

One-channel H-Bridge Driver IC

SSP2617

General Description

The SSP2617 is one channel H-Bridge driver IC, it provides integrated motor-driver solution for toys, robotics, consumer products and other low voltage or battery-powered motion control applications.

The SSP2617 maximum operational voltage is 25V. It can supply up to 3.0A of output continuous current and 5.0A of output peak current. There is internal shutdown function for over-temperature protection and over-current protection ($I_{OCP}=5.0A$).

Features

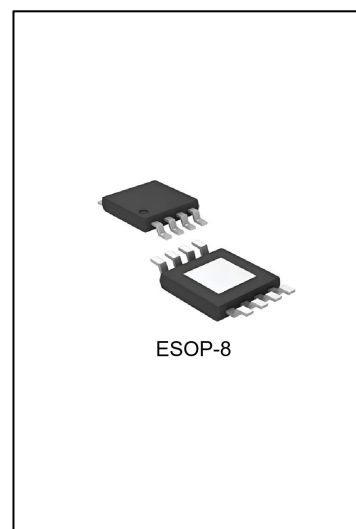
- Operation voltage range up to 25V
- Maximum continuous current output up to 3.0A
- Low $R_{DS(ON)}$ for highly efficient H-bridge output
- Support PWM control
- Over current protection
- Over temperature protection
- Low standby current
- Low quiescent current
- Package: ESOP8

Applications

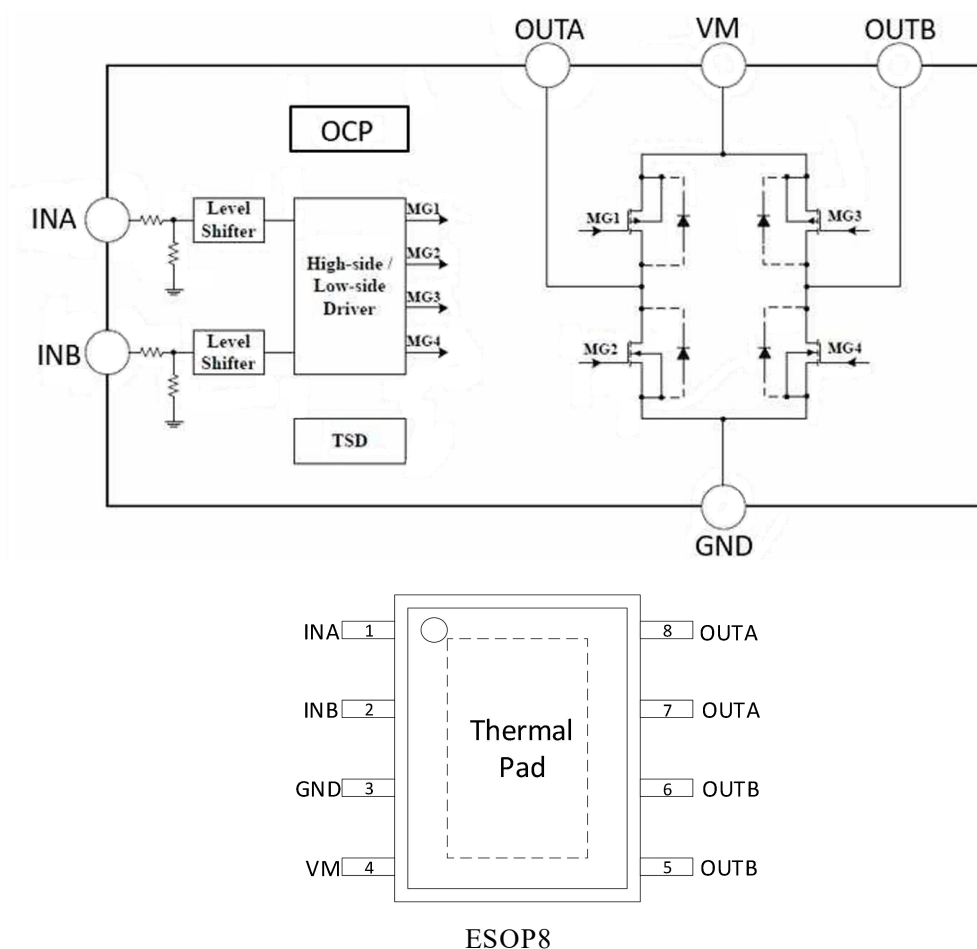
- Robotics (R/C servo, Sweeping robot)
- Toys (R/C car, R/C aircraft)
- Any relevant DC motor applications

Order specification

Part No	Package	Manner of Packing	Devices per bag/reel
SSP2617	ESOP8	Reel	4000



Block Diagram and Pin Arrangement Diagram



Pin Assignment

NO.	NAME	TYPE	DESCRIPTION
1	INA	I	Input INA
2	INB	I	Input INB
3	GND	G	Ground
4	VM	P	Power Supply for H-Bridge. Connection 10uF or bigger capacitor between VDD and GND
5	OUTB	O	Output OUTB
6	OUTB	O	Output OUTB
7	OUTA	O	Output OUTA, Connection 0.1uF between OUTA and OUTB
8	OUTA	O	Output OUTA, Connection 0.1uF between OUTA and OUTB
Thermal Pad		G	Ground, connection PCB to ensure normal operation

Function and application description

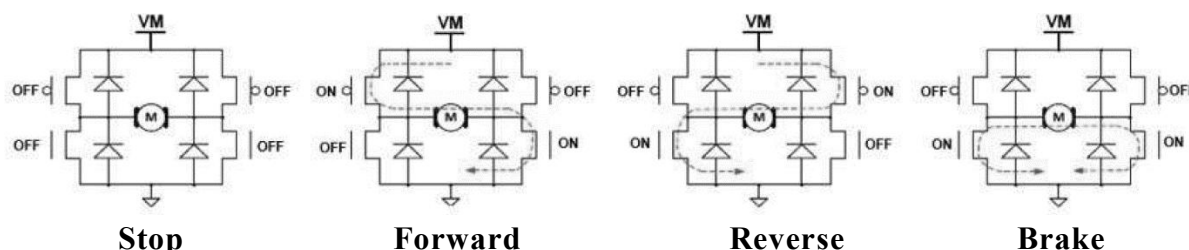
Functional Description

The SSP2617 is one channel H-Bridge driver IC, it provides integrated motor-driver solution for motion control applications. The SSP2617 maximum operational voltage is 25V. It can supply up to 3.0A of output continuous current and 5.0A of output peak current. There is internal shutdown function for over-temperature protection and over-current protection.

Input-Output Logical Table

INA	INB	OUTA	OUTB	Mode	Operating Current
L	L	Hi-Z	Hi-Z	Stop	IVM_OFF
H	L	H	L	Forward	IVM_ON
L	H	L	H	Reverse	IVM_ON
H	H	L	L	Brake	IVM_ON

Operating Mode Descriptions



- Stop mode Definition: When INA=INB= L, then OUTA=OUTB=Hi-Z
- Forward mode Definition: When INA=H, INB=L, then OUTA=H, OUTB=L
- Reverse mode Definition: When INA=L, INB=H, then OUTB=H, OUTA=L
- Brake mode Definition: When INA=INB= H, then OUTA=OUTB=L

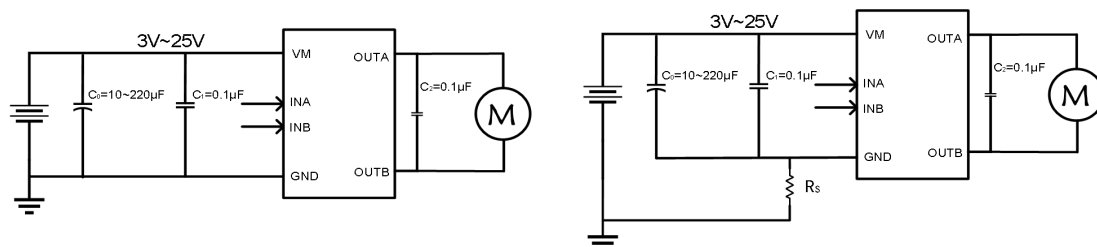
Over-current protection (OCP)

While the IC conducts a large current, 5.0A (Typ.), the internal over-current protection function will be triggered. The device enters protection mode of auto-recover to avoid damaging IC and system.

Over-temperature protection

If the IC junction temperature exceeds 180°C (Typ.), the internal over-temperature protection function will be triggered, partial FETs in the H-bridge are disabled, that will ensure the safety of customers' products. If the IC junction temperature falls to 120 °C(Typ.), the IC resumes automatically.

Application Notes



Without Current Sense Application

With Current Sense Application

C0, C1: Power supply VM pin capacitor:

- The capacitor can reduce the power spike when the motor is in motion. To avoid the IC directly damaged by the VM peak voltage. It also can stabilize the power supply voltage and reduce its ripples.
- The C0 capacitor can compensate power when motor starts running.
- The capacitor value determines the stability of the VM during motor in motion. If the large voltage power or a heavy loading motor is used, then a larger capacitor would be needed.
- On the PCB configuration, the C0 and C1 must be mounted as close as possible to VM pin .

C2: The across-motor capacitor

- The C2 capacitors can reduce the power spike of motor in start running. A 0.1µF capacitor is recommended.
- The C2 capacitor must be added to the general application.

RS: The sense resistor in current sense application

- Need to sense output current, the RS is recommended to added between IC GND and PCB ground.
- The C0 and C1 negative terminal is recommend connection to IC GND.

Absolute Maximum Ratings

$T_{amb}=25^{\circ}\text{C}$, unless specified otherwise.

Parameter	Symbol	Typ.	Unit
Power Supply	V_M	-0.3~30	V
Power Supply	INA, INB	-0.3~7.0	V
Thermal resistance	θ_{JA}	160	$^{\circ}\text{C}/\text{W}$
Operation temp.	T_j	-40~125	$^{\circ}\text{C}$
Storage temp.	T_{stg}	-65~150	$^{\circ}\text{C}$

Note: These are stress ratings only. Stresses exceeding the range specified under “Absolute Maximum Ratings” may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

Recommended operating conditions ($T_{amb}=25^{\circ}\text{C}$)

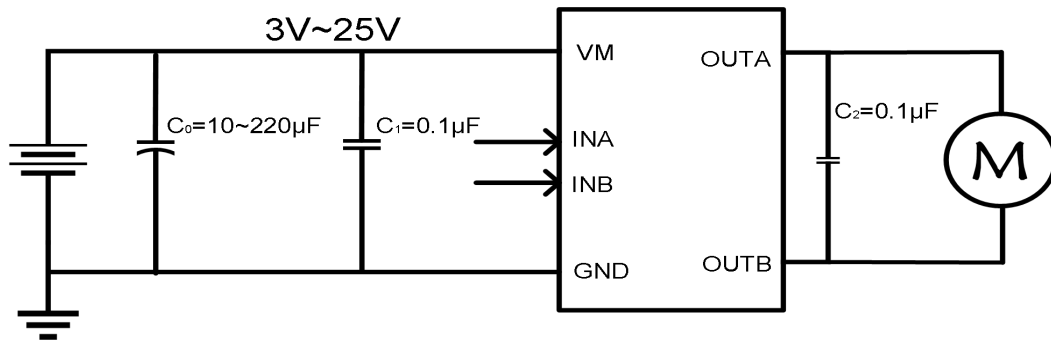
Parameter	Symbol	Typ.	Unit
Power Supply	V_M	3~25	V
Input Logic	INA, INB	0~5.0	V
Output Contiguous	I_{OUTA} , I_{OUTB}	0~3.0	A
Operation temp.	T_a	-40~85	$^{\circ}\text{C}$

Electrical Characteristics

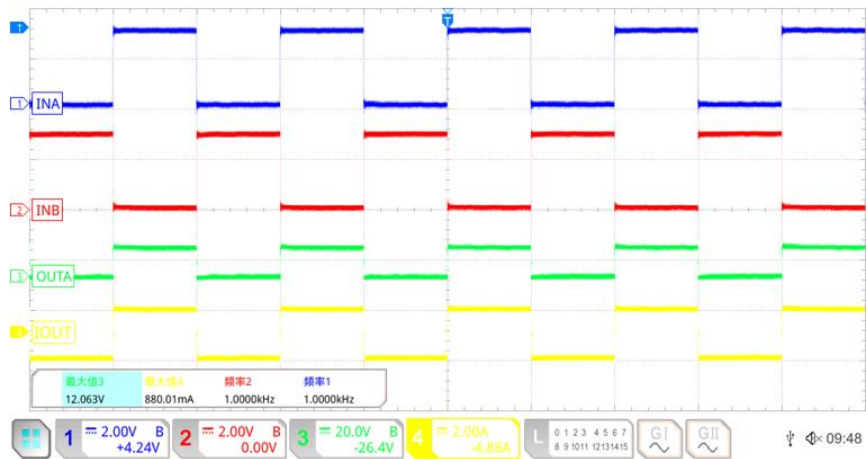
$V_M=7.2\text{V}$, $T_{amb}=25^{\circ}\text{C}$, $R_{LOAD}=20\Omega$, unless specified otherwise.

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
H-Bridge FETs						
R _{DS_{ON}_H}	High-side on-resistance	I _{OUT} =1.0A		0.15		Ω
R _{DS_{ON}_L}	Low-side on-resistance			0.1		Ω
INA/INB						
V _{INH}	Input high level		2.0		5.0	V
V _{INL}	Input low level		0		0.8	V
R _{PD}	Pull down resistance			100	200	KΩ
Supply Current						
I _{VM_OFF}	Standby current	INA=INB=0		0	10	μA
I _{VM_ON}	Operation current			1.0	1.5	mA
Thermal Protection						
T _{OTSD}	Thermal shutdown			180		°C
T _{HYS}	Thermal shutdown			60		°C

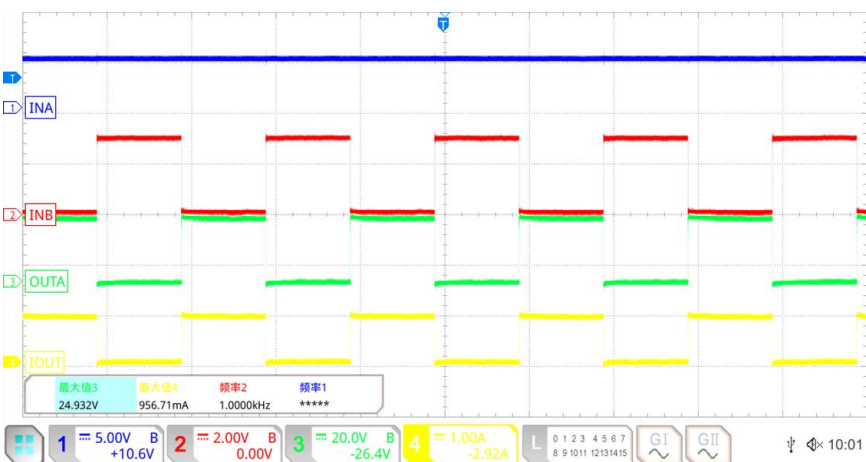
Application Circuits



Typical Performance Characteristics(Tamb= 25℃)

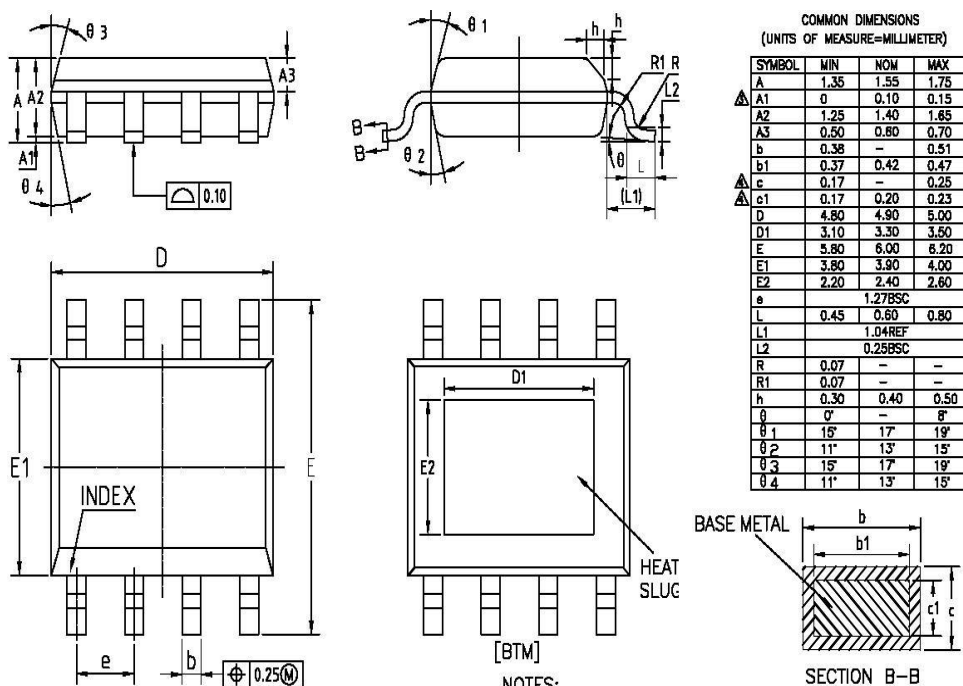


VCC=12V, Iout=1A, INA=-INB, 1KHz



VCC=25V, Iout=1A, INA=High, INB=1KHz

Package Information (ESOP8)



NOTES:

ALL DIMENSIONS REFER TO JEDEC STANDARD MS-012 AA
DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS.

Symbol	Dimensions In Millimeters			Symbol	Dimensions In Millimeters		
	Min.	Nom	Max.		Min.	Nom	Max.
A	-	-	1.77	D	4.7	4.9	5.1
A1	0.08	0.18	0.28	E	5.8	6	6.2
A2	1.2	1.4	1.6	E1	3.7	3.9	4.1
A3	0.55	0.65	0.75	e	1.27BSC		
b	0.39	-	0.48	L	0.5	0.65	0.8
b1	0.38	0.41	0.43	L1	1.05BSC		
c	0.21	-	0.26	q	0	-	8°
D1	3.1	3.3	3.5	E2	2.2	2.4	2.6

Special Instructions

The company reserves the right of final interpretation of this specification.

Version Change Description

Version: V1.0	Author: Yang	Time: 2025.7.10
Modify the record:		
1. Editio princeps		

Statement

The information in the usage specification is correct at the time of publication, Shanghai Siproin Microelectronics Co.,Ltd. has the right to change and interpret the specification, and reserves the right to modify the product without prior notice. Users can obtain the latest version information from our official website or other effective channels before confirmation, and verify whether the relevant information is complete and up to date.

With any semiconductor product, there is a certain possibility of failure or failure under certain conditions. The buyer is responsible for complying with safety standards and taking safety measures when using the product for system design and complete machine manufacturing. The product is not authorized to be used as a critical component in life-saving or life-sustaining products or systems, in order to avoid potential failure risks that may cause personal injury or property loss.