



# 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  $V_O \text{ max}=1.4V$ . They are especially suited for use in compact motor of portable equipment.

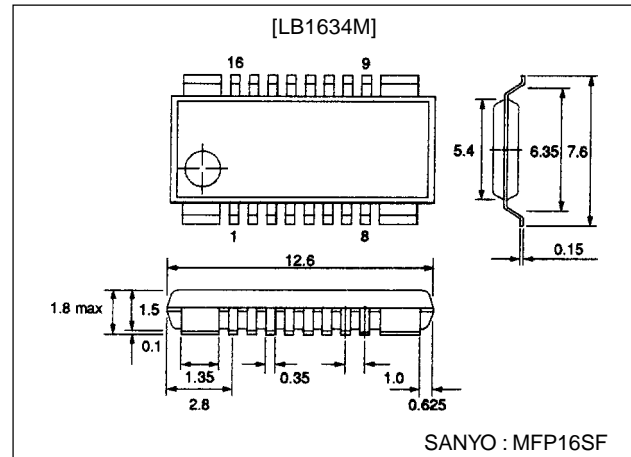
### Features

- Low voltage operation (2.5V min).
- Low saturation voltage.  
(upper transistor + lower transistor residual voltage ; at  $I_O=1A$ ,  $V_O(\text{sat})=0.9V$  typ.).
- Low current drain at standby mode ( $I_{CCO}=10\mu A$  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 $T_a = 25^\circ C$

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

#### Recommended Operating Conditions at $T_a = 25^\circ C$

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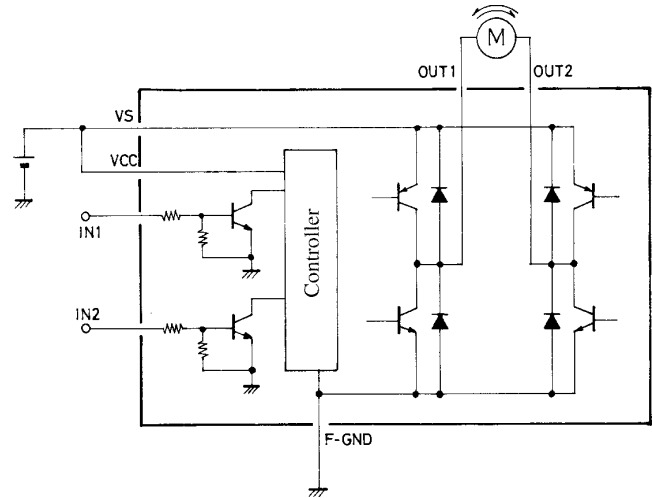
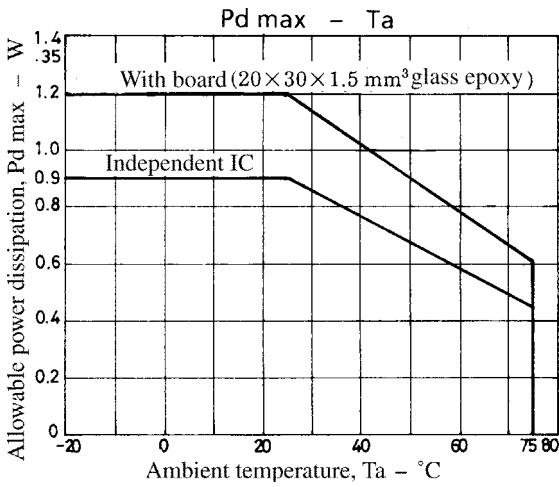
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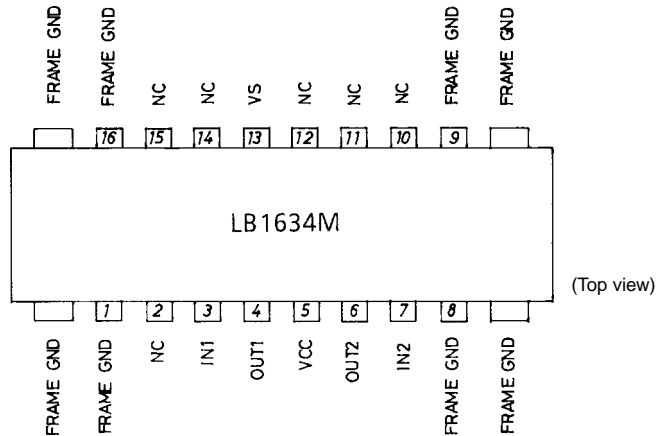
## Electrical Characteristics at $T_a = 25^\circ\text{C}$ , $V_{CC}=V_S=3\text{V}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Supply current	$I_{CC0}$	$V_{IN1,2}=0\text{V}$ $I_{CC}+I_S$			10	$\mu\text{A}$
	$I_{CC1}$	$V_{IN1}=3\text{V}$ , $V_{IN2}=0\text{V}$ $I_{CC}+I_S$			30	$\text{mA}$
	$I_{CC2}$	$V_{IN1,2}=3\text{V}$ $I_{CC}+I_S$			60	$\text{mA}$
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	$\text{mA}$
[Spark killer diode]						
Reverse current	$I_S(\text{leak})$	$V_{CC}$ , $V_S=7\text{V}$			10	$\mu\text{A}$
Forward voltage	$V_{SF}$	$I_{OUT}=1\text{A}$			1.7	V

## Sample Application Circuit



## Pin Assignment



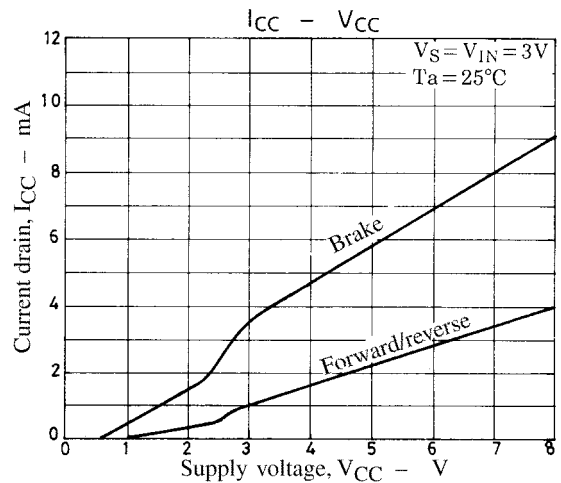
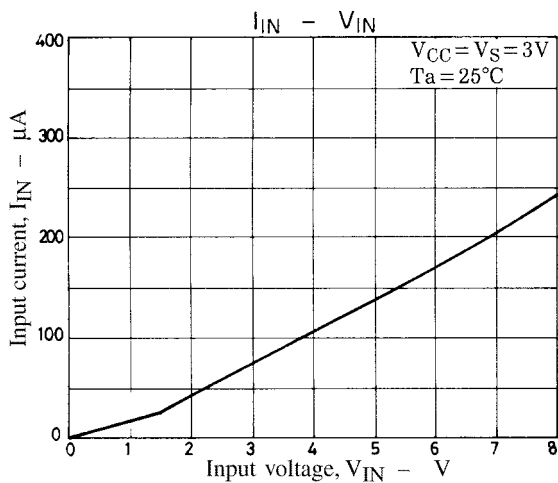
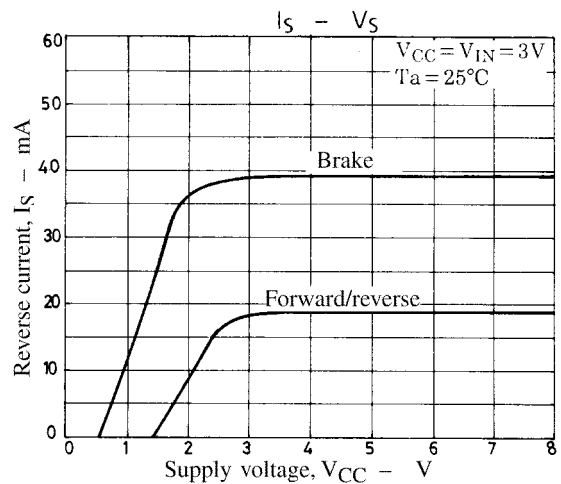
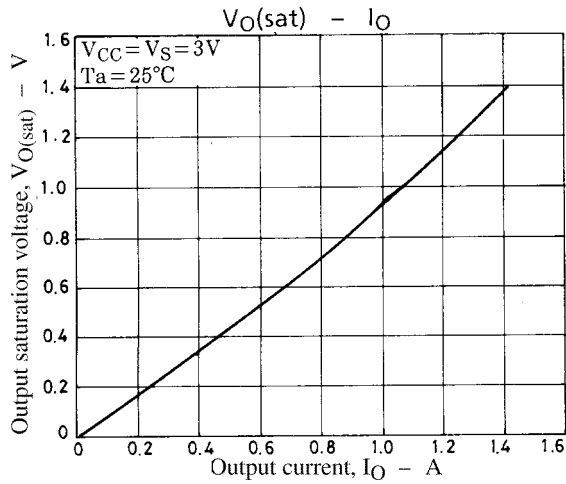
## Truth Table

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.

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