CN8023

Bi-direction Relay Driver

5~36V, 450mA

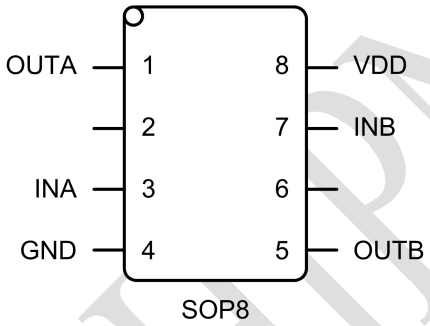
■ Introduction

CN8023, as a bi-direction relay driver circuit, is used to control magnetic latching relays. With a large output capability and ultra-low power consumption, it can be widely used in intelligent electro-meter and other related fields.

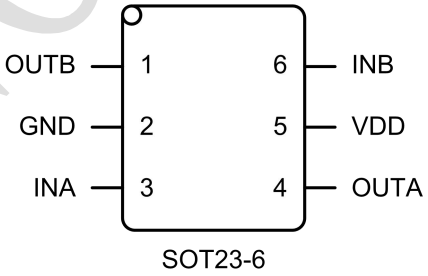
CN8023 is available in SOT23-6 and SOP-8 package.

■ Features

- Recommended Supply Voltage Range: 5 ~ 36V
- Up to 450mA current output when adding 1/20 duty cycle input signal.
- Operating Temperature Range: -40 ~ +85℃
- Compatible with 3~5V MCU
- Input Signal Anti-Noise Processing
- Inductive load current recoil protection



SOP8



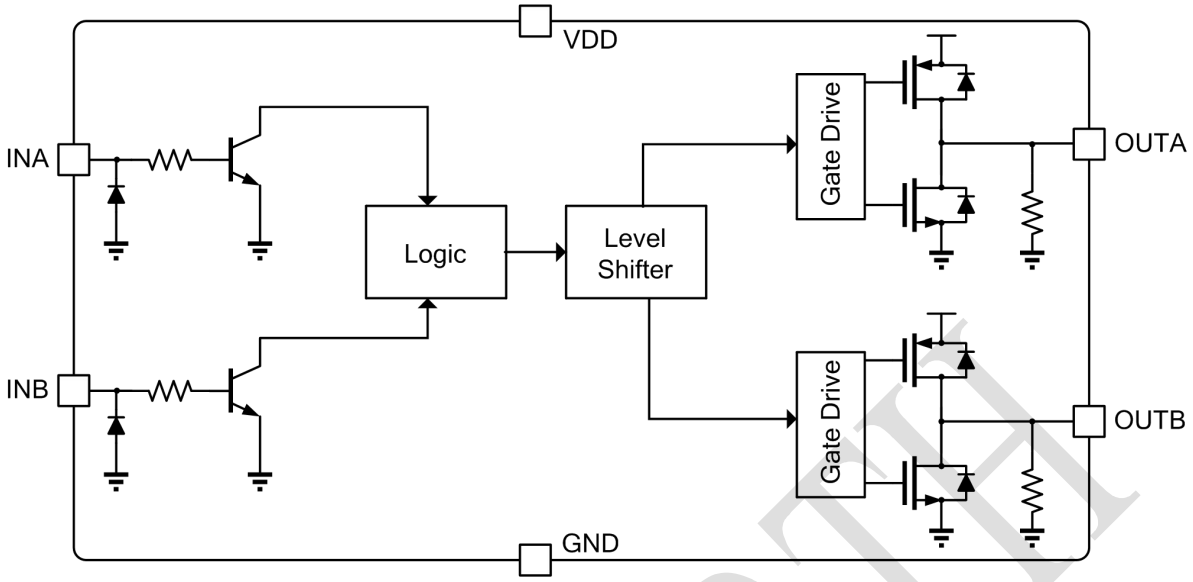
SOT23-6

■ Order Information

Part No.	Package	Tube/Reel	Mark*
CN8023A	SOP-8	2500/Reel	CN8023 YYWWHY
CN8023B	SOT23-6	3000/Reel	CNYW

*Note: YY-year-(00~99), WW-week-(00~53), Y-year-(0~9), W-week-(a~z, A~Z, 0)

■ Simplified Block Diagram



■ Pin Description

SOP8	SOT23-6	Symbol	Description
1	4	OUTA	Output A
2	-	NC	NC
3	3	INA	Input A
4	2	GND	Ground
5	1	OUTB	Output B
6	-	NC	NC
7	6	INB	Input B
8	5	VDD	Power Supply

■ Logic Function Table

INA	INB	OUTA	OUTB
0	0	High-Z	High-Z
0	1	0	1
1	0	1	0
1	1	0	0

Note: The ‘High-Z’ in the table means about 42KOhm source resistance to GND.

■ Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_{IN}	V_{IN} Supply Voltage Range	-0.4~+40	V
V_{IO}	Other I/O Pins Voltage Range	GND - 0.3, VDD + 0.3	V
T_J	Maximum Junction Temperature	150	℃
T_{STG}	Storage Temperature Range	-65~150	℃
P_{TR}	Package Thermal Resistance (Ambient to Junction)	120	℃/W
$V_{ESD\ (\ HBM\ )}$	Electrostatic Discharge Voltage (HMB)	4000	V

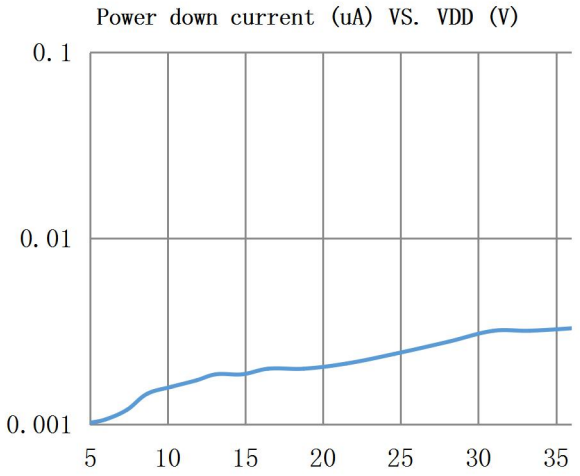
■ Electrical Characteristics

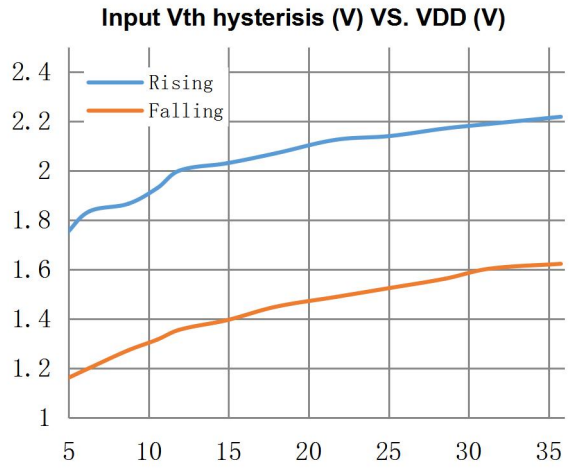
Test conditions: TA = 25 °C unless otherwise noted.

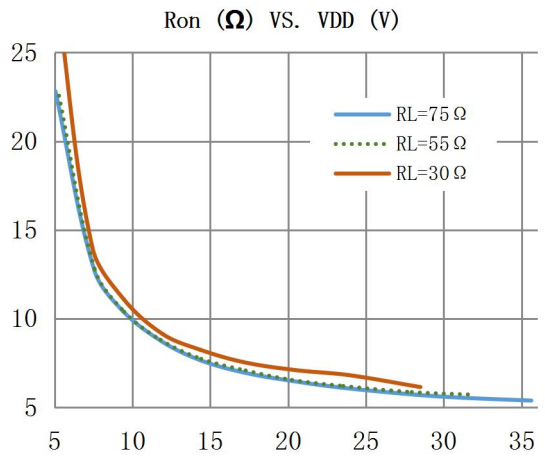
Symbol	Description	Conditions	min	Typ.	max	Unit
VDD	Recommended Supply Power Voltage		5	-	36	V
I_{VDD}	Power Down Current	INA=INB=0V, VDD=12V	-	2	100	nA
I_B	Input Logic Bias Current	INA=INB=5V	-	50	100	μA
V_{TH_H}	Input Logic High		-	2.0	-	V
V_{TH_L}	Input Logic Low		-	1.4	-	V
$R_{DS(ON)}$	Output On-Resistance (R_{HS} + R_{LS})	VDD=12V R_{LOAD}=75Ω	-	10	14	Ω
$T_{DEGLITCH}$	Input Noise Blanking Time		0.1	-	1	μs

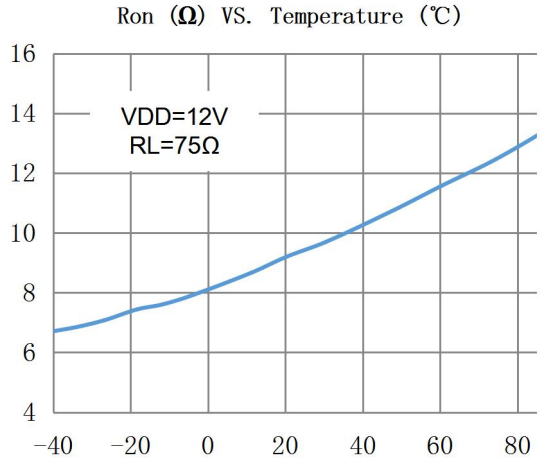
■ Typical Characteristics

Test conditions: VDD=12V, RL=75Ω, TA=25℃, unless otherwise noted.

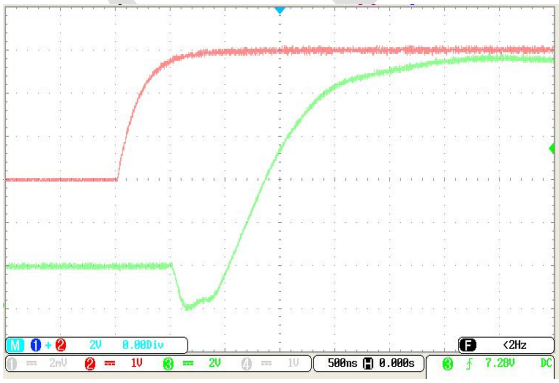




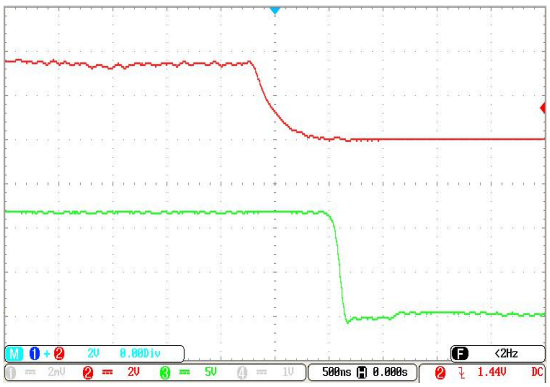




Input Output Delay (Rising)

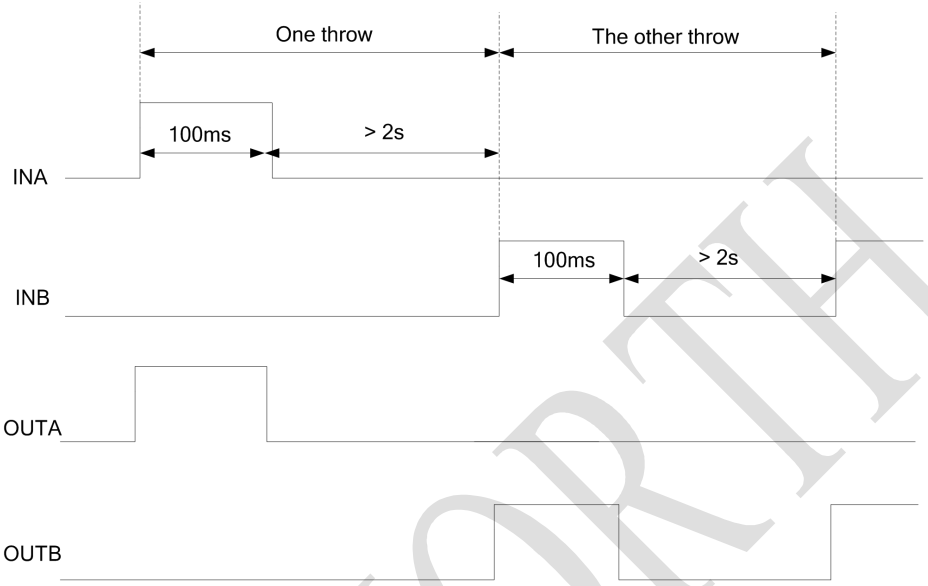


Input Output Delay (Falling)

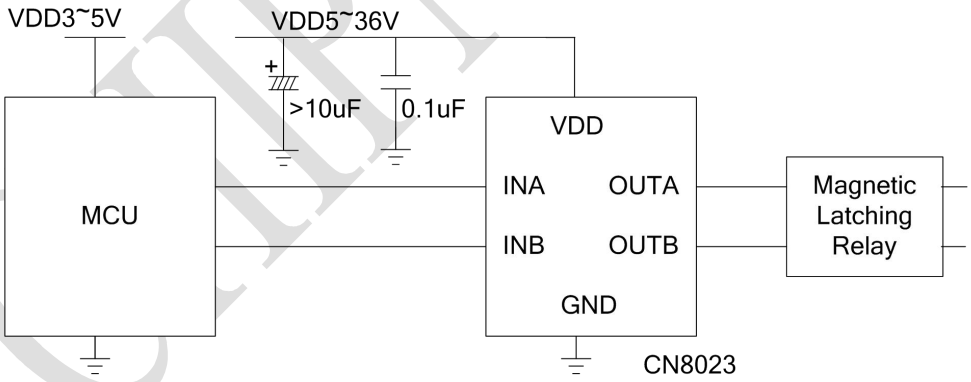


■ Application Examples

Usually, magnetic latching relay can be driven by a pulse which is about 100ms long, and the interval between the two pulses should be longer than 2s to avoid heat accumulation. Here is a waveform example for the smart meter application.

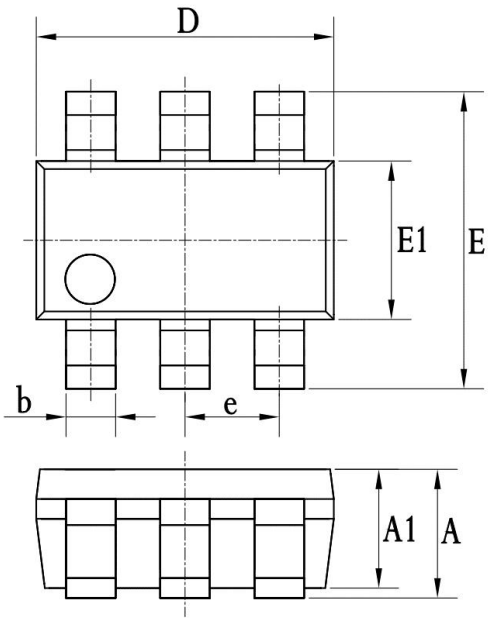


In the smart meter application, CN8023 can be directly connect with the MCU and the relay.



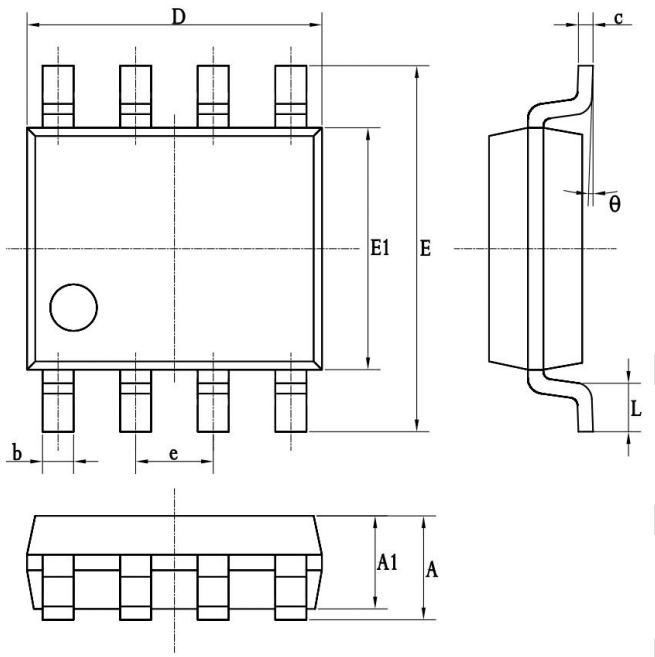
■ Package Outline

SOT23-6



Symbol	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.90	1.10	1.40	-	-	-
A1	0.90	1.10	1.30	-	-	-
b	0.30	0.40	0.50	-	-	-
c	0.10	0.15	0.25	-	-	-
D	2.70	2.90	3.10	-	-	-
E	2.50	2.80	3.10	-	-	-
E1	1.50	1.60	1.80	-	-	-
e	-	0.95	-	-	-	-
L	0.20	-	-	-	-	-

SOP-8



Symbol	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	-	1.75	-	-	-
A1	1.25	-	1.55	-	-	-
b	0.33	-	0.51	-	-	-
c	0.17	-	0.26	-	-	-
D	4.70	-	5.10	-	-	-
E	5.80	-	6.20	-	-	-
E1	3.70	-	4.10	-	-	-
e	-	1.27	-	-	-	-
L	0.50	-	0.80	-	-	-
θ	0	-	8°	-	-	-

■ ORDER INFORMATION:

date	Version	Revision notes	Reviser
2020.3.19	V1.0	Initial data compilation	ZhangSongfeng