

**SANYO**

No.3296

**LB1831M****Low-Saturation Bidirectional Motor Driver for Low-Voltage Applications**

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**

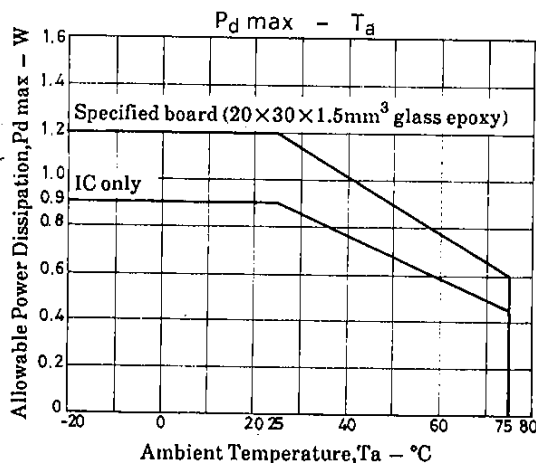
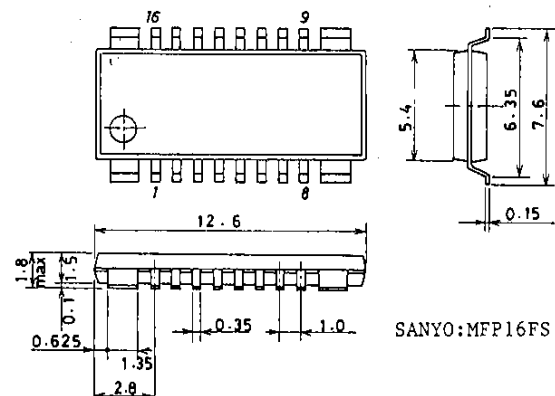
- Capable of being operated from a low voltage (2.5V min)
- Low saturation voltage  
(Upper transistor + lower transistor residual voltage 1.0V max at 400mA)
- Parallel connection available  
(Upper transistor + lower transistor residual voltage 0.5V max at 400mA)  
(Upper transistor + lower transistor 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.

**Absolute Maximum Ratings at  $T_a = 25^\circ\text{C}$** 

Parameter	Symbol	Value	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	$P_d$ max1	IC only	900 mW
	$P_d$ max2	Mounted on specified board ( $20 \times 30 \times 1.5\text{mm}^3$ glass epoxy)	1200 mW
Operating Temperature	$T_{opr}$	-20 to +75	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-40 to +125	$^\circ\text{C}$

**Allowable Operating Conditions at  $T_a = 25^\circ\text{C}$** 

Parameter	Symbol	Value	Unit
Supply Voltage	$V_{CC}$	2.5 to 9.0	V
	$V_S$	1.8 to 9.0	V
Input 'H'-Level Voltage	$V_{IH}$	1.8 to 9.0	V
Input 'L'-Level Voltage	$V_{IL}$	-0.3 to +0.7	V

**Package Dimensions 3097**  
(unit: mm)

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2070TA/TS No.3296-1/3

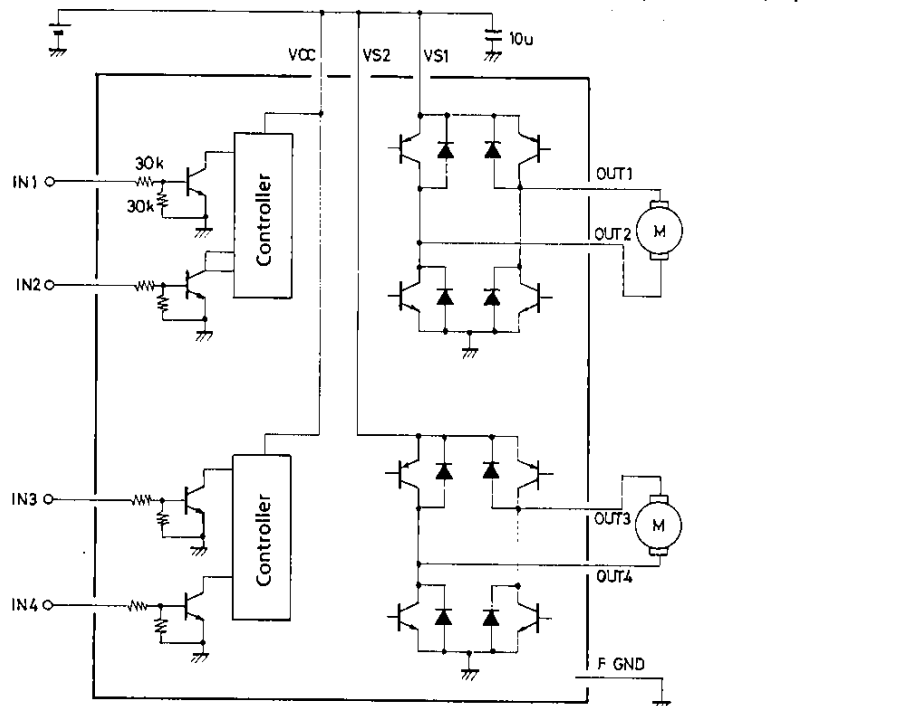
# LB1831M

Electrical Characteristics at $T_a = 25^\circ\text{C}, V_{CC} = 3\text{V}$			min	typ	max	unit
Supply Current	$I_{CC}$	$V_{IN1,2,3,4} = 0\text{V}, I_{CC} + I_S$		0.1	10	$\mu\text{A}$
	$I_{CC1}$	$V_{IN1} = 3\text{V}, V_{IN2,3,4} = 0\text{V}, I_{CC} + I_S$		10	18	$\text{mA}$
	$I_{CC2}$	$V_{IN1,2} = 3\text{V}, V_{IN3,4} = 0\text{V}, I_{CC} + I_S$		20	35	$\text{mA}$
Output Saturation Voltage (Upper + Lower)	$V_{OUT1}$	$I_{OUT} = 200\text{mA}$	0.35	0.50		V
	$V_{OUT2}$	$I_{OUT} = 400\text{mA}$	0.75	1.0		V
	$V_{OUT3}$	$I_{OUT} = 400\text{mA}, \text{parallel connection}$	0.4	0.55		V
	$V_{OUT4}$	$I_{OUT} = 800\text{mA}, \text{parallel connection}$	0.8	1.1		V
Output Sustain Voltage	$V_{O(sus)}$	$I_{OUT} = 400\text{mA}$	9			V
Input Current [Spark Killer Diode]	$I_{IN}$	$V_{IN} = 2\text{V}, V_{CC} = 6\text{V}$			80	$\mu\text{A}$
Reverse Current	$I_S (\text{leak})$	$V_{CC1,2} = 9\text{V}$			30	$\mu\text{A}$
Forward Voltage	$V_{SF}$	$I_{OUT} = 500\text{mA}$			1.7	V

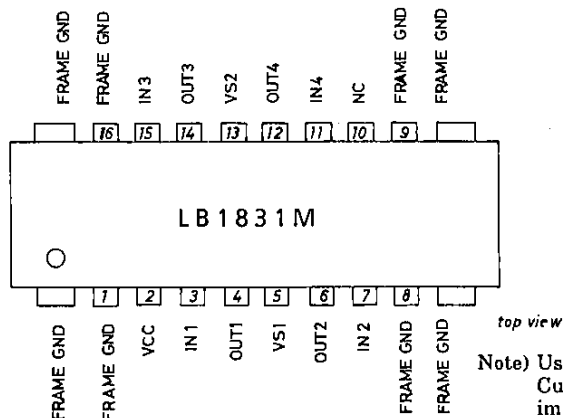
## Truth Table

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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