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SANYO Semiconductors
DATA SHEET

An ON Semiconductor Company

N-Channel Silicon MOSFET

# FW811 — General-Purpose Switching Device Applications

## Features

- 4V drive.
- Composite type, facilitating high-density mounting.

## Specifications

### Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Drain-to-Source Voltage | $V_{DSS}$ | | 35 | V |
| Gate-to-Source Voltage | $V_{GSS}$ | | ±20 | V |
| Drain Current (DC) | $I_D$ | | 8 | A |
| Drain Current (PW≤10s) | $I_D$ | Duty cycle≤1% | 9 | A |
| Drain Current (PW≤10μs) | $I_{DP}$ | Duty cycle≤1% | 52 | A |
| Allowable Power Dissipation | $P_D$ | When mounted on ceramic substrate (2000mm$^2$×0.8mm) 1unit, PW≤10s | 2.0 | W |
| Total Dissipation | $P_T$ | When mounted on ceramic substrate (2000mm$^2$×0.8mm), PW≤10s | 2.2 | 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 | |
| Drain-to-Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D$=1mA, $V_{GS}$=0V | 35 | | | V |
| Zero-Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=35V, $V_{GS}$=0V | | | 1 | μA |
| Gate-to-Source Leakage Current | $I_{GSS}$ | $V_{GS}$=±16V, $V_{DS}$=0V | | | ±10 | μA |
| Cutoff Voltage | $V_{GS(off)}$ | $V_{DS}$=10V, $I_D$=1mA | 1.2 | | 2.6 | V |
| Forward Transfer Admittance | \| yfs \| | $V_{DS}$=10V, $I_D$=8A | 2.7 | 4.5 | | S |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)1}$ | $I_D$=8A, $V_{GS}$=10V | | 18 | 24 | mΩ |
| | $R_{DS(on)2}$ | $I_D$=4A, $V_{GS}$=4.5V | | 29 | 41 | mΩ |
| | $R_{DS(on)3}$ | $I_D$=4A, $V_{GS}$=4V | | 39 | 55 | mΩ |

Marking : W811

Continued on next page.

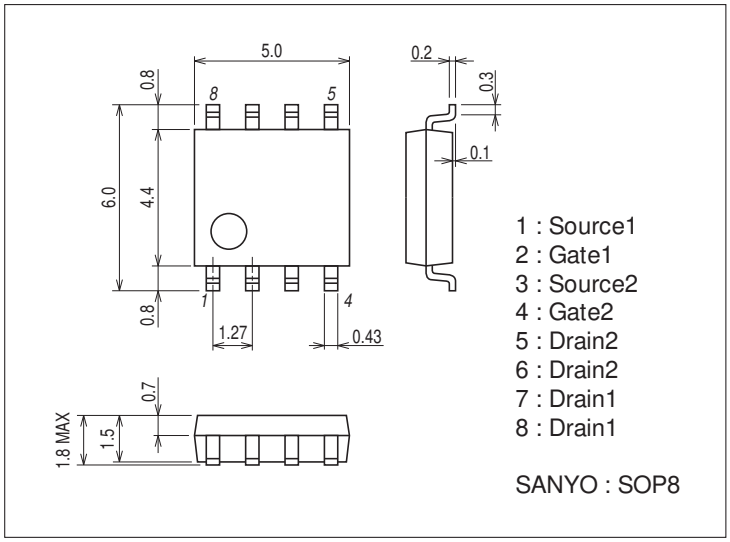
Continued from preceding page.

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Input Capacitance | Ciss | $V_{DS}$=20V, f=1MHz | | 660 | | pF |
| Output Capacitance | Coss | $V_{DS}$=20V, f=1MHz | | 90 | | pF |
| Reverse Transfer Capacitance | Crss | $V_{DS}$=20V, f=1MHz | | 60 | | pF |
| Turn-ON Delay Time | $t_d$(on) | See specified Test Circuit. | | 10 | | ns |
| Rise Time | $t_r$ | See specified Test Circuit. | | 50 | | ns |
| Turn-OFF Delay Time | $t_d$(off) | See specified Test Circuit. | | 40 | | ns |
| Fall Time | $t_f$ | See specified Test Circuit. | | 40 | | ns |
| Total Gate Charge | Qg | $V_{DS}$=20V, $V_{GS}$=10V, $I_D$=8A | | 13.0 | | nC |
| Gate-to-Source Charge | Qgs | $V_{DS}$=20V, $V_{GS}$=10V, $I_D$=8A | | 2.4 | | nC |
| Gate-to-Drain “Miller” Charge | Qgd | $V_{DS}$=20V, $V_{GS}$=10V, $I_D$=8A | | 3.2 | | nC |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=8A, $V_{GS}$=0V | | 0.81 | 1.2 | V |

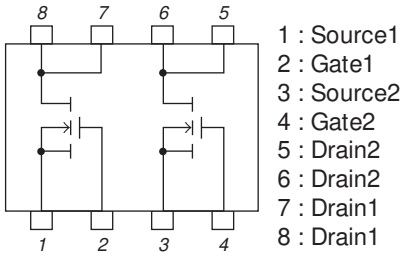
## Package Dimensions

unit : mm (typ)

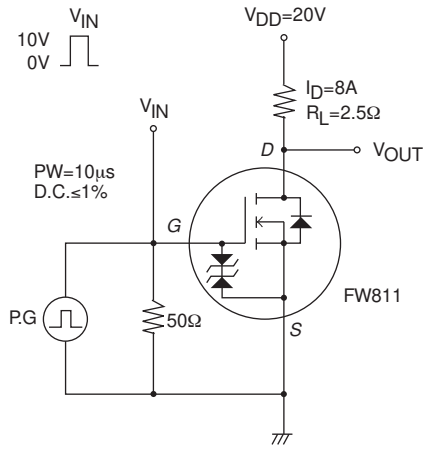
7005A-003

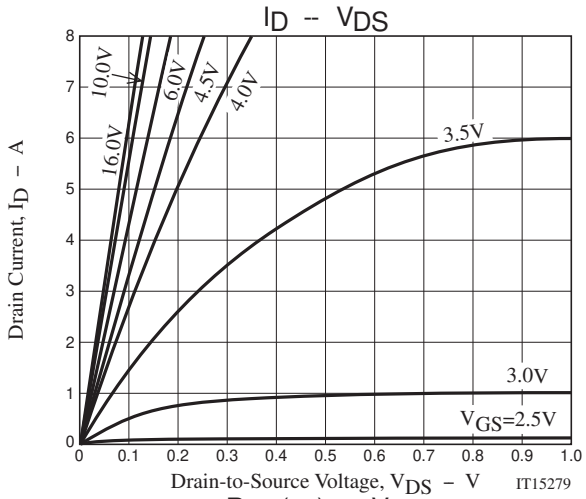


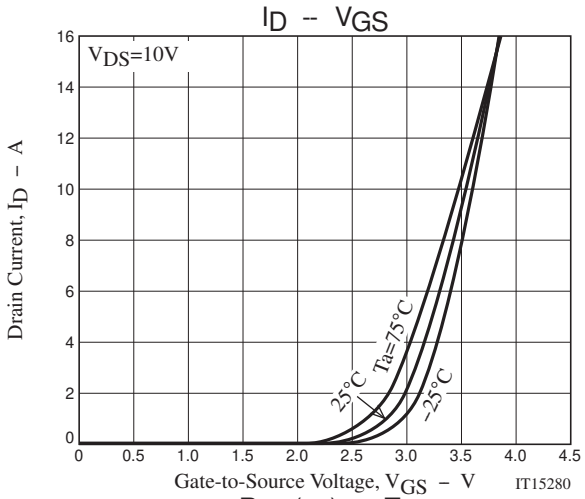

## Electrical Connection

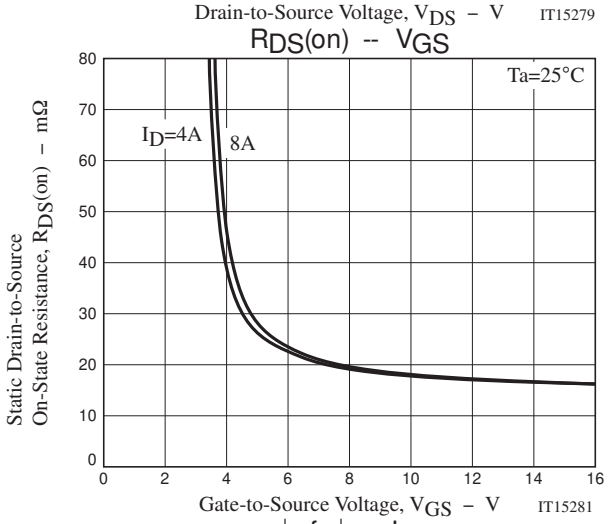


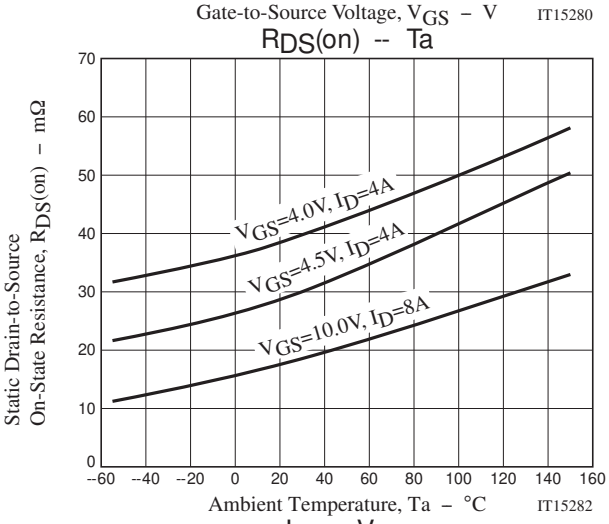

## Switching Time Test Circuit

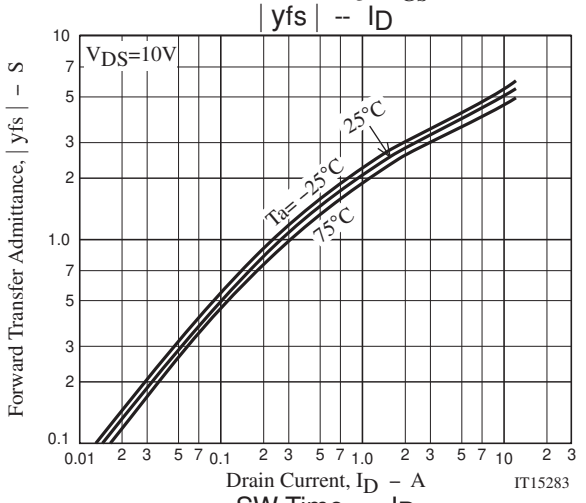


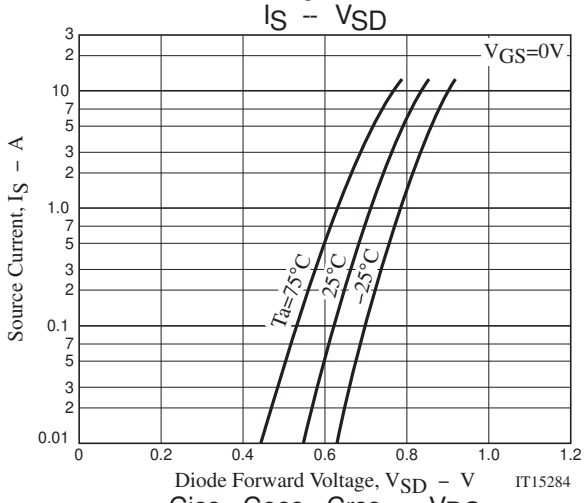

ID -- VDS
Drain Current, ID – A
10.0V
6.0V
4.5V
4.0V
16.0V
3.5V
3.0V
VGS=2.5V
Drain-to-Source Voltage, VDS – V
IT15279

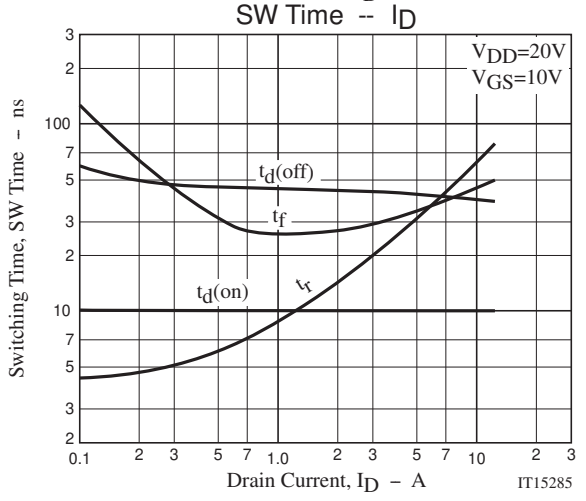

ID -- VGS
VDS=10V
Drain Current, ID – A
25°C
Ta=75°C
–25°C
Gate-to-Source Voltage, VGS – V
IT15280

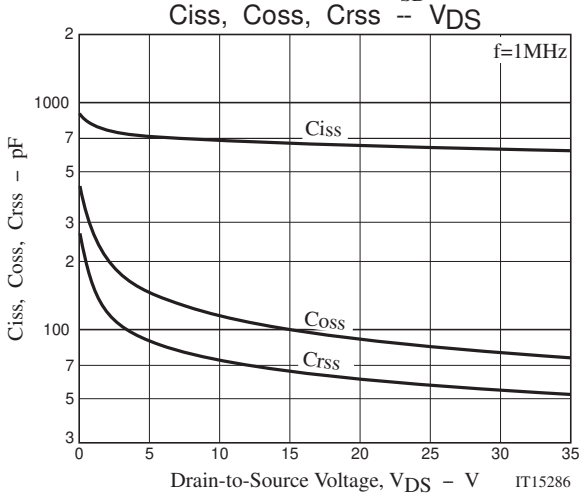

RDS(on) -- VGS
Ta=25°C
ID=4A
8A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT15281

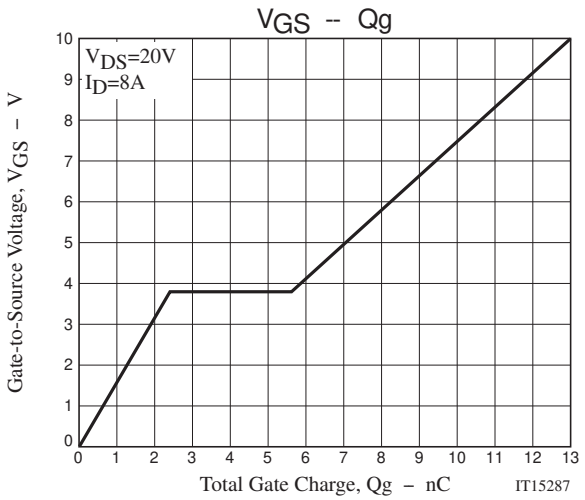

RDS(on) -- Ta
VGS=4.0V, ID=4A
VGS=4.5V, ID=4A
VGS=10.0V, ID=8A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT15282

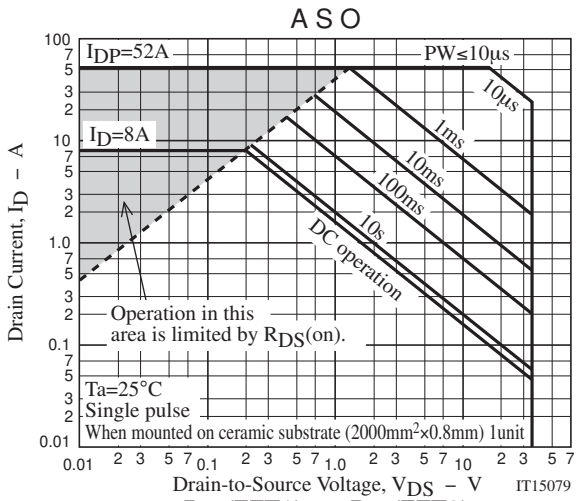

| yfs | -- ID
VDS=10V
25°C
Ta= –25°C
75°C
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT15283

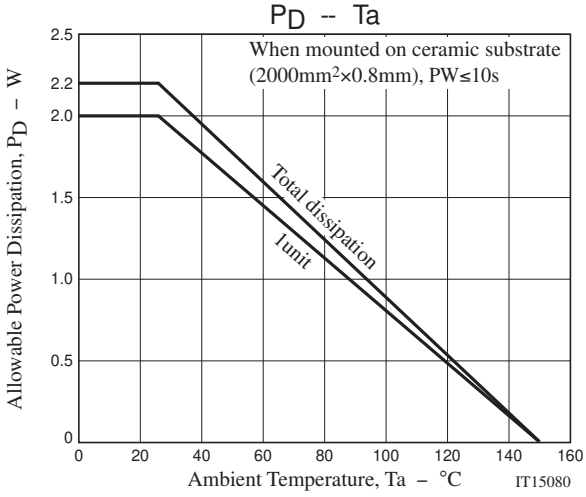

IS -- VSD
VGS=0V
Ta=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT15284

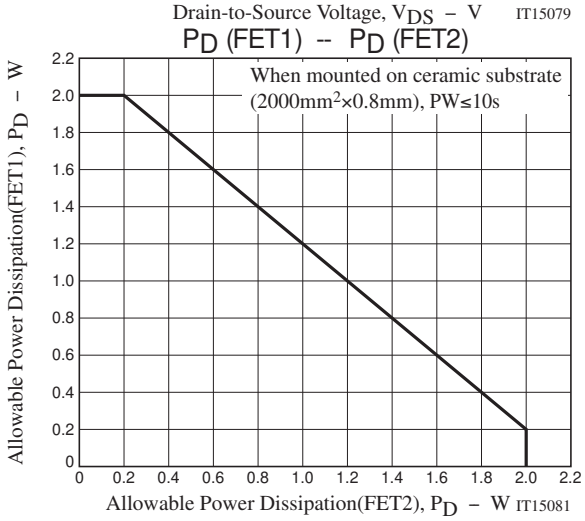

SW Time -- ID
VDD=20V
VGS=10V
td(off)
tf
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT15285


Ciss, Coss, Crss -- VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT15286




Note on usage : Since the FW811 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.



This catalog provides information as of December, 2009. Specifications and information herein are subject to change without notice.