上海贝岭
SHANGHAI BELLING

BL8123

400mA Bi-Direction Driver

DESCRIPTION

BL8123 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 control applications.

BL8123 can provide 400mA typical driving current, which will different according to the relay coil resistance. The input High Level Threshold of BL8123 is 1.5V, making it compatible with most single chip microcontroller.

BL8123 is available in SOT23-6 package.

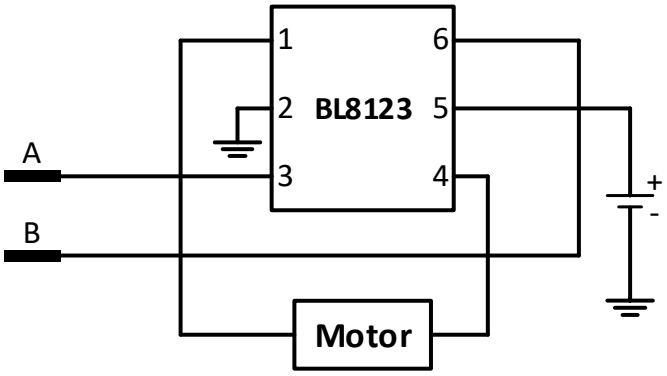
FEATURES

- 1.8 to 5.5V input voltage range
- Low power consumption (I_Q<1uA)
- Input high level threshold: 1.5V, compatible with most single chip microcontroller
- Typical driving current: 400mA
  $R_{DS(ON)}$=12ohm (V_{IN}=3V, PMOSFET+NMOSFET)
  $R_{DS(ON)}$=10ohm (V_{IN}=5V, PMOSFET+NMOSFET)
- Peak driving current: 400mA@VIN=5V
- Environment temperature: -40°C~85°C
- SOT23-6 package

APPLICATIONS

- Smart Meter

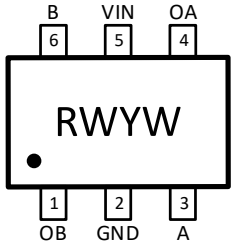
TYPICAL APPLICATION



ORDERING INFORMATION

Part No.	Package	Tape & Reel
BL8123CB6TR	SOT23-6	3000/Reel

PIN OUT & MARKING



SOT23-6

RW: Product Code
YW: Date code

ABSOLUTE MAXIMUM RATING

Parameter			Value
Max operating junction temperature (T_J)			150°C
Ambient temperature (T_A)			-40°C to 125°C
Package thermal resistance	SOT23-6	θ_{JA}	190°C/W
		θ_{JC}	110°C/W
Storage temperature (T_S)			-40°C to 150°C
Lead temperature & time			260°C, 10s

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

RECOMMENDED WORK CONDITIONS

Parameter	Value
Input voltage range	2V to 5V
Operating junction temperature (T_J)	-40°C to 85°C

ELECTRICAL CHARACTERISTICS

V_{IN}=5V, T_A=25°C

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{IN}	Input voltage range		1.8		5.5	V
I_Q	Quiescent current				1	uA
$R_{DS(ON)}$	Switch $R_{DS(ON)}$	V_{IN}=3V, R_L=75ohm		12	15	ohm
		V_{IN}=5V, R_L=75ohm		10	15	ohm
V_{TH}	ON input high voltage	V_{IN}=3V		1.5		V
R_{IN}	Equivalent input resistor			20		Kohm
V_{SD}	Fly-wheel diode forward voltage	Is=1A		1.4	1.5	V
T_R	Rise time	V_{IN}=3V, R_L=75ohm		560		ns
$T_{D(ON)}$	Turn on delay time	V_{IN}=3V, R_L=75ohm		1400		ns
T_F	Fall time	V_{IN}=3V, R_L=75ohm		200		ns
$T_{D(OFF)}$	Turn off delay time	V_{IN}=3V, R_L=75ohm		800		ns

LOGIC FUNCTION TABLE

Input A	Input B	Output OA	Output OB	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

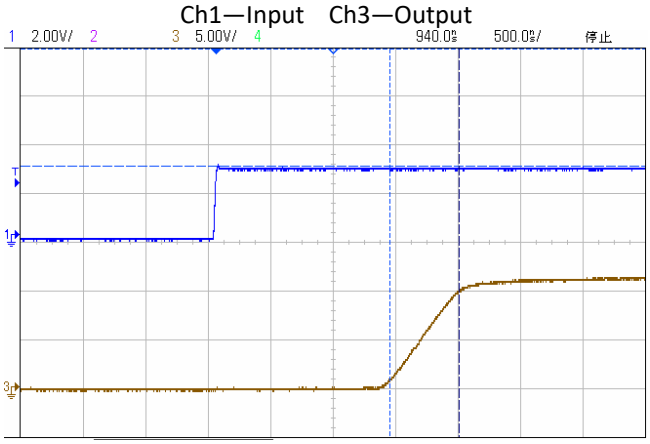
PIN DESCRIPTION

NAME	PIN #	DESCRIPTION
OB	1	Output B.
GND	2	Ground.
A	3	Input A.
OA	4	Output A.
VIN	5	Supply input voltage.
B	6	Input B.

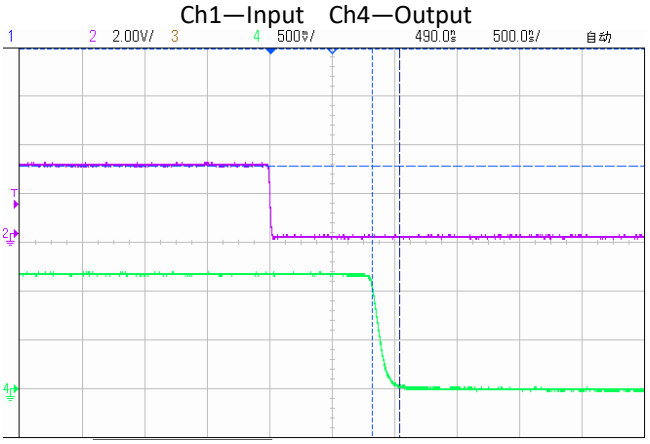
ELECTRICAL PERFORMANCE

Tested under T_A=25°C, unless otherwise specified.

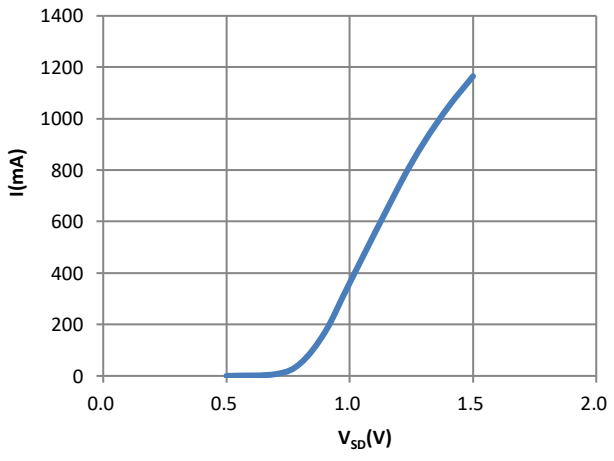
Turn on delay and rise time



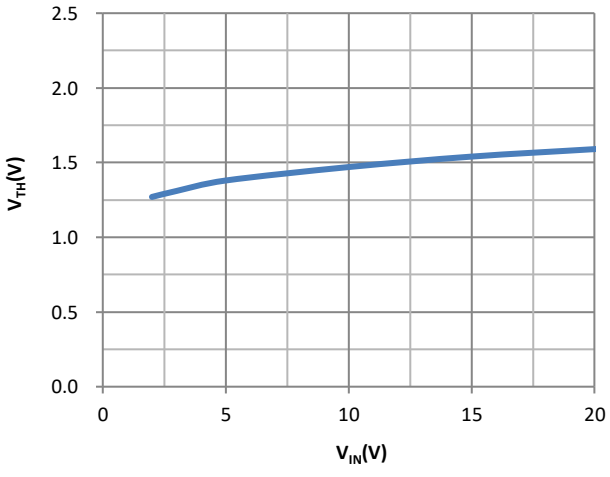
Turn off delay and fall time



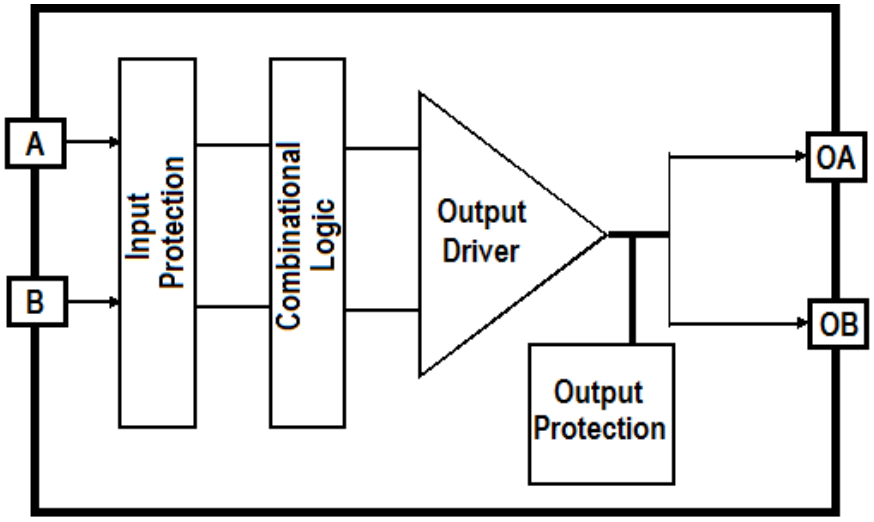
Forward Voltage



V_{TH} vs. V_{IN}



BLOCK DIAGRAM

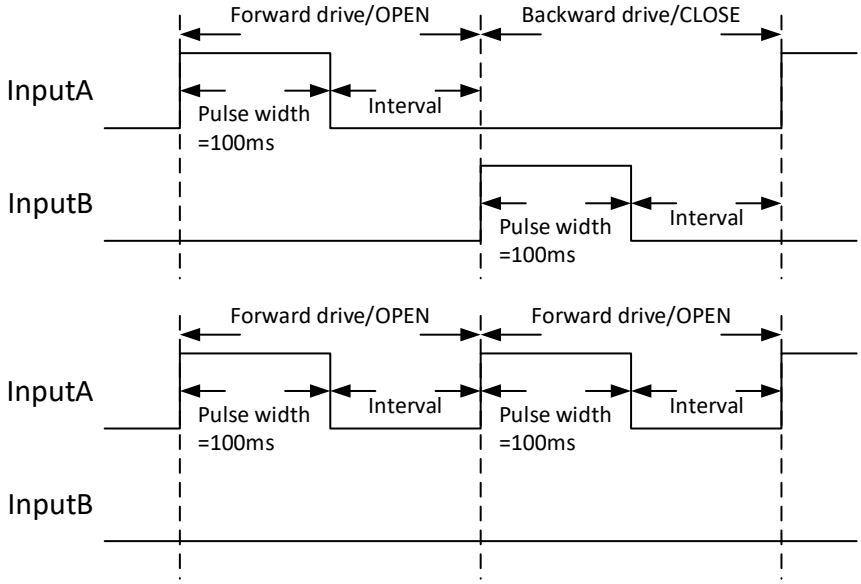


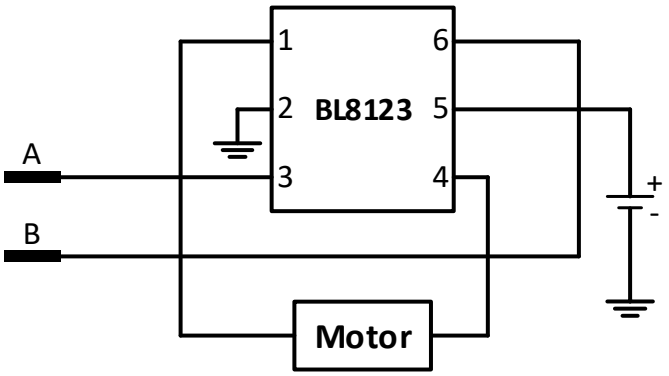
DETAILED DESCRIPTION

Pulse Triggering

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.





Pulse triggering application diagram

Relay free-wheel

Relay from ON to OFF, the energy stored in the relay inductor released by the chip's internal body diode and the relay inductor. Until the end of the release of this energy, relay proceeding to the next operation.

PACKAGE OUTLINE

Package	SOT23-6	Devices per reel	3000	Unit	mm

Package specification: