

Bi-Directional Motor Drive

General Description

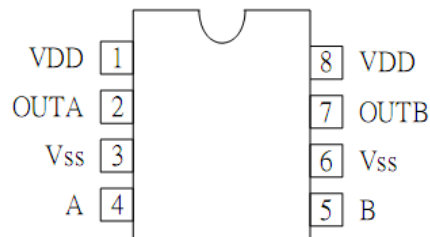
The LN4506 is a bi-directional motor driver IC used in low-voltage application. It provides Forward/Reverse/Brake/Stop function for motor driver application. It is designed with LSI high technology along with low power consumption.

Features

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

Package

- DIP-8



Pin Assignment

Pin Number	Pin Name	Function Description
1,8	VDD	Positive power supply.
3,6	VSS	Negative power supply.
4	A	Input signal A
5	B	Input signal B
2	OUTA	Motor driver output A
7	OUTB	Motor driver output B

Absolute Maximum Ratings

The following ratings designate persistent limits beyond which damage to the device may occur.

Parameter	Symbol	Min	Max	Unit
Supply Voltage	$V_{DD}-V_{SS}$	-0.3	+5.5	V
Switch 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

■ Electrical Characteristics

- Operating Temperature=25°C

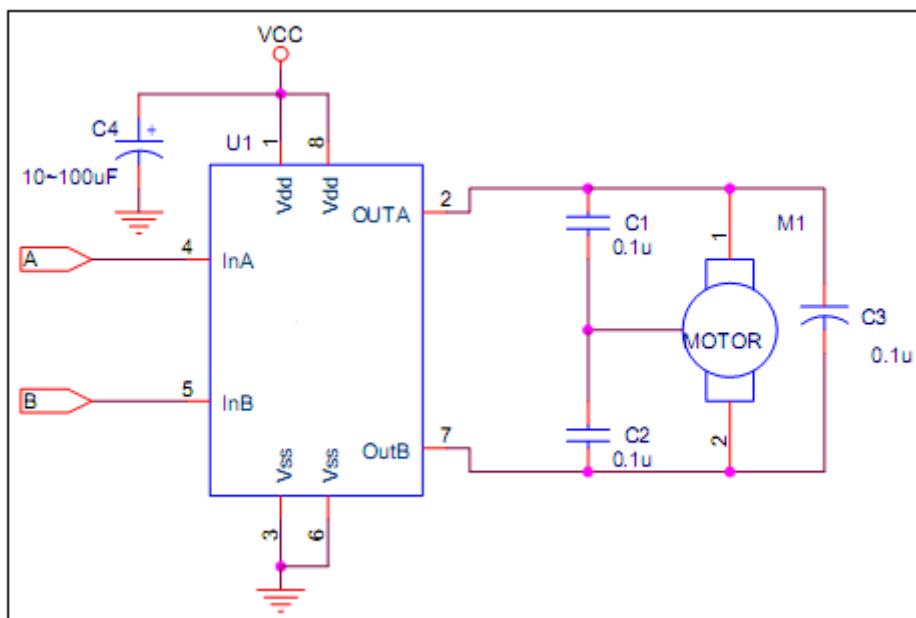
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating Voltage	V_{DD}		2.0	3.0	5.5	V
Standby Current	I_{DDs}	$V_{DD}=3V, A, B=V_{SS}$	-	0.4	1	μA
		$V_{DD}=4.5V, A, B=V_{SS}$		1.1	2	μA
Operating Current	I_{DDO}	$V_{DD}=3V, \text{no load,}$	-	3.4	50	μA
		$V_{DD}=4.5V, \text{no load,}$		8.7	50	μA
A/B Input Current	I_{IN}	$V_{DD}=3V, V_{IN}=V_{DD}$	-	3	6	μA
		$V_{DD}=4.5V, V_{IN}=V_{DD}$		7.5	15	μA
A/B Input High Voltage	V_{IH}	$V_{DD}=3V$	2.4		V_{DD}	V
		$V_{DD}=4.5V$	3.2		V_{DD}	V
A/B Input Low Voltage	V_{IL}	$V_{DD}=3V$	V_{SS}		0.6	V
		$V_{DD}=4.5V$	V_{SS}		1.2	V
OUTA-OUTB Load Current	I_O	$V_{DD}=3V$	-		400	mA
		$V_{DD}=4.5V$			670	mA
Output Low Voltage	V_{OL}	$V_{DD}=3V, I_{OL}=100mA$	-	0.15	0.3	V
		$V_{DD}=4.5V, I_{OL}=100mA$		0.10	0.3	V
Output High Voltage	V_{OH}	$V_{DD}=3V, I_{OH}=100mA$	$V_{DD}-0.3$	2.8	-	V
		$V_{DD}=4.5V, I_{OH}=100mA$	$V_{DD}-0.3$	4.4	-	V
Output Rise Time	T_{RS}	$V_{DD}=3V, \text{no load}$	-	3.8	10	ns
		$V_{DD}=4.5V, \text{no load}$		2.8	10	ns
Output Fall Time	T_{FL}	$V_{DD}=3V, \text{no load}$	-	3.2	10	ns
		$V_{DD}=4.5V, \text{no load}$		4.0	10	ns
Input to Output Response Time	T_{RP}	$V_{DD}=3V, \text{no load}$	-	6	15	ns
		$V_{DD}=4.5V, \text{no load}$		3.5	10	ns
Thermal Protection Temperature	T_{SD}			130		°C
Current Limiter	I_{CL}			1.1		A

■ Operation Mode

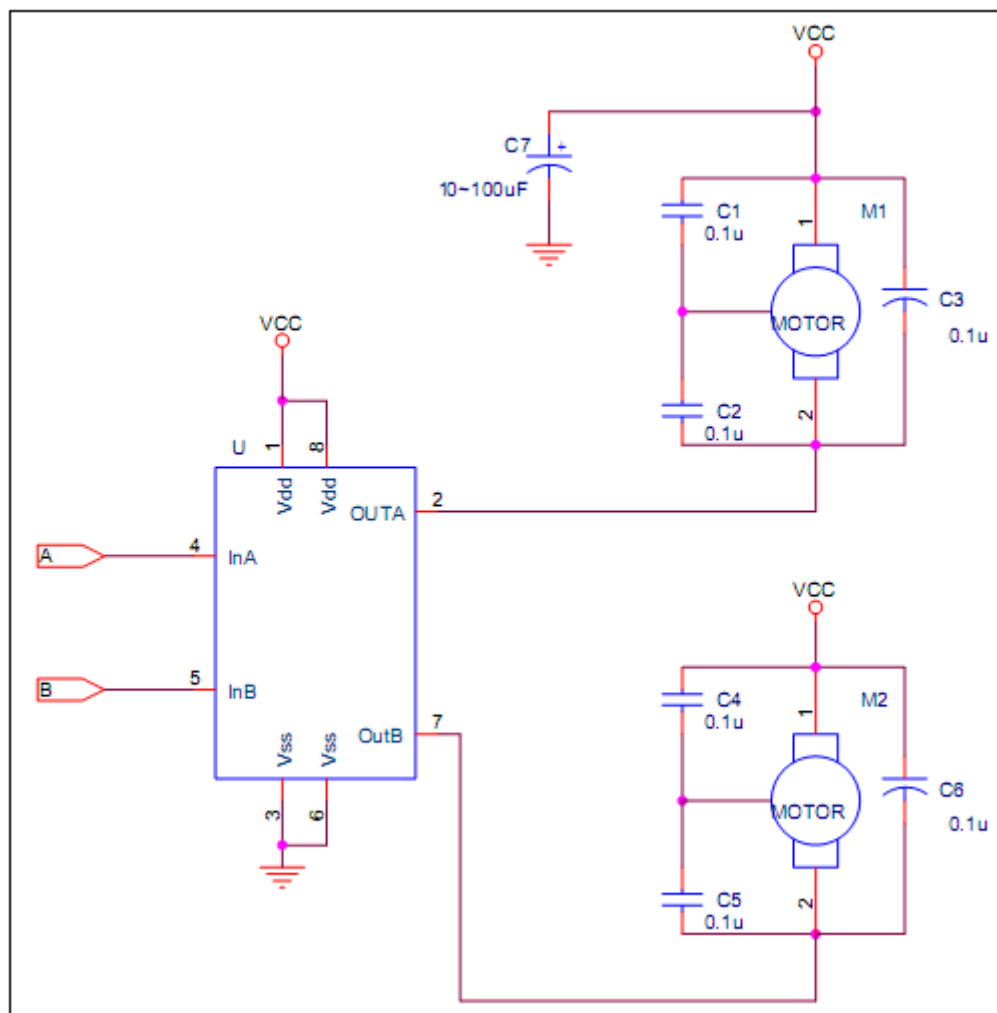
Input A	Input B	Out A	Out B	Mode
L	L	L	L	STOP
H	L	H	L	Forward
L	H	L	H	Reverse
H	H	H	H	Brake

■ Application Circuit

- Single Motor Drive-Bi-Directional

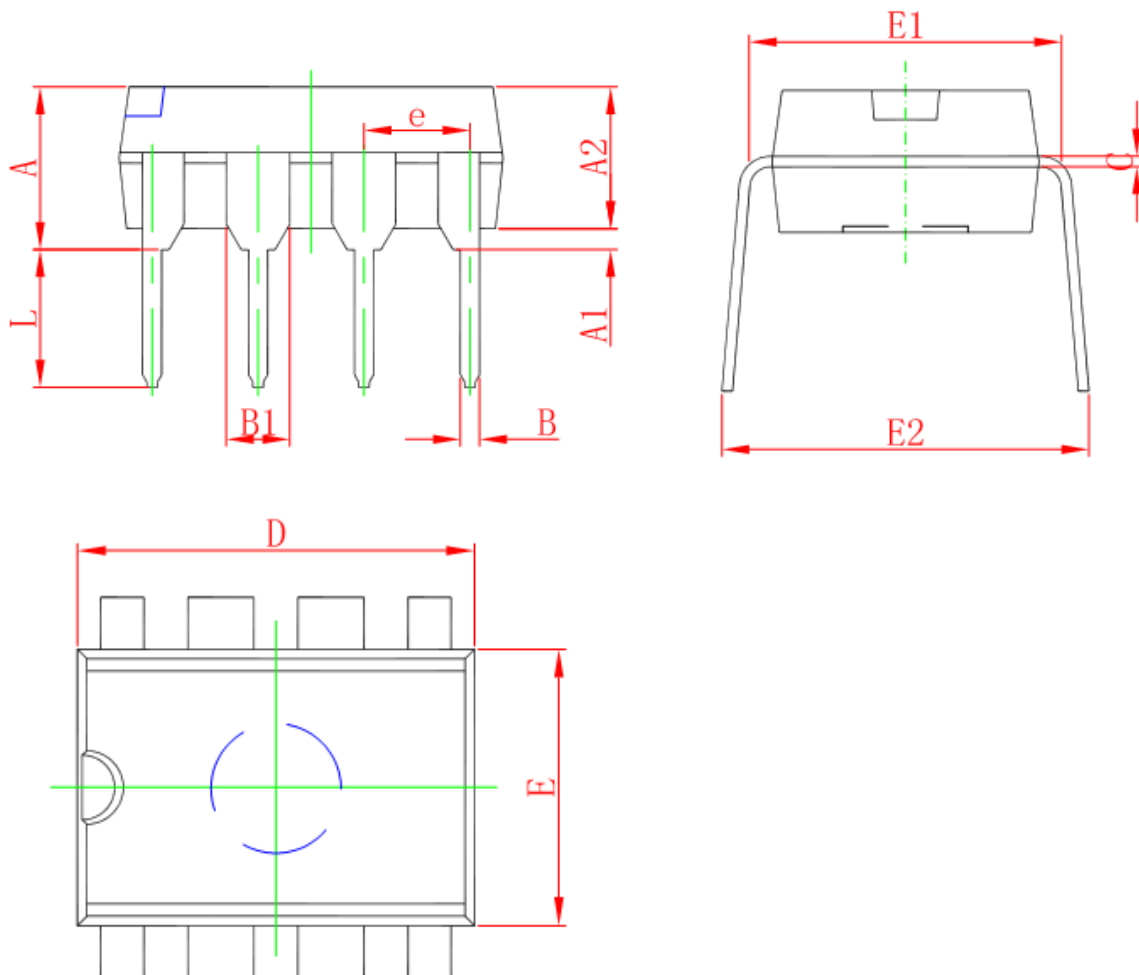


● Two-Motor Drive With On-Off



Package Information

• DIP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.710	4.310	0.146	0.170
A1	0.510		0.020	
A2	3.200	3.600	0.126	0.142
B	0.380	0.570	0.015	0.022
B1	1.524 (BSC)		0.060 (BSC)	
C	0.204	0.360	0.008	0.014
D	9.000	9.400	0.354	0.370
E	6.200	6.600	0.244	0.260
E1	7.320	7.920	0.288	0.312
e	2.540 (BSC)		0.100 (BSC)	
L	3.000	3.600	0.118	0.142
E2	8.400	9.000	0.331	0.354