

11-FD216

Version : A.010

Issue Date : 2006/12/28

File Name : SP-FD216-A.010.doc

Total Pages: 6

Brushless Vibrator Driver

Built-in Hall Sensor



新竹市科學園區展業一路9號7樓之1

SILICON TOUCH TECHNOLOGY INC.

9-7F-1, Prosperity Road I, Science Based Industrial Park,
Hsin-Chu, Taiwan 300, R.O.C.

Tel : 886-3-5645656 Fax : 886-3-5645626

Brushless Vibrator Driver Built-in Hall Sensor

General Specifications

The device is designed specifically for brushless DC motor applications without any external components, such as vibrator, ultra-small brushless motor. Each device includes a HALL sensor, a lock detection circuit to shut down the driver output for the lock prevention, and complementary bi-directional drivers for driving and sinking coil load.

If the motor rotation is stall by external forces or obstacles, the drivers will shut down roughly 0.5 to 2 seconds after the motor is locked. When the drivers shut down, the automatic self-restart circuit will try to power up the drivers every 0.5 to 2 seconds till the motor locking is released.

Pin Description

NO.	NAME	Description
1	O2	Output Driver2
2	NC	No Connection
3	VSS	Ground
4	O1	Output Driver1
5	NC	No Connection
6	VDD	Power

Features and Benefits

- Optimized for small Brushless DC Motor applications
- Low voltage operation
- Built-in Hall effect sensor
- Built-in Reverse Protection
- Lock detection and automatic self-restart without external capacitor
- High sinking and driving output capability
- Thin, highly reliable package (CSP6)

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

Characteristic	Symbol	Rating	Unit
Supply Voltage	V_{DD}	5.5	V
Output Current	I_{OUT}	200	mA
Power Dissipation	P_D	400	mW
Thermal Resistance, Junction to Ambient	θ_{JA}	70	$^\circ\text{C}/\text{W}$
Operating Temperature Range	T_{OPR}	-40 ~ 125	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-65 ~ 150	$^\circ\text{C}$

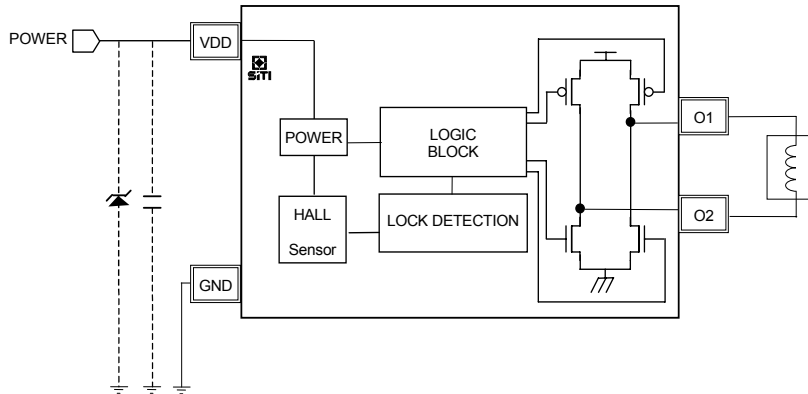
Electrical Characteristics (Unless otherwise noted, $T_A = 25\text{ }^\circ\text{C}$, $V_{DD} = 3\text{V}$)

Characteristic	Sym.	Condition	Limit			Unit
			Min.	Typ.	Max.	
Supply Voltage	V_{DD}	Operating	1.8	3	4.5	V
Magnetic Specifications ($T_J = 25\text{ }^\circ\text{C}$)						
Operating Point	B_{OP}		-	1.0	10	mT
Release Point	B_{RP}		-	-1.0	-10	mT
Hysteresis	B_{HYS}		-	2.0	20	mT
O1/O2 Output Terminal ($T_J = 25\text{ }^\circ\text{C}$)						
Output Voltage High	V_{OH}	$I_{OUT} = 100\text{ mA}$	2.6	2.85	-	V
Output Voltage Low	V_{OL}	$I_{OUT} = 100\text{ mA}$	-	0.3	0.5	V
Output Current	I_{OUT}	$R_L = 30\ \Omega$	-	85	-	mA
Automatic Self-Restart Circuit						
On Time	T_{ON}	-	-	156	-	ms
Duty Ratio	R_{DR}	T_{OFF} / T_{ON}		3		

Driver Output v.s. Magnetic Pole

Magnetic Field	O1	O2
North magnetic pole	H	L
South magnetic pole	L	H

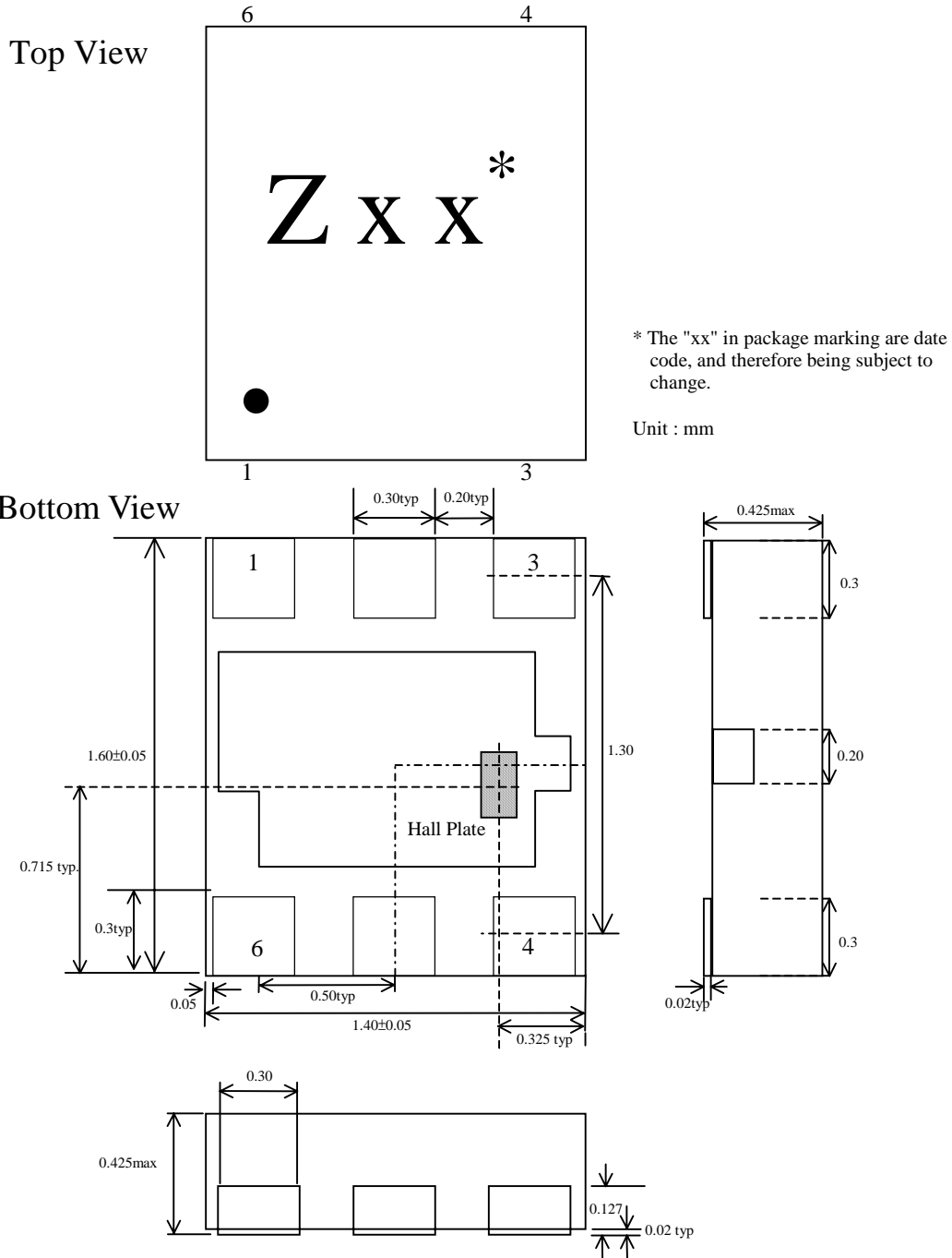
Block Diagram & Application Circuit



Application Notes

- The connection of the capacitor or Zener Diode between VDD and GND will increase stability of operation, if required.

Package Specifications (CSP6)





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 misusage 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.