

MD311

Version : A.004
Issue Date : 2014/7/1
File Name : SP-MD311-A.004.doc
Total Page : 7

Micro-actuator Driver



新竹市展業一路 9 號 7 樓之 1

SILICON TOUCH TECHNOLOGY INC.

9-7F-1, Prosperity Rd I, Science-Based Industrial Park

Hsinchu, Taiwan, R.O.C.

Tel : 886-3-5727171 Fax : 886-3-5727390

MD311

Micro-actuator Driver

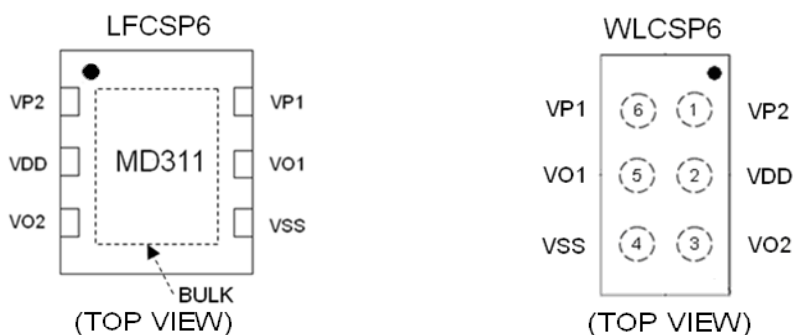
General Specifications

MD311 is a micro-actuator driver IC with miniature package. It is one channel low voltage bi-directional motor driver IC. The design is optimal for driving different type micro-actuator, such as OIS motors, voice coil motors, piezo-actuators, or other DC motor actuators. It is suitable for camera module application or other portable device.

Features and Benefits

- ◆ Low voltage operation ($V_{DD\ Min} = 1.8\ V$)
- ◆ Low input current
- ◆ Zero standby current
- ◆ High frequency switch (1MHz)
- ◆ Thin, small package (LFCSP6 / WLCSP6)

Pin Assignment



Pin Num.	Pin Name	Description
1	VP2	Driver control pin2
2	VDD	Power supply
3	VO2	Driver output 2
4	VSS	Ground
5	VO1	Driver output 1
6	VP1	Driver control pin1
BULK		Ground

Absolute Maximum Ratings (Unless otherwise noted, $T_A = 25^\circ\text{C}$)

Characteristic	Symbol	Rating	Unit
Supply Voltage	V_{DD}	4.5	V
Input Voltage	V_{P1}	$V_{DD}+0.4$	V
I_O Peak Current	I_{OPeak}	400	mA
I_{ODC} Current	I_{ODC}	280	mA
Power Dissipation	P_D	300 (LFCSP6)	mW
		300(WLCSP6)	
Operating Temperature Range	T_{OPR}	-40 ~ 80	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-65 ~ 150	$^\circ\text{C}$

Electrical Characteristic

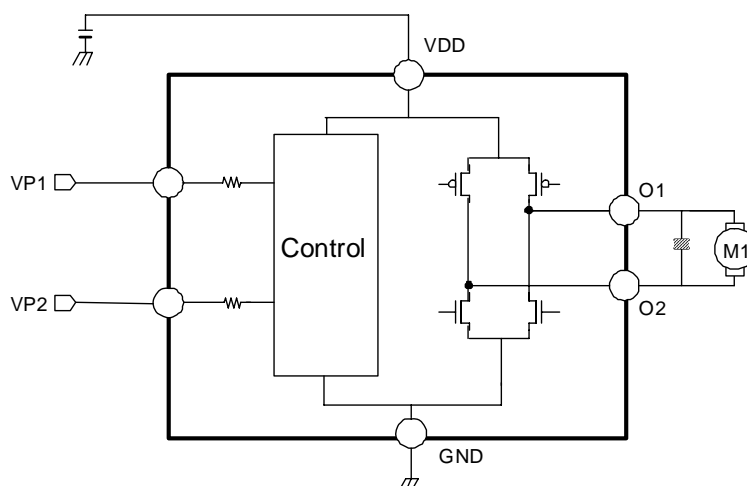
(Unless otherwise noted, $T_A = 25^\circ\text{C}$ & $V_{DD} = 2.8\text{V}$)

Characteristic	Sym.	Condition	Limit			Unit
			Min.	Typ.	Max.	
Supply Voltage	V_{DD}		1.8	2.8	4.5	V
Standby Current	I_{DD}	No load	-	-	3	μA
VP1 VP2 and PD Input Terminal ($T_J = 25^\circ\text{C}$)						
Input Voltage "H"	V_{IH}	-	$0.5 \cdot V_{DD}$	-	$V_{DD}+0.4$	V
Input Voltage "L"	V_{IL}	-	-0.4	-	$0.2 \cdot V_{DD}$	V
Input Current "H"	I_{IH}	$V_{IN} = V_{DD}$	-	-	± 1	μA
Input Current "L"	I_{IL}	$V_{IN} = 0\text{V}$	-	-	± 1	μA
Output Terminal (O1, O2)						
Output Resistance (Upper)	R_{OH}	$I_{OUT} = 200\text{mA}$	-	1.32	1.6	Ohm
Output Resistance (Low)	R_{OL}	$I_{OUT} = 200\text{mA}$	-	0.73	0.9	Ohm

Truth Table

Input		Output	
VP1	VP2	O1	O2
L	L	H	H
L	H	H	L
H	L	L	H
H	H	L	L

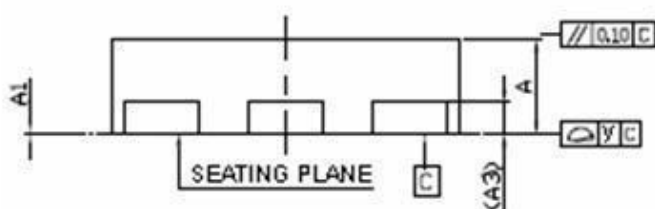
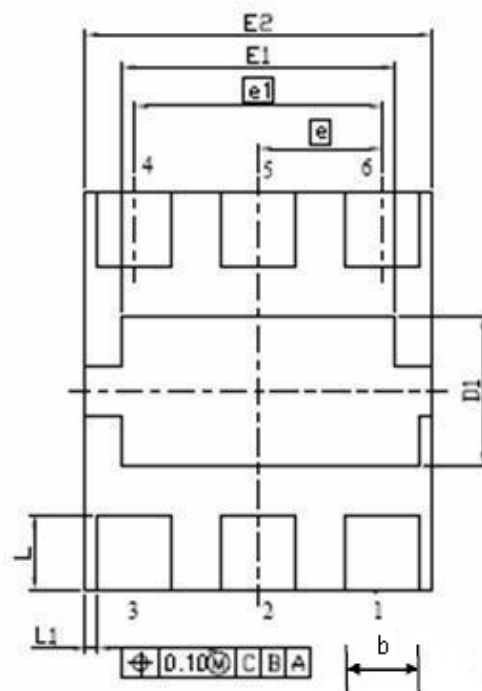
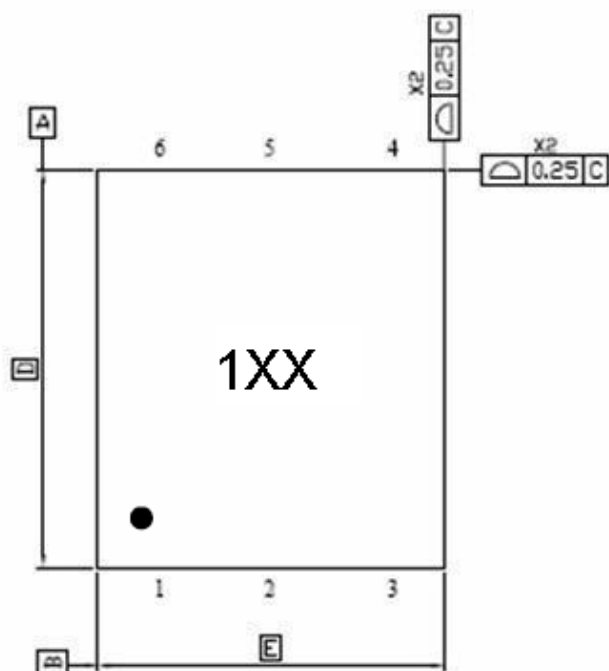
Function Block



Application Notes

- The O1/O2 output H/H or L/L will brake the motor. Though the active current of driver is near to zero, if the application is required to turn off driver, please turn off the driver's power from VDD.
- The capacitor connected between the output nodes O1/O2 will reduce the noise generating by motor when the motor is switched to opposed direction.

Package Specifications (LFCSP6)



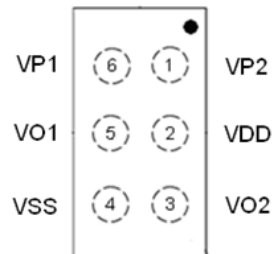
Note:

1 and XX of the “1XX” are the product number and lot numbers b

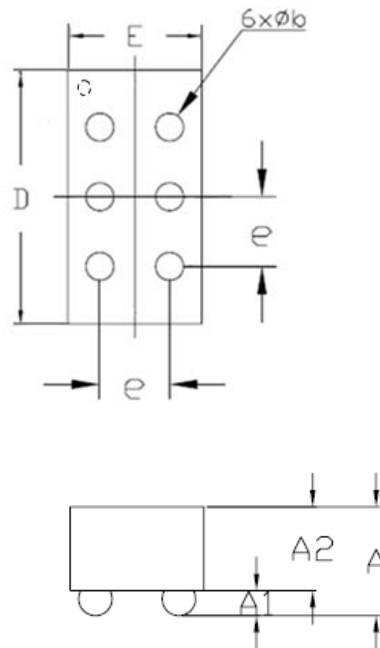
SYMBOL	DIMENSION (mm)		
	MIN.	NOM.	MAX.
A	0.33	0.38	0.43
A1	0.00	0.02	0.05
A3	0.127 REF		
b	0.22	0.30	0.38
D	1.50	1.60	1.70
D1	0.50	0.60	0.70
E	1.30	1.40	1.50
E1	1.00	1.10	1.20
E2	1.30	1.40	1.50
e	0.50 BASIC		
e1	1.00 BASIC		
L	0.25	0.30	0.35
L1	0.05 BASIC		
y	-	-	0.08

Package Specifications(WLCSP): (0.450mm*0.881mm*0.325mm)

TOP VIEW



BOTTOM VIEW



SYMBOL	DIMENSION (mm)		
	MIN.	NOM.	MAX.
A	0.302	0.325	0.348
A1	0.067	0.075	0.083
A2	0.235	0.250	0.265
D	0.860	0.881	0.903
E	0.429	0.450	0.472
b	0.090	0.100	0.110
e	0.250		

The products listed herein are designed for ordinary electronic applications, such as electrical appliances, audio-visual equipment, communications devices and so on. Hence, it is advisable that the devices should not be used in medical instruments, surgical implants, aerospace machinery, nuclear power control systems, disaster/crime-prevention equipment and the like. Misusing those products may directly or indirectly endanger human life, or cause injury and property loss.

Silicon Touch Technology, Inc. will not take any responsibilities regarding the misuse of the products mentioned above. Anyone who purchases any products described herein with the above-mentioned intention or with such misused applications should accept full responsibility and indemnify. Silicon Touch Technology, Inc. and its distributors and all their officers and employees shall defend jointly and severally against any and all claims and litigation and all damages, cost and expenses associated with such intention and manipulation.

Silicon Touch Technology, Inc. reserve the right to make changes to their products or to discontinue any product or service without notice, and advise customers to obtain the latest version of relevant information to verify, before placing orders, that information being relied on is current and complete.