eSW4506A

Bi-Directional Motor Driver

Product Specification

DOC. VERSION 1.1

ELAN MICROELECTRONICS CORP.

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Specification Revision History		
Version	Revision Description	Date
1.0	Initial version	2005/03/31
1.1	Add application circuitry	2006/02/21

1 General Description

The **eSW4506A** IC is a bi-directional motor driver IC used in low-voltage application. It provides Forward/Reverse/Brake/Stop function for motor driver application. It is designed with LSI high technology along with low power consumption.

2 Features

- Low voltage operation
- Low current drain at standby mode
- Built-in Input pull down resistance
- Provides 4 modes of motor driving, i.e., Forward/Reverse/Brake/Stop.

3 Pin Assignment

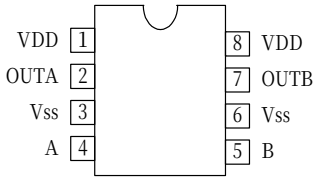

Figure 3-1 eSW4506A 8 Pin PDIP

4 Pin Descriptions

Symbol	I/O	Pin No.	Function
VDD	I	1, 8	Positive power supply
Vss	I	3, 6	Negative power supply.
A	I	4	Input signal A
B	I	5	Input signal B
OUTA	O	2	Motor driver outout A
OUTB	O	7	Motor driver output B

5 Absolute Maximum Ratings

Items	Symbol	Min	Max	Unit
Supply Voltage	V_{DD}-V_{SS}	–0.3	+5.5	V
Input Voltage	V_{IN}	V_{SS} –0.3	V_{DD}+0.3	V
Operating Temperature	T_{OP}	–20.0	+70.0	^{0}C
Storage Temperature	T_{STG}	–55.0	+125.0	^{0}C

6 Electrical Characteristics

■ **Operating Temperature =25°C**

Items	Sym	Min.	Typ.	Max.	Unit	Condition
Operating Voltage	V_{DD}	2.0	3.0	5.5	V	
Standby Current	I_{DDS}	-	0.4	1	uA	V_{DD}=3V, A,B = Vss
			1.1	2	uA	V_{DD}=4.5V, A,B = Vss
Operating Current	I_{DDO}	-	3.4	50	uA	V_{DD}=3V, no load,
			8.7	50	uA	V_{DD}=4.5V, no load,
A/B Input Current	I_{iN}	-	3	6	uA	V_{DD}=3V, V_{IN} =V_{DD}
			7.5	15	uA	V_{DD}=4.5V, V_{IN} =V_{DD}
A/B Input High Voltage	V_{IH}	2.4		V_{DD}	V	V_{DD}=3V
		3.2		V_{DD}	V	V_{DD}=4.5V
A/B Input Low Voltage	V_{iL}	Vss		0.6	V	V_{DD}=3V
		Vss		1.2	V	V_{DD}=4.5V
OUTA-OUTB Load Current	I_O	-		400	mA	V_{DD}=3V,
				670	mA	V_{DD}=4.5V,
Output Low Voltage	V_{OL}	-	0.15	0.3	V	V_{DD}=3V, I_{OL}= 100mA
			0.10	0.3	V	V_{DD}=4.5V, I_{OL}= 100mA
Output High Voltage	V_{OH}	V_{DD} –0.3	2.8	-	V	V_{DD}=3V, I_{OH}=100mA
		V_{DD} –0.3	4.4	-	V	V_{DD}=4.5V, I_{OH}=100mA
Output Rise Time	T_{RS}	-	3.8	10	nS	V_{DD}=3V, no load
			2.8	10	nS	V_{DD}=4.5V, no load
Output Fall Time	T_{FL}	-	3.2	10	nS	V_{DD}=3V, no load
			4.0	10	nS	V_{DD}=4.5V, no load
Input to Output Response Time	T_{RP}	-	6	15	nS	V_{DD}=3V, no load
			3.5	10	nS	V_{DD}=4.5V, no load

7 Operation Mode

Input A	Input B	OutA	OutB	Mode
L	L	L	L	STOP
H	L	H	L	Forward
L	H	L	H	Reverse
H	H	H	H	Brake

8 Application Circuit

8.1 Single Motor Drive - Bi-Directional

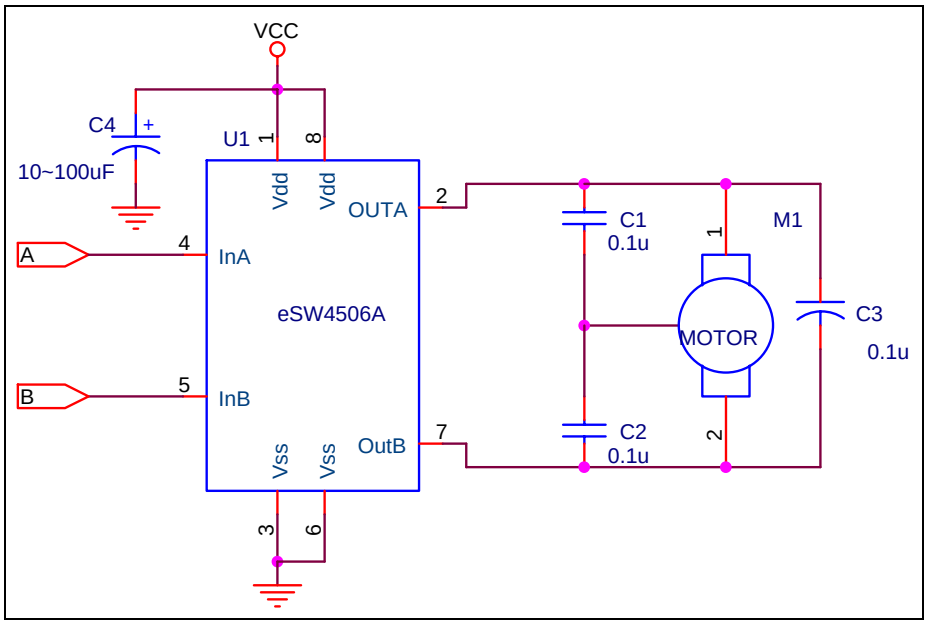

Figure 8-1 Single Motor Drive - Bi-Directional Application Circuit

8.2 Two-Motor Drive with On-Off

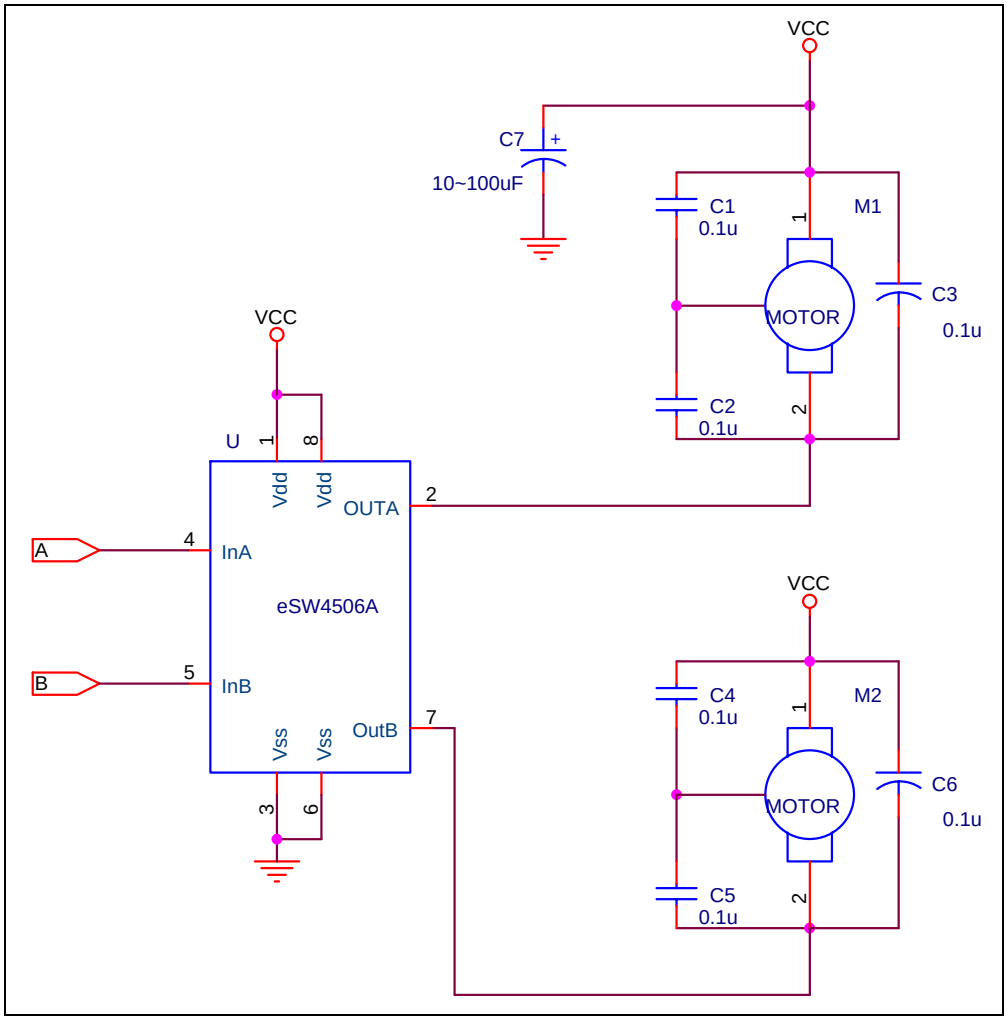

Figure 8-2 Two-Motor Drive with On-Off Application Circuit