HT6751A/B

Camera Motor Driver (1.5 Channel)

Features

- Operating voltage: 2.0V~6.0V
- Operating current < 2mA at 3.0V, No load
- Standby current I_{VDD}< 2μA, no load
- Separate logic power supply and motor power supply
- Built-in thermal shutdown circuit
- Built-in H bridge control circuit
- Built-in spark killer diode
- Provides strong ESD (min. of 4KV) per pin
- 8-pin SOP package

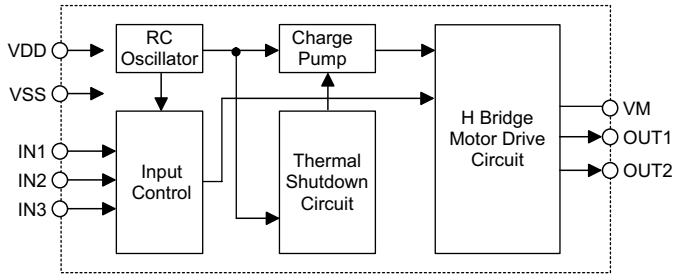
Applications

- Camera motor driver
- Toy motor driver

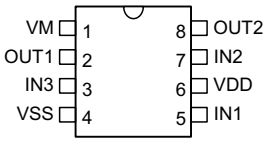
General Description

The IC can control H Bridge circuit for motor driving. It provides Spark Killer Diode/Thermal Shutdown function/Forward function/Reverse function/Brake function/Stop function for motor driver application. It is designed by LSI high technology with low power process.

Block Diagram



Pin Assignment



HT6751A/B – 8 SOP

Pin Description

Pin No.	Pin Name	I/O	Description
1	VM	P	Power of motor driving circuit
2	OUT1	O	Connect to motor terminal
3	IN3	I	Input signal
4	VSS	—	Negative power supply, ground
5	IN1	I	Input signal
6	VDD	—	Positive power supply
7	IN2	I	Input signal
8	OUT2	O	Connect to motor terminal

Absolute Maximum Ratings

Supply Voltage.....V_{DD}–0.3V to 7.0V
Voltage to Input Terminal .....–0.3V to V_{DD}+0.3
Junction Temperature .....150°C
Storage Temperature.....–40°C to 125°C
Operating Temperature .....–20°C to 85°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.

Electrical Characteristics

Ta=25°C

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		V_{DD}	Conditions				
V_{DD}	Operating Voltage 1	—	—	2.0	—	6.0	V
VM	Operating Voltage 2	—	Motor loading	1.8	—	6.0	V
I_{VM}	V_M Current	5V	Standby mode with internal pump	—	—	10	μA
I_{OPR}	Operating Current	5V	No load @ V_{DD}=5V	—	—	2	mA
I_{VDD}	Standby Current	5V	Standby mode	—	1	2	μA
I_{IL}	Input Leakage Current	5V	0<Vin<V_{DD}	–1.0	—	1.0	μA
V_{IL}	Input Low Voltage	5V	—	–0.3		$0.3V_{DD}$	V
V_{IH}	Input High Voltage	5V	—	$0.6V_{DD}$	—	V_{DD}+0.3	V
R_{ON}	H Bridge On Resistance	3V	(up_NMOS+down_NMOS) at 3V	—	—	0.4	Ω

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		V_{DD}	Conditions				
t_{CP_ON}	Charge Pump Turn On Time	5V	V_{DD}=VM=5V, Ivm=0.5A	—	—	2	ms
t_{CP_OFF}	Charge Pump Turn Off Time	5V	V_{DD}=VM=5V, Ivm=0.5A	—	—	1	ms
t_{H_ON}	H Bridge Turn On Time	5V	V_{DD}=VM=5V, Ivm=0.5A	—	—	10	μs
t_{H_OFF}	H Bridge Turn Off Time	5V	V_{DD}=VM=5V, Ivm=0.5A	—	—	5	μs

Functional Description

• In HT6751A function

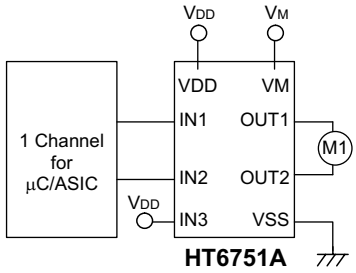
IN1	IN2	IN3	Function	MOS On	MOS Off
0	1	1	Motor1 forward	P1/N2	P2/N1
1	0	1	Motor1 reverse	P2/N1	P1/N2
0	0	1	Motor1 brake	N1/N2	P1/P2
1	1	1	Standby mode	—	P1/P2/N1/N2
0	1	0	Motor2 forward	P2/(N3)	N2/(P3)
1	0	0	Motor2 reverse	N2/(P3)	P2/(N3)
0	0	0	Motor2 brake	N2/(N3)	P2/(P3)

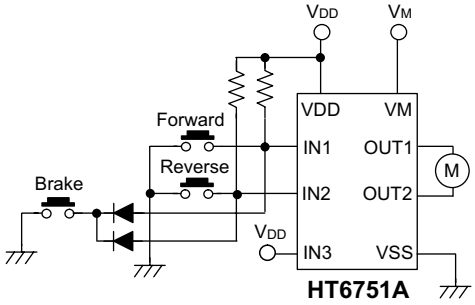
• In HT6751B function

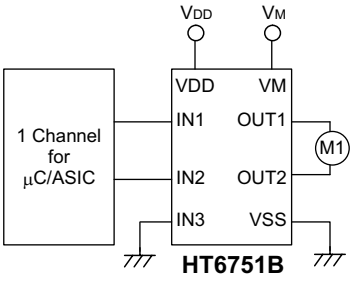
IN1	IN2	IN3	Function	MOS On	Mos Off
1	0	0	Motor1 forward	P1/N2	P2/N1
0	1	0	Motor1 reverse	P2/N1	P1/N2
1	1	0	Motor1 brake	N1/N2	P1/P2
0	0	0	Standby mode	—	P1/P2/N1/N2
1	0	1	Motor2 forward	P2/(N3)	N2/(P3)
0	1	1	Motor2 reverse	N2/(P3)	P2/(N3)
1	1	1	Motor2 brake	N2/(N3)	P2/(P3)

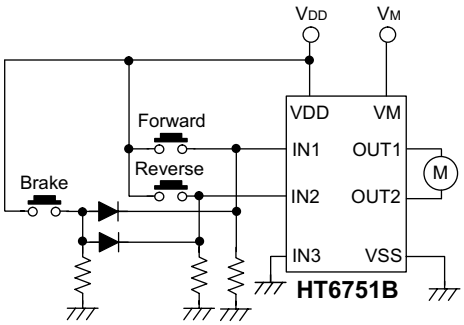
- In normal state and standby mode
  - Charge pump circuit is in off state
  - Oscillator circuit is in off state
  - Standby current is below 2μA
  - For HT6751A, the oscillator circuit and charge pump circuit is on until IN1 or IN2 or IN3 is low input
  - For HT6751B, the oscillator circuit and charge pump circuit is on until IN1 or IN2 or IN3 is high input
- The system enters thermal shutdown mode (current is limited below 500mA) when the temperature of the internal sensor is greater than Junction Temperature and then release this mode until the temperature of the internal sensor below (Junction Temperatue >150°C). The system can accept IN1/IN2/IN3 signal when in thermal shutdown mode.

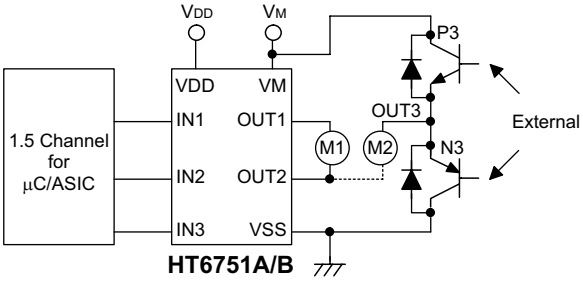
Application Circuits











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