



LB1634M

Low-Saturation Bidirectional Motor Driver for Low-Voltage Applications

Overview

The LB1634M is a low-saturation bidirectional motor driver IC for use in low-voltage applications. At an I_O of 1A, they have a low saturation output $V_O \text{ max}=1.4\text{V}$. They are especially suited for use in compact motor of portable equipment.

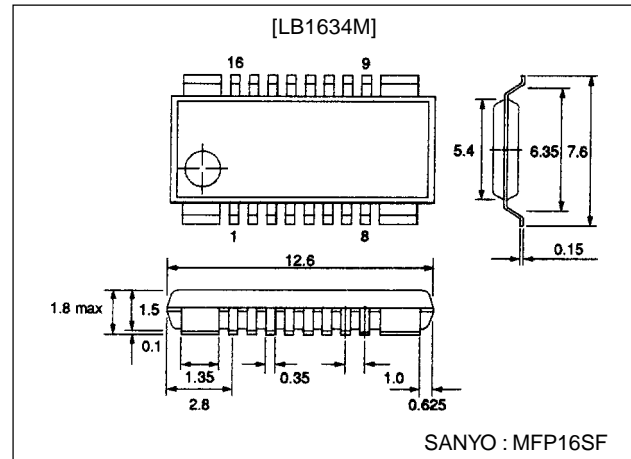
Features

- Low voltage operation (2.5V min).
- Low saturation voltage.
(upper transistor + lower transistor residual voltage ;
at $I_O=1\text{A}$, $V_O(\text{sat})=0.9\text{V}$ typ.).
- Low current drain at standby mode ($I_{\text{CCO}}=10\mu\text{A}$ typ. or less).
- Separate logic power supply and motor power supply.
- Brake function built in.
- Spark killer diode built in.
- Compact package (MFP-16FS) suited for surface mounting.

Package Dimensions

unit:mm

3097-MFP16FS



Specifications

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{\text{CC max}}$		-0.3 to +8.0	V
	$V_{\text{S max}}$		-0.3 to +8.0	V
Output applied voltage	V_{OUT}		-0.3 to $V_{\text{S}} + V_{\text{F}}$	V
Input applied voltage	V_{IN}		-0.3 to +8.0	V
Ground pin flow-out current	I_{GND}		2	A
Allowable power dissipation	$P_{\text{d max1}}$	Independent IC	900	mW
	$P_{\text{d max2}}$	With board ($20 \times 30 \times 1.5\text{mm}^3$ glass epoxy)	1200	mW
Operating temperature	T_{opr}		-20 to +75	$^\circ\text{C}$
Storage temperature	T_{stg}		-40 to +125	$^\circ\text{C}$

Recommended Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V_{CC}		2.5 to 7.0	V
	V_{S}		2.2 to 7.0	V
Input high-level voltage	V_{IH}		2.0 to 7.0	V
Input low-level voltage	V_{IL}		-0.3 to +0.7	V

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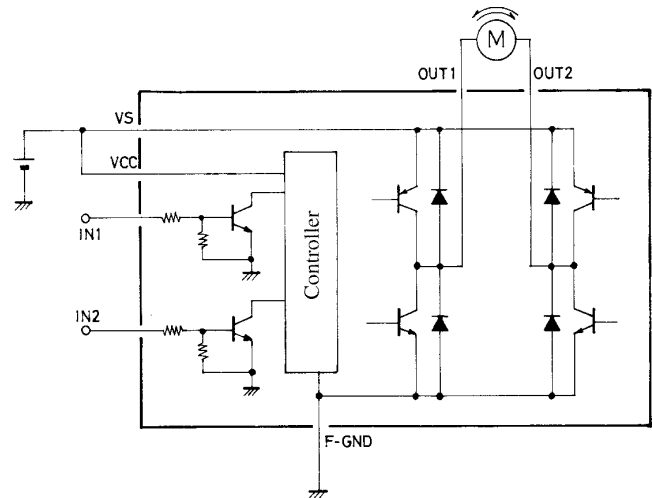
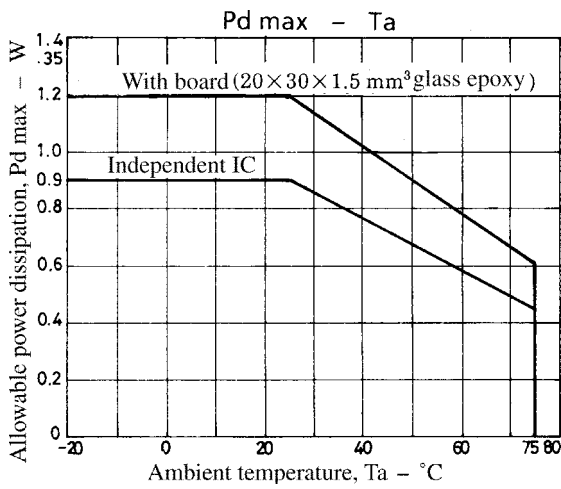
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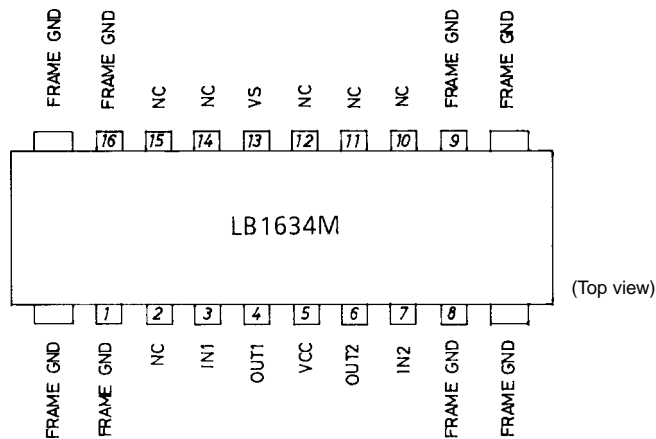
Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC}=V_S=3\text{V}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Supply current	I_{CC0}	$V_{IN1,2}=0\text{V}$ $I_{CC}+I_S$			10	μA
	I_{CC1}	$V_{IN1}=3\text{V}$, $V_{IN2}=0\text{V}$ $I_{CC}+I_S$			30	mA
	I_{CC2}	$V_{IN1,2}=3\text{V}$ $I_{CC}+I_S$			60	mA
Operatinh saturation voltage (upper + lower)	V_{OUT1}	$I_{OUT}=500\text{mA}$			0.7	V
	V_{OUT2}	$I_{OUT}=1\text{A}$			1.4	V
Output pin voltage difference		$I_O=500\text{mA}$	-20	0	+20	%
Output sustain voltage	$V_{O(sus)}$	$I_{OUT}=1\text{A}$	9			V
Input current	I_{IN}	$V_{IN}=7\text{V}$, $V_{CC}=7\text{V}$			0.5	mA
[Spark killer diode]						
Reverse current	$I_S(\text{leak})$	V_{CC} , $V_S=7\text{V}$			10	μA
Forward voltage	V_{SF}	$I_{OUT}=1\text{A}$			1.7	V

Sample Application Circuit



Pin Assignment



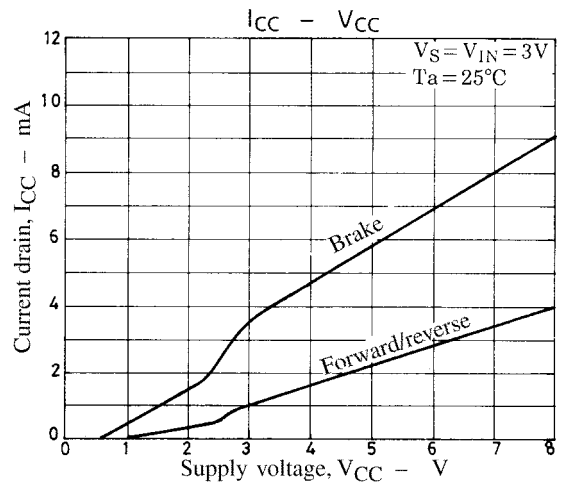
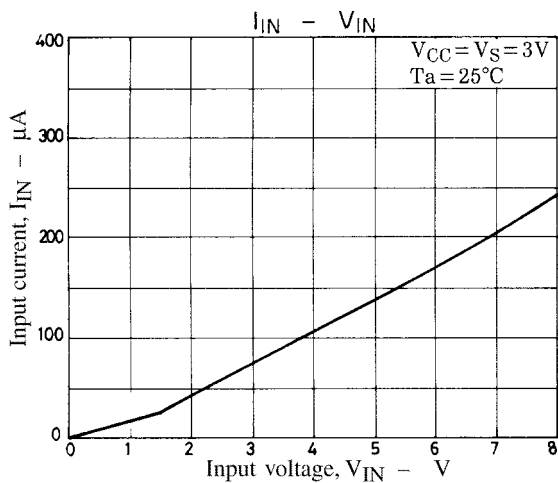
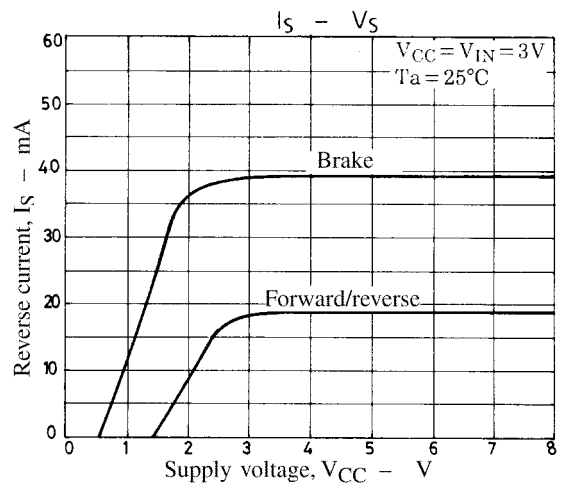
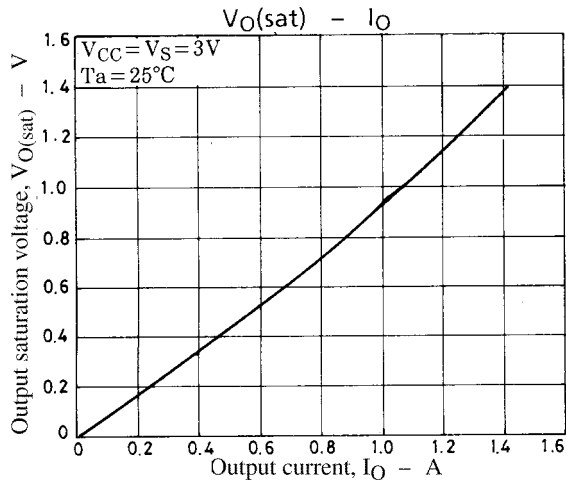
Truth Table

IN1	IN2	OUT1	OUT2	Mode
H	L	H	L	Forward
L	H	L	H	Reverse
H	H	L	L	Brake
L	L	OFF	OFF	Standby

Note : Use one of the FRAME-GND pins for grounding.

When the Cu-foiled side is soldered, heat radiation can be more improved.

LB1634M



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