

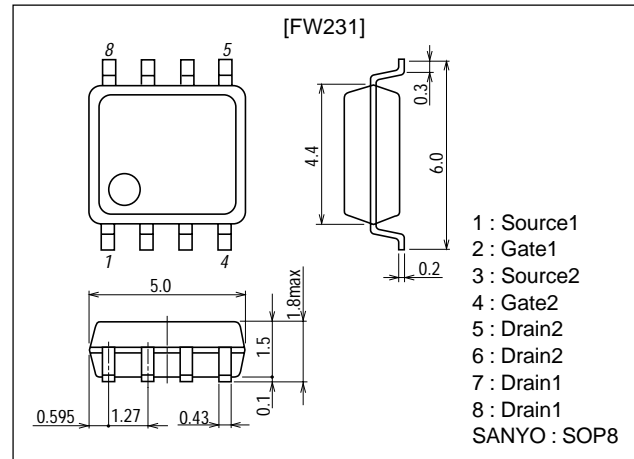
**FW231****Load Switching Applications****Features**

- 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)	$I_D$		9	A
Drain Current (pulse)	$I_{DP}$	$PW \leq 10\mu s$ , duty cycle $\leq 1\%$	52	A
Allowable Power Dissipation	$P_D$	Mounted on a ceramic board (1000mm <sup>2</sup> ×0.8mm) 1unit	1.7	W
Total Dissipation	$P_T$	Mounted on a ceramic board (1000mm <sup>2</sup> ×0.8mm)	2.0	W
Channel Temperature	$T_{ch}$		150	°C
Storage Temperature	$T_{stg}$		-55 to +150	°C

**Electrical Characteristics** at Ta = 25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1mA$ , $V_{GS}=0$	20			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=20V$ , $V_{GS}=0$			1	μA
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8V$ , $V_{DS}=0$			±10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V$ , $I_D=1mA$	0.4		1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V$ , $I_D=9A$	16	24		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=9A$ , $V_{GS}=4V$		15	20	mΩ
	$R_{DS(on)2}$	$I_D=2A$ , $V_{GS}=2.5V$		20	27	mΩ

Marking : W231

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■ SANYO assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all SANYO products described or contained herein.

**SANYO Electric Co.,Ltd. Semiconductor Company**

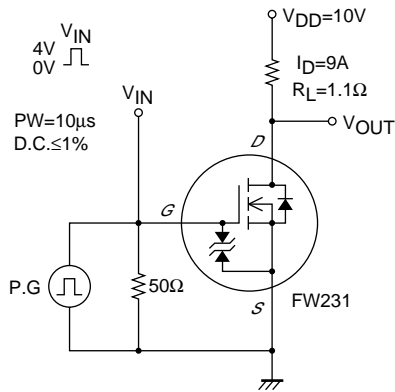
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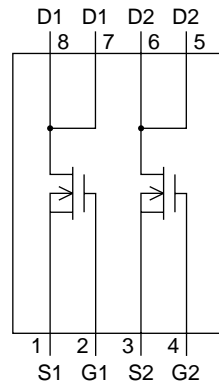
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	$V_{DS}=10V, f=1MHz$		1950		pF
Output Capacitance	Coss	$V_{DS}=10V, f=1MHz$		550		pF
Reverse Transfer Capacitance	Crss	$V_{DS}=10V, f=1MHz$		370		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		24		ns
Rise Time	$t_r$	See specified Test Circuit		440		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		200		ns
Fall Time	$t_f$	See specified Test Circuit		300		ns
Total Gate Charge	Qg	$V_{DS}=10V, V_{GS}=10V, I_D=9A$		60		nC
Gate-to-Source Charge	Qgs	$V_{DS}=10V, V_{GS}=10V, I_D=9A$		2.8		nC
Gate-to-Drain "Miller" Charge	Qgd	$V_{DS}=10V, V_{GS}=10V, I_D=9A$		10		nC
Diode Forward Voltage	$V_{SD}$	$I_S=9A, V_{GS}=0$	0.82	1.2		V

## Switching Time Test Circuit

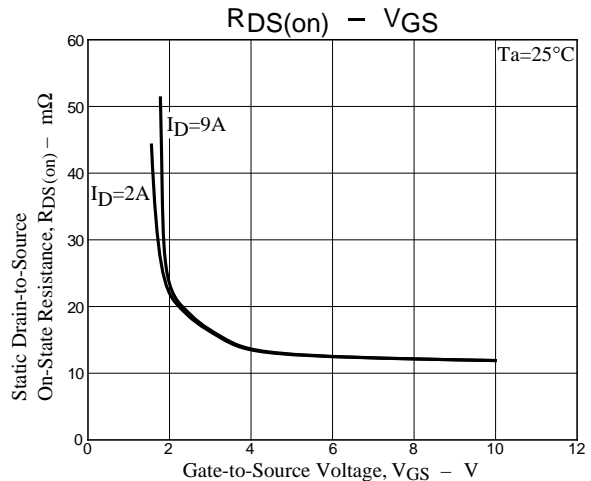
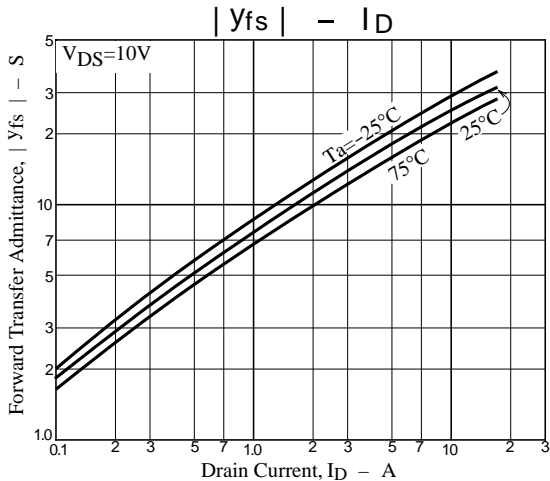
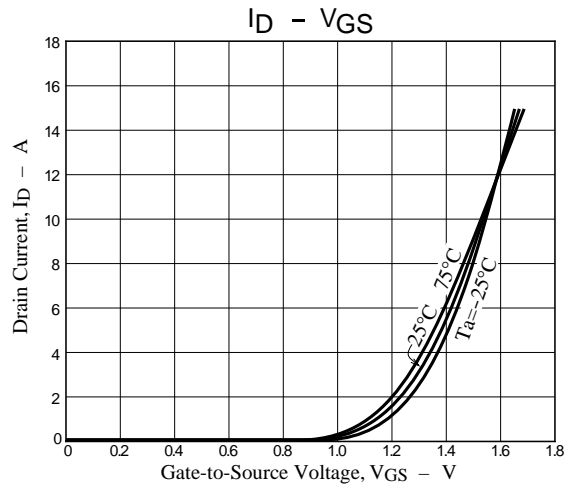
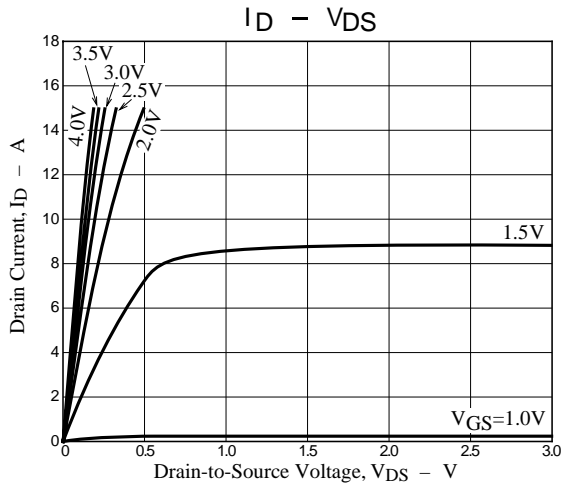


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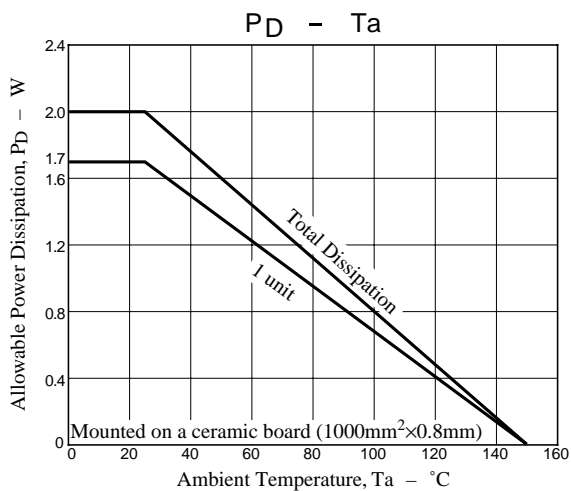
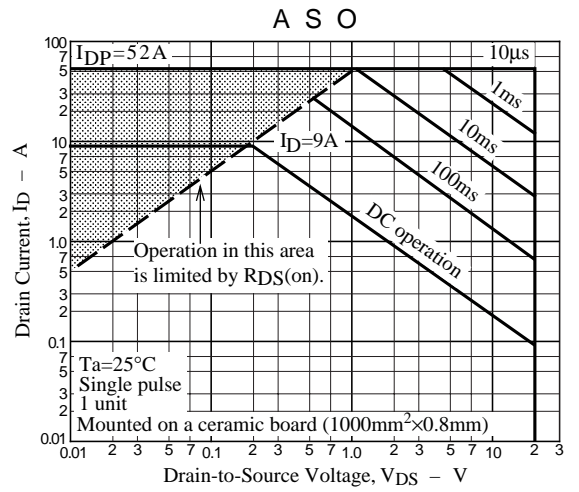
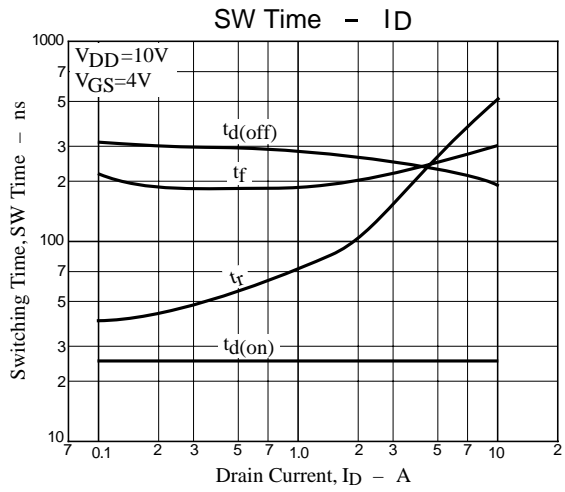
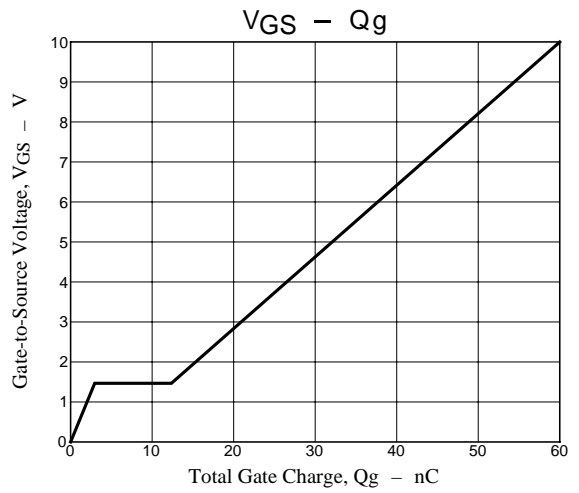
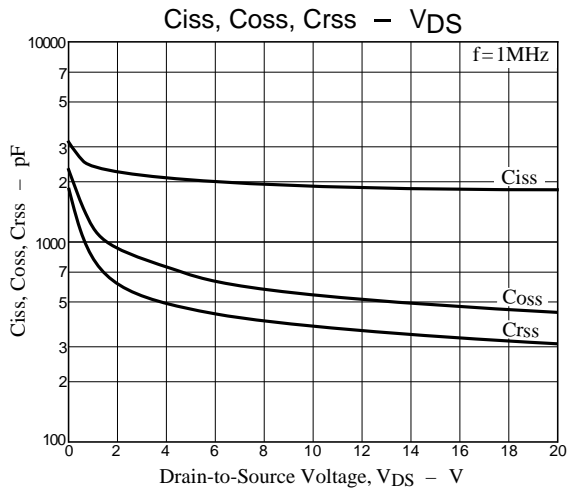
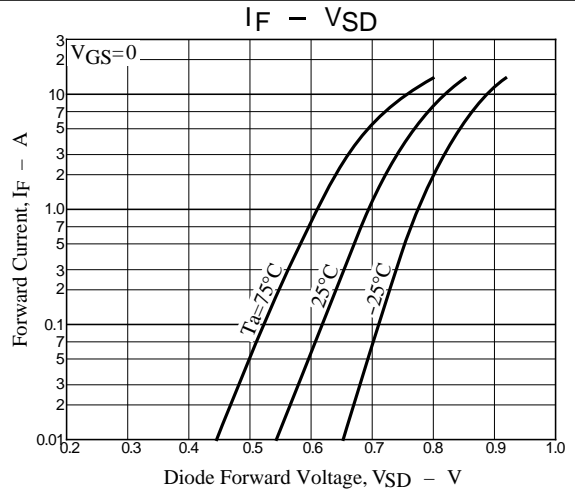
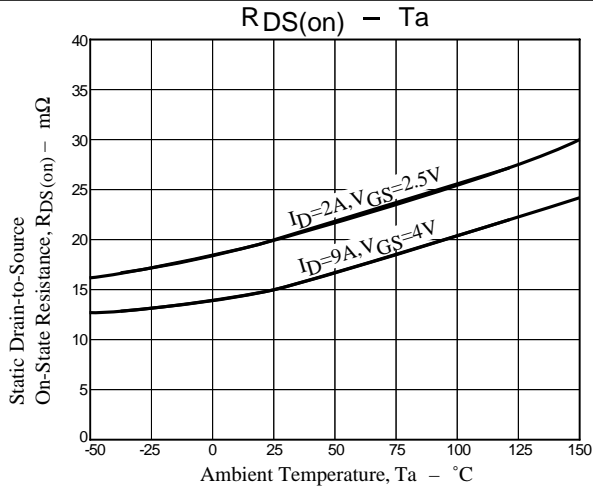
## Electrical Connection



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