



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

LB1638MC — Monolithic Digital IC

Low-Voltage, Low-Saturation Bidirectional Motor Driver

Overview

The LB1638MC are low-saturation bidirectional motor driver ICs for use in low-voltage applications. At an I_O of 500mA, they have a low saturation output of $V_{O(sat)} = 0.75V$. 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 $I_O = 500mA$, $V_{O(sat)} = 0.75V$ typ.)
- Low current drain at standby mode ($I_{CCO} = 0.1\mu A$ typ. or less)
- Separate logic power supply and motor power supply
- Brake function
- Built-in spark killer diodes

Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC\ max}$		-0.3 to +10.5	V
	$V_S\ max$		-0.3 to +10.5	V
Output applied voltage	V_{OUT}		-0.3 to $V_{CC} + V_{SF}$	V
Input applied voltage	V_{IN}		-0.3 to +10.0	V
Ground pin flow-out current	I_{GND}		1.0	A
Allowable power dissipation	$P_d\ max$	Mounted on a specified board	820	mW
Operating temperature	T_{opr}		-20 to +75	$^\circ C$
Storage temperature	T_{stg}		-40 to +125	$^\circ C$

* Specified board: 114.3mm × 76.1mm × 1.6mm, glass epoxy board.

Caution 1) Absolute maximum ratings represent the value which cannot be exceeded for any length of time.

Caution 2) Even when the device is used within the range of absolute maximum ratings, as a result of continuous usage under high temperature, high current, high voltage, or drastic temperature change, the reliability of the IC may be degraded. Please contact us for the further details.

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<http://semicon.sanyo.com/en/network>

LB1638MC

Allowable Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage range	VCC		2.5 to 9.0	V
	VS		2.2 to 9.0	V
Input high-level voltage	VIH		2.0 to 9.0	V
Input low-level	VIL		-0.3 to +0.7	V

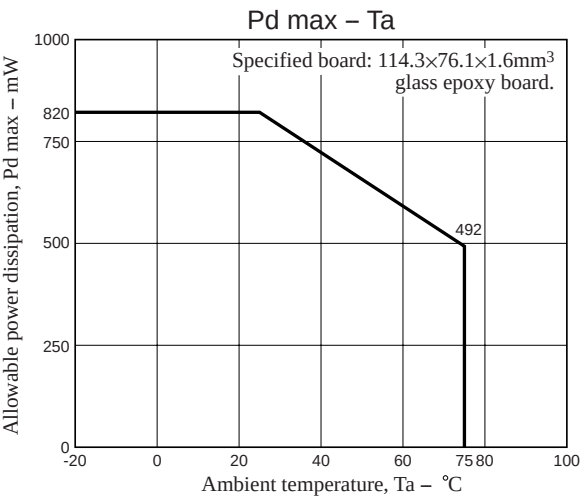
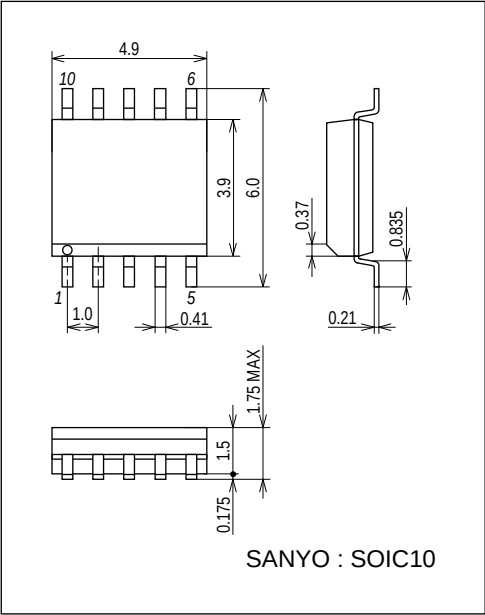
Electrical Characteristics at Ta = 25°C, VCC = 5V

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Current drain	ICC0	VIN1,2 ICC + IS			10	μA
	ICC1	VIN1 = 3V, VIN2 = 0V ICC + IS			20	mA
	ICC2	VIN1,2 = 3V ICC + IS			40	mA
Output saturation voltage (upper + lower)	VOUT1	IOUT = 200mA		0.25	0.5	V
	VOUT2	IOUT = 500mA		0.70	1.3	V
Output pin voltage difference		IO = 200mA			0.1	V
Output sustain voltage	VO(sus)	IOUT = 500mA	9			V
Input current	IIN	VIN = 7V, VCC = 7V			0.5	mA
Spark killer diode						
Reverse current	IS(leak)	VCC, VS = 7V			10	μA
Forward voltage	VSF	IOUT = 200mA			1.7	V

Package Dimensions

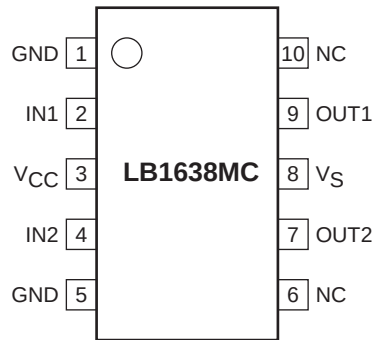
unit : mm (typ)

3426A



LB1638MC

Pin Assignment

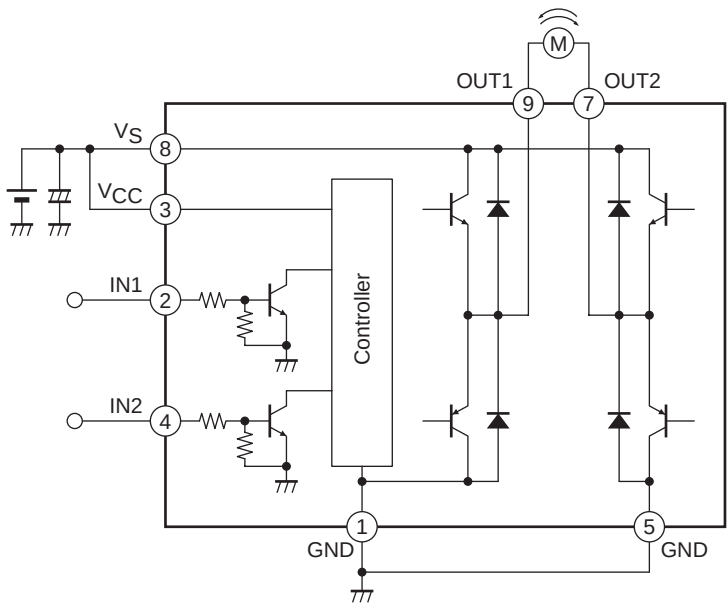


Note: both ground pins must be grounded.

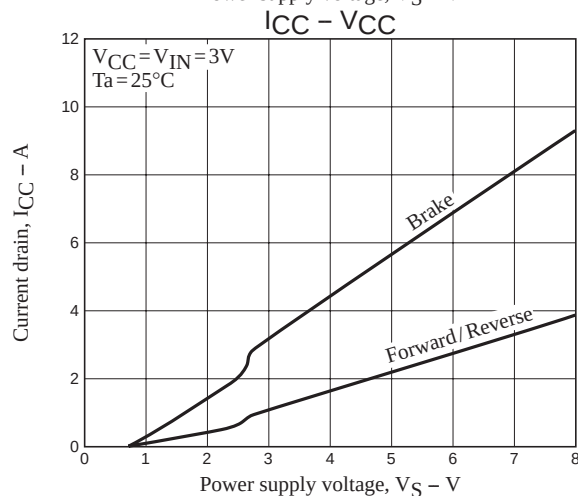
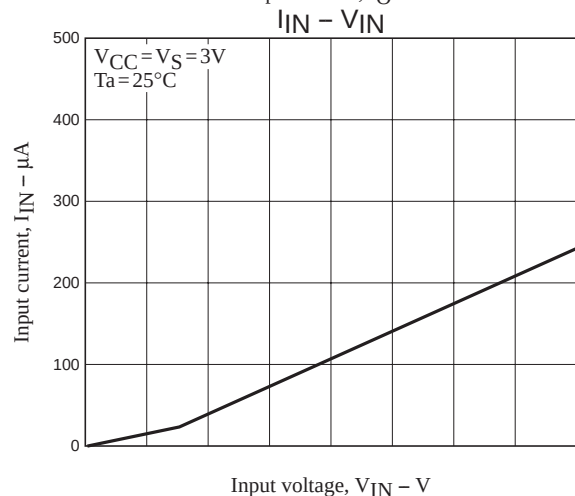
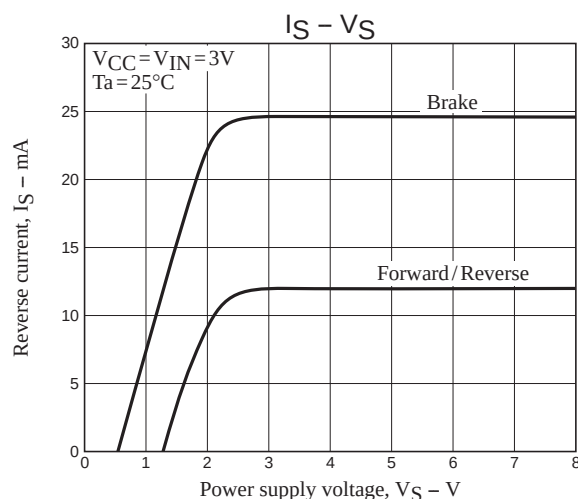
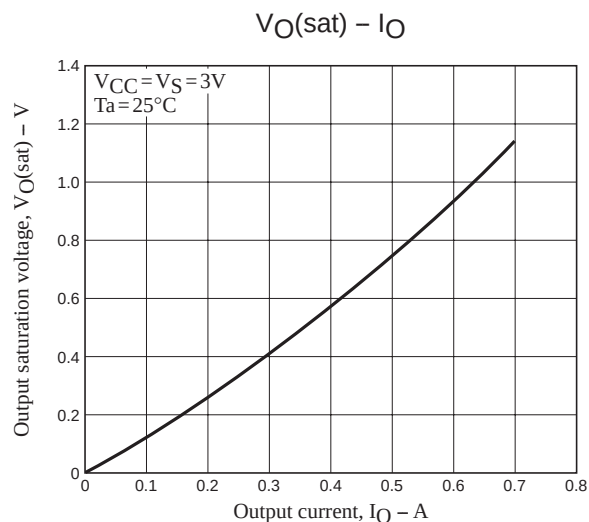
Truth Table

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

Block Diagram and Sample Application Circuit



Note: When using the same power supply for V_S and V_{CC}, short the V_{CC} and V_S pins to each other or insert a capacitor in the V_{CC} line.



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