

8023S RELAY DRIVER

DESCRIPTION

8023S is a bi-direction relay driver circuit,used to control the magnetic latching relay ,with large output capability,ultra-low power consumption.It can be widely used in smart meters and other pulses,level driver application.

8023S can provide 400mA typical driving current, which will different according to the relay coil resistance. The input High Level Threshold of 8023S is 2.2V; it can compatible with most single chip micro-controller.

8023S is available in SOP-8, DIP-8 and SOT23-6 packages.

FEATURES

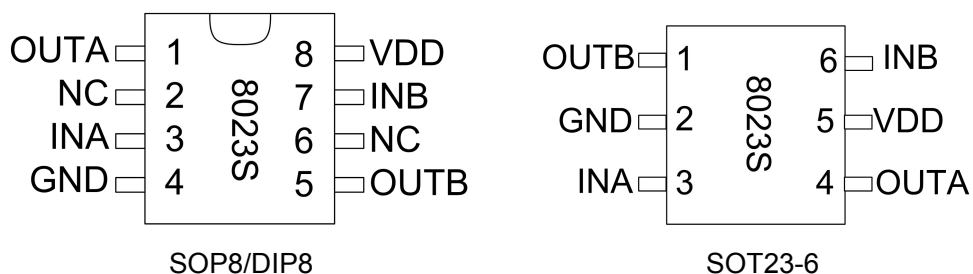
- ◆ Pure MOSFET process,ultra-low power consumption(<10nA)
- ◆ Input high level threshold 2.2V,compatible with most single chip micro-controller
- ◆ 5V to 25V input voltage range,Max withstand voltage 50V
- ◆ 120k ohm resistance to GND be designed at INA and INB
- ◆ Typical driver current:400mA
Rds(on)=12ohm(Vin=12V, PMOSFET+NMOSFET)
- ◆ Integrate fast freewheeling diode,Have reverse clamping

APPLICATIONS

- ◆ Smart Meter
- ◆ Other pulses,level driver application

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PIN INFORMATION



PIN DESCRIPTION (SOP8/DIP8)

PIN #	NAME	DESCRIPTION
1	OUTA	Output A
2, 6	NC	Not connected.
3	INA	Input A
4	GND	Ground.
5	OUTB	Output B
7	INB	Input B
8	VDD	Supply input voltage

PIN DESCRIPTION (SOT23-6)

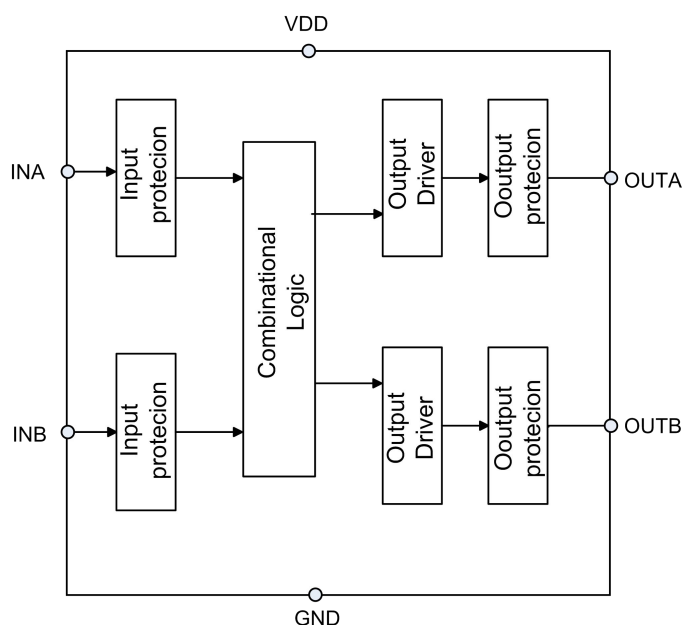
PIN #	NAME	DESCRIPTION
1	OUTB	Output B
2	GND	Ground.
3	INA	Input A
4	OUTA	Output A
5	VDD	Supply input voltage
6	INB	Input B

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LOGIC FUNCTION TABLE

Input A	Input B	Output A	Output B	Relay Response
1	0	1	0	ON
0	1	0	1	OFF
0	0	High-impedance	High-impedance	Hold
1	1	High-impedance	High-impedance	Hold

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATING

Parameter	Value
Input Voltage range	5V-25V
Max withstand voltage	50V
Max Operating Junction Temperature(Tj)	150 °C
Ambient Temperature(Ta)	-40 °C– 125 °C
Storage Temperature(Ts)	-40 °C– 150 °C

Note: Exceed these limits to damage to the device. Exposure to absolute maximum rating conditions may affect device reliability.

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ELECTRICAL CHARACTERISTICS

(TA=25°C)

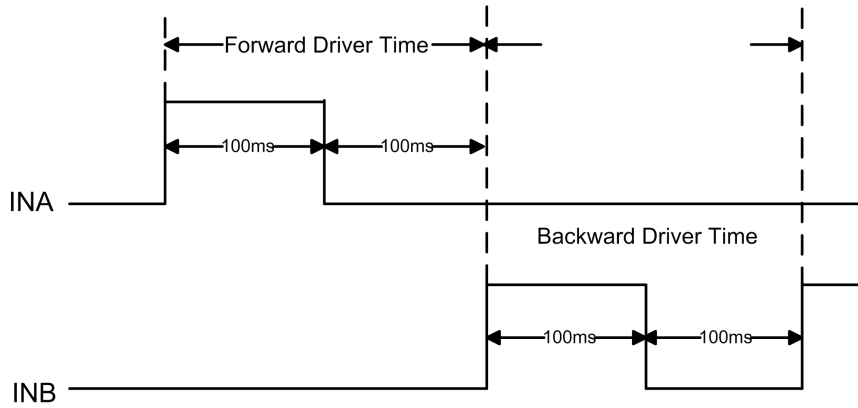
Symbol	Description	Conditions	Min	Typ	Max	Unit
Static Parameter						
B _{VDS}	Output Breakdown Voltage	V _{INA} =V _{INB} =0V, I _d =250uA	55			V
I _{DSS}	Output Leakage Current	V _{INA} =V _{INB} =0V			3	μA
V _{THA}	On Input A High Voltage	VDD=9V, V _{INB} =0V, V _{INA} up		2.2		V
V _{THB}	On Input B High Voltage	VDD=9V, V _{INA} =0V, V _{INB} up		2.2		V
R _{DS(ON)}	Switch Rdson	VDD=9V, R _{load} =100Ω		12		Ω
		VDD=24V, R _{load} =100Ω		12		Ω
C _{in}	Input Equivalent Cap.				5	pF
Freewheeling Diode Parameter						
I _s	Forward Conduction Current				1	A
V _{SD}	Forward Conduction Voltage			1.3		V
T _{RR}	Reverse Recovery Time			190		ns
Transmission Characteristics						
T _R	Rise time	VDD=12V, RL=80Ω		75		ns

APPLICATION DESCRIPTION

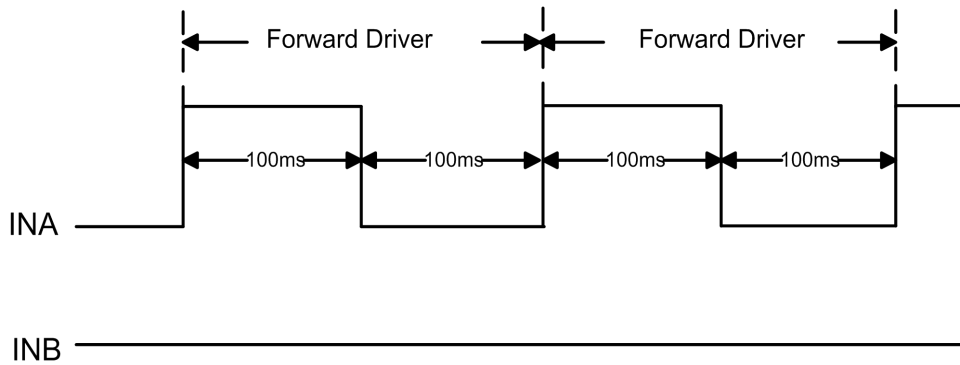
If input is driven by square pulse, connect the inputs to the pulse source directly. Relay will operate as logic table stated (V_{in} should be less than the power supply voltage).

The recommended pulse width=100ms. The length of the intervals should be longer than 100ms. These intervals include: intervals between forward drive pulse and next backward drive pulse, intervals between forward drive pulse and next forward drive pulse, intervals between backward drive pulse and next forward drive pulse, intervals between backward drive pulse and next backward drive pulse.

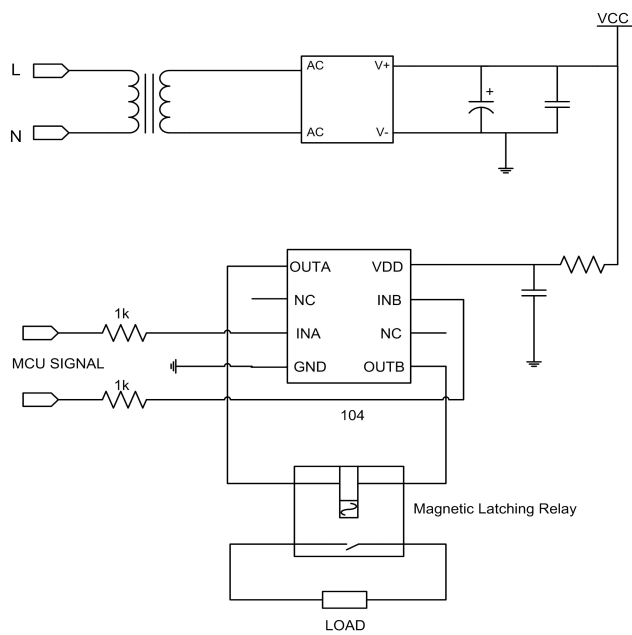
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Pulse Schematic Picture 1



Pulse Schematic Picture 2

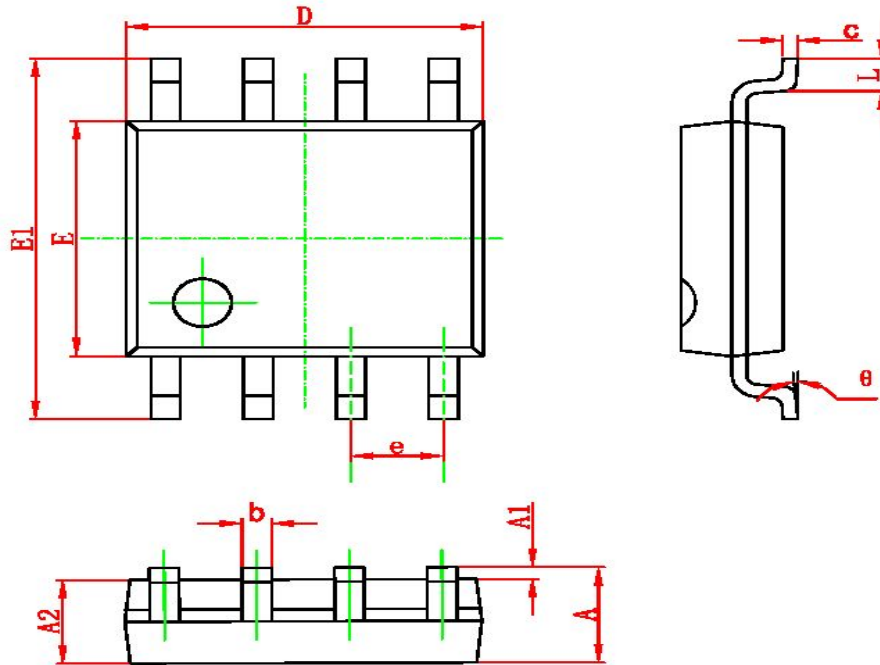


Typical Application circuit

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PACKAGE INFORMATION

SOP8 Package

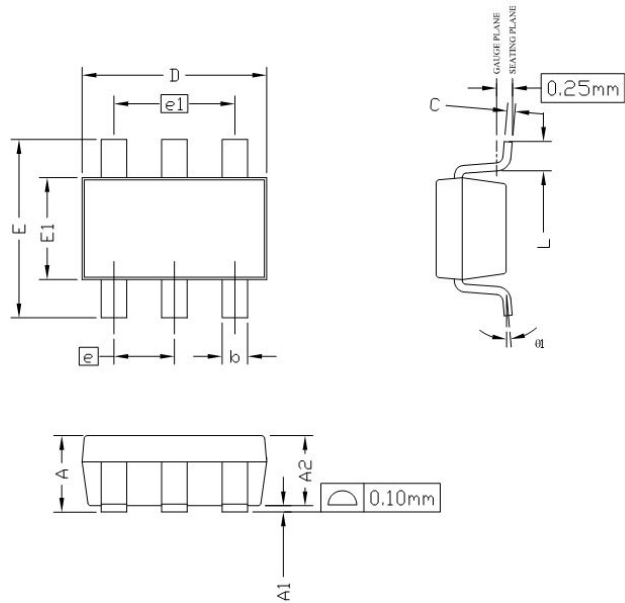


Dimensions

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
C	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
E	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

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SOT23-6 Package



Dimensions

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.90	1.25	0.035	0.049
A1	0.00	0.15	0.000	0.006
A2	0.70	1.20	0.028	0.047
b	0.30	0.50	0.012	0.020
C	0.08	0.20	0.005	0.008
D	2.70	3.10	0.106	0.122
E	2.50	3.10	0.098	0.122
E1	1.50	1.70	0.059	0.067
e	0.95(BSC)		0.037(BSC)	
E1	1.90(BSC)		0.075(BSC)	
L	0.30	0.60	0.012	0.024
θ	0°	8°	0°	8°