eSW4511

Bidirectional Motor Driver

Product Specification

DOC. VERSION 1.0

ELAN MICROELECTRONICS CORP.

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Contents

Specification Revision History

Doc. Version	Revision Description	Date
1.0	Initial version	2008/12/26

1 General Description

The **eSW4511** is a high-performance bidirectional motor driver IC, designed with LSI technology and specifically suitable for low-voltage, high-current product applications. Device reliability and flexibility is enhanced with its built-in input pull down resistance and four modes of motor driving functions, i.e., Forward/Reverse/Brake/Stop. Along with its combined features, it has the advantage of low power consumption.

2 Features

- Low operating voltage: 2.0V ~ 5.5V
- Maximum of 1.1A High current drain at standby mode
- Built-in Input pull down resistance
- Provides four modes of motor driving: Forward/Reverse/Brake/Stop

3 Pin Assignment

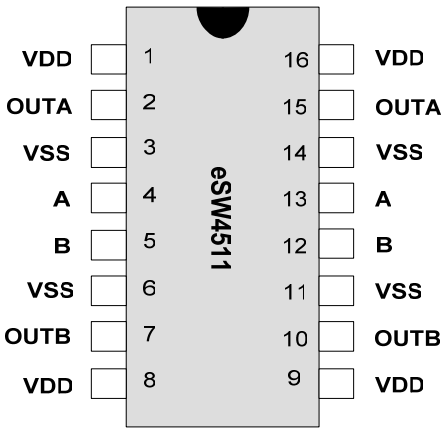

Figure 3-1 eSW4511 16-Pin PDIP

4 Pin Description

Symbol	I/O	Pin No.	Function
VDD	I	1, 8, 9, 16	Positive power supply
VSS	I	3, 6, 11, 14	Negative power supply
A	I	4, 13	Input Signal A
B	I	5, 12	Input Signal B
OUTA	O	2, 15	Motor Driver Output A
OUTB	O	7, 10	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	°C
Storage Temperature	T_{STG}	–55.0	+125.0	°C

6 Electrical Characteristics

Operating Temperature = 25°C

Items	Symbol	Min.	Typ.	Max.	Unit	Condition
Operating Voltage	V_{DD}	2.0	3.0	5.5	V	-
Standby Current	I_{DDS}	-	1	2	µA	V_{DD}=3V, A,B=Vss
			2	4	µA	V_{DD}=4.5V, A,B=Vss
Operating Current	I_{DDO}	-	7	100	µA	V_{DD}=3V, no load
			17	100	µA	V_{DD}=4.5V, no load
A/B Input Current	I_{IN}	-	6	12	µA	V_{DD}=3V, V_{IN}=V_{DD}
			15	30	µA	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	-	-	1100	mA	V_{DD}=5.5Vmax
				1000	mA	V_{DD}=4.5V
				600	mA	V_{DD}=3V
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 Circuits

8.1 Single Motor Drive – Bidirectional

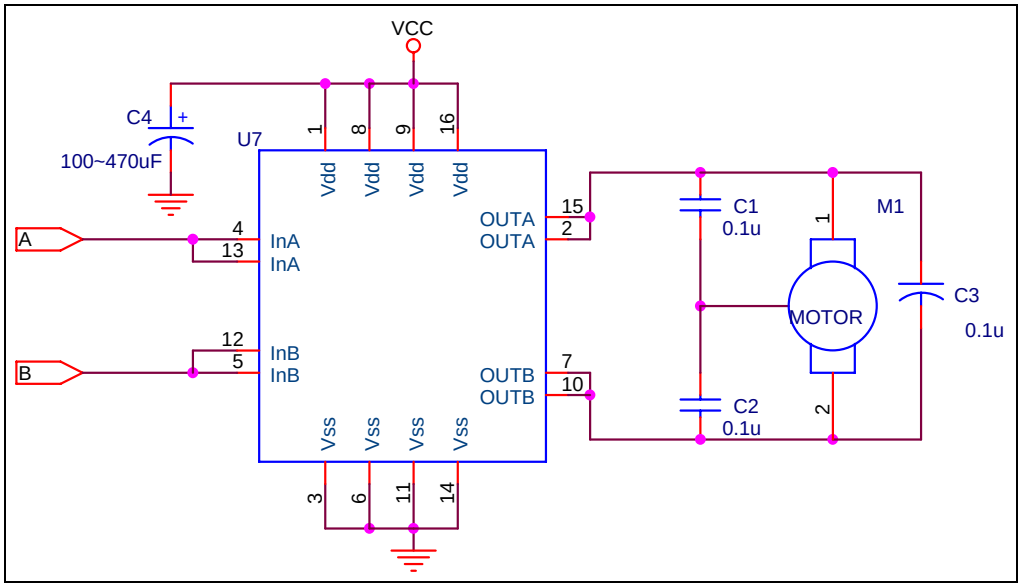

Figure 8-1 eSW4511 Single Motor Drive - Bidirectional Application Circuits

8.2 Two-Motor Drive with On-Off

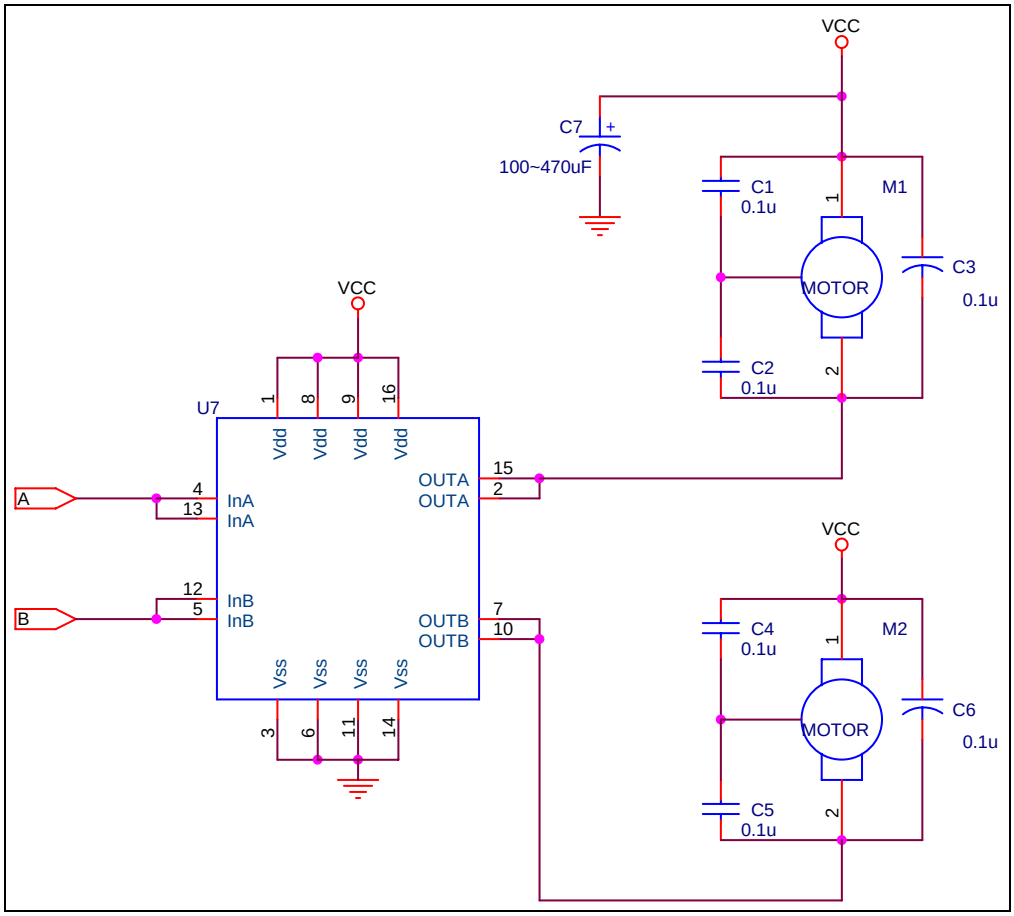

Figure 8-2 eSW4511 Two-Motor Drive with On-Off Application Circuits