

No.3297

LB1833M

Low-Saturation Bidirectional Motor Driver for Low-Voltage Applications

The LB1833M is a low-saturation stepping motor driver IC for use in low-voltage applications. It is especially suited for use 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)
- Through current preventer on-chip
- Logic power supply and motor power supply are separate.
- 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.

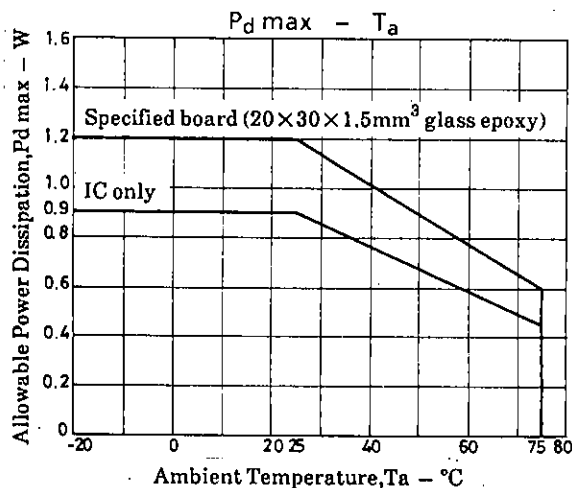
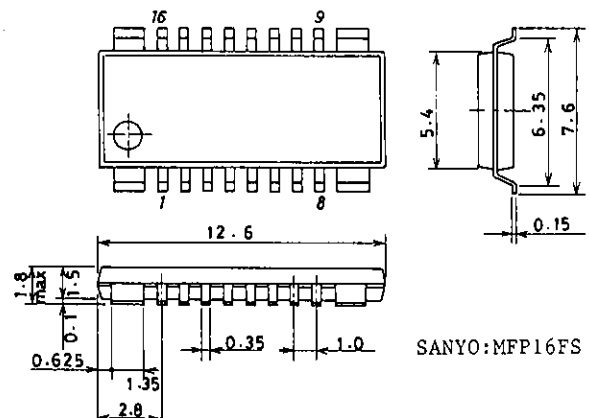
Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Value	unit
Maximum Supply Voltage	V _{CC} max	-0.3 to +8.0	V
	V _S max	-0.3 to +8.0	V
Output Supply Voltage	V _{OUT}	-0.3 to V _S + V _{SF}	V
Input Supply Voltage	V _{IN}	-0.3 to +8.0	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 (20×30×1.5mm ³ glass epoxy)	1200 mW
Operating Temperature	T _{opg}	-20 to +75	°C
Storage Temperature	T _{stg}	-40 to +125	°C

Allowable Operating Conditions at Ta = 25°C

Parameter	Symbol	Value	unit
Supply Voltage	V _{CC}	2.5 to 7.0	V
	V _S	1.8 to 7.0	V
Input 'H'-Level Voltage	V _{IH}	1.8 to 7.0	V
Input 'L'-Level Voltage	V _{IL}	-0.3 to +0.7	V

Package Dimensions 3097
(unit: mm)



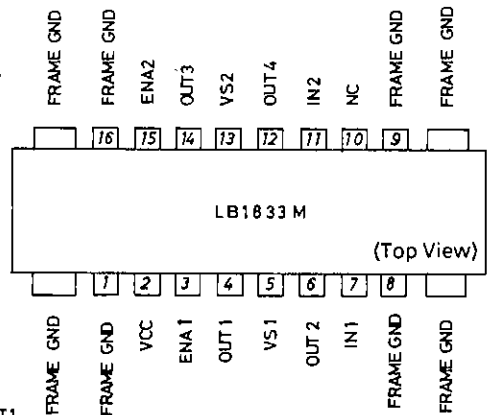
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Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 3\text{V}$			min	typ	max	unit
Supply Current 1	I_{cco}	$EN_{A1,2} = 0\text{V}, 4 = 0\text{V},$ $V_{IN1} = 3\text{V}$ or $0\text{V}, I_S + I_{CC}$		0.1	10	μA
Supply Current 2	I_{CC}	$EN_{A1} = 3\text{V}, V_{IN1} = 3\text{V}$ or $0\text{V},$ $I_S + I_{CC}$		10	18	mA
Output Saturation Voltage	V_{OUT1}	$EN_A = 3\text{V}, V_{IN} = 3\text{V}$ or $0\text{V}, I_{OUT} = 200\text{mA}$	0.35	0.50		V
	V_{OUT2}	$EN_A = 3\text{V}, V_{IN} = 3\text{V}$ or $0\text{V}, I_{OUT} = 400\text{mA}$	0.75	1.0		V
Input Current 1	I_{IN}	$V_{CC} = 6\text{V}, V_{IN} = 6\text{V}$			250	μA
Input Current 2	I_{ENA}	$V_{CC} = 6\text{V}, EN_A = 6\text{V}$			350	μA
Output Sustain Voltage [Spark Killer Diode]	$V_{O(sus)}$	$I_{OUT} = 400\text{mA}$	9			V
Reverse Current	$I_S(\text{leak})$	$V_{CC}, V_S = 7\text{V}$			30	μA
Forward Voltage	V_{SF}	$I_{OUT} = 500\text{mA}$			1.7	V

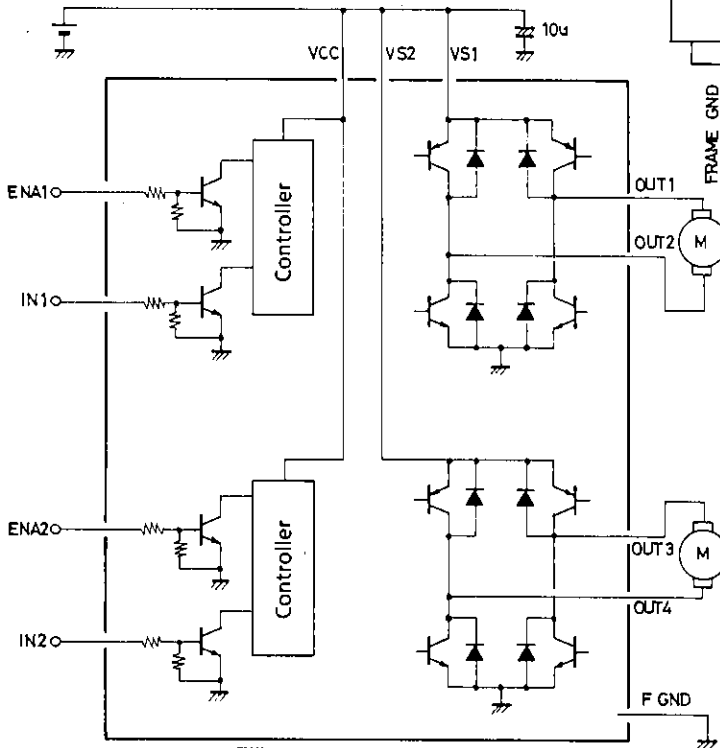
Truth Table

IN 1/2	ENA 1/2	OUT 1/3	OUT 2/4	Motor
L	H	H	L	Forward
H	H	L	H	Reverse
L	L	OFF	OFF	Standby
H	L	OFF	OFF	Standby

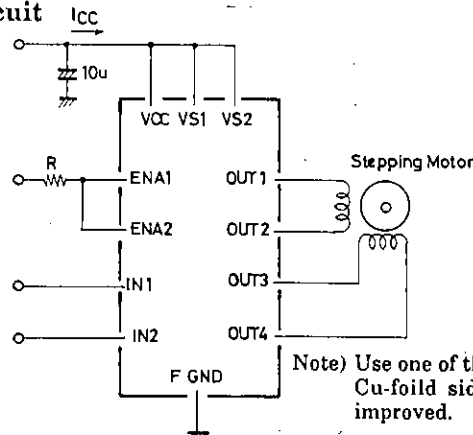
Pin Assignment



Equivalent Circuit Block Diagram



Sample Application Circuit



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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