



LB1833M

Low-Saturation Bidirectional Motor Driver for Low-Voltage Applications

Overview

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.

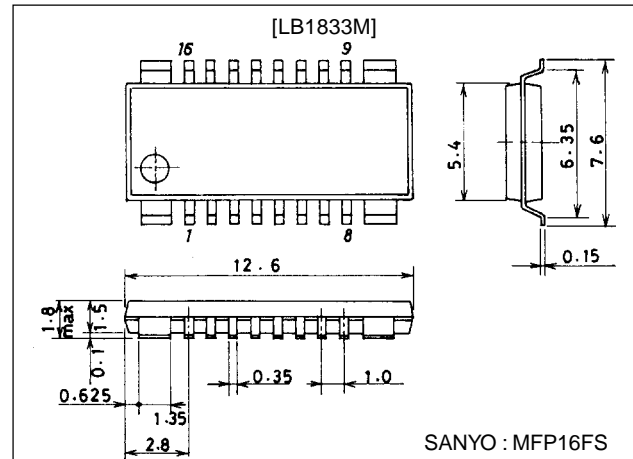
Features

- Capable of being operated from a low voltage (2.5V min).
- Low saturation voltage.
(Upper transistor+low 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.

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 +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	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

Allowable Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V _{CC}		2.5 to 7.0	V
	V _S		1.8 to 7.0	V
Input high-level voltage	V _{IH}		1.8 to 7.0	V
Input low-level voltage	V _{IL}		-0.3 to +0.7	V

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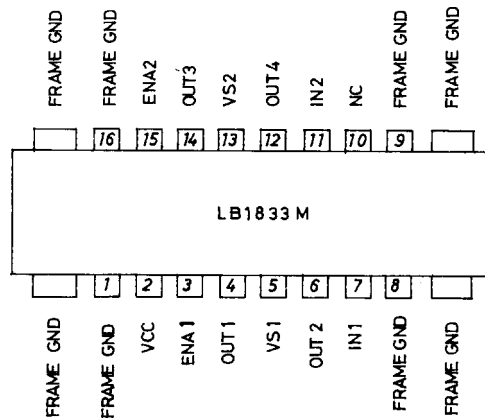
Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC}=3\text{V}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Supply current 1	I_{CCO}	ENA1, 2=0V, ENA4=0V, $V_{IN1}=3\text{V}$ or 0V, I_S+I_{CC}		0.1	10	μA
Supply current 2	I_{CC}	ENA1=3V, $V_{IN1}=3\text{V}$ or 0V, I_S+I_{CC}		10	18	mA
Output saturation voltage	V_{OUT1}	ENA=3V, $V_{IN}=3\text{V}$ or 0V, $I_{OUT}=200\text{mA}$		0.35	0.50	V
	V_{OUT2}	ENA=3V, $V_{IN}=3\text{V}$ or 0V, $I_{OUT}=400\text{mA}$		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}	$V_{CC}=6\text{V}$, $E_{NA}=6\text{V}$			350	μA
Output sustain voltage	$V_{O(sus)}$	$I_{OUT}=400\text{mA}$	9			V
[Spark Killer Diode]						
Reverse current	$I_{S(leak)}$	V_{CC} , $V_S=7\text{V}$			30	μA
Forward voltage	V_{SF}	$I_{OUT}=500\text{mA}$			1.7	V

Truth Table

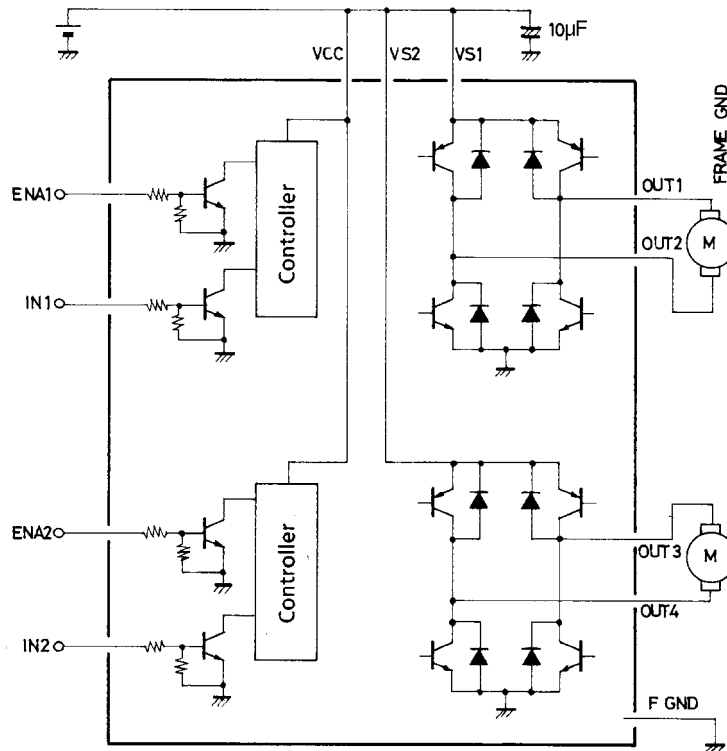
IN 1/2	ENA 1/2	OUT 1/3	OUT 2/4	Mode
L	H	H	L	Forward
H	H	L	H	Reverse
L	L	OFF	OFF	Standby
H	L	OFF	OFF	Standby

Pin Assignment

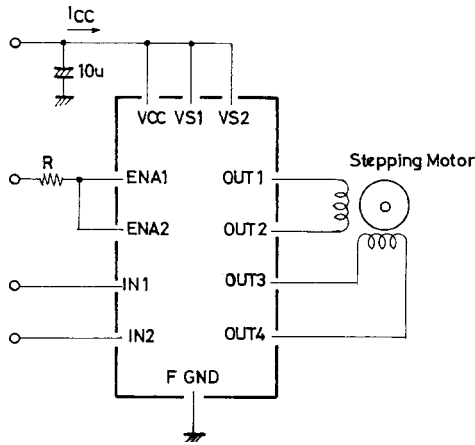


Top view

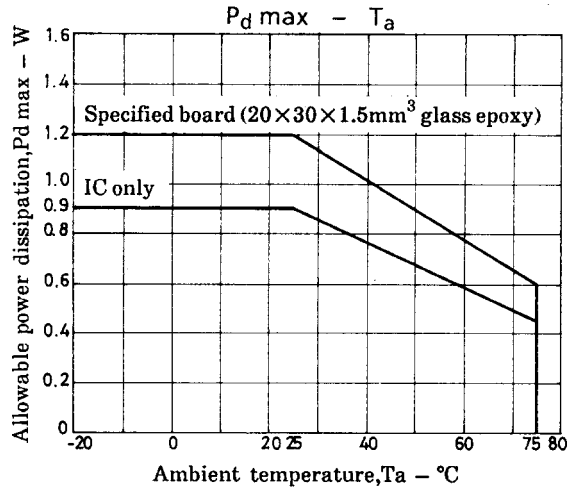
Equivalent Circuit Block Diagram



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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