



DC-DC Converter Applications

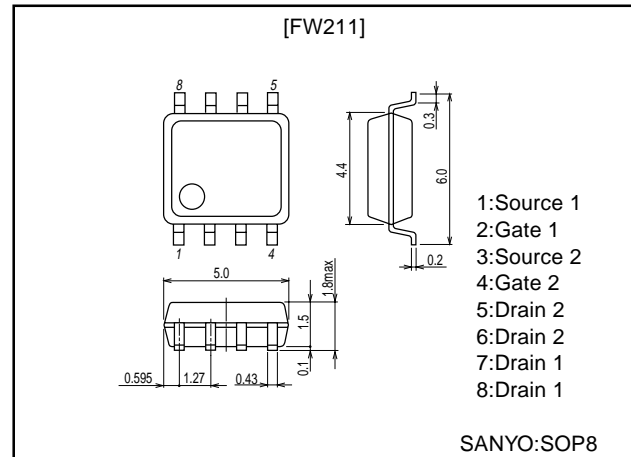
Features

- Low ON resistance.
- 2.5V drive.

Package Dimensions

unit:mm

2129



Specifications

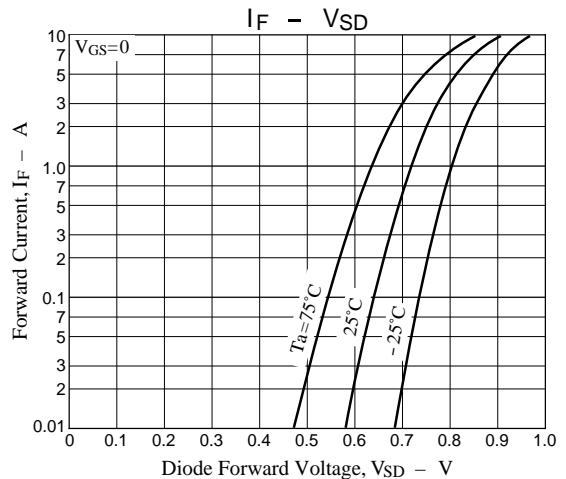
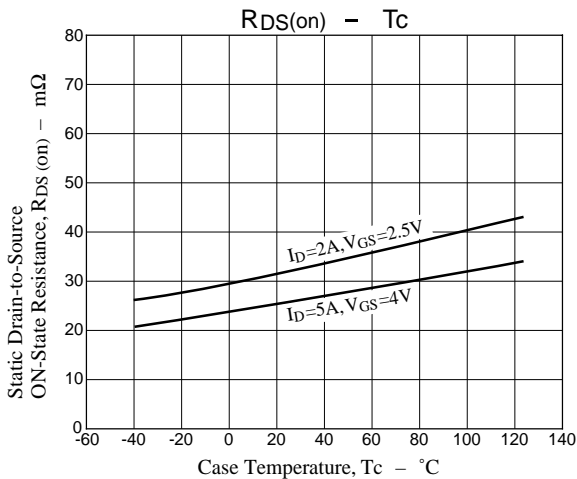
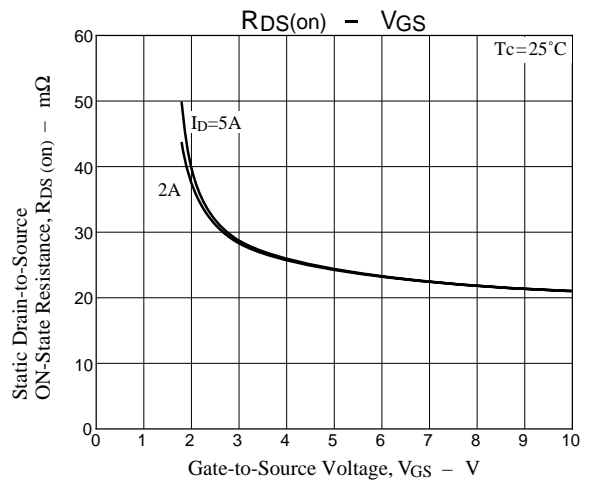
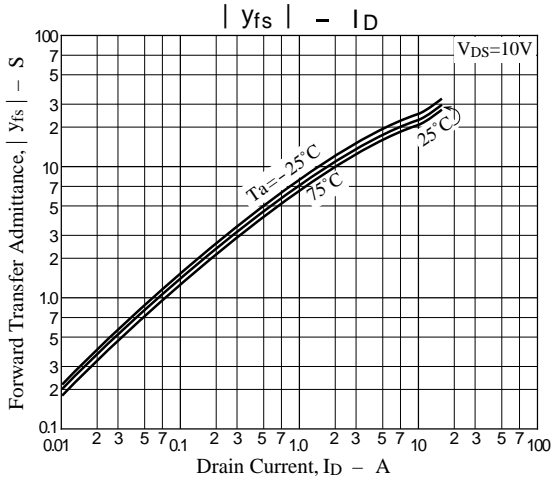
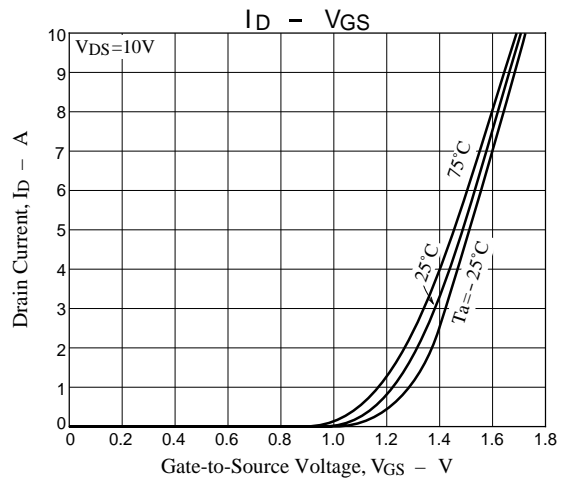
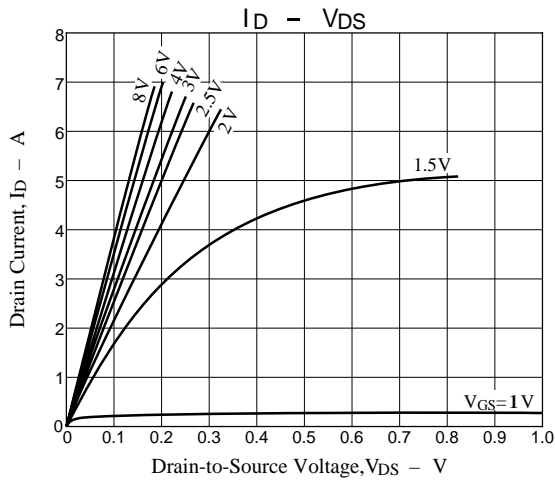
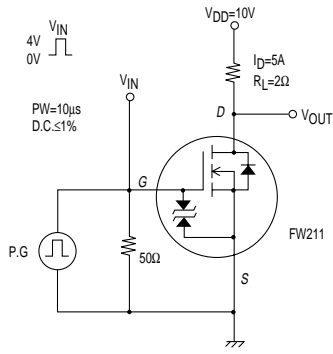
Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

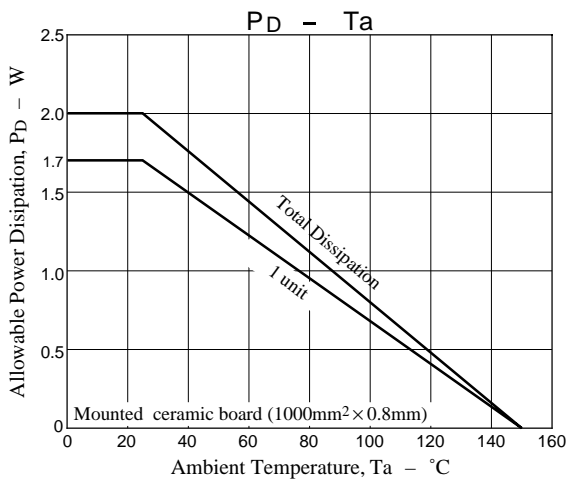
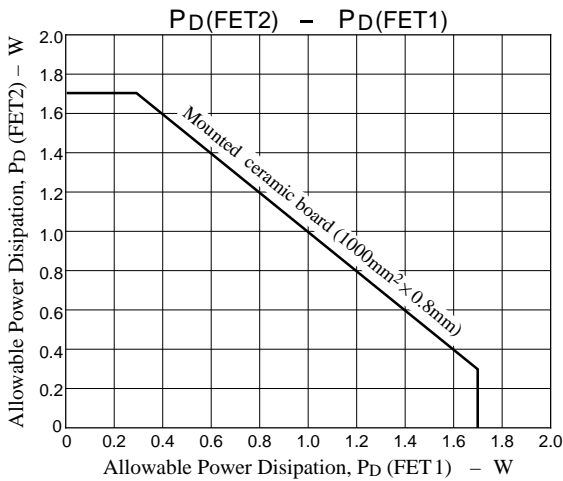
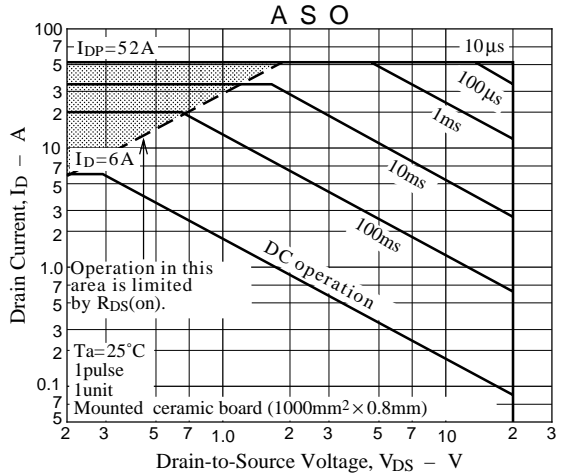
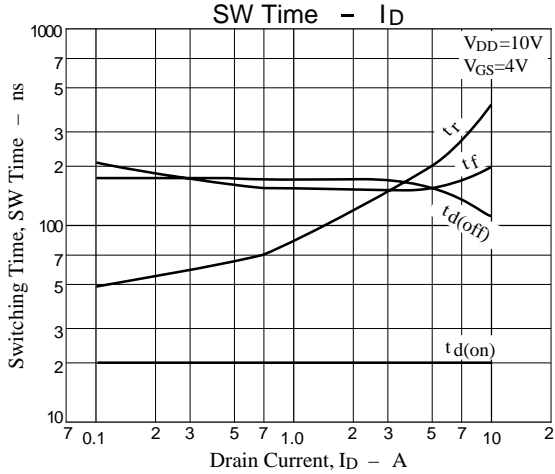
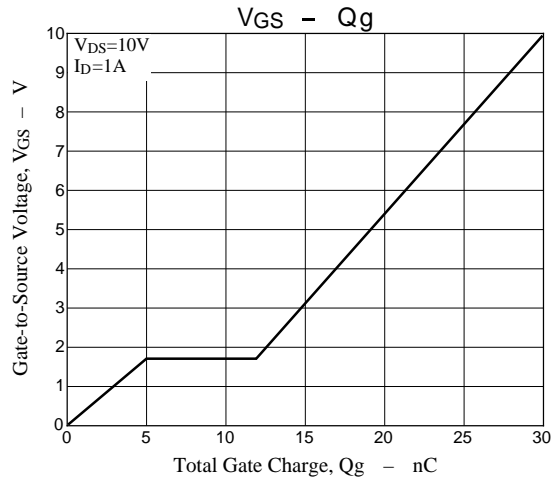
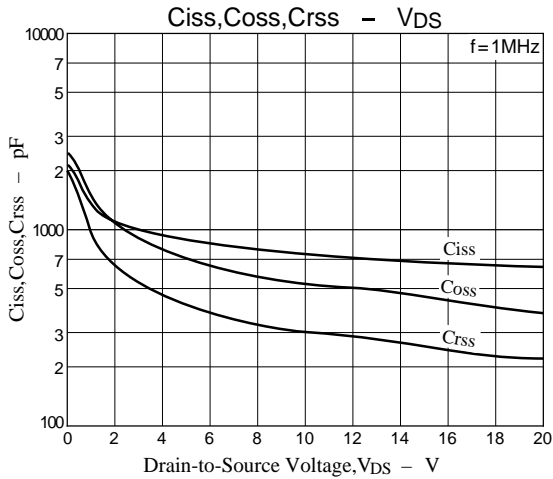
| Parameter | Symbol | Conditions | Ratings | Unit |
|-----------------------------|-----------|---|-------------|------------------|
| Drain-to-Source Voltage | V_{DSS} | | 20 | V |
| Gate-to-Source Voltage | V_{GS} | | ± 10 | V |
| Drain Current (DC) | I_D | | 6 | A |
| Drain Current (pulse) | I_{DP} | $PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$ | 52 | A |
| Allowable Power Dissipation | P_D | Mounted on a ceramic board (1000mm ² ×0.8mm) 1unit | 1.7 | W |
| Total Dissipation | P_T | Mounted on a ceramic board (1000mm ² ×0.8mm) | 2.0 | W |
| Channel Temperature | T_{ch} | | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | | -55 to +150 | $^\circ\text{C}$ |

Electrical Characteristics at $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Conditions | Ratings | | | Unit | |
|--|---------------|---|----------------------------------|-----|----------|---------------|------------------|
| | | | min | typ | max | | |
| Drain-to-Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D = 1\text{mA}$, $V_{GS} = 0$ | 20 | | | V | |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = 20\text{V}$, $V_{GS} = 0$ | | | 100 | μA | |
| Gate-to-Source Leakage Current | I_{GSS} | $V_{GS} = \pm 8\text{V}$, $V_{DS} = 0$ | | | ± 10 | μA | |
| Cutoff Voltage | $V_{GS(off)}$ | $V_{DS} = 10\text{V}$, $I_D = 1\text{mA}$ | 0.4 | | 1.3 | V | |
| Forward Transfer Admittance | $ y_{fs} $ | $V_{DS} = 10\text{V}$, $I_D = 5\text{A}$ | | 9 | 15 | S | |
| Static Drain-to-Source ON-State Resistance | $R_{DS(on)1}$ | $I_D = 5\text{A}$, $V_{GS} = 4\text{V}$ | | | 27 | 35 | $\text{m}\Omega$ |
| | $R_{DS(on)2}$ | $I_D = 2\text{A}$, $V_{GS} = 2.5\text{V}$ | | | 35 | 48 | $\text{m}\Omega$ |
| Input Capacitance | C_{iss} | $V_{DS} = 10\text{V}$, $f = 1\text{MHz}$ | | | 750 | pF | |
| Output Capacitance | C_{oss} | $V_{DS} = 10\text{V}$, $f = 1\text{MHz}$ | | | 520 | pF | |
| Reverse Transfer Capacitance | C_{rss} | $V_{DS} = 10\text{V}$, $f = 1\text{MHz}$ | | | 300 | pF | |
| Turn-ON Delay Time | $t_{d(on)}$ | See Specified Test Circuit | | | 20 | ns | |
| Rise Time | t_r | See Specified Test Circuit | | | 200 | ns | |
| Turn-OFF Delay Time | $t_{d(off)}$ | See Specified Test Circuit | | | 150 | ns | |
| Fall Time | t_f | See Specified Test Circuit | | | 150 | ns | |
| Total Gate Charge | Q_g | $V_{DS} = 10\text{V}$, $V_{GS} = 10\text{V}$, $I_D = 1\text{A}$ | | | 30 | nC | |
| Gate-to-Source Charge | Q_{gs} | | | | 5 | nC | |
| Gate-to-Drain "Miller" Charge | Q_{gd} | | | | 7 | nC | |
| Diode Forward Voltage | V_{SD} | | $I_S = 5\text{A}$, $V_{GS} = 0$ | 1.0 | 1.2 | V | |

Switching Time Test Circuit





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