

# 2SJ471

Silicon P Channel DV-L MOS FET  
High Speed Power Switching

# HITACHI

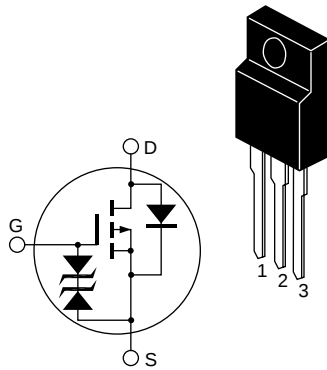
ADE-208-540  
1st. Edition

## Features

- Low on-resistance  
 $R_{DS(on)} = 25 \text{ m}\Omega$  typ.
- 4V gate drive devices.
- High speed switching

## Outline

TO-220CFM



1. Gate
2. Drain
3. Source

Absolute Maximum Ratings (Ta = 25°C)

| Item                                      | Symbol                                 | Ratings     | Unit |
|-------------------------------------------|----------------------------------------|-------------|------|
| Drain to source voltage                   | V <sub>DSS</sub>                       | −30         | V    |
| Gate to source voltage                    | V <sub>GSS</sub>                       | ±20         | V    |
| Drain current                             | I <sub>D</sub>                         | −30         | A    |
| Drain peak current                        | I <sub>D(pulse)</sub> <sup>Note1</sup> | −120        | A    |
| Body to drain diode reverse drain current | I <sub>DR</sub>                        | −30         | A    |
| Channel dissipation                       | Pch <sup>Note2</sup>                   | 30          | W    |
| Channel temperature                       | Tch                                    | 150         | °C   |
| Storage temperature                       | Tstg                                   | −55 to +150 | °C   |

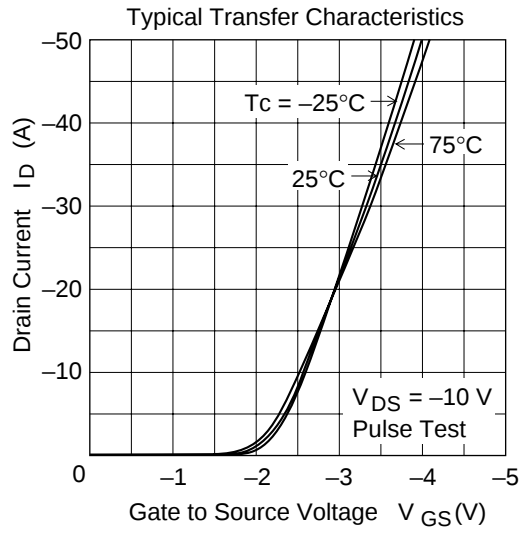
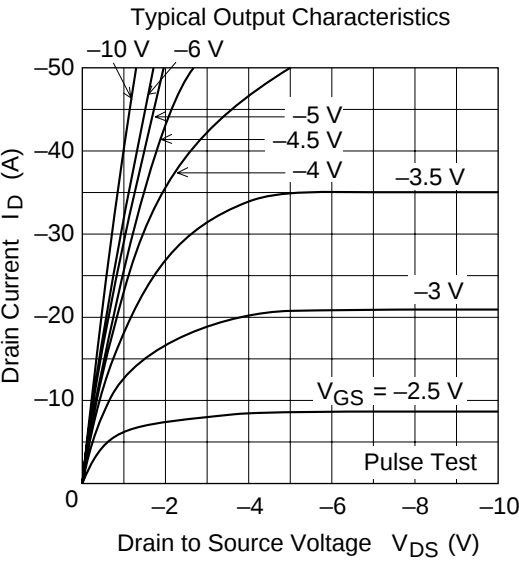
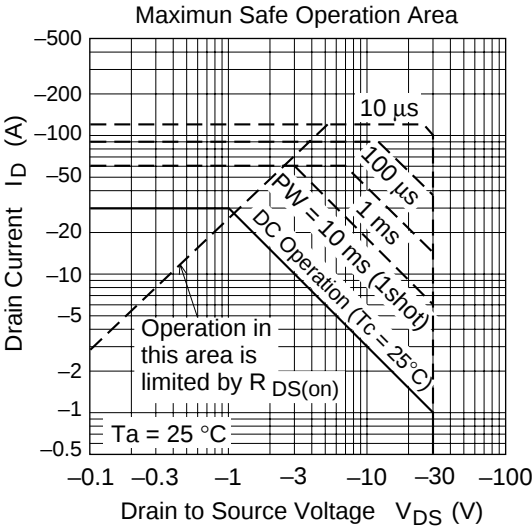
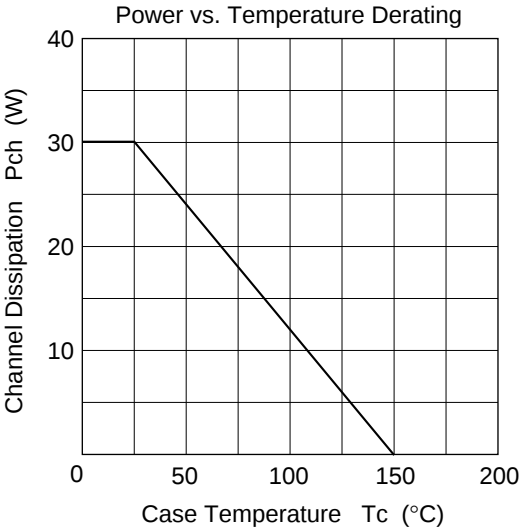
Notes: 1. PW ≤ 10μs, duty cycle ≤ 1 %  
2. Value at Tc = 25°C

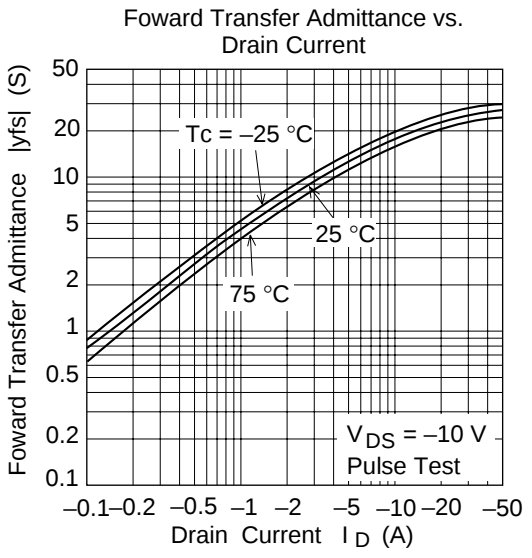
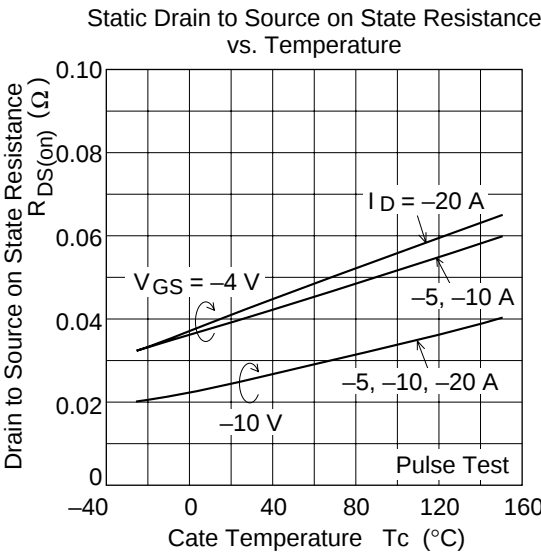
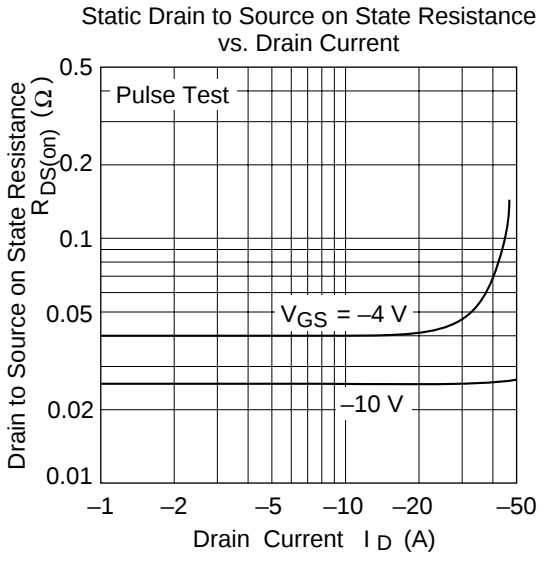
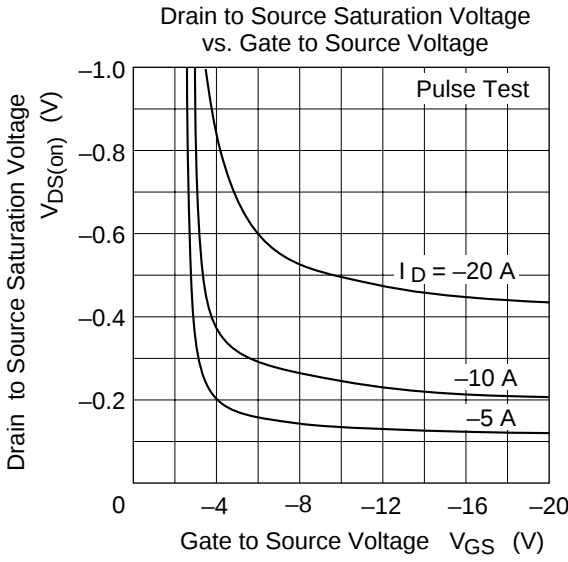
## Electrical Characteristics (Ta = 25°C)

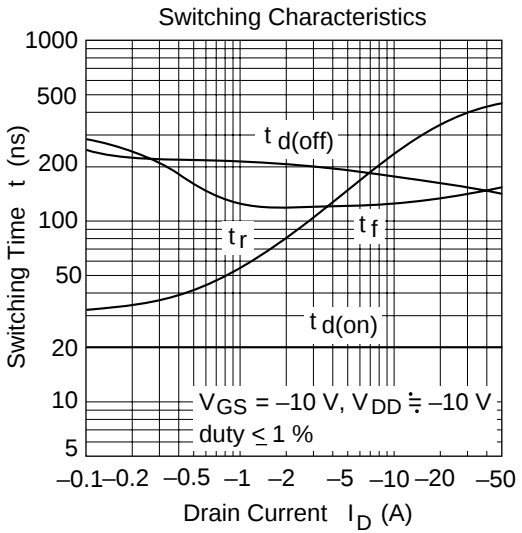
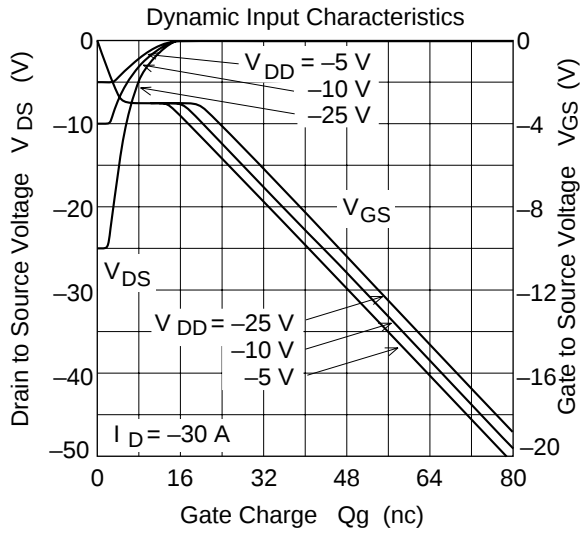
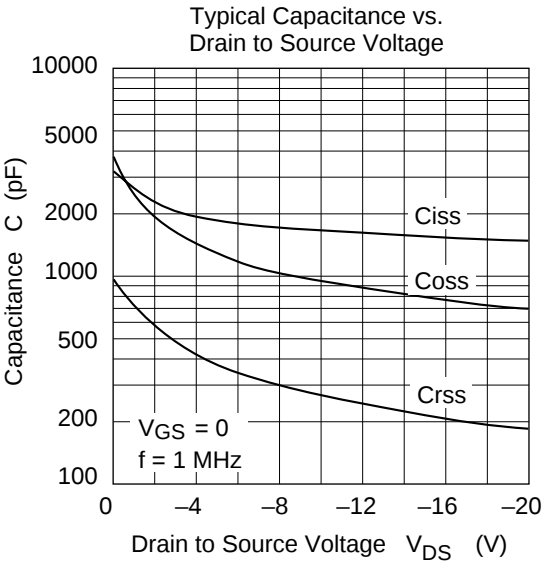
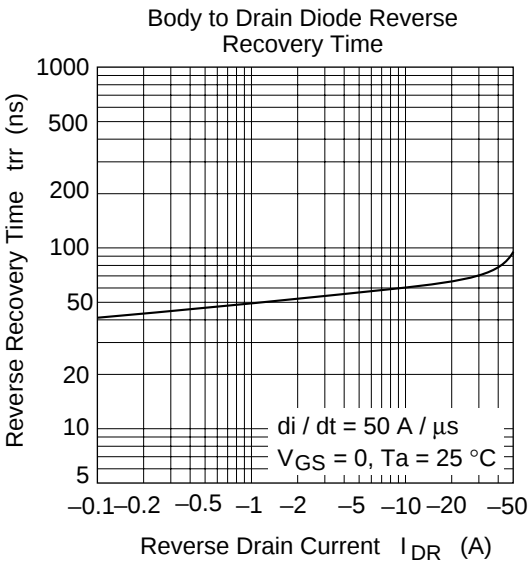
| Item                                       | Symbol        | Min  | Typ  | Max  | Unit | Test Conditions                                                         |
|--------------------------------------------|---------------|------|------|------|------|-------------------------------------------------------------------------|
| Drain to source breakdown voltage          | $V_{(BR)DSS}$ | -30  | —    | —    | V    | $I_D = -10\text{mA}$ , $V_{GS} = 0$                                     |
| Gate to source breakdown voltage           | $V_{(BR)GSS}$ | ±20  | —    | —    | V    | $I_G = \pm 100\mu\text{A}$ , $V_{DS} = 0$                               |
| Zero gate voltage drain current            | $I_{DSS}$     | —    | —    | -10  | μA   | $V_{DS} = -30\text{V}$ , $V_{GS} = 0$                                   |
| Gate to source leak current                | $I_{GSS}$     | —    | —    | ±10  | μA   | $V_{GS} = \pm 16\text{V}$ , $V_{DS} = 0$                                |
| Gate to source cutoff voltage              | $V_{GS(off)}$ | -1.0 | —    | -2.0 | V    | $I_D = -1\text{mA}$ , $V_{DS} = -10\text{V}$                            |
| Static drain to source on state resistance | $R_{DS(on)}$  | —    | 25   | 35   | mΩ   | $I_D = -15\text{A}$ , $V_{GS} = -10\text{V}$ <sup>Note3</sup>           |
|                                            | $R_{DS(on)}$  | —    | 40   | 60   | mΩ   | $I_D = -15\text{A}$ , $V_{GS} = -4\text{V}$ <sup>Note3</sup>            |
| Forward transfer admittance                | $ y_{fs} $    | 12   | 20   | —    | S    | $I_D = -15\text{A}$ , $V_{DS} = -10\text{V}$ <sup>Note3</sup>           |
| Input capacitance                          | $C_{iss}$     | —    | 1700 | —    | pF   | $V_{DS} = -10\text{V}$                                                  |
| Output capacitance                         | $C_{oss}$     | —    | 950  | —    | pF   | $V_{GS} = 0$                                                            |
| Reverse transfer capacitance               | $C_{rss}$     | —    | 260  | —    | pF   | $f = 1\text{MHz}$                                                       |
| Turn-on delay time                         | $t_{d(on)}$   | —    | 20   | —    | ns   | $V_{GS} = -10\text{V}$ , $I_D = -15\text{A}$                            |
| Rise time                                  | $t_r$         | —    | 290  | —    | ns   | $R_L = 0.67\Omega$                                                      |
| Turn-off delay time                        | $t_{d(off)}$  | —    | 170  | —    | ns   |                                                                         |
| Fall time                                  | $t_f$         | —    | 130  | —    | ns   |                                                                         |
| Body to drain diode forward voltage        | $V_{DF}$      | —    | -1.1 | —    | V    | $I_F = -30\text{A}$ , $V_{GS} = 0$                                      |
| Body to drain diode reverse recovery time  | $t_{rr}$      | —    | 70   | —    | ns   | $I_F = -30\text{A}$ , $V_{GS} = 0$<br>$diF/dt = 50\text{A}/\mu\text{s}$ |

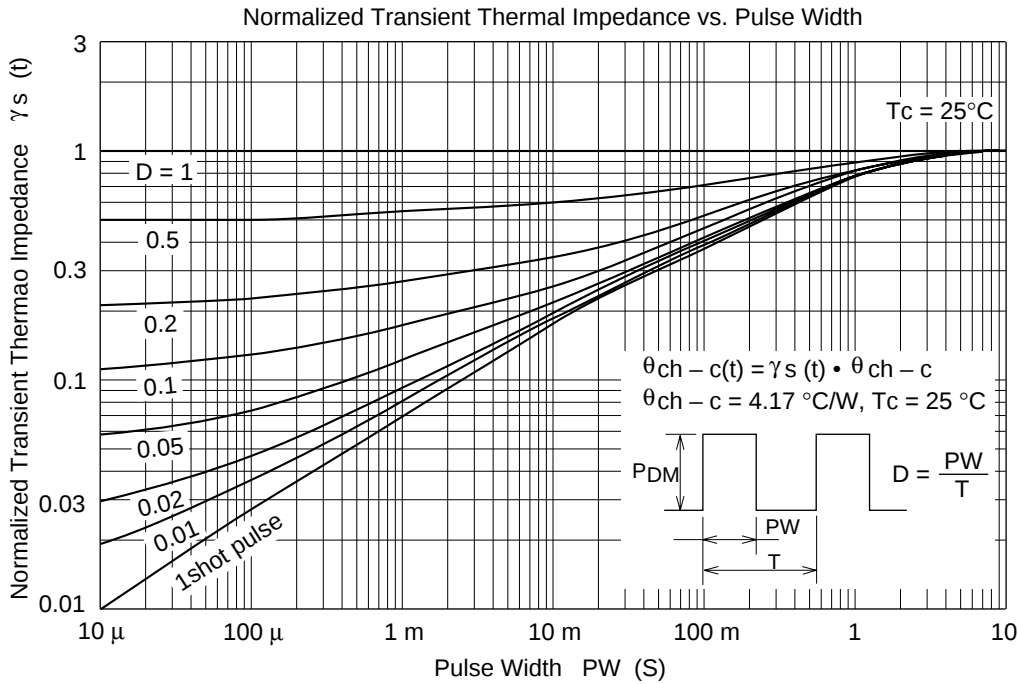
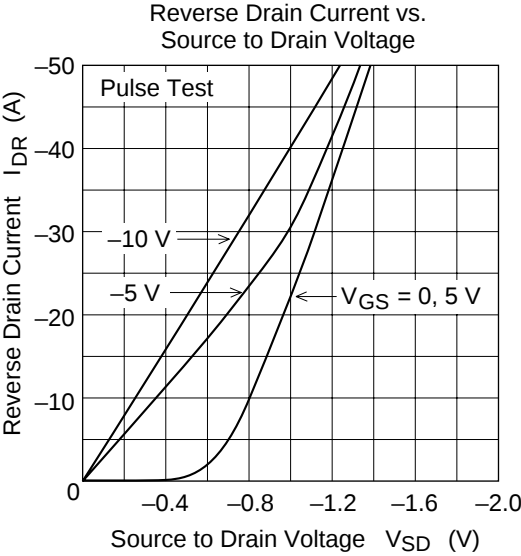
Note: 3. Pulse test

Main Characteristics

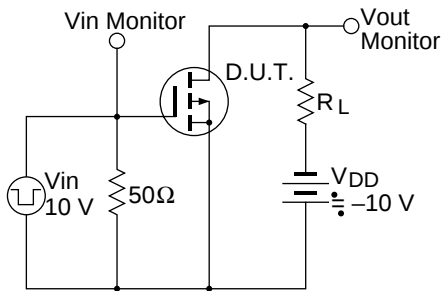




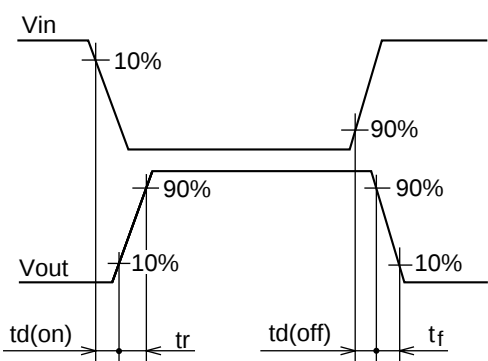




Switching Timen Test Circuit

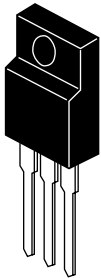
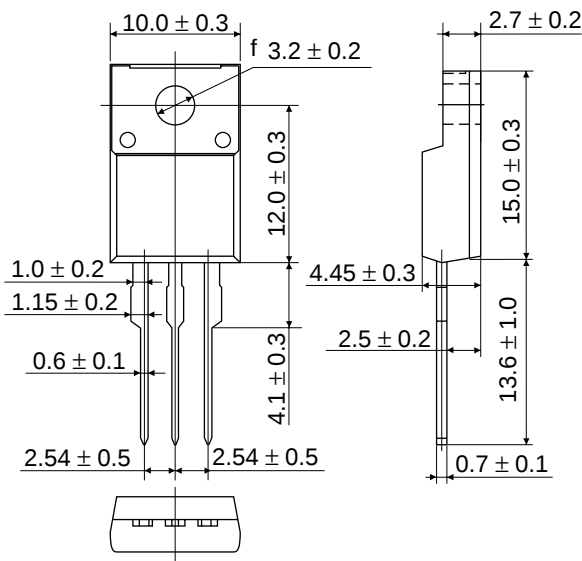


Waveform



Package Dimensions

Unit: mm



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

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