

LB1633M

3097

Monolithic Digital IC

T-52-13-25

Low-Saturation Bidirectional Motor Driver for Low-Voltage Applications

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The LB1633M 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 Tr + lower Tr residual voltage 1.2V max at 400mA)
- 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 small-sized (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 +7.0	V
	V _S max	-0.3 to +7.0	V
Output Supply Voltage	V _{OUT}	-0.3 to V _{CC} + V _F	V
Input Supply Voltage	V _{IN}	-0.3 to V _{CC}	V
GND Pin Flow-out Current	I _{GND}	Per ch 1.0	A
Allowable Power Dissipation	Pd1	IC only 900	mW
	Pd2	*With board 1200	mW
Operating Temperature	T _{opg}	-20 to +75	°C
Storage Temperature	T _{stg}	-40 to +125	°C

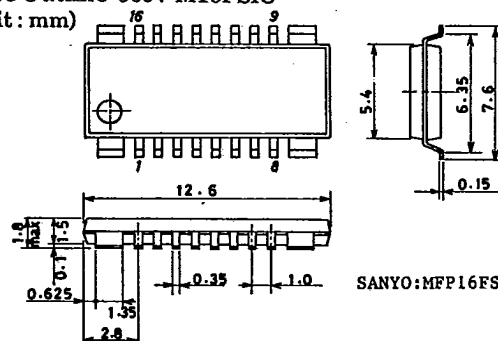
*: Specified board (20x30x1.5mm³ glass epoxy)

Allowable Operating Conditions at Ta = 25°C

			unit
Supply Voltage	V _{CC}	2.5 to 6.0	V
	V _S	1.8 to 6.0	V
Input 'H'-Level Voltage	V _{IH}	1.8 to 6.0	V
Input 'L'-Level Voltage	V _{IL}	-0.3 to +0.7	V

Case Outline 3097-M16FSIC

(unit: mm)



9037TA,TS No.2589 - 1/3

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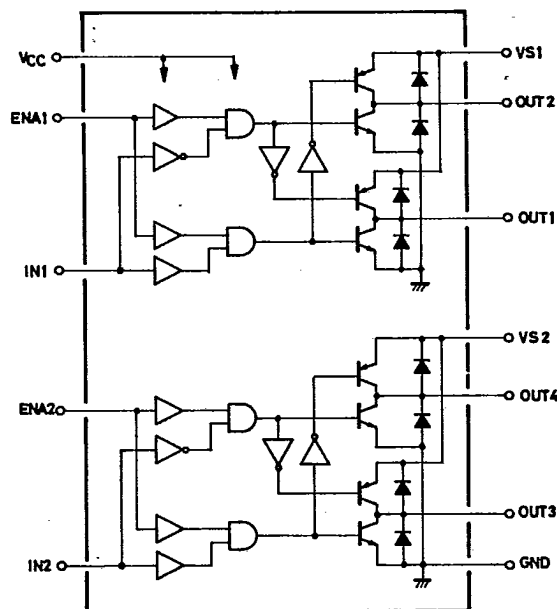
Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 3\text{V}$

			min	typ	max	unit
Supply Current	I_{CCO}	ENA1,2=0V, $V_{IN1}=3\text{V}$ or 0V,			30	μA
		$I_S + I_{CC}$				
Output Saturation Voltage	I_{CC}	ENA1=3V, $V_{IN}=3\text{V}$ or 0V,			30	mA
		$I_S + I_{CC}$				
	V_{OUT1}	ENA=3V, $V_{IN}=3\text{V}$ or 0V,			0.6	V
		$I_{OUT}=200\text{mA}$				
Input Current	V_{OUT2}	ENA=3V, $V_{IN}=3\text{V}$ or 0V,			1.2	V
		$I_{OUT}=400\text{mA}$				
	I_{IN}	$V_{CC}=6\text{V}$, $V_{IN}=6\text{V}$			1.0	mA
	I_{ENA}	$V_{CC}=6\text{V}$, ENA=6V			1.0	mA
Output Sustain Voltage	$V_{O(sus)}$	$I_{OUT}=400\text{mA}$	9			V
Reverse Current	$I_{S(leak)}$	$V_{CC}: V_S=6\text{V}$			30	μA
Forward Voltage	V_{SF}	$I_{OUT}=500\text{mA}$			1.7	V

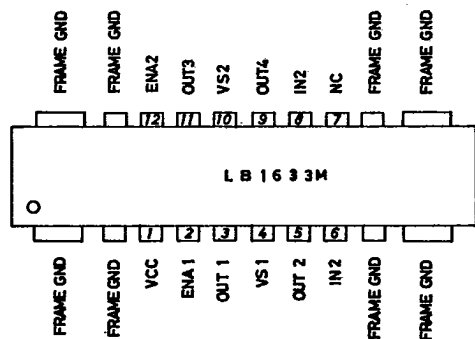
Truth Table

IN1/2	ENA1/2	OUT1/3	OUT2/4	MOTOR
L	H	H	L	Forward
H	H	L	H	Reverse
L	L	off	off	Standby
H	L	off	off	Standby

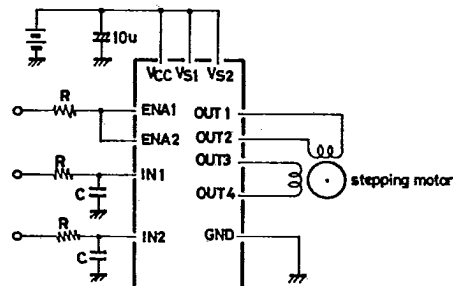
Equivalent Circuit Block Diagram



Pin Assignment



Sample Application Circuit



The feedthrough current intensity of the output transistor has been checked thoroughly. By connecting C, R to the input section, the feedthrough current disappears and the standby mode is entered for a certain period of time and then changed to the next mode.

