



Motor Driver Applications

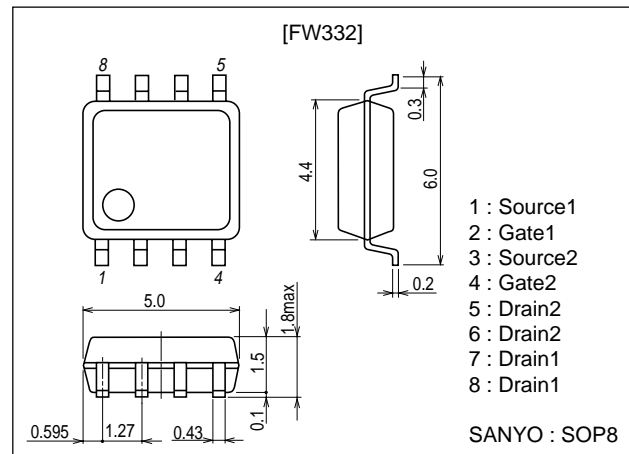
Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- Composite type with an N-channel MOSFET and a P-channel MOSFET driving from a 4V supply voltage contained in a single package.
- High-density mounting.

Package Dimensions

unit : mm

2129



Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings		Unit
			N-channel	P-channel	
Drain-to-Source Voltage	V _{DSS}		30	-30	V
Gate-to-Source Voltage	V _{GSS}		±20	±20	V
Drain Current (DC)	I _D		4	-3	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	16	-12	A
Allowable Power Dissipation	P _D	Mounted on a ceramic board (2000mm ² ×0.8mm)1unit	1.4		W
Total Dissipation	P _T	Mounted on a ceramic board (2000mm ² ×0.8mm)	1.7		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	
[N-channel]						
Drain-to-Source Breakdown Voltage	V _{(BR)DSS}	I _D =1mA, V _{GS} =0	30			V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0			1	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±16V, V _{DS} =0			±10	μA
Cutoff Voltage	V _{GS(off)}	V _{DS} =10V, I _D =1mA	1.0		2.4	V
Forward Transfer Admittance	y _{fs}	V _{DS} =10V, I _D =4A	3.7	5.3		S

Marking : W332

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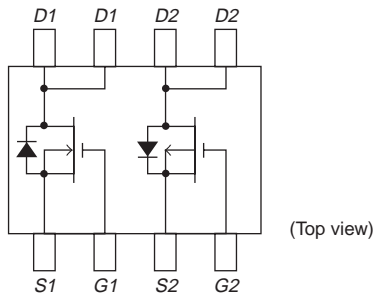
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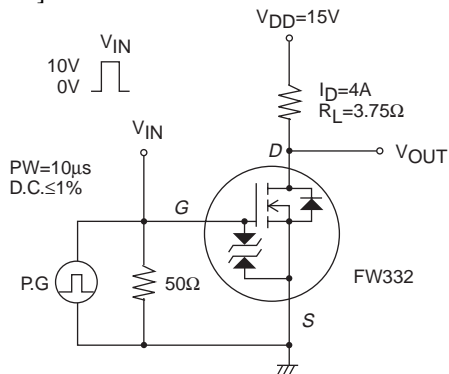
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=4A, V_{GS}=10V$		55	70	m Ω
	$R_{DS(on)2}$	$I_D=2A, V_{GS}=4V$		105	145	m Ω
Input Capacitance	C_{iss}	$V_{DS}=10V, f=1MHz$		270		pF
Output Capacitance	C_{oss}	$V_{DS}=10V, f=1MHz$		90		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=10V, f=1MHz$		55		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		9		ns
Rise Time	t_r	See specified Test Circuit.		80		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		25		ns
Fall Time	t_f	See specified Test Circuit.		17		ns
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=10V, I_D=4A$		7.0		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=10V, V_{GS}=10V, I_D=4A$		1.3		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=10V, V_{GS}=10V, I_D=4A$		1.5		nC
Diode Forward Voltage	V_{SD}	$I_S=4A, V_{GS}=0$		0.84	1.2	V
[P-channel]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1mA, V_{GS}=0$	-30			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0$			-1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16V, V_{DS}=0$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-10V, I_D=-1mA$	-1.0		-2.4	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10V, I_D=-3A$	2.9	4.2		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=-3A, V_{GS}=-10V$		90	115	m Ω
	$R_{DS(on)2}$	$I_D=-1.5A, V_{GS}=-4V$		160	225	m Ω
Input Capacitance	C_{iss}	$V_{DS}=-10V, f=1MHz$		370		pF
Output Capacitance	C_{oss}	$V_{DS}=-10V, f=1MHz$		100		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=-10V, f=1MHz$		65		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		8		ns
Rise Time	t_r	See specified Test Circuit.		45		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		30		ns
Fall Time	t_f	See specified Test Circuit.		31		ns
Total Gate Charge	Q_g	$V_{DS}=-10V, V_{GS}=-10V, I_D=-3A$		8.6		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=-10V, V_{GS}=-10V, I_D=-3A$		1.2		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=-10V, V_{GS}=-10V, I_D=-3A$		1.8		nC
Diode Forward Voltage	V_{SD}	$I_S=-3A, V_{GS}=0$	-0.85		-1.5	V

Electrical Connection



Switching Time Test Circuit

[N-channel]



[P-channel]

