



LB1831M

Low-Saturation Bidirectional Motor Driver for Low-Voltage Applications

Overview

The LB1831M is a dual low-saturation bidirectional motor driver IC for use in low-voltage applications. It is especially suited for use in compact low-voltage motors in portable equipment such as printer, FDD, camera.

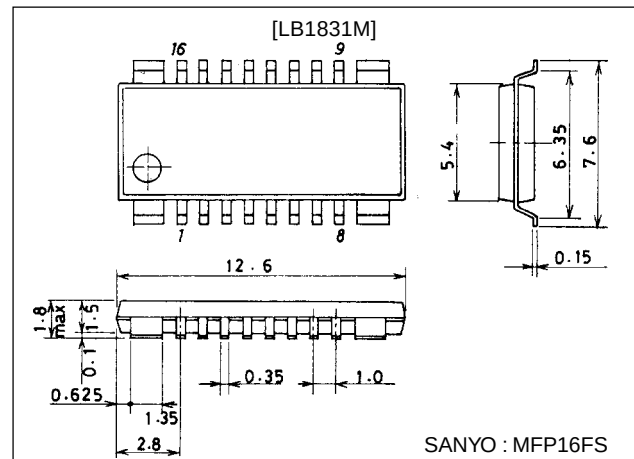
Features

- Capable of being operated from a low voltage (2.5V min).
- Low saturation voltage.
(Upper transistor+lower transistor residual voltage 1.0V max at 400mA).
- Parallel connection available.
(Upper transistor+lower transistor residual voltage 0.5V max at 400mA).
(Upper transistor+lower transistor residual voltage 1.0V max at 800mA).
- Logic power supply and motor power supply are separate.
- On-chip braking function.
- On-chip spark killer diodes.
- Possible to increase the internal allowable power dissipation because the package is compact (MFP-16FS) and heat can be radiated easily to the outside.

Package Dimensions

unit:mm

3097-MFP16FS



Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V _{CC} max		-0.3 to +10	V
	V _S max		-0.3 to +10	V
Output supply voltage	V _{OUT}		V _S +V _{SF}	V
Input supply voltage	V _{IN}		-0.3 to +10	V
GND pin flow-out current	I _{GND}	per channel	1.0	A
Allowable power dissipation	Pd max1	IC only	900	mW
	Pd max2	Mounted on specified board (20×30×1.5mm ³ glass epoxy)	1200	mW
Operating temperature	T _{opr}		-20 to +75	°C
Storage temperature	T _{stg}		-40 to +125	°C

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SANYO Electric Co.,Ltd. Semiconductor Business Headquarters

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

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Allowable Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V _{CC}		2.5 to 9.0	V
	V _S		1.8 to 9.0	V
Input high-level voltage	V _{IH}		1.8 to 9.0	V
Input low-level voltage	V _{IL}		-0.3 to 0.7	V

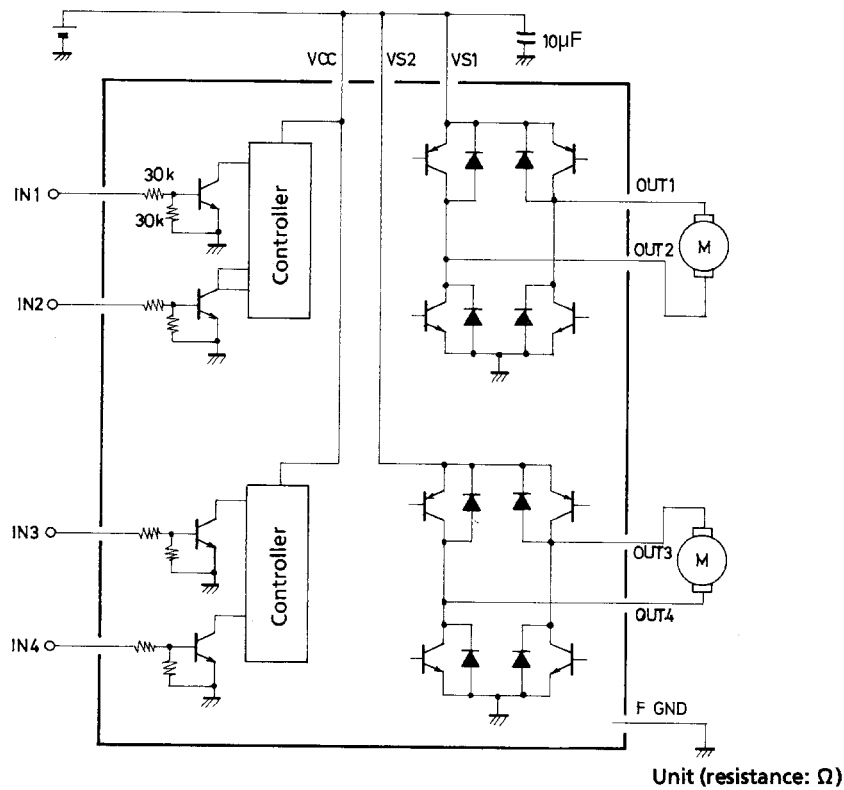
Electrical Characteristics at Ta = 25°C, V_{CC}=3V

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Supply current	I _{CC}	V _{IN1, 2, 3, 4} =0V, I _{CC} +I _S		0.1	10	μA
	I _{CC1}	V _{IN1} =3V, V _{IN2, 3, 4} =0V, I _{CC} +I _S		10	18	mA
	I _{CC2}	V _{IN1, 2} =3V, V _{IN3, 4} =0V, I _{CC} +I _S		20	35	mA
Output saturation voltage (upper+lower)	V _{OUT1}	I _{OUT} =200mA		0.35	0.50	V
	V _{OUT2}	I _{OUT} =400mA		0.75	1.0	V
	V _{OUT3}	I _{OUT} =400mA, parallel connection		0.4	0.55	V
	V _{OUT4}	I _{OUT} =800mA, parallel connection		0.8	1.1	V
Output sustain voltage	V _{O(sus)}	I _{OUT} =400mA	9			V
Input current	I _{IN}	V _{IN} =2V, V _{CC} =6V			80	μA
[Spark Killer Diode]						
Reverse current	I _{S(leak)}	V _{CC1, 2} =9V			30	μA
Forward voltage	V _{SF}	I _{OUT} =500mA			1.7	V

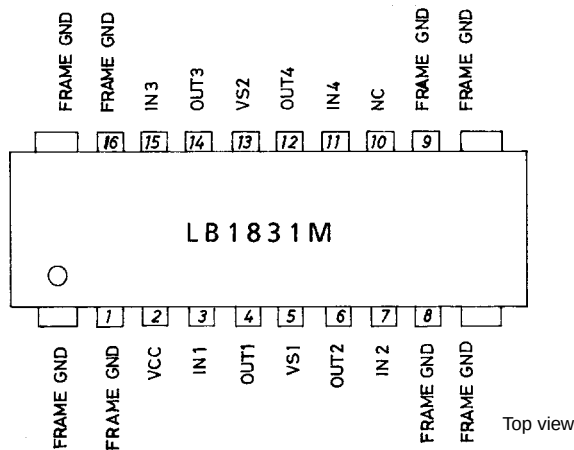
Truth Table

IN 1/3	IN 2/4	OUT 1/3	OUT 2/4	Mode
H	L	H	L	Forward
L	H	L	H	Reverse
H	H	L	L	Brake
L	L	OFF	OFF	Standby

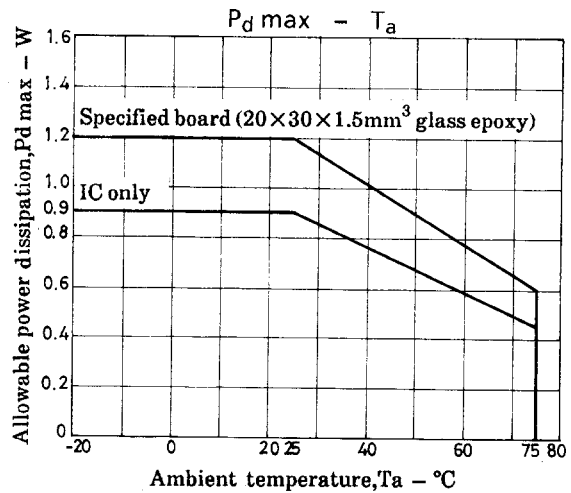
Equivalent Circuit Block Diagram



Pin Assignment



Note : Use one of the FRAME-GND pins for grounding.
When the Cu-foild side is soldered, heat radiation can be more improved.



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