Low Voltage H-Bridge Motor Drive

FEATURES

- Support the input voltage range: motor power: 1.8 ~ 12 V, control power supply: 1.8 ~ 5.5 V
- LDMOSRdson (HS+LS) 280mΩ
- Ultra low power sleep mode
- Maximum 1.8 A current output capacity
- Built-in UVLO Protection
- Built-inOver Temperature Protection
- Built-in Short Circuit Protection
- Built-in Over Current Protection
- Built-in Charge Pump
- DFN8L 2*2 package

GENERAL DESCRIPTION

STI8837 is a low voltage DC motor driver IC , Internal integration 280m (HS+LS) H bridge NMOS switch, which can support the 1.8~12V input voltage range, The maximum current capacity of up to 1.8A, support for ultra low power sleep mode; built-in UVLO, Thermal Shutdown, OCP protection circuit can be used in camera, toys and consumer products

APPLICATIONS

- Cameras
- Toys
- Consumer Products

TYPICAL APPILCATION

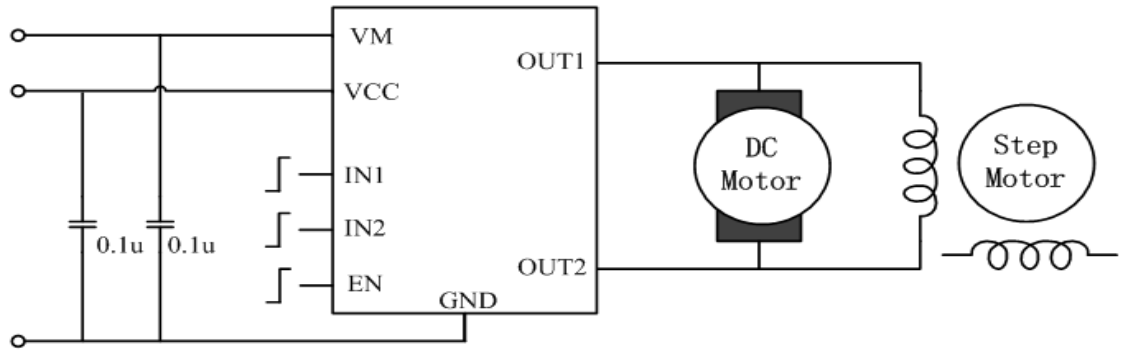
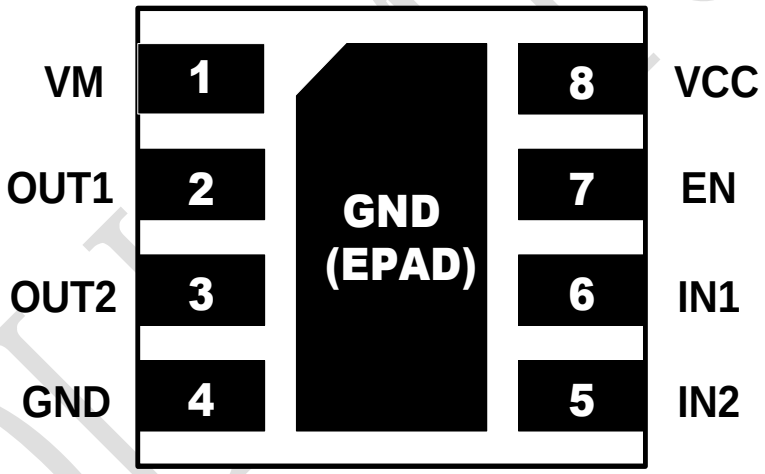


Figure 1. Basic Application Circuit

ABSOLUTE MAXIMUM RATINGS

Parameter	Value	Unit
VM Voltage Range	-0.3~12	V
VCC,IN1,IN2,nSLEEP Voltages Range	-0.3~6	V
VSET/VOUT Voltage Range	-0.3~Vin+0.3	V
Storage Temperature Range	-50~150	°C
Junction Temperature	-40~150	°C
Package Thermal Resistance	10	°C/W

PACKAGE/ORDER INFORMATION



DFN8L 2*2

Top Mark: S8837YY XXX (S8837: Device Code,YY XXX: Inside Code)

Part Number	Package	Top mark	Quantity/ Reel
STI8837	DFN8L 2*2	S8837YY XXX	3000

PIN FUNCTIONS

Pin	Name	Function
1	VM	Power Supply for Driver Connect a 0.1u bypass ceramic capacitor to GND
2	OUT1	Motor Driver output 1
3	OUT2	Motor Driver output 2
4	GND	Ground pin
5	IN2	PWM input2
6	IN1	PWM input1
7	EN	Chip Enable Input 1:Enable, 2:Sleep Mode
8	VCC	Power Supply for Logic Input Connect a 0.1u bypass ceramic capacitor to GND

ESD RATING

Items	Description	Value	Unit
V_{ESD}	Human Body Model for all pins	±2000	V

JEDEC specification JS-001

RECOMMENDED OPERATING CONDITIONS

Items	Description	Min	Max	Unit
Voltage Range	VM	1.8	12	V
TA	Operating Temperature Range	-40	85	°C

ELECTRICAL CHARACTERISTICS (Note 3)

(V_{IN}=12V , T_A = 25°C, unless otherwise noted.)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
VM Voltage Range	V_{VM}		1.8		12	V
VM Supply Current	I_{VM}	VM=5V VCC=3V No PWM		67		uA
		VM=5V VCC=3V 50kHz PWM		0.43		mA
VCC Voltage Surge	V_{VCC}		1.8		5.5	V
VCC Supply Current	I_{VCC}	VM=5V VCC=3V No PWM		105		uA
		VM=5V VCC=3V 50kHz PWM		0.28		mA
		VM=5V VCC=3V Sleep Mode		5		nA
Input Logic Low Voltage	V_{IL}		0.25x VCC	0.4x VCC		V
Input Logic High Voltage	V_{IL}			0.5x VCC	0.6x VCC	V
Input logic Hysteresis	V_{HYS}			0.1x VCC		V
Input Logic Low Current	I_{IL}		-5		5	uA
Input Logic High Current	I_{IH}				50	uA
Input Pull Down Resistor	R_{IN}			100		KΩ
Output Switch On-Resistance	R_{ON}	VM=5V VCC=3V Iload=800mA		285		mΩ
Output Switch Leakage Current	I_{LEAK}		-200		200	nA
VCC UVLO Voltage	V_{UVLO}			1.7		V
UVLO Hysteresis	V_{UVLO_HY}			100		mV
Over Current Protection	I_{OCP}			2.2		A
Over Current Retry Time	T_{OCP_RT}			1		mS
Thermal Shutdown Threshold	T_{SDN}			160		℃

Thermal Shutdown Hysteresis	T_{SDN_HY}			20		℃
Output Enable time	T_1			180		nS
Output Disable time	T_2			70		nS
Delay Time IN1 low to OUT2 high IN2 low to OUT1 high	T_3			140		nS
Delay Time IN2 high to OUT1 low IN1 high to OUT2 low	T_4			160		nS
Output rise time	T_5			60		nS
Output fall time	T_6			20		nS

FUNCTIONAL BLOCK DIAGRAM

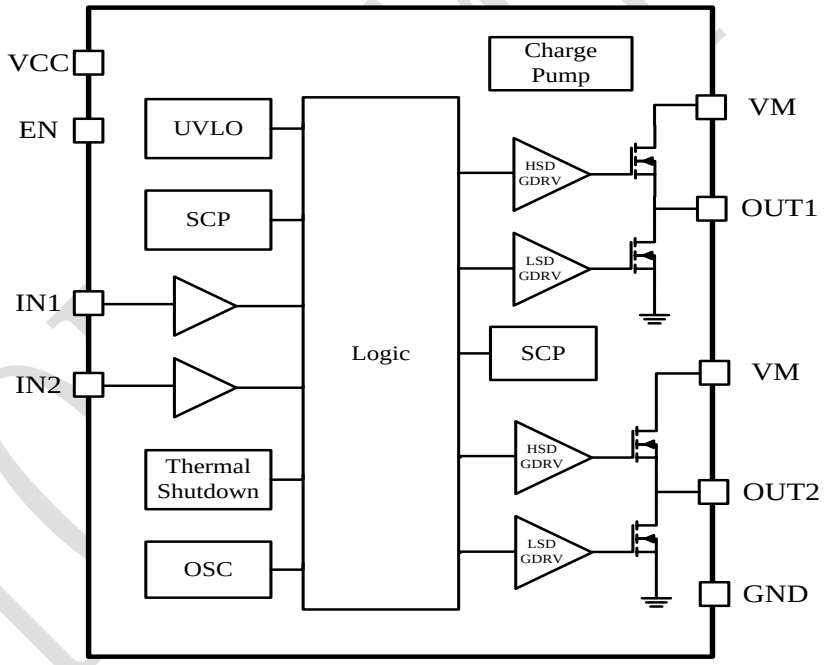
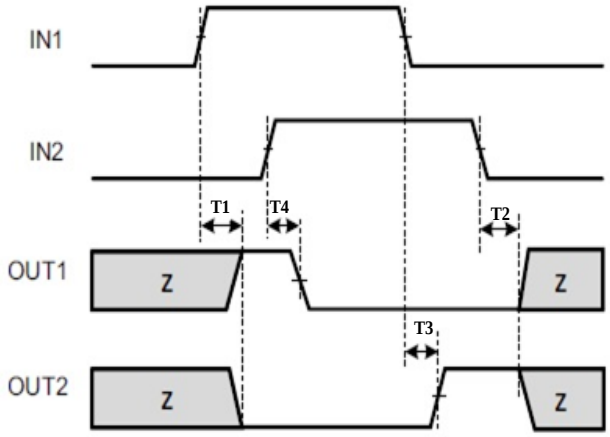
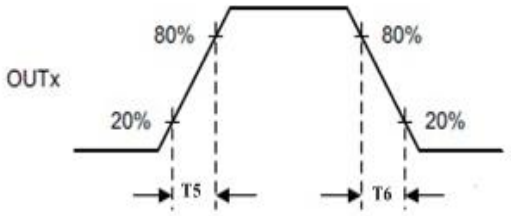


Figure 2. STI8837 Block Diagram

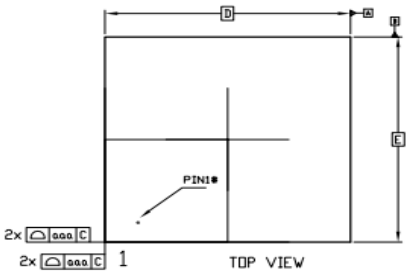
INPUT OUTPUT LOGIC

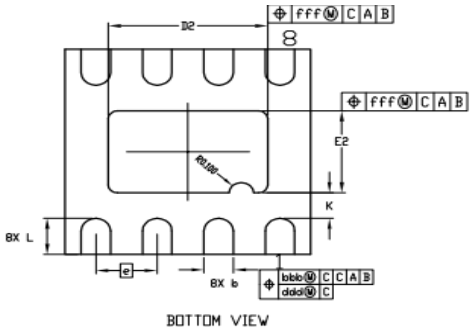


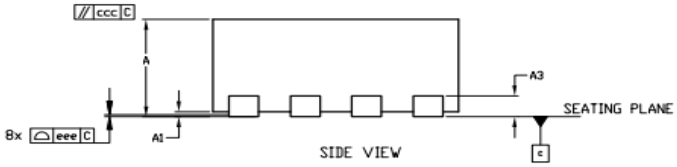


EN	IN1	IN2	OUT1	OUT2	Function
0	X	X	Z	Z	Coast
1	0	0	Z	Z	Coast
1	1	0	H	L	Forward
1	0	1	L	H	Reverse
1	1	1	L	L	Break

PACKAGE INFORMATION







DIM / SYMBOL	MIN.	NOM.	MAX.
A	0.70	0.75	0.80
A1	0	0.02	0.05
A3	–	0.20 REF	–
b	0.19	0.24	0.29
D		2.00BSC	
E		2.00BSC	
D2	1.25	1.30	1.35
E2	0.75	0.80	0.85
e		0.50BSC	
L	0.30	0.35	0.40
K	0.20		
aaa		0.15	
bbb		0.10	
ccc		0.10	
ddd		0.05	
eee		0.08	
fff		0.10	

DFN8L 2*2

Note:

1) All dimensions are in millimeters.

2) Package length does not include mold flash, protrusion or gate burr.

3) Package width does not include inter lead flash or protrusion.

4) Lead popularity (bottom of leads after forming) shall be 0.10 millimeters max.

5) Pin 1 is lower left pin when reading top mark from left to right.