

# 4-ch BLT Motor Driver IC for CD Players

## Monolithic IC MM1669XH

### Outline

This IC is a one-chip IC integrating a 4-ch BTL driver (spindle motor, sled motor, 2ch actuator) and a 3.3V regulator to support low-voltage DSP.

### Features

1. 4ch motor driver for CD players
2. Built-in 3.3V regulator (external PNP-Tr required)
3. Driver gain can be adjusted using an external resistor
4. Built-in thermal shutdown function

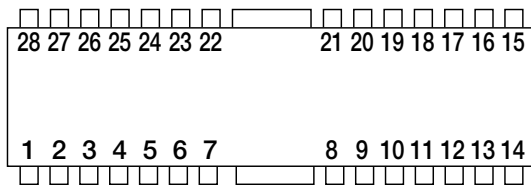
### Package

HSOP-28D

### Applications

1. CD players
2. Video CD players

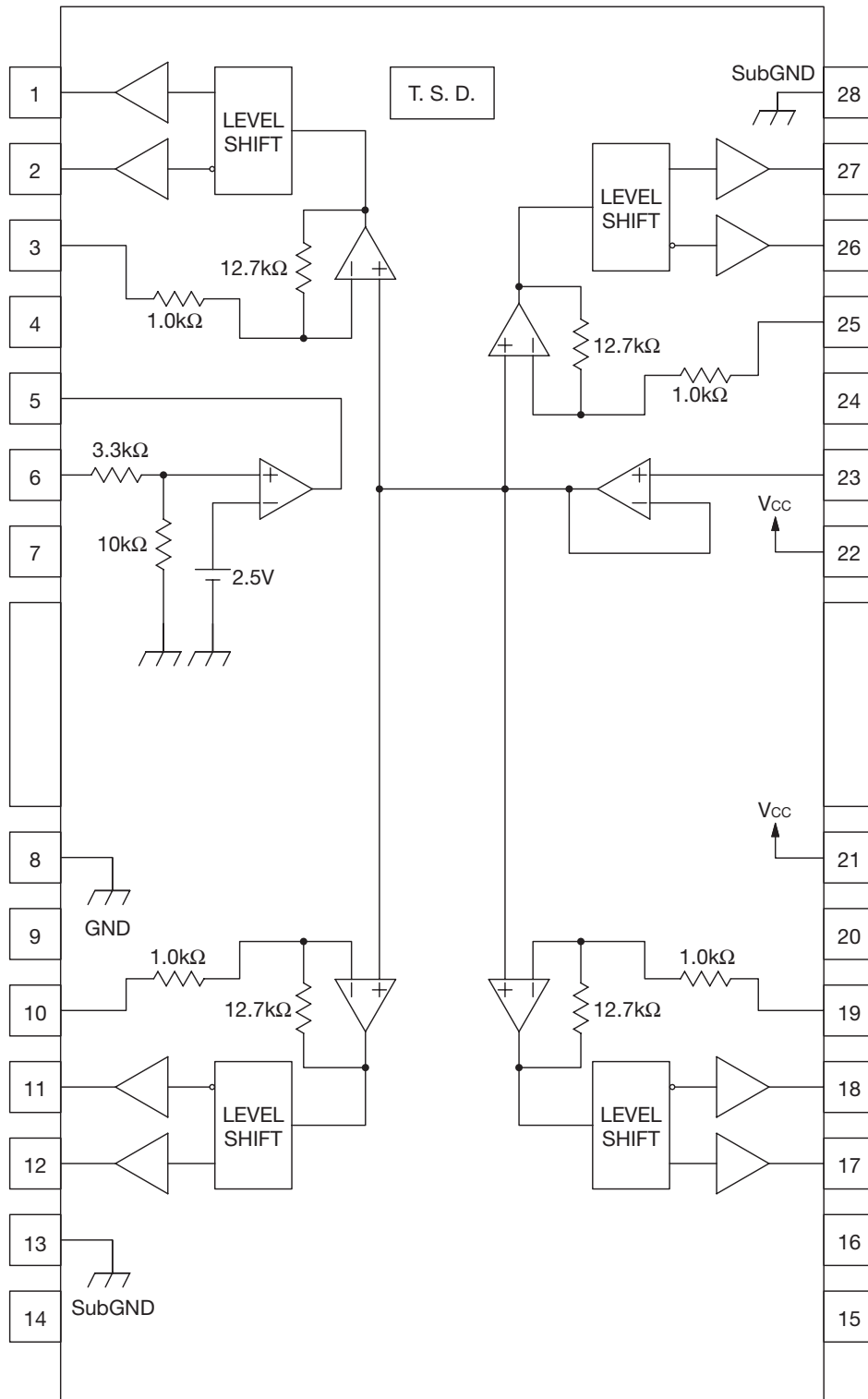
### Pin Assignment



HSOP-28D  
(TOP VIEW)

1	ch1-OUT-	15	NC
2	ch1-OUT+	16	NC
3	ch1-IN	17	ch3-OUT-
4	NC	18	ch3-OUT+
5	Tr-B	19	ch3-IN
6	REG-OUT	20	NC
7	NC	21	V <sub>CC</sub>
8	GND	22	V <sub>CC</sub>
9	NC	23	Bias
10	ch2-IN	24	NC
11	ch2-OUT+	25	ch4-IN
12	ch2-OUT-	26	ch4-OUT+
13	SubGND	27	ch4-OUT-
14	NC	28	SubGND

Block Diagram



T. S. D. : Thermal shut-down

Pin Description

Pin no.	Pin name	Functions	Internal Equivalent Circuit Diagram
1 12 17 27	ch1-OUT- ch2-OUT- ch3-OUT- ch4-OUT-	ch1 negative output ch2 negative output ch3 negative output ch4 negative output	
2 11 18 26	ch1-OUT+ ch2-OUT+ ch3-OUT+ ch4-OUT+	ch1 positive output ch2 positive output ch3 positive output ch4 positive output	
3 10 19 25	ch1-IN ch2-IN ch3-IN ch4-IN	ch1 input ch2 input ch3 input ch4 input	
5	Tr-B	Connect to external transistor base	

Pin no.	Pin name	Functions	Internal Equivalent Circuit Diagram
6	REG-OUT	Constant voltage output. Connects to external transistor collector	
8	GND	GND	
13	SubGND	Substrate GND	
28			
21	Vcc	Vcc	
22			
23	Bias	Bias amplifier input	
4	NC	No connect	
7			
9			
14			
15			
16			
20			
24			

**Absolute Maximum Ratings** (Ta=25°C)

Item	Symbol	Ratings	Units
Supply voltage	V <sub>CC</sub>	13.5	V
Output current 1	I <sub>OUT1</sub>	800 ★1	mA
Output current 2	I <sub>OUT2</sub>	600 ★2	mA
Allowable loss	P <sub>d</sub>	1.7	W
Operating temperature	T <sub>OPR</sub>	-40~+85	°C
Storage temperature	T <sub>STG</sub>	-55~+150	°C

Note: ★1, Output current 1 is to channel 1 or 4 for motor.

★2, Output current 2 is to channel 2 or 3 for actuator.

**Recommended Operating Conditions**

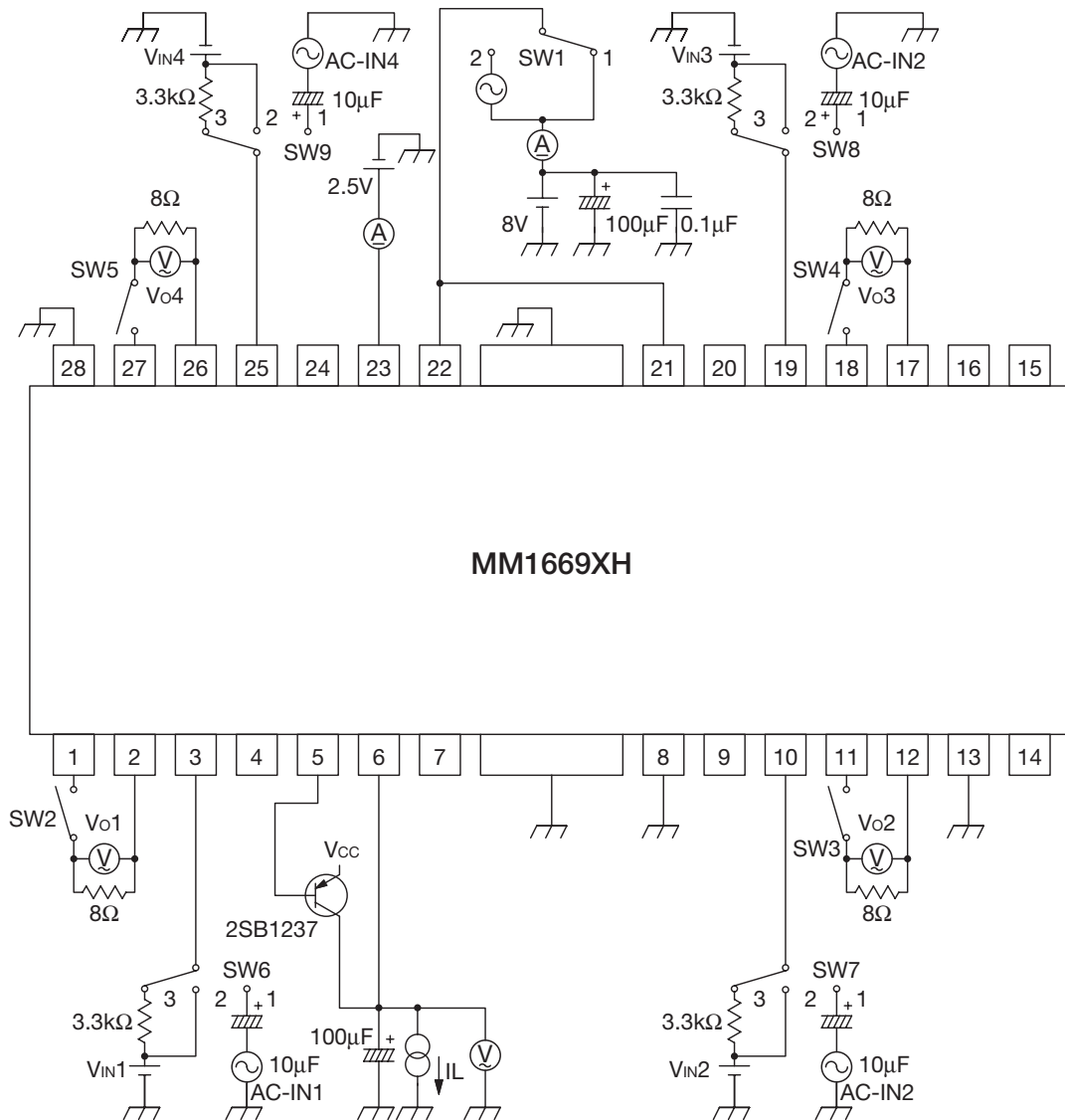
Item	Symbol	Ratings	Units
Operating supply voltage	V <sub>CC</sub>	6.0~9.0	V

**Electrical Characteristics** (Except where noted otherwise, Ta=25°C, V<sub>CC</sub>=8V, Bias=2.5V, R<sub>L</sub>=8Ω, f=1kHz)

Item	Symbol	Measurement conditions	Min.	Typ.	Max.	Units
<b>Driver</b>						
Quiescent current	I <sub>CC</sub>	No load	4.5	6	7.5	mA
Output offset voltage ★	V <sub>OFF</sub>	R <sub>IN</sub> =3.3kΩ	-40	0	40	mV
Output voltage High	V <sub>OH</sub>		5.2	5.5		V
Output voltage Low	V <sub>OL</sub>			1.3	1.6	V
Ripple rejection	RR	V <sub>IN</sub> =0.1V <sub>rms</sub> , f=100Hz		60		dB
Voltage gain	G <sub>V</sub>	V <sub>IN</sub> =0.1V <sub>rms</sub>	26.0	28.0	30.0	dB
Slew rate	SR	V <sub>O</sub> =3V <sub>P-P</sub> square wave, f=100kHz		4.0		V/μs
Power supply-mute-ON voltage	V <sub>CCMON</sub>			4.5		V
Power supply-mute-OFF voltage	V <sub>CCMOFF</sub>			4.7		V
Power supply-mute hysteresis voltage	V <sub>HYS</sub>			200		mV
Current consumption for power voltage mute	I <sub>CCM</sub>			3.0		mA
Bias-mute-on voltage	V <sub>BMON</sub>			1.2		V
Current consumption for bias mute	I <sub>BM</sub>			3.0		mA
<b>Regulator</b>						
Output voltage	V <sub>REG</sub>	I <sub>L</sub> =100mA	3.15	3.3	3.45	V
Output load variation	ΔV <sub>RL</sub>	I <sub>L</sub> =0~200mA	-50	0	10	mV
Power supply voltage variation	ΔV <sub>VCC</sub>	V <sub>CC</sub> =6~9V, I <sub>L</sub> =100mA	-10	0	25	mV

Note: ★ In consideration of DSP output impedance, output offset voltage is measured with a 3.3kΩ resistor added to input.

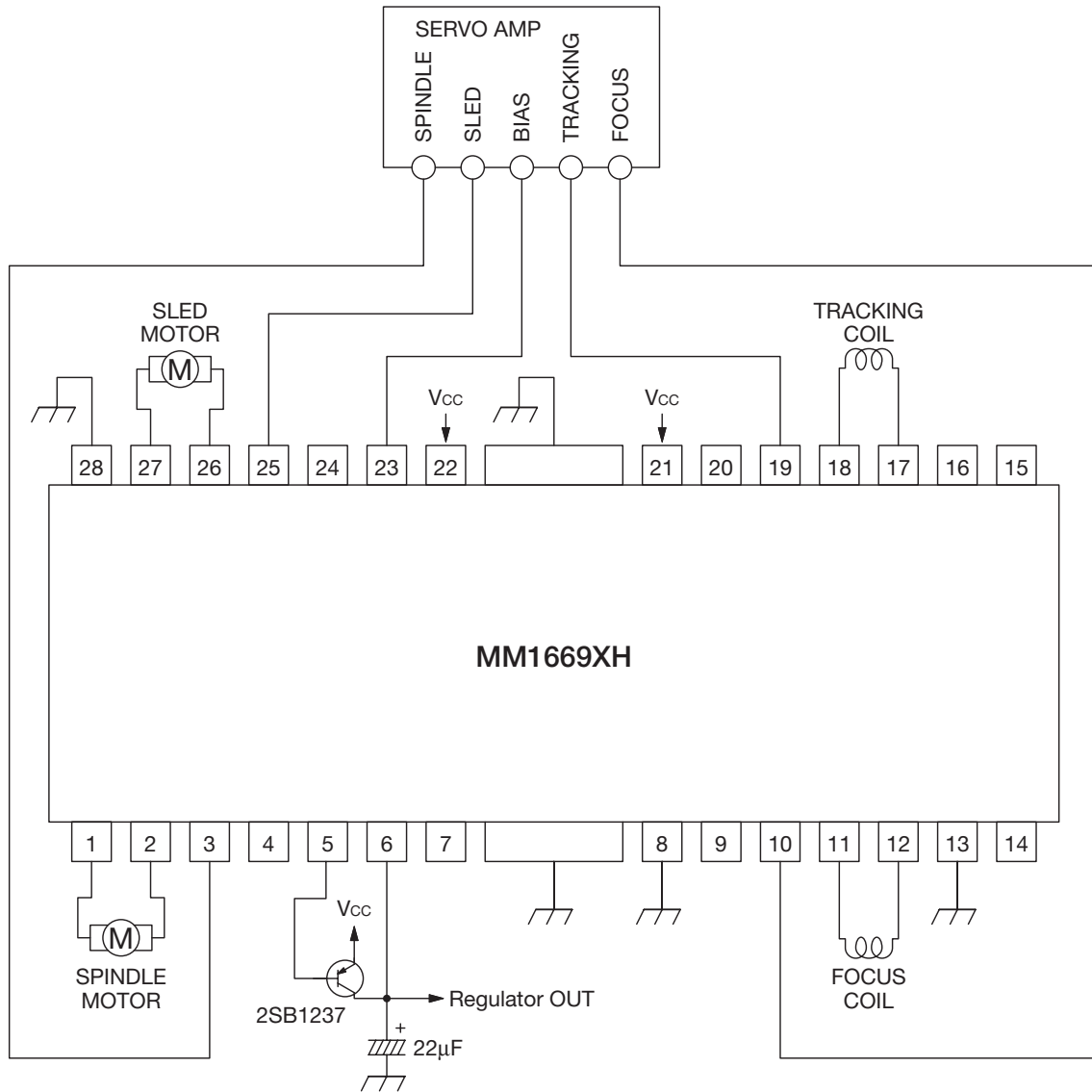
Measuring Circuit



Notes on Use

1. Heat dissipation fins are in use to connect to the external GND.
2. It is in use that the by-pass capacitor is between Vcc and GND of IC as possible as near (approximately 0.1µF).

Application Circuit

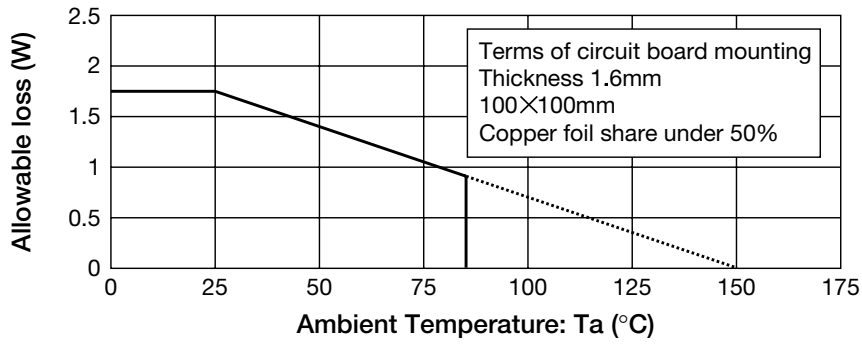


We shall not be liable for any trouble or damage caused by using this circuit.

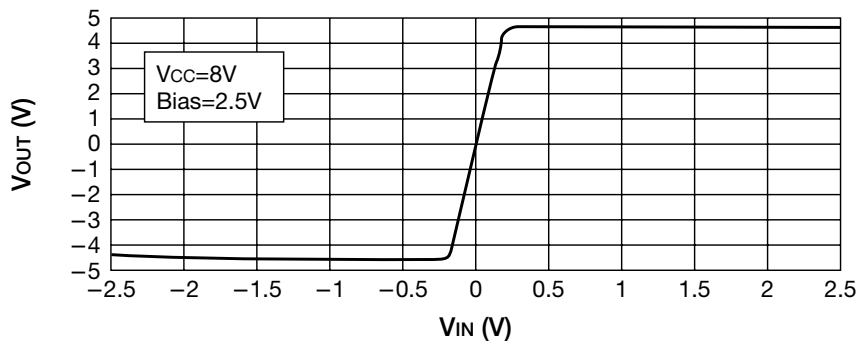
In the event a problem which may affect industrial property or any other rights of us or a third party is encountered during the use of information described in these circuit, MITSUMI shall not be liable for any such problem, nor grant a license therefor.

## Characteristics

### Allowable loss



### Driver Output Voltage



### 3.3V Regulator Output Load Variation

