

**LB1838M**

Low-saturation, Bidirectional Motor Driver for Low-voltage Applications

Overview

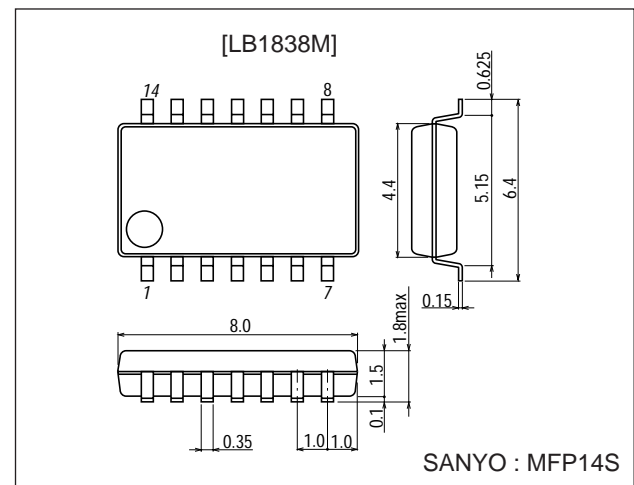
The LB1838M is a low-saturation two-channel bidirectional motor driver IC for use in low-voltage applications. The LB1838M is a bipolar stepper-motor driver IC that is ideal for use in printers, FDDs, cameras and other portable devices.

Features

- Low voltage operation (2.5 V min)
- Low saturation voltage (upper transistor + lower transistor residual voltage; 0.40 V at 400 mA).
- Through-current prevention circuit built in
- Separate logic power supply and motor power supply
- Spark killer diodes built in
- Thermal shutdown circuit built in
- Compact package (14-pin MFP)

Package Dimensions

unit : mm

3111-MFP14S

Specifications

Absolute Maximum Ratings at Ta = 25°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}		V _S +V _{SF}	V
Input applied voltage	V _{IN}		−0.3 to +10	V
Ground pin flow-out current	IGND	Per channel	1.0	A
Allowable power dissipation	Pd max1	Independent IC	550	mW
	Pd max2	* With board	800	mW
Operating temperature	Topr		−20 to +75	°C
Storage temperature	Tstg		−40 to +125	°C

*Note: Mounted on 20 x 30 x 1.5 mm³ glass epoxy PCB

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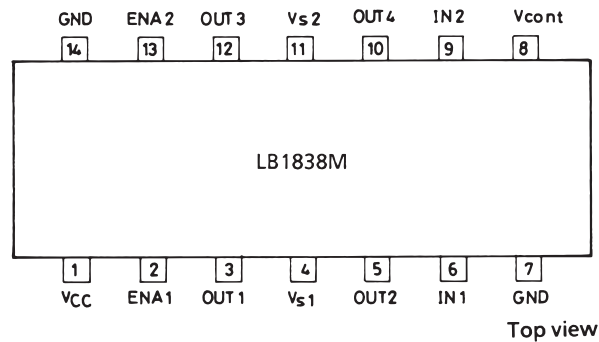
Allowable Operating Ranges at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V _{CC}		2.5 to 9.0	V
	V _S		1.8 to 9.0	V
Input high-level voltage	V _{IH}		1.8 to 9.0	V
Input low-level voltage	V _{IL}		−0.3 to +0.7	V

Electrical Characteristics at Ta = 25°C, V_{CC} = 3 V

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Supply current 1	I _{CC0}	ENA1, 2 = 0 V, V _{IN} 1 = 3 V or 0 V		0.1	10	μA
Supply current 2	I _{CC1}	ENA1 = 3 V, V _{IN} 1 = 3 V or 0 V		12	18	mA
Output saturation voltage	V _{OUT1}	ENA = 3 V, V _{IN} = 3 V or 0 V, I _{OUT} = 200 mA		0.2	0.28	V
	V _{OUT2}	ENA = 3 V, V _{IN} = 3 V or 0 V, I _{OUT} = 400 mA		0.4	0.6	V
Input current 1	I _{IN}	V _{CC} = 6 V, V _{IN} = 6 V			200	μA
Input current 2	I _{ENA}	V _{CC} = 6 V, ENA = 6 V			200	μA
Output sustaining voltage	V _O (sus)	I _{OUT} = 400 mA	9			V
Spark killer diode reverse current	I _S (leak)	V _{CC1} , V _S = 7 V			30	μA
Spark killer diode forward voltage	V _{SF}	I _{OUT} = 400 mA			1.7	V

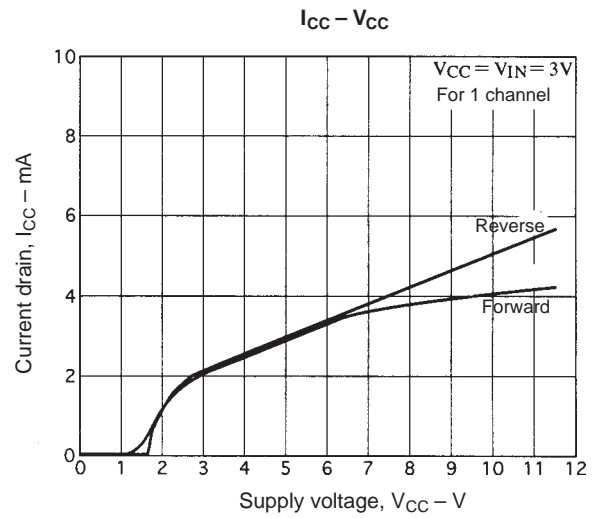
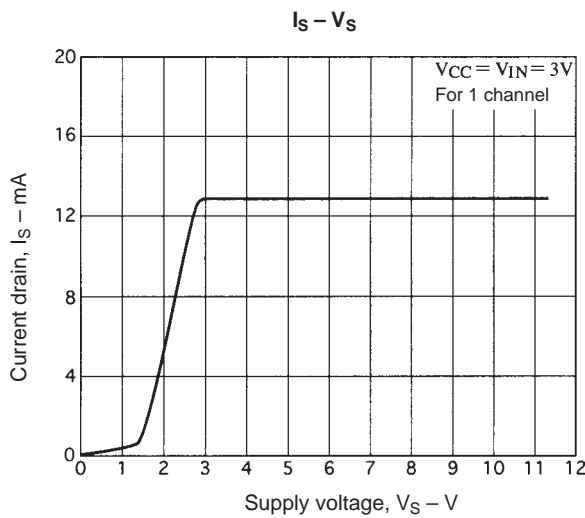
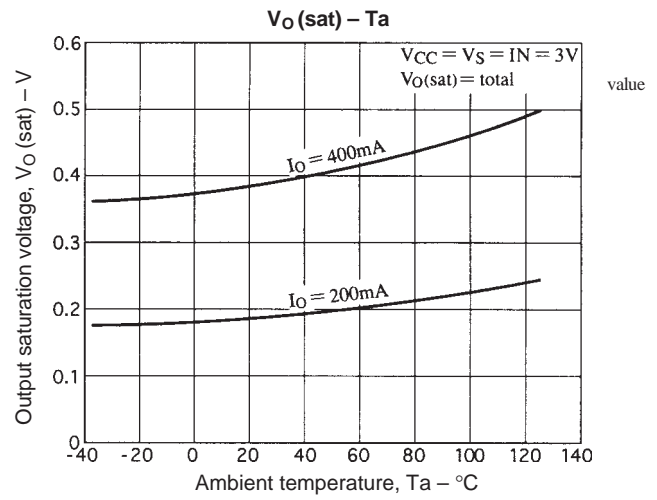
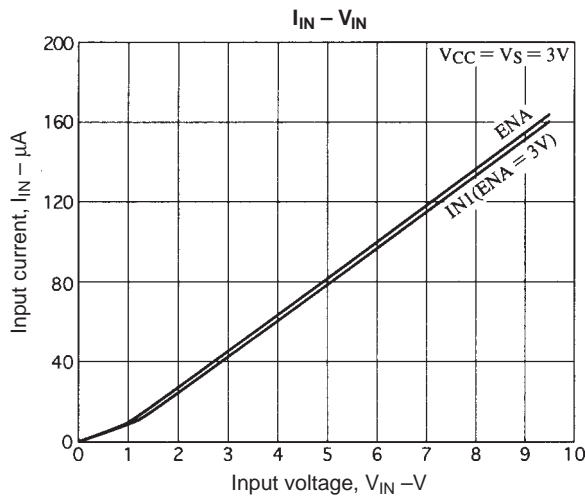
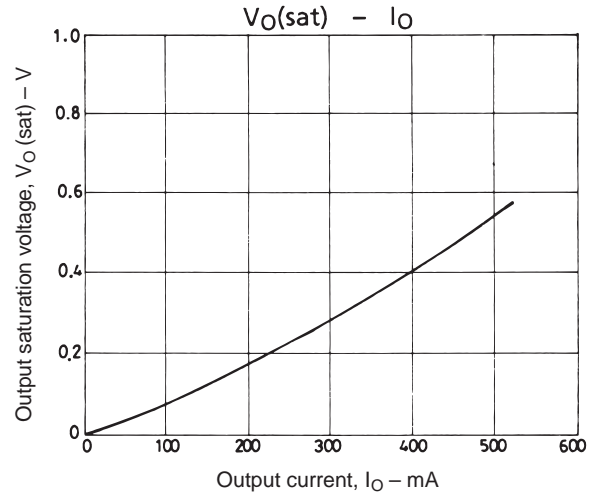
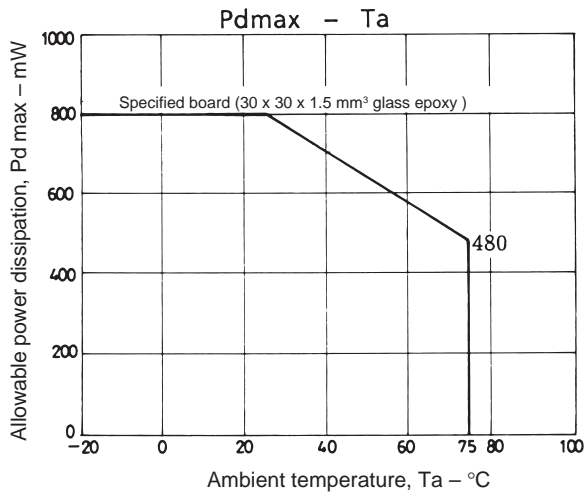
Pin Assignment



Note: Both GND pins should be connected to ground.

Truth Table

IN 1, 2	ENA 1, 2	OUT 1, 3	OUT 2, 4	Mode
L	H	H	L	Forward
H	H	L	H	Reverse
L	L	OFF	OFF	Standby
H	L	OFF	OFF	Standby



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