Ordering number: EN 3296

Monolithic Digital IC

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

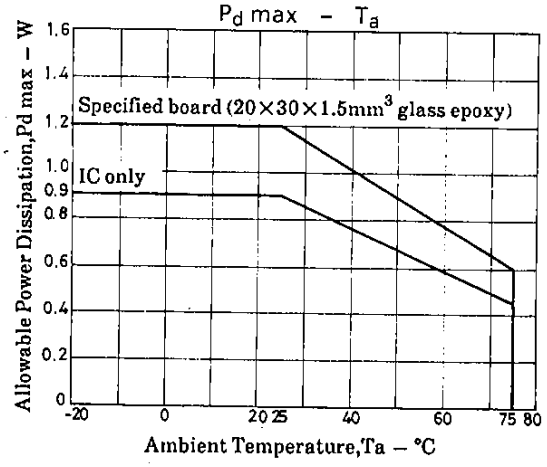
- Capable of being operated from a low voltage (2.5V min)
- Low saturation voltage
  (Upper transistor + lower transistor residual voltage 1.0V max at 400mA)
- Parallel connection available
  (Upper transistor + lower transistor residual voltage 0.5V max at 400mA)
  (Upper transistor + lower transistor 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 Ta = 25°C

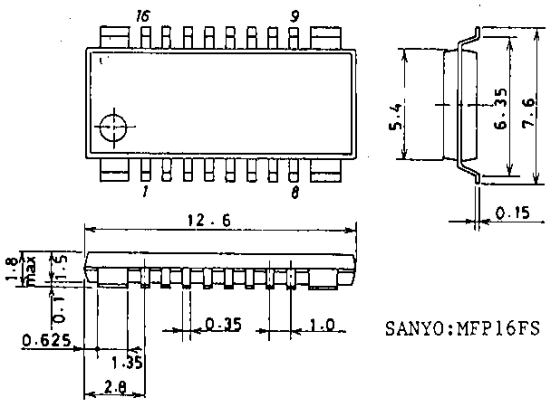
				unit
Maximum Supply Voltage	V_{CC} max		−0.3 to +10	V
	V_S max		−0.3 to +10	V
Output Supply Voltage	V_{OUT}		$V_S + V_{SF}$	V
Input Supply Voltage	V_{IN}		−0.3 to +10	V
GND Pin Flow-out Current	I_{GND}	Per channel	1.0	A
Allowable Power Dissipation	Pd max1	IC only	900	mW
	Pd max2	Mounted on specified board ($20 \times 30 \times 1.5mm^3$ glass epoxy)	1200	mW
Operating Temperature	**Topr**		−20 to +75	°C
Storage Temperature	Tstg		−40 to +125	°C

Allowable Operating Conditions at Ta = 25°C

			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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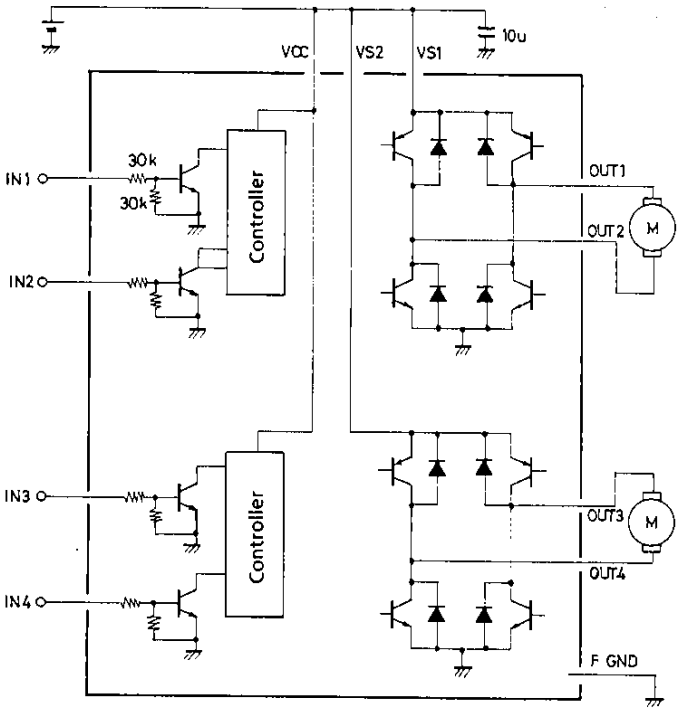
Electrical Characteristics at Ta=25°C, V_{CC}=3V			min	typ	max	unit
Supply Current	I_{CC}	V_{IN}1,2,3,4=0V, $I_{CC}+I_S$		0.1	10	μA
	$I_{CC}1$	$V_{IN}1$=3V, V_{IN}2,3,4=0V, $I_{CC}+I_S$		10	18	mA
	$I_{CC}2$	V_{IN}1,2=3V, V_{IN}3,4=0V, $I_{CC}+I_S$		20	35	mA
Output Saturation Voltage (Upper+Lower)	$V_{OUT}1$	I_{OUT}=200mA		0.35	0.50	V
	$V_{OUT}2$	I_{OUT}=400mA		0.75	1.0	V
	$V_{OUT}3$	I_{OUT}=400mA, parallel connection		0.4	0.55	V
	$V_{OUT}4$	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_{CC}1,2=9V			30	μA
Forward Voltage	V_{SF}	I_{OUT}=500mA			1.7	V

Truth Table

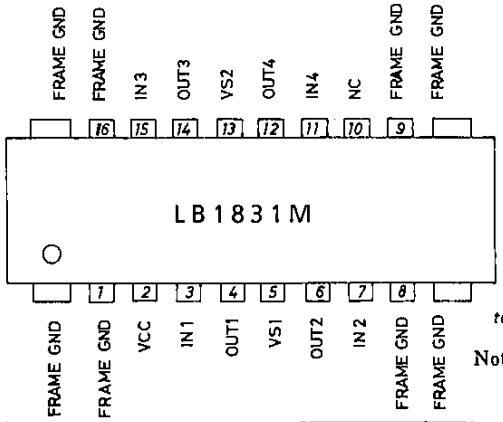
IN 1/3	IN 2/4	OUT 1/3	OUT 2/4	Mode
H	L	H	L	Forward
L	H	L	H	Reverse
H	H	L	L	Brake
L	L	OFF	OFF	Standby

Equivalent Circuit Block Diagram

Unit (resistance: Ω, capacitance: F)



Pin Assignment



top view

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