



SANYO Semiconductors

# DATA SHEET

## LV8018W — Bi-CMOS LSI Actuator for Portable MD 4ch PWM H Bridge Driver

### Overview

The LV8018W is 4ch PWM H bridge driver for actuator for portable MD.

### Specifications

#### Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Output block supply voltage	VBAT max		7	V
Control block supply voltage	V <sub>CC</sub> max		7	V
Predrive voltage (gate voltage)	VG max		9.5	V
Maximum output current (1ch-4ch)	I <sub>O</sub> max		500	mA
Allowable power dissipation	Pd max	Independent IC	0.5	W
Operating temperature	Topr		-20 to +85	°C
Storage temperature	Tstg		-55 to +150	°C

#### Recommended Operating Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Output block supply voltage	VBAT		1.2 to 5.5	V
Control block supply voltage	V <sub>CC1</sub> , V <sub>CC2</sub>		2.0 to 3.6	V
Predrive voltage	VG		VBAT+3V to 9V	V

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# LV8018W

**Electrical Characteristics** at  $T_a = 25^\circ\text{C}$ ,  $V_{CC1, 2} = 3.0\text{V}$ ,  $V_{BAT} = 3.0\text{V}$

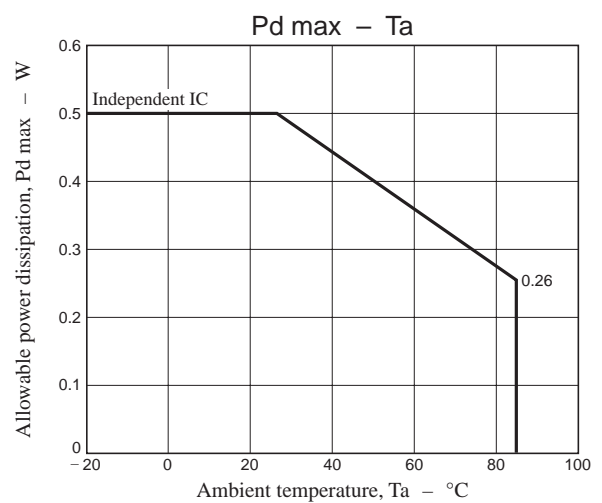
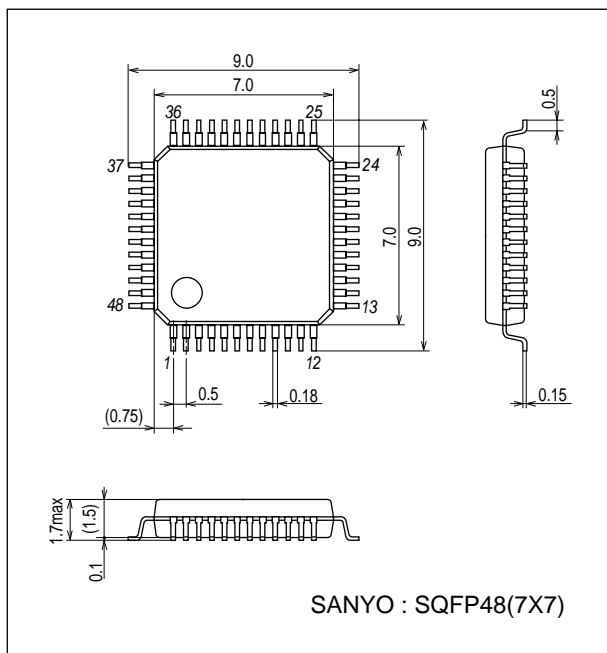
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Standby current dissipation	$I_{CCO}$				10	$\mu\text{A}$
Current dissipation	$I_{CC(A)}$	$V_{GOFF} = \text{"L"}$		1.4	1.9	$\text{mA}$
	$I_{CC(B)}$	$V_{GOFF} = \text{"H"}$		1.0	1.5	$\text{mA}$
Predrive block current dissipation	$I_{GO}$	$V_G = 7\text{V}$ , each logic input = "L"		70	105	$\mu\text{A}$
	$I_G$	$V_G = 7$ , input frequency 88kHz		1.0	1.5	$\text{mA}$
S/S bias current	$I_{SS}$	S/S = 3.0V		80	120	$\mu\text{A}$
S/S input "High" voltage	$V_{SSH}$		$V_{CC2}-0.6$		$V_{CC1}$	V
S/S input "Low" voltage	$V_{SSL}$		0		0.6	V
VBATT/2 set voltage accuracy	$\Delta V_{MON}$				$\pm 10$	%
VBATT/2 limit voltage	$V_{MONLIM}$		$V_{CC1}-0.2$	$V_{CC1}$		V
VBATT monitor input resistance	$R_{MON}$		35	50	75	$\text{k}\Omega$
Logic input bias current	$I_{LG}$				$\pm 1$	$\mu\text{A}$
Logic input "High" voltage	$V_{LGH}$		$V_{CC2}-0.6$		$V_{CC2}$	V
Logic input "Low" voltage	$V_{LGL}$		0		0.6	V
<b>Booster circuit</b>						
Output voltage	$V_{GO}$	No load	8.5	8.8		V
	$V_G$	$I_{GOUT} = -1\text{mA}$	6.7	7.2		V
Output oscillation-frequency	$F_{OSC}$		100	115	130	$\text{kHz}$
Clamp voltage	$V_{GLIM}$	$V_{GOFF} = \text{"L"}$ , $V_{CC1, 2} = 3.6\text{V}$	9.2	9.5	9.8	V
<b>MOS driver output stage (<math>V_G = 7\text{V}</math>)</b>						
Output ON resistance	$R_{on1, 2, 3, 4}$	$I_O = 100\text{mA}$ , sum of upper and lower outputs		1.3	2.0	$\Omega$
Output propagation delay time	TRISE	*		0.2	1.0	$\mu\text{s}$
	YFALL	*		0.1	0.7	$\mu\text{s}$
Minimum pulse width	$T_{min}$	Output pulse width $\geq (2/3) T_{min}$ *	200			$\text{ns}$
<b>TSD circuit</b>						
Operating temperature	TSD	*	150	180		$^\circ\text{C}$
Hysteresis width	$\Delta TSD$	*		30		$^\circ\text{C}$

\* : "Design" indicates the design target, not the measured value.

## Package Dimensions

unit : mm (typ)

3163B



# LV8018W

## Truth table

Ch1, 2, 4 (for focus, tracking, and traverse)

S/S	MUTE1	IN1, 2, 4F	IN1, 2, 4R	OUT1, 2, 4F	OUT1, 2, 4R
H	H	L	L	L	L
H	H	H	L	H	L
H	H	L	H	L	H
H	H	H	H	L	L
H	L	x	x	Z	Z
L	x	x	x	Z	Z

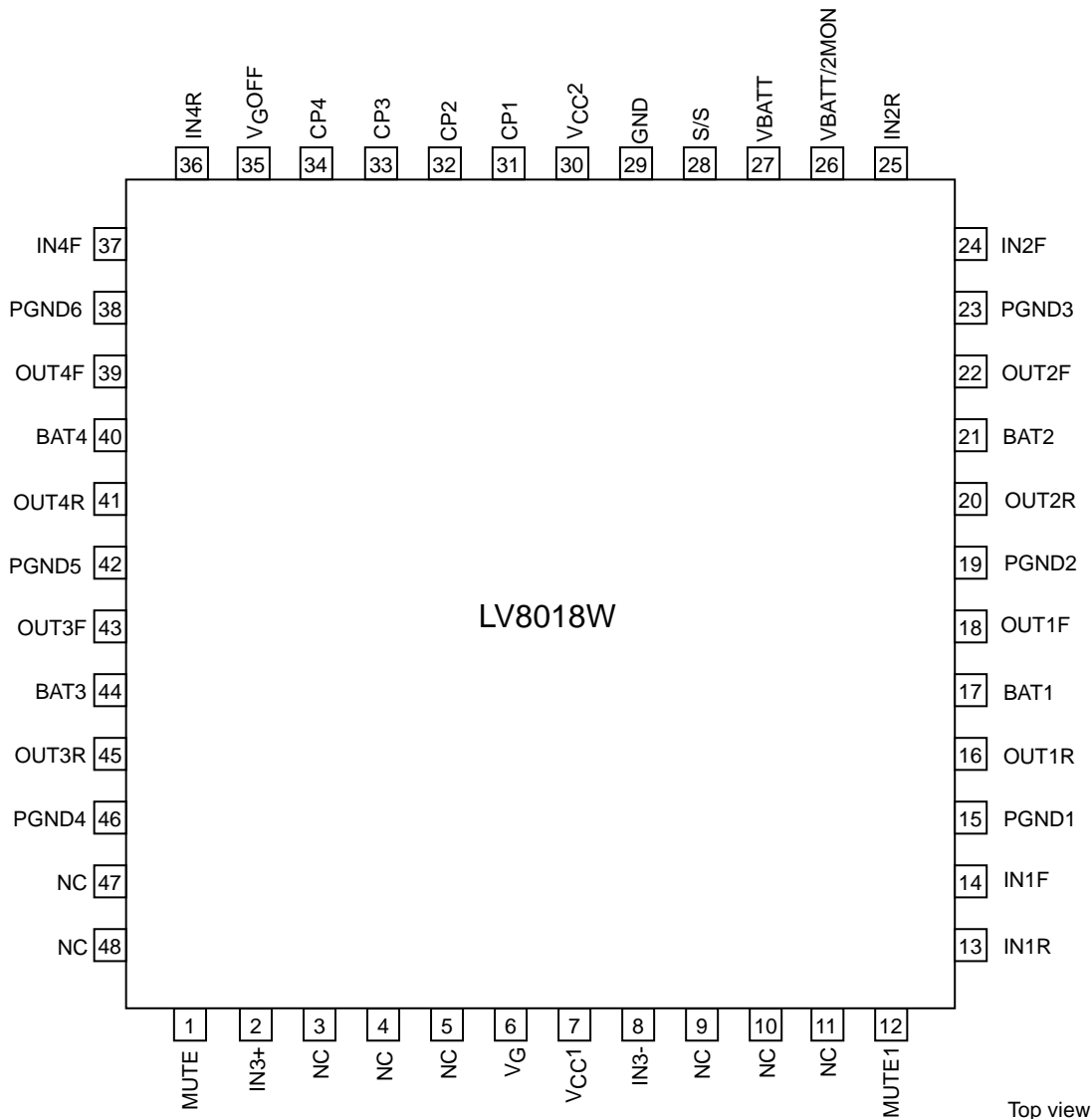
x : Don't Care, Z : Open

Ch3 (for spindle)

S/S	MUTE	IN3+	IN3-	OUT3F	OUT3R
H	H	L	L	L	L
H	H	H	L	H	L
H	H	L	H	L	L
H	H	H	H	L	H
H	L	x	x	Z	Z
L	x	x	x	Z	Z

x : Don't Care, Z : Open

## Pin Assignment



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## Pin Functions

Pin No.	Pin	Function	Equivalent Circuit
1	MUTE	3 CH MUTE pin L for MUTE ON	
2 8	IN3+ IN3-	Input pins, each on the forward side and reverse side of CH3. (Digital input)	
6	VG	Pin to provide the supply voltage to the predrive. With VG OFF = "L", the output voltage of booster circuit is output to this pin. This voltage acts directly as the supply voltage of predrive.	
7	VCC1	Pin to provide the supply voltage of analog signal system.	
12	MUTE1	MUTE pin common to CH1, 2, and 4. L for MUTE ON	
14 13	IN1F IN1R	Input pins, each on the forward side and reverse sides of CH1. (Digital input)	
18 16 17 15 19	OUT1F OUT1R BAT1 PGND1 PGND2	OUT1F : CH1 forward side output pin OUT1R : CH1 reverse side output pin BAT1 : CH1 output power pin PGND1, 2 : Power GND pin	

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Pin No.	Pin	Function	Equivalent Circuit
22 20 21 23	OUT2F OUT2R BAT2 PGND3	OUT2F : CH2 forward side output pin OUT2R : CH2 reverse side output pin BAT2 : CH2 output power pin PGND3 : Power GND pin	
24 25	IN2F IN2R	Input pins, each on the forward side and reverse side of CH2. (Digital input)	
27 26	VBATT $\frac{VBATT}{2}$ MON	Output power connection pin Pin to monitor 1/2 of output power supply. Used to monitor the output power supply at the digital servo and to correct the voltage dependence of servo.	
28	S/S	Start/stop pin H for start and L for stop	
29	GND	Signal GND pin	
30	VCC2	Pin to provide supply voltage of the logic signal system	

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Pin No.	Pin	Function	Equivalent Circuit
31 32 33 34	CP1 CP2 CP3 CP4	CP1, 3 : Switching pins of booster circuit CP2, 4 : Pins to which the rectifier transistor of booster circuit is connected	
35	VGOFF	Booster circuit ON/OFF selector pin L for booster circuit ON H for booster circuit OFF	
37 36	IN4F IN4R	Input pins, each on the forward side and reverse side of CH4	
39 41 40 42 38	OUT4F OUT4R BAT4 PGND5 PGND6	OUT4F : CH4 forward side output pin OUT4R : CH4 reverse side output pin BAT4 : CH4 output power pin PGND5, 6 : Power GND pin	
43 45 44 46	OUT3F OUT3R BAT3 PGND4	OUT3F : CH3 forward side output pin OUT3R : CH3 reverse side output pin BAT3 : CH3 output power pin PGND4 : Power GND pin	



## Cautions for use

1. Apply power in the order from  $V_{CC}$  to each BAT. When the external power supply is used for VG, apply power in the order from  $V_{CC}$ , through VG, to each BAT. For each BAT, turn ON power supply after complete rising of  $V_{CC}$  and VG voltages.
2. Each power supply must be stabilized by inserting a capacitor to GND to prevent entry of ripple and noise. In particular, the capacitor of sufficient capacitance must be used for the output because the large current flows here. The capacitor to be inserted in each power supply should be installed as near as possible to the IC pin.

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