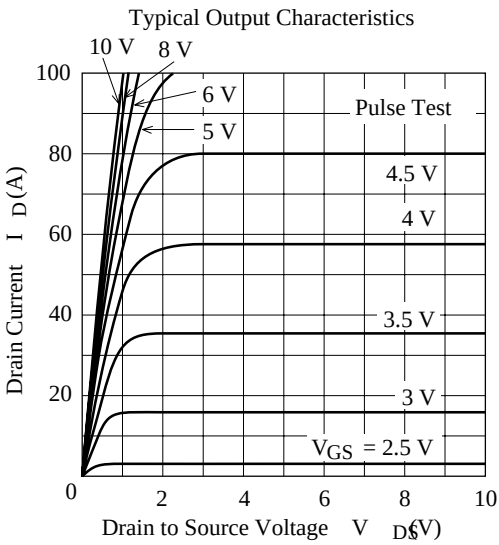
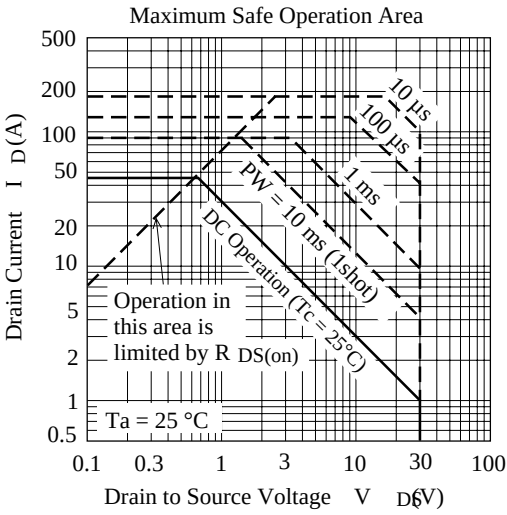
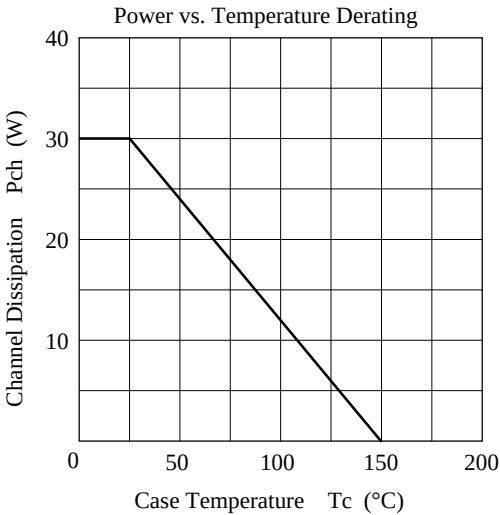
2. Value at Tc = 25°C

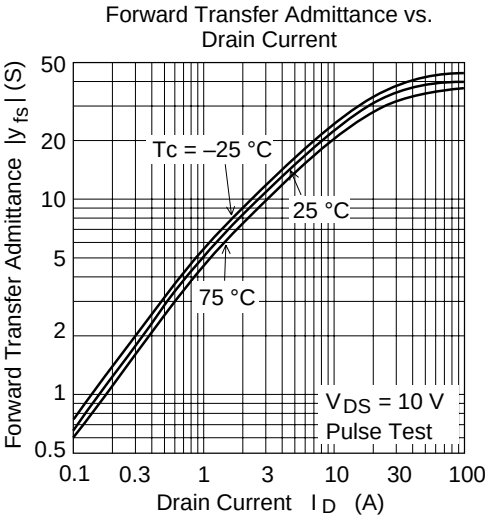
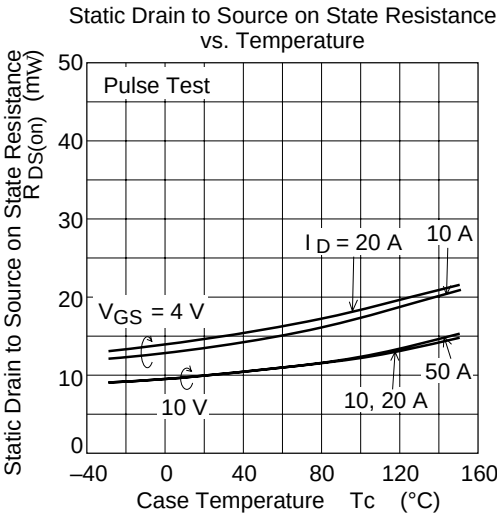
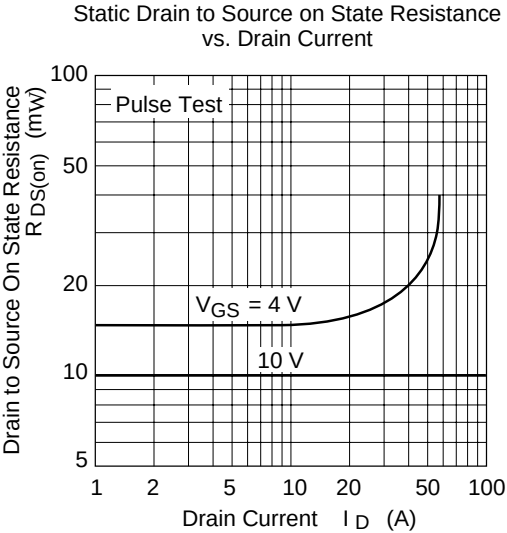
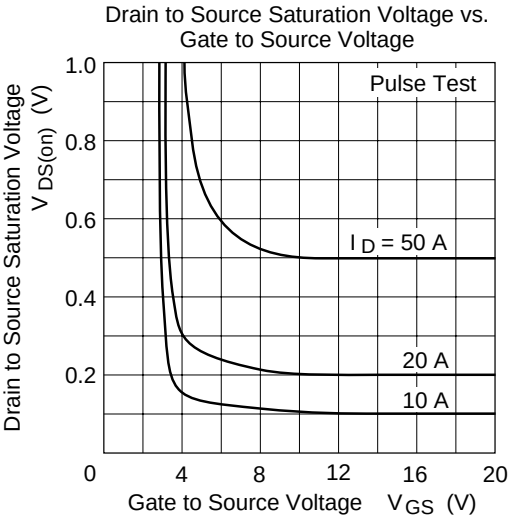
**Electrical Characteristics** (Ta = 25°C)

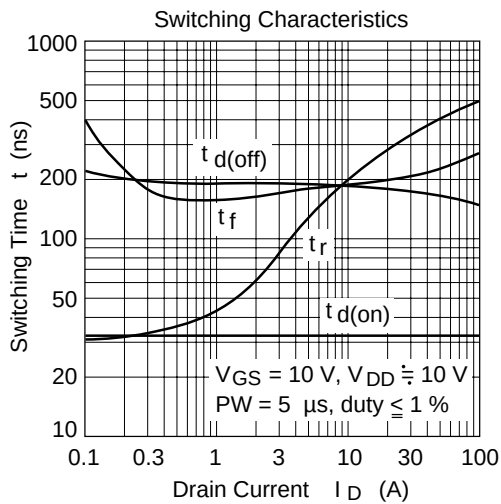
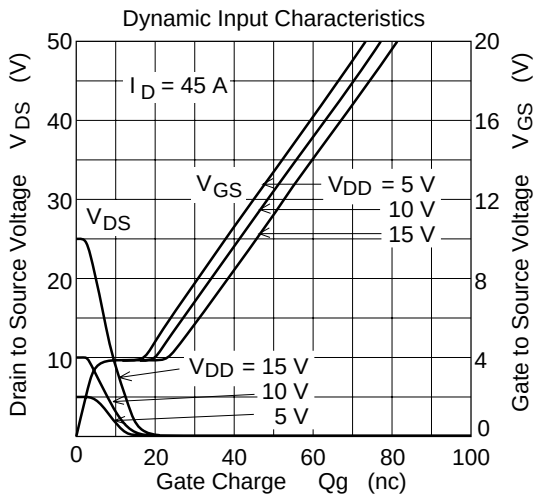
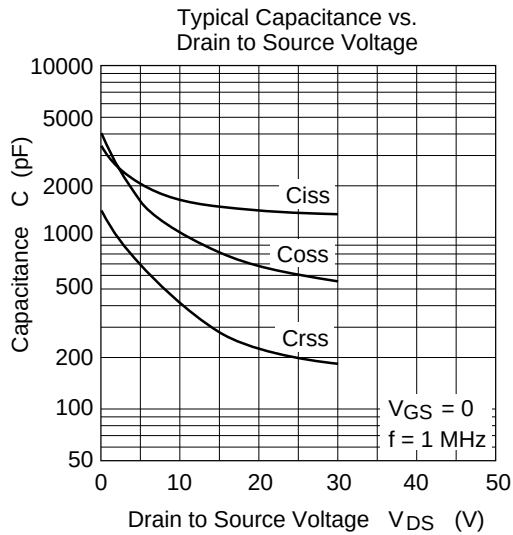
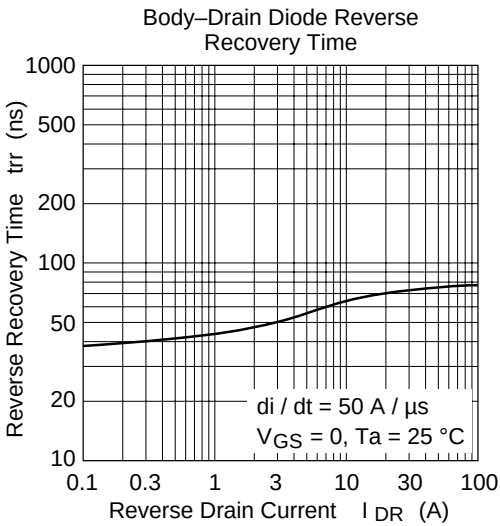
| Item                                       | Symbol        | Min | Typ  | Max | Unit | Test Conditions                             |
|--------------------------------------------|---------------|-----|------|-----|------|---------------------------------------------|
| Drain to source breakdown voltage          | $V_{(BR)DSS}$ | 30  | —    | —   | V    | $I_D = 10mA, V_{GS} = 0$                    |
| Gate to source breakdown voltage           | $V_{(BR)GSS}$ | ±20 | —    | —   | V    | $I_G = \pm 100\mu A, V_{DS} = 0$            |
| Gate to source leak current                | $I_{GSS}$     | —   | —    | ±10 | μA   | $V_{GS} = \pm 16V, V_{DS} = 0$              |
| Zero gate voltage drain current            | $I_{DSS}$     | —   | —    | 10  | μA   | $V_{DS} = 30V, V_{GS} = 0$                  |
| Gate to source cutoff voltage              | $V_{GS(off)}$ | 1.0 | —    | 2.0 | V    | $I_D = 1mA, V_{DS} = 10V$ <sup>Note3</sup>  |
| Static drain to source on state resistance | $R_{DS(on)}$  | —   | 10   | 14  | mΩ   | $I_D = 20A, V_{GS} = 10V$ <sup>Note3</sup>  |
| Static drain to source on state resistance | $R_{DS(on)}$  | —   | 15   | 25  | mΩ   | $I_D = 20A, V_{GS} = 4V$ <sup>Note3</sup>   |
| Forward transfer admittance                | $ y_{fs} $    | 20  | 30   | —   | S    | $I_D = 20A, V_{DS} = 10V$ <sup>Note3</sup>  |
| Input capacitance                          | Ciss          | —   | 1570 | —   | pF   | $V_{DS} = 10V$                              |
| Output capacitance                         | Coss          | —   | 1100 | —   | pF   | $V_{GS} = 0$                                |
| Reverse transfer capacitance               | Crss          | —   | 410  | —   | pF   | f = 1MHz                                    |
| Turn-on delay time                         | $t_{d(on)}$   | —   | 32   | —   | ns   | $V_{GS} = 10V, I_D = 20A$                   |
| Rise time                                  | $t_r$         | —   | 300  | —   | ns   | $R_L = 0.5\Omega$                           |
| Turn-off delay time                        | $t_{d(off)}$  | —   | 180  | —   | ns   |                                             |
| Fall time                                  | $t_f$         | —   | 200  | —   | ns   |                                             |
| Body-drain diode forward voltage           | $V_{DF}$      | —   | 1.0  | —   | V    | $I_F = 45A, V_{GS} = 0$                     |
| Body-drain diode reverse recovery time     | $t_{rr}$      | —   | 75   | —   | ns   | $I_F = 45A, V_{GS} = 0$<br>diF/ dt = 50A/μs |

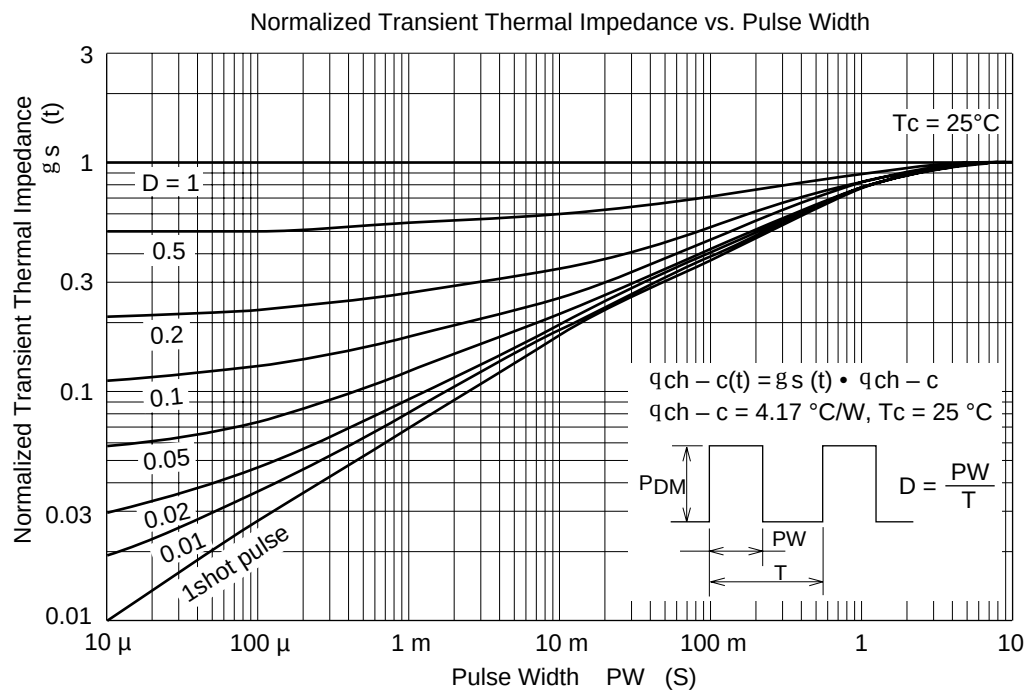
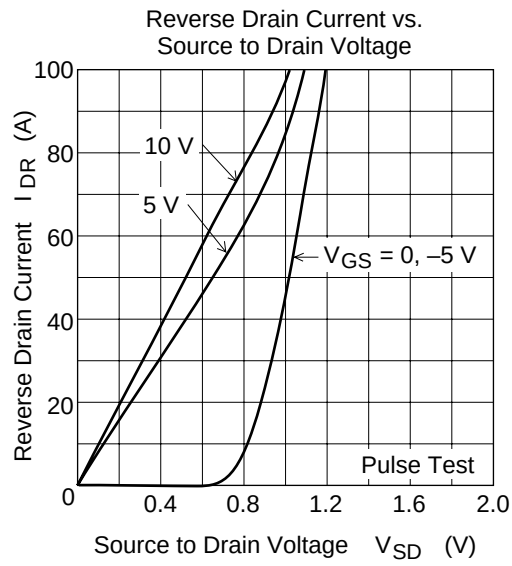
Note: 3. Pulse test

Main Characteristics

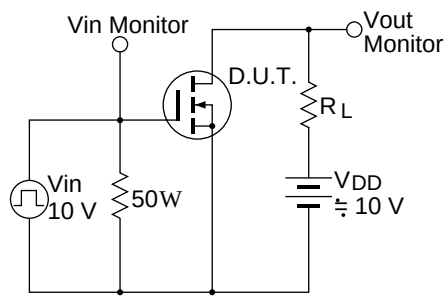




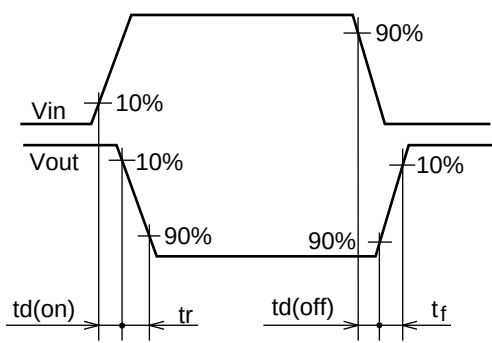




Switching Time Test Circuit

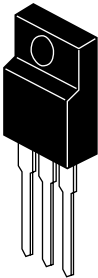
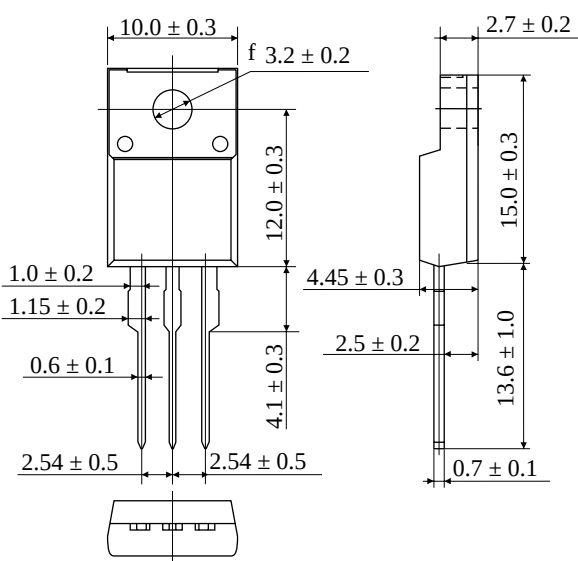


Waveform



Package Dimensions

Unit: mm



|              |           |
|--------------|-----------|
| Hitachi Code | TO-220CFM |
| EIAJ         | —         |
| JEDEC        | —         |



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