

**FW214**

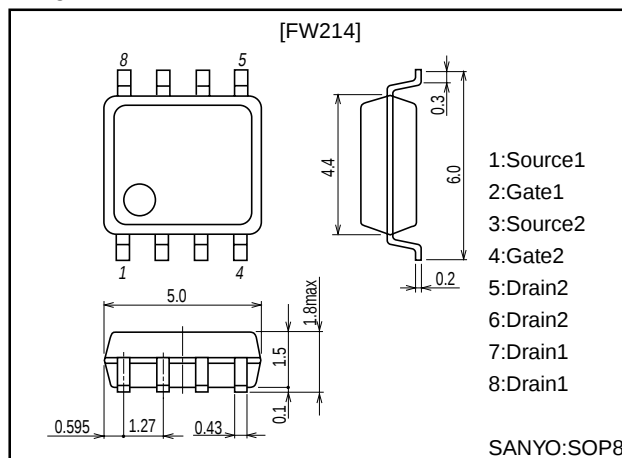
## Ultrahigh-Speed Switching Applications

### Features

- Low ON resistance.
- 2.5V drive.

### Package Dimensions

unit:mm

**2129**

### Specifications

Absolute Maximum Ratings at Ta = 25°C

| Parameter                   | Symbol    | Conditions                                                  | Ratings     | Unit |
|-----------------------------|-----------|-------------------------------------------------------------|-------------|------|
| Drain-to-Source Voltage     | $V_{DSS}$ |                                                             | 20          | V    |
| Gate-to-Source Voltage      | $V_{GSS}$ |                                                             | ±10         | V    |
| Drain Current (DC)          | $I_D$     |                                                             | 5           | A    |
| Drain Current (pulse)       | $I_{DP}$  | PW≤10μs, duty cycle≤1%                                      | 48          | A    |
| Allowable Power Dissipation | $P_D$     | Mounted on ceramic board (1200mm <sup>2</sup> ×0.8mm) 1unit | 1.7         | W    |
| Total Dissipation           | $P_T$     | Mounted on ceramic board (1200mm <sup>2</sup> ×0.8mm)       | 2.0         | W    |
| Channel Temperature         | Tch       |                                                             | 150         | °C   |
| Storage Temperature         | Tstg      |                                                             | -55 to +150 | °C   |

Electrical Characteristics at Ta = 25°C

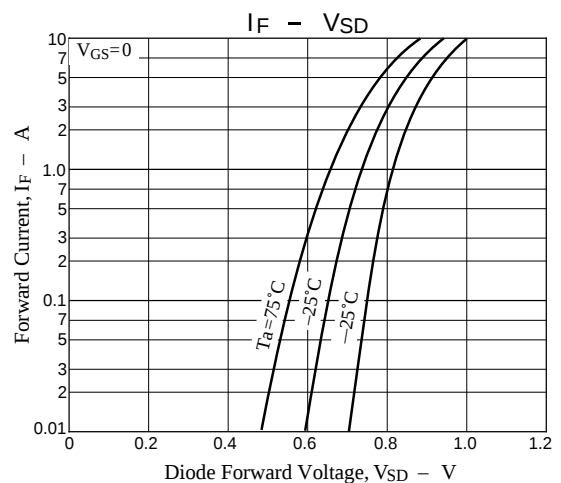
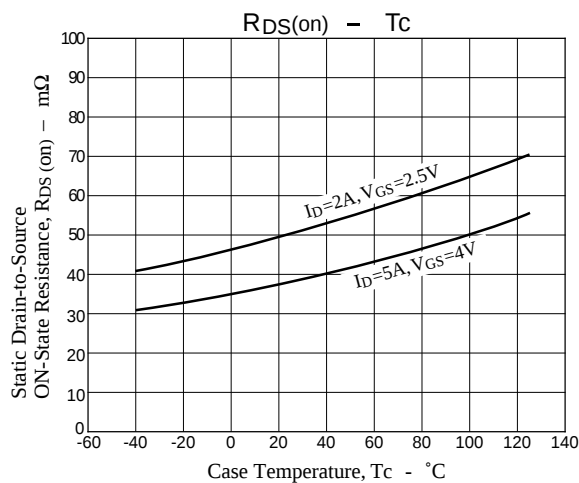
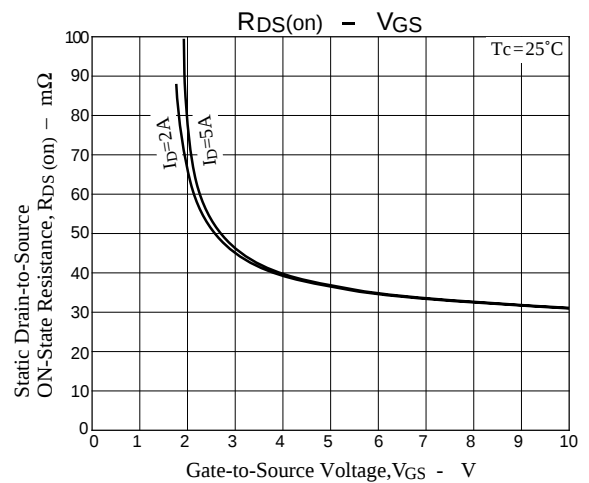
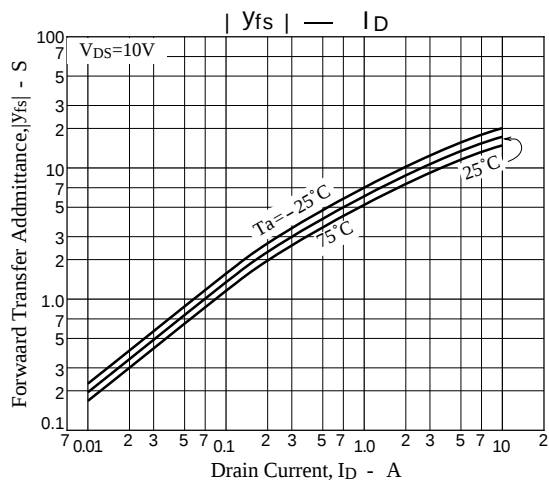
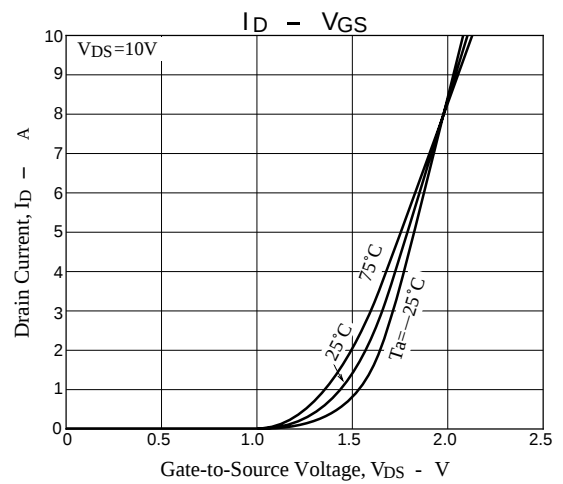
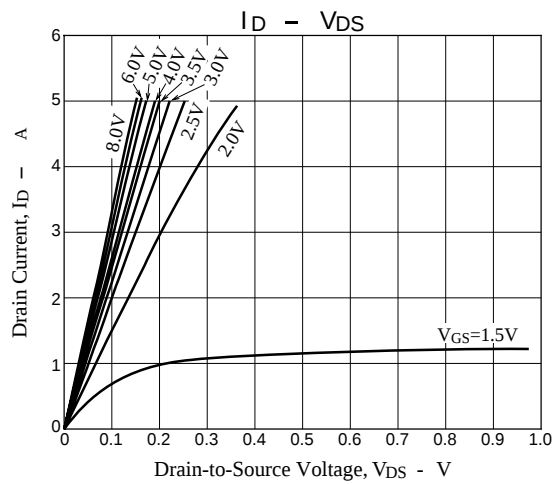
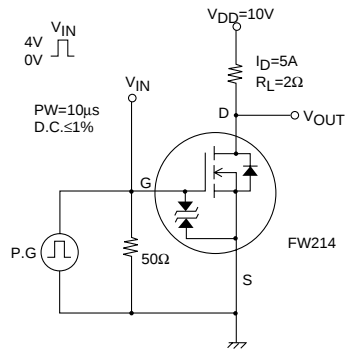
| Parameter                                  | Symbol              | Conditions                       | Ratings |     |     | Unit |
|--------------------------------------------|---------------------|----------------------------------|---------|-----|-----|------|
|                                            |                     |                                  | min     | typ | max |      |
| D-S Breakdown Voltage                      | $V_{(BR)DSS}$       | $I_D=1mA, V_{GS}=0$              | 20      |     |     | V    |
| Zero Gate Voltage Drain Current            | $I_{DSS}$           | $V_{DS}=20V, V_{GS}=0$           |         |     | 100 | μA   |
| Gate-to-Source Leak Current                | $I_{GSS}$           | $V_{GS}=±8V, V_{DS}=0$           |         |     | ±10 | μA   |
| Cutoff Current                             | $V_{GS(off)}$       | $V_{DS}=10V, I_D=1mA$            | 0.4     |     | 1.3 | V    |
| Forward Transfer Admittance                | y <sub>fs</sub>     | $V_{DS}=10V, I_D=5A$             | 8       | 13  |     | S    |
| Static Drain-to-Source ON-State Resistance | $R_{DS(on)1}$       | $I_D=5A, V_{GS}=4V$              |         | 38  | 50  | mΩ   |
|                                            | $R_{DS(on)2}$       | $I_D=2A, V_{GS}=2.5V$            |         | 50  | 70  | mΩ   |
| Input Capacitance                          | Ciss                | $V_{DS}=10V, f=1MHz$             |         | 500 |     | pF   |
| Output Capacitance                         | Coss                | $V_{DS}=10V, f=1MHz$             |         | 280 |     | pF   |
| Reverse Transfer Capacitance               | Crss                | $V_{DS}=10V, f=1MHz$             |         | 150 |     | pF   |
| Turn-ON Delay Time                         | t <sub>d(on)</sub>  | See specified Test Circuit       |         | 20  |     | ns   |
| Rise Time                                  | t <sub>r</sub>      | See specified Test Circuit       |         | 250 |     | ns   |
| Turn-OFF Delay Time                        | t <sub>d(off)</sub> | See specified Test Circuit       |         | 70  |     | ns   |
| Fall Time                                  | t <sub>f</sub>      | See specified Test Circuit       |         | 130 |     | ns   |
| Total Gate Charge                          | Qg                  | $V_{DS}=10V, V_{GS}=10V, I_D=5A$ |         | 22  |     | nC   |
| Gate-to-Source Charge                      | Qgs                 | $V_{DS}=10V, V_{GS}=10V, I_D=5A$ |         | 3   |     | nC   |
| Gate-to-Drain ("Miller") Charge            | Qgd                 | $V_{DS}=10V, V_{GS}=10V, I_D=5A$ |         | 3   |     | nC   |
| Diode Forward Voltage                      | V <sub>SD</sub>     | $I_S=5A, V_{GS}=0$               |         | 1.0 | 1.2 | V    |

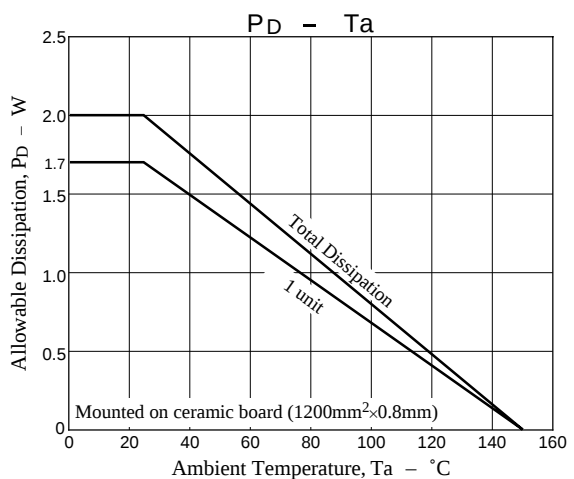
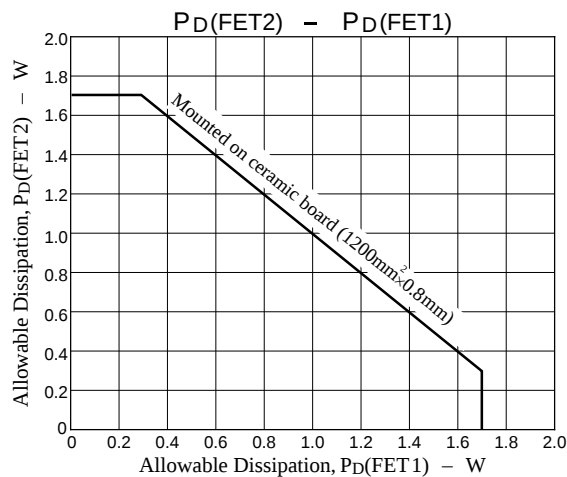
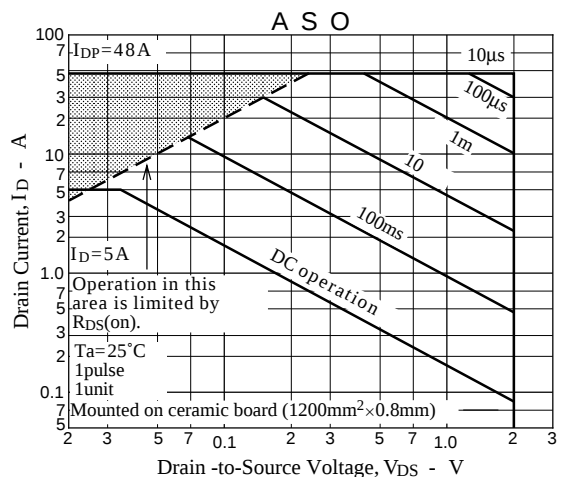
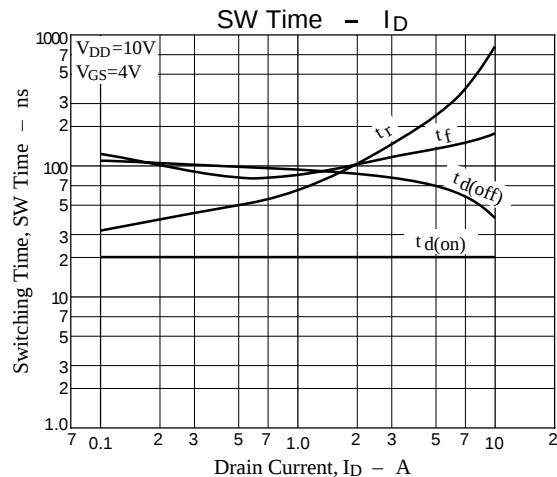
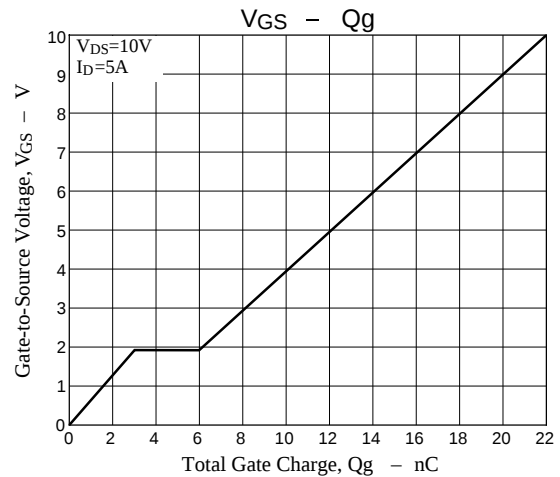
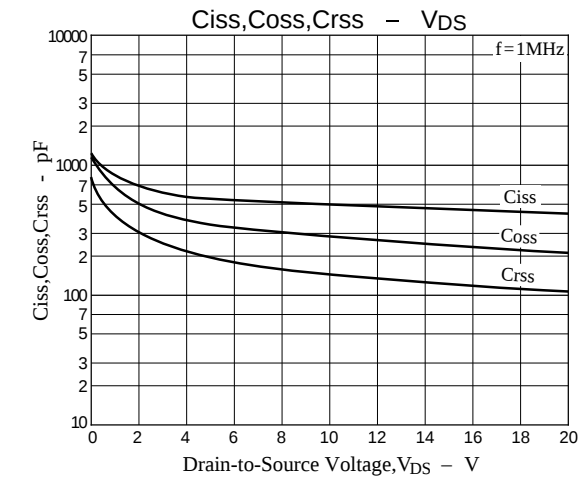
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## Switching Time Test Circuit





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