



# 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.

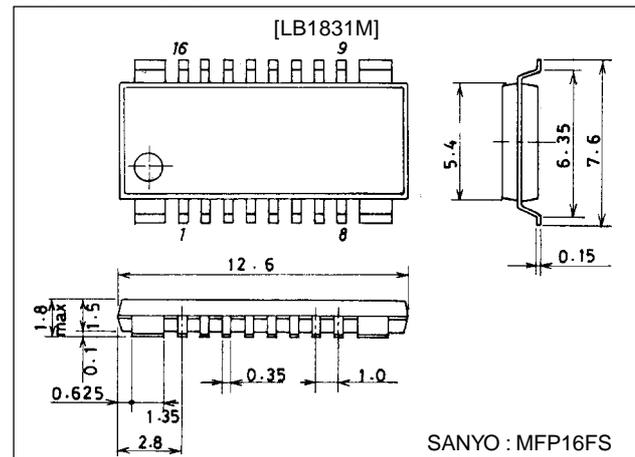
### Features

- 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 <sub>CC</sub> max		-0.3 to +10	V
	V <sub>S</sub> max		-0.3 to +10	V
Output supply voltage	V <sub>OUT</sub>		V <sub>S</sub> +V <sub>SF</sub>	V
Input supply voltage	V <sub>IN</sub>		-0.3 to +10	V
GND pin flow-out current	I <sub>GND</sub>	per channel	1.0	A
Allowable power dissipation	Pd max1	IC only	900	mW
	Pd max2	Mounted on specified board (20×30×1.5mm <sup>3</sup> glass epoxy)	1200	mW
Operating temperature	T <sub>opr</sub>		-20 to +75	°C
Storage temperature	T <sub>stg</sub>		-40 to +125	°C

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## Allowable Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V <sub>CC</sub>		2.5 to 9.0	V
	V <sub>S</sub>		1.8 to 9.0	V
Input high-level voltage	V <sub>IH</sub>		1.8 to 9.0	V
Input low-level voltage	V <sub>IL</sub>		-0.3 to 0.7	V

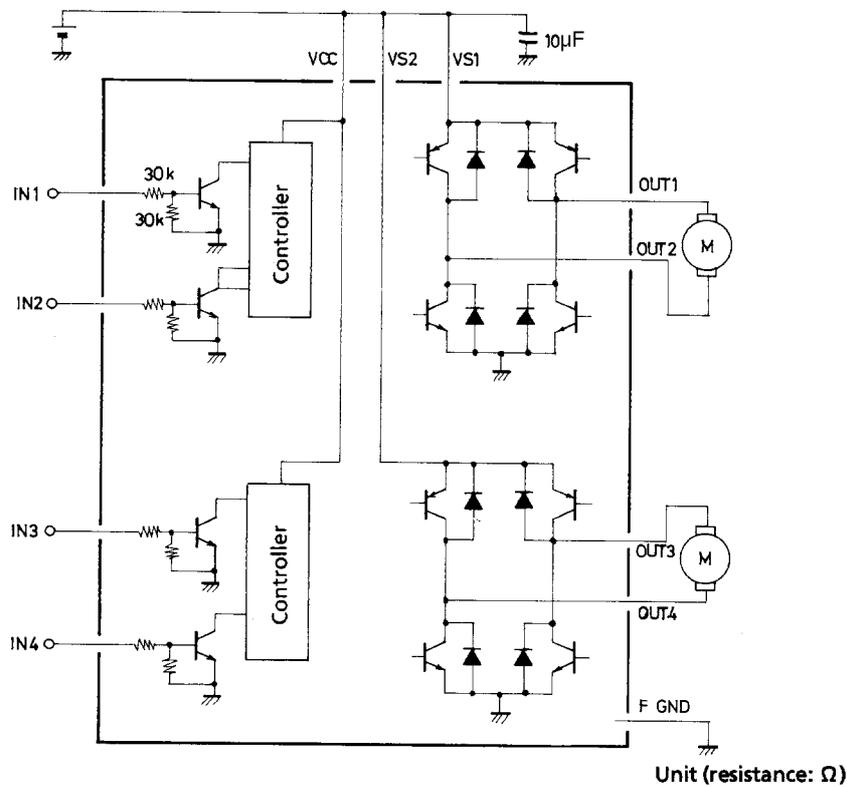
## Electrical Characteristics at Ta = 25°C, V<sub>CC</sub>=3V

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

## Truth Table

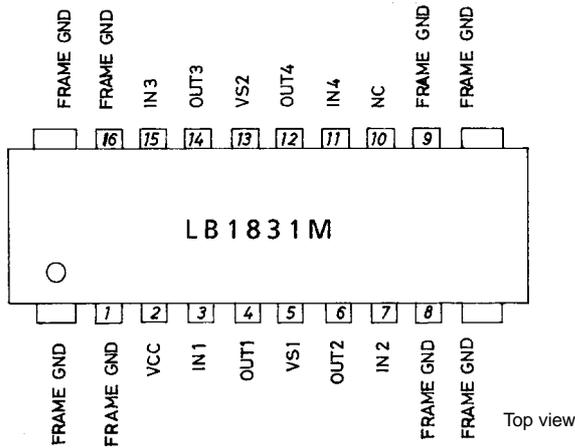
IN 1/3	IN 2/4	OUT 1/3	OUT 2/4	Mode
H	L	H	L	Forward
L	H	L	H	Reverse
H	H	L	L	Brake
L	L	OFF	OFF	Standby

## Equivalent Circuit Block Diagram

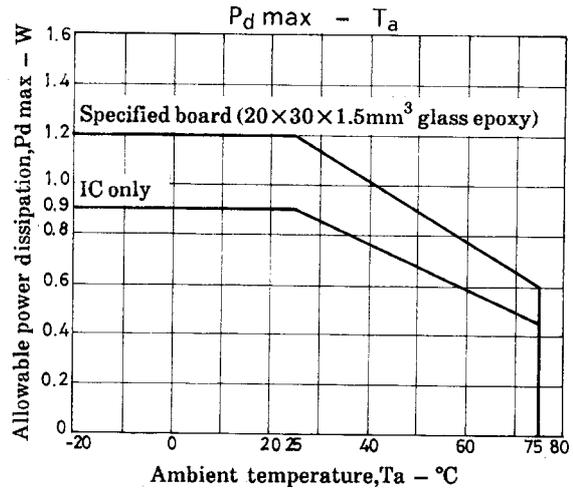


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## Pin Assignment



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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