



# LB1630M

## Low-Saturation Bidirectional Motor Driver for Low-Voltage Applications

### Overview

The LB1630M is a low-saturation bidirectional motor driver IC for use in low-voltage applications. It is especially suited for use in small-sized low-voltage motors for printers, cassette tape recorders, and commercial equipment.

### Features

- Low-voltage (2.5V min) operation, low current drain ( $I_{CC} \leq 30\mu\text{A}$ ) at the standby mode.
- Low-saturation voltage (upper transistor + lower transistor residual voltage 1.2V max at 400mA).
- On-chip spark killer diodes.

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC \text{ max}}$		-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 +7.0	V
Allowable load resistance	$R_M \text{ min}$	Pulse width < 50ms, duty 10%	3	$\Omega$
GND pin flow-out current	$I_{GND}$	Pulse width < 50ms, duty 10%	1	A
Allowable power dissipation	$P_d \text{ max}$		400	mW
Operating temperature	$T_{opr}$		-20 to +75	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-40 to +125	$^\circ\text{C}$

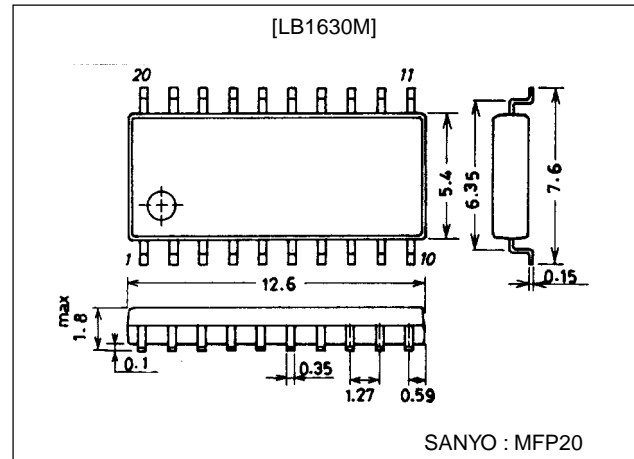
#### Allowable Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	$V_{CC}$		2.5 to 6.0	V
Input high-level voltage	$V_{IH}$		2.0 to 6.0	V
Input low-level voltage	$V_{IL}$		-0.3 to +0.7	V

### Package Dimensions

unit:mm

3036B-MFP20



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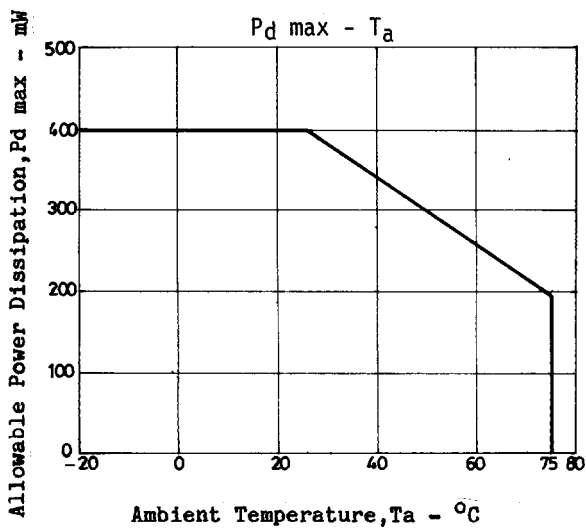
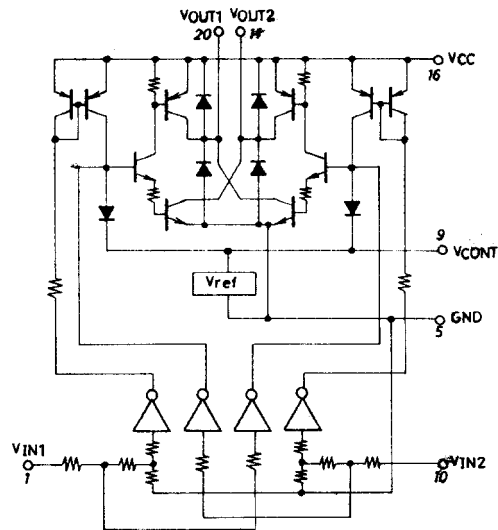
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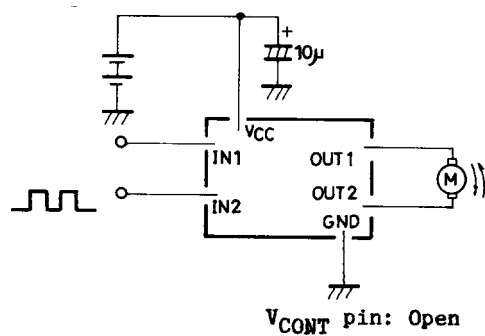
## Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output saturation voltage (upper side+lower side)	$V_{OUT(1)}$	$V_{CC}=3\text{V}, V_{IN}=3\text{V}, I_{OUT}=200\text{mA}$			0.6	V
	$V_{OUT(2)}$	$V_{CC}=3.5\text{V}, V_{IN}=3\text{V}, I_{OUT}=400\text{mA}$			1.2	V
Output sustain voltage	$V_{O(sus)}$	$I_{OUT}=400\text{mA}$	9			V
Output leakage current	$I_{O(leak)}$	$V_{CC}=6\text{V}$			30	$\mu\text{A}$
Input current	$I_{IN}$	$V_{IN}=6\text{V}$			1.0	mA
[Spark killer diode]						
Reverse current	$I_{S(leak)}$	$V_{CC}=6\text{V}, V_{IN}=0\text{V}$			30	$\mu\text{A}$
Forward voltage	$V_{SF}$	$I_{OUT}=500\text{mA}$			1.7	V
Current drain	$I_{CC}$	$I_{CC}=3.5\text{V}, V_{IN}=3\text{V}, I_{OUT}=400\text{mA}$			430	mA

## Equivalent Circuit



## Sample Application Circuit



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