T-52-13-25

LB1633M

3097

Monolithic Digital IC

Low-Saturation Bidirectional Motor Driver for Low-Voltage Applications

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

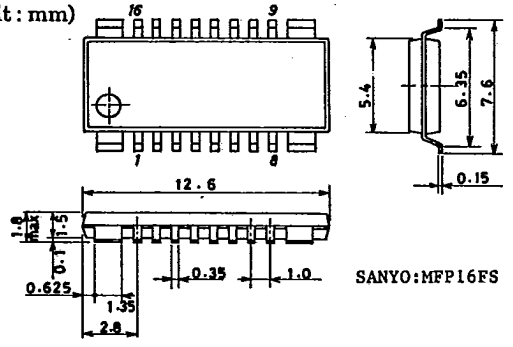
				unit
Maximum Supply Voltage	V_{CC} max		−0.3 to +7.0	V
	V_S max		−0.3 to +7.0	V
Output Supply Voltage	V_{OUT}		−0.3 to V_{CC}+V_F	V
Input Supply Voltage	V_{IN}		−0.3 to V_{CC}	V
GND Pin Flow-out Current	I_{GND}	Per ch	1.0	A
Allowable Power Dissipation	Pd1	IC only	900	mW
	Pd2	*With board	1200	mW
Operating Temperature	Topg		−20 to +75	°C
Storage Temperature	Tstg		−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)



SANYO:MFP16FS

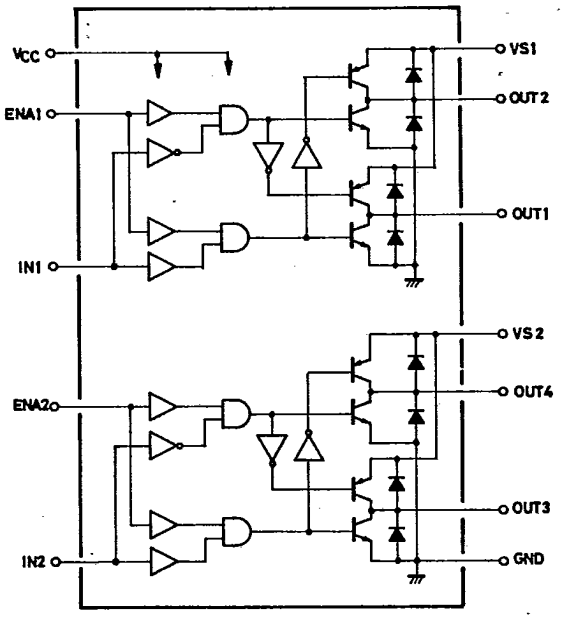
Electrical Characteristics at Ta=25°C, V_{CC}=3V

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

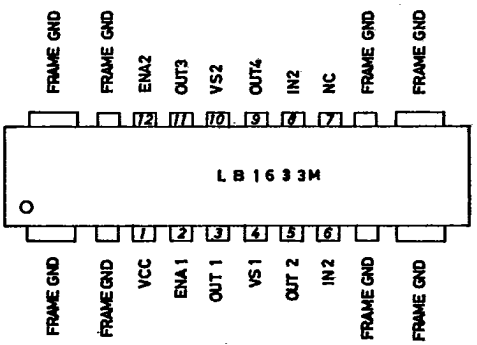
Truth Table

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

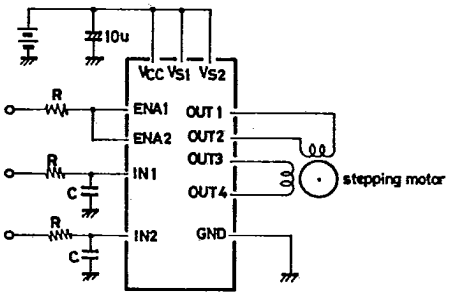
Equivalent Circuit Block Diagram



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.