



SANYO Semiconductors

## DATA SHEET

N-Channel Silicon MOSFET

# FW813 — General-Purpose Switching Device Applications

## Features

- ON-resistance  $R_{DS(on)} = 39\text{m}\Omega$  (typ.)
- 4V drive
- Nch + Nch MOSFET

## Specifications

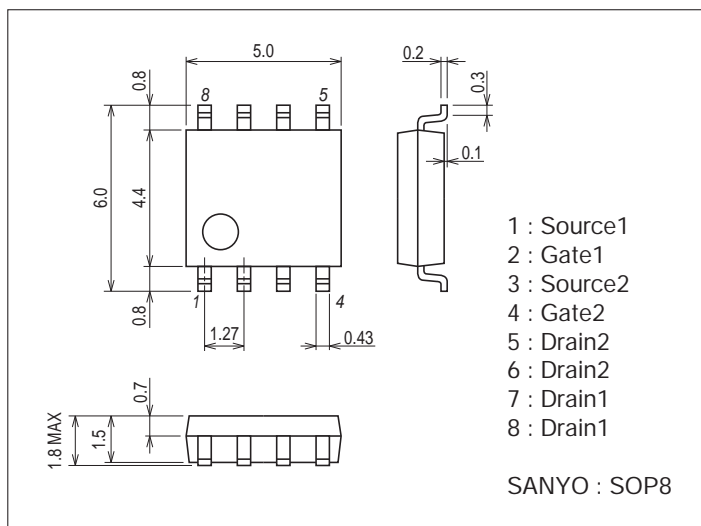
Absolute Maximum Ratings at  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DS}$		60	V
Gate-to-Source Voltage	$V_{GS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		5	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	52	A
Allowable Power Dissipation	$P_D$	When mounted on ceramic substrate ( $2000\text{mm}^2 \times 0.8\text{mm}$ ) 1unit, $PW \leq 10\text{s}$	2.3	W
Total Dissipation	$P_T$	When mounted on ceramic substrate ( $2000\text{mm}^2 \times 0.8\text{mm}$ ), $PW \leq 10\text{s}$	2.5	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		$-55$ to $+150$	$^\circ\text{C}$

## Package Dimensions

unit : mm (typ)

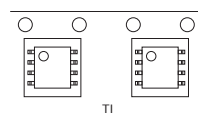
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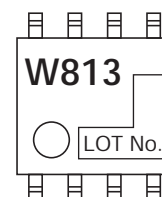
## Product & Package Information

- Package : SOP8
- JEITA, JEDEC : SC-87, SOT96
- Minimum Packing Quantity : 1,000 pcs./reel

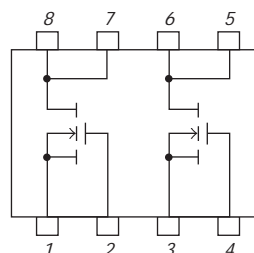
## Packing Type : TL



## Marking



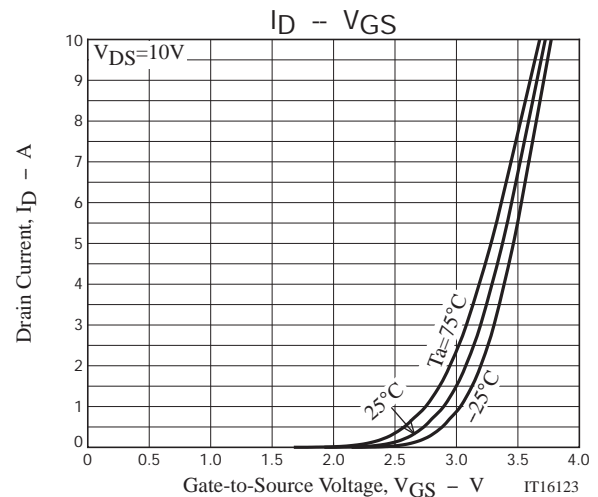
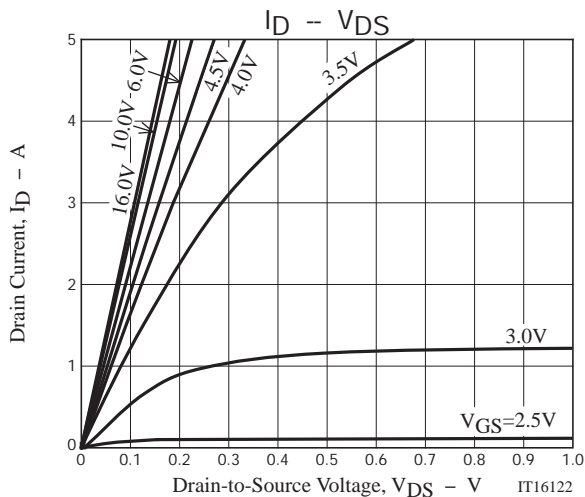
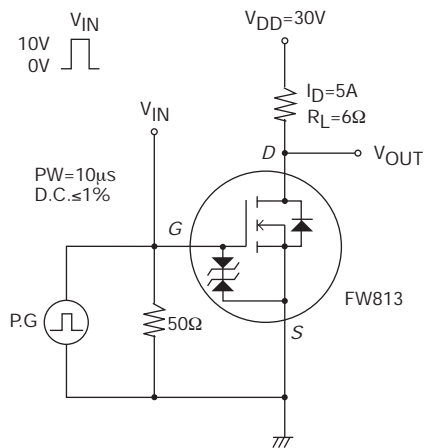
## Electrical Connection

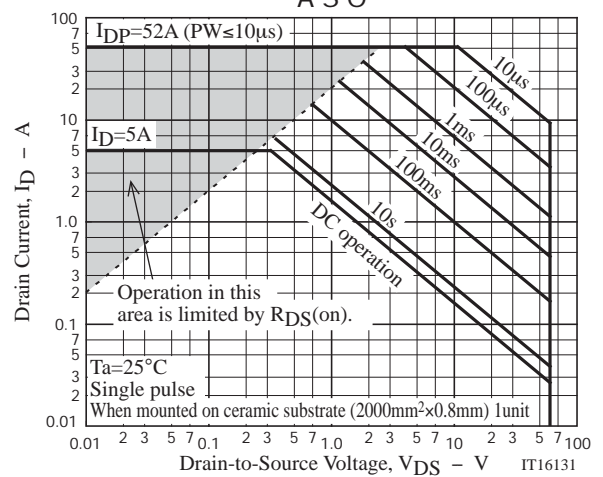
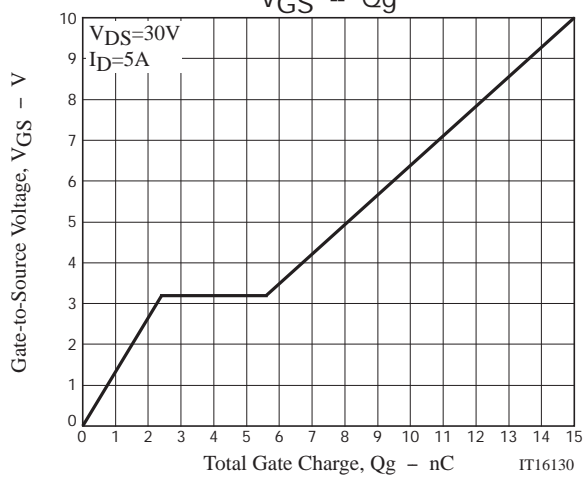
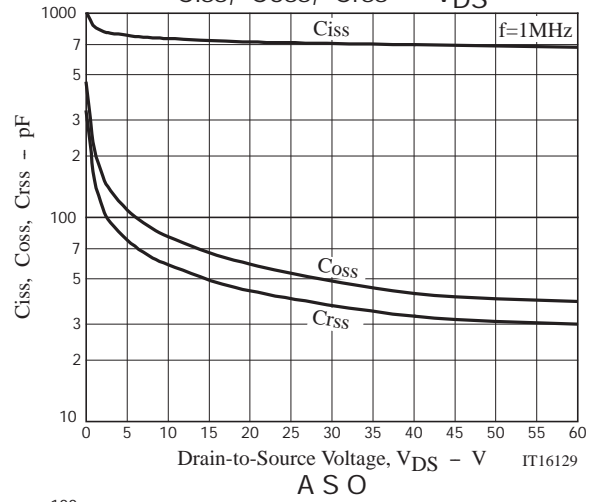
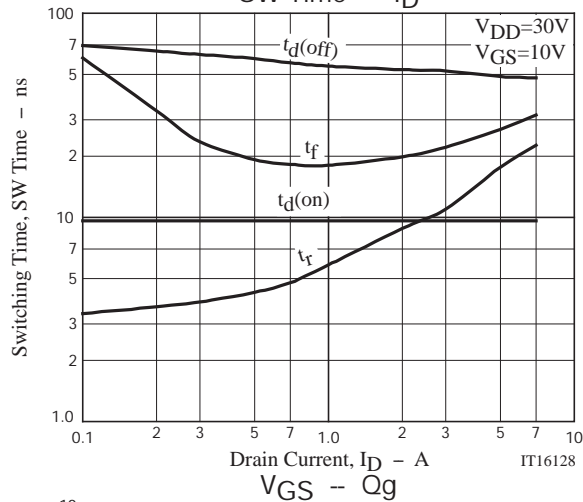
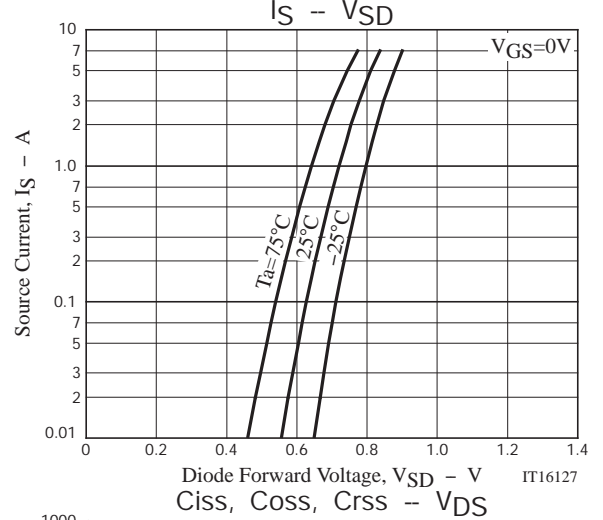
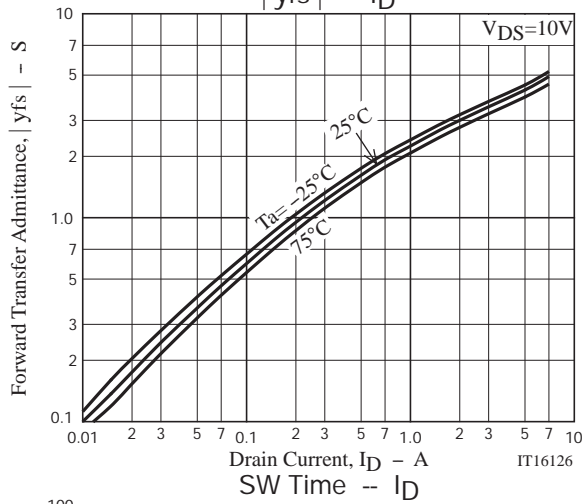
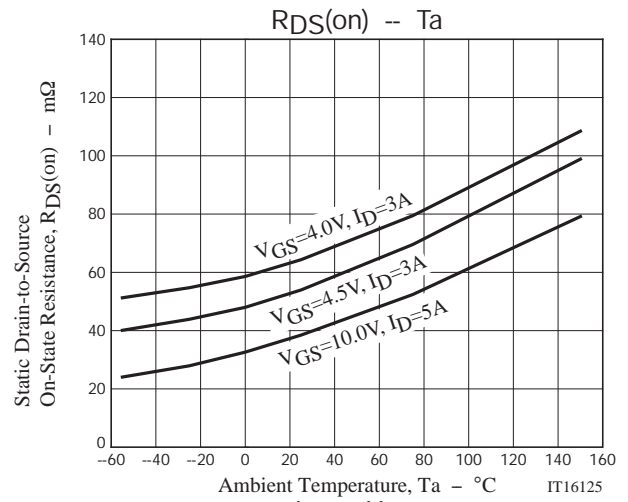
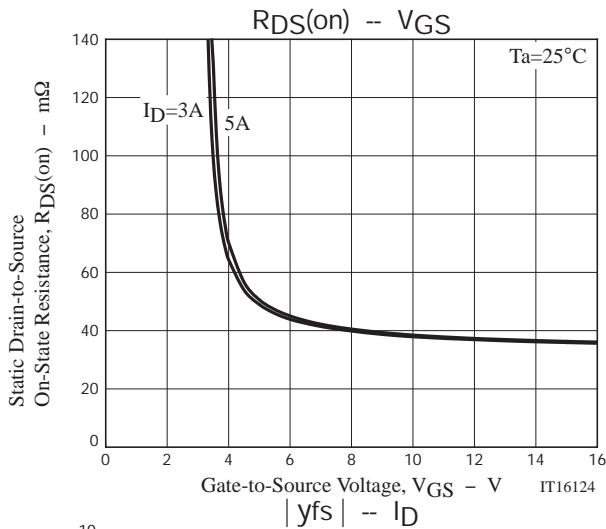


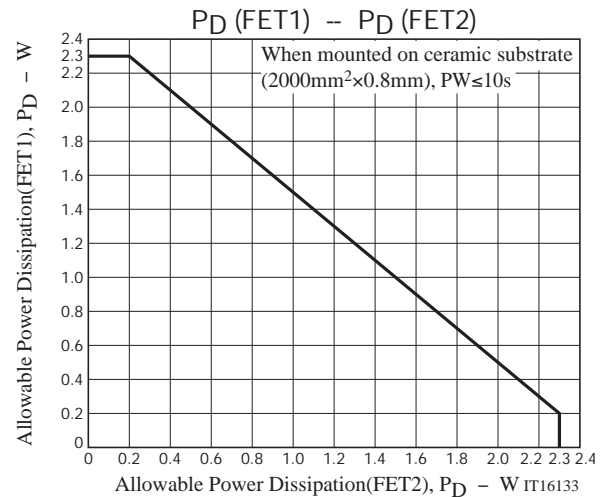
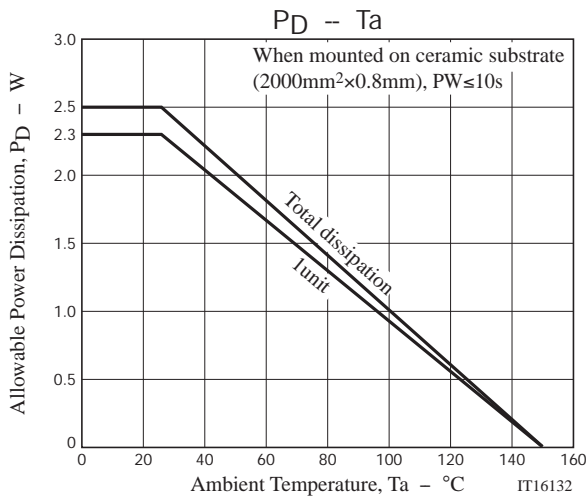
Electrical Characteristics at  $T_a=25^\circ\text{C}$ 

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$ , $V_{GS}=0\text{V}$	60			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=60\text{V}$ , $V_{GS}=0\text{V}$			1	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 16\text{V}$ , $V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}$ , $I_D=1\text{mA}$	1.2		2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10\text{V}$ , $I_D=5\text{A}$		4.2		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=5\text{A}$ , $V_{GS}=10\text{V}$		39	49	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=3\text{A}$ , $V_{GS}=4.5\text{V}$		54	76	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D=3\text{A}$ , $V_{GS}=4\text{V}$		64	90	$\text{m}\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=20\text{V}$ , $f=1\text{MHz}$		725		pF
Output Capacitance	$C_{oss}$	$V_{DS}=20\text{V}$ , $f=1\text{MHz}$		60		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=20\text{V}$ , $f=1\text{MHz}$		45		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		9.6		ns
Rise Time	$t_r$	See specified Test Circuit.		18		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		49		ns
Fall Time	$t_f$	See specified Test Circuit.		27		ns
Total Gate Charge	$Q_g$	$V_{DS}=30\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=5\text{A}$		15		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=30\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=5\text{A}$		2.4		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=30\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=5\text{A}$		3.2		nC
Diode Forward Voltage	$V_{SD}$	$I_S=5\text{A}$ , $V_{GS}=0\text{V}$		0.81	1.2	V

## Switching Time Test Circuit







Note on usage : Since the FW813 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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