

**LB1635M**

Low-Saturation Bidirectional Motor Drive for Low-Voltage Applications

Overview

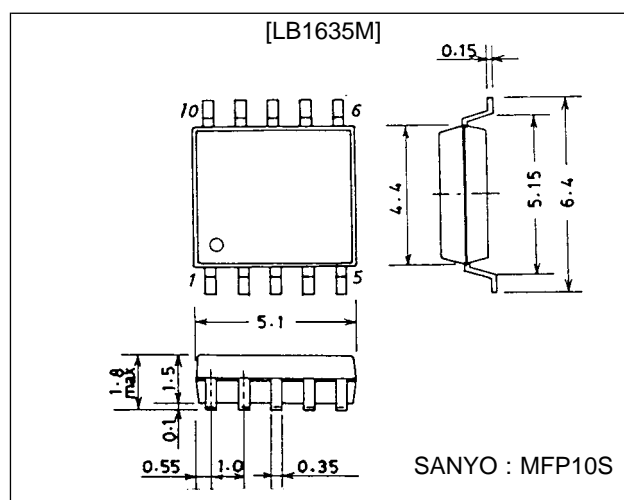
The LB1635M is a low-saturation bidirectional motor driver IC for use in low-voltage applications. At an I_O of 200 mA, they have a low saturation output of $V_O(\text{sat}) = 0.5 \text{ V}$ typ. They are especially suited for use in compact motor of portable equipment.

Features

- Low voltage operation (2.5 V min.)
- Low saturation voltage
(upper transistor + lower transistor residual voltage;
at $I_O = 200 \text{ mA}$, $V_O(\text{sat}) = 0.5 \text{ V}$ typ.)
- Low current drain at standby mode ($I_{\text{CCO}} = 0.1 \mu\text{A}$ typ. or less)
- Separate logic power supply and motor power supply
- Brake function built in
- Spark killer diodes built in
- Compact package (MFP-10S) suited for surface mounting.

Package Dimensions

unit : mm

3086A-MFP10S

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}		500	mA
Allowable power dissipation	$P_{\text{d max1}}$	Independent IC	300	mW
	$P_{\text{d max2}}$	* With board	440	mW
Operating temperature	T_{opr}		-20 to +75	$^\circ\text{C}$
Storage temperature	T_{stg}		-40 to +125	$^\circ\text{C}$

* Specified board ($30 \times 30 \times 1.5 \text{ mm}^3$ glass epoxy)

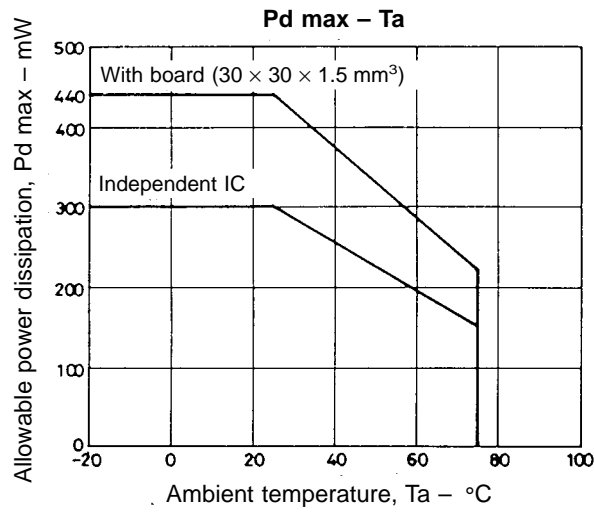
Allowable Operating Ranges at $T_a = 25^\circ\text{C}$

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

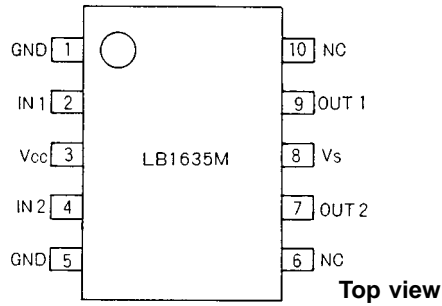
LB1635M

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

Parameter	Symbol	Conditions	min	typ	max	Unit
Supply current	I_{CC0}	$V_{IN\ 1, 2} = 0\text{ V}$			10	μA
	I_{CC1}	$V_{IN\ 1} = 3\text{ V}, V_{IN\ 2} = 0\text{ V}$			15	mA
	I_{CC2}	$V_{IN\ 1, 2} = 3\text{ V}$			30	mA
Output saturation voltage (upper + lower)	V_{OUT1}	$I_{OUT} = 100\text{ mA}$		0.25	0.5	V
	V_{OUT2}	$I_{OUT} = 200\text{ mA}$		0.50	1.0	V
Output pin voltage difference		$I_O = 100\text{ mA}$	-20	0	+20	%
Output sustain voltage	V_O (sus)	$I_{OUT} = 200\text{ mA}$	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 (leak)	$V_{CC}, V_S = 7\text{ V}$			10	μA
Forward voltage	V_{SF}	$I_{OUT} = 200\text{ mA}$			1.7	V



Pin Assignment

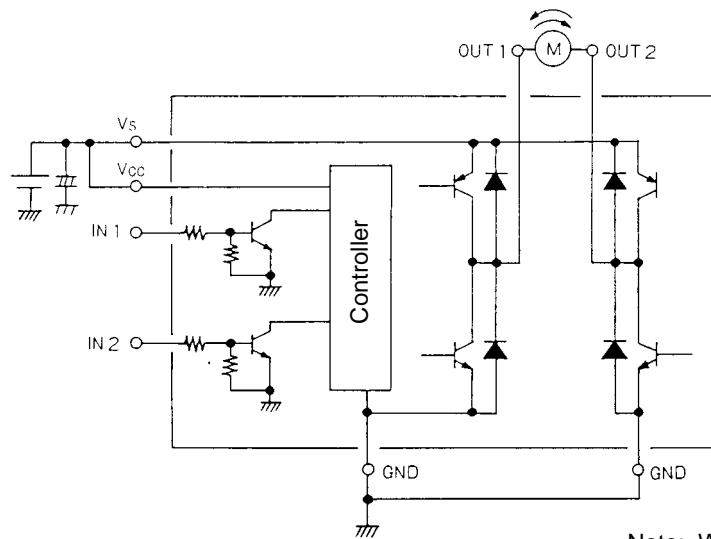


Note: both ground pins must be grounded.

Truth Table

IN 1	IN 2	OUT 1	OUT 2	Mode
H	L	H	L	Forward
L	H	L	H	Reverse
H	H	L	L	Brake
L	L	OFF	OFF	Standby

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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