

**LB1830M**

Low-Saturation Bidirectional Motor Driver for Low-Voltage Applications

Overview

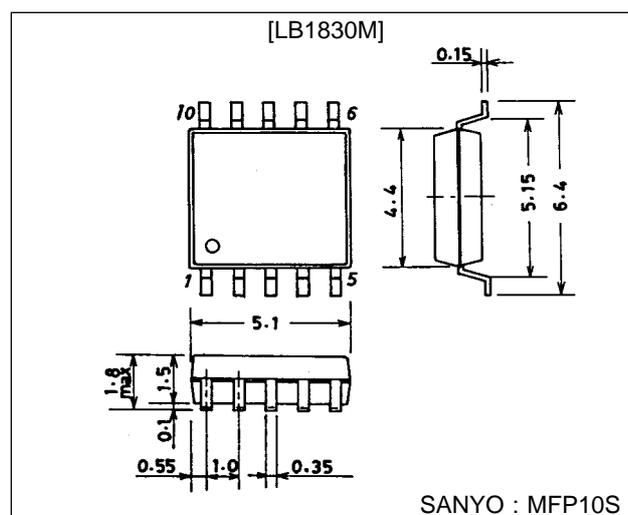
The LB1830M is a low-saturation bidirectional motor driver IC with brake function for use in low-voltage applications. As both of forward and reverse outputs are regulated, it is especially suited for use in portable equipment such as VCR, camera.

Features

- Wide operating voltage range: 3.0 to 9.0 V
- Low saturation voltage: 0.2 V at $I_O = 40$ mA (typ)
- Low current drain at standby mode (0.1 μ A or less)
- Brake function
- Regulated voltage value (forward/reverse) setting available by one variable resistor
- Regulated output/saturation output switching available
- Built-in spark killer diodes
- MFP-10S package

Package Dimensions

unit: mm

3086A-MFP10S

Specifications

Absolute Maximum Ratings at $T_a = 25$ °C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max		10.5	V
Output current	I_m max		200	mA
Input supply voltage	V_{IN}		-0.3 to +10	V
Allowable power dissipation	P_d max	Independent IC	0.4	W
		With specified board (30 × 30 × 1.5 mm ³)	0.55	W
Operating temperature	T_{opr}		-20 to +80	°C
Storage temperature	T_{stg}		-40 to +125	°C

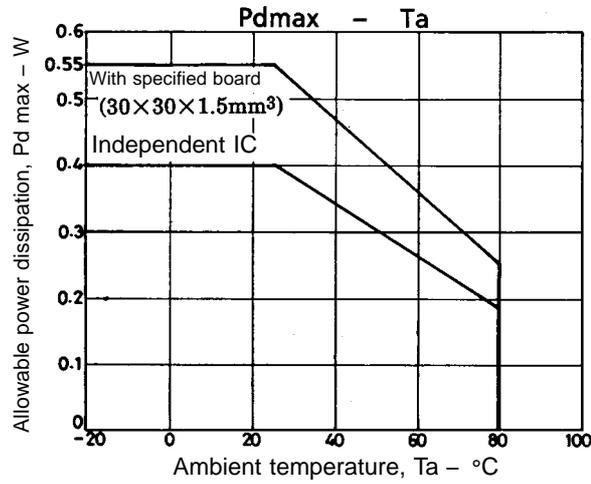
Allowable Operating Ranges at $T_a = 25$ °C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V_{CC}		3.0 to 9.0	V
Input high level voltage	V_{IH}		2.0 to 9.0	V
Input low level voltage	V_{IL}		-0.3 to +0.3	V
Control voltage	V_C		1.0 to 6.0	V

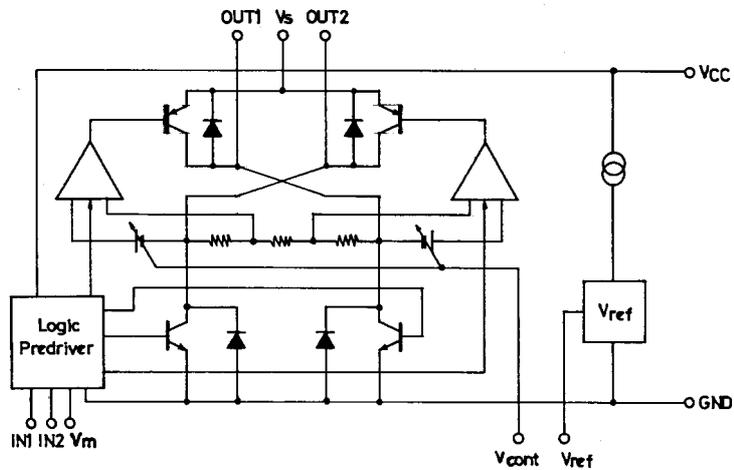
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Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 6\text{ V}$

Parameter	Symbol	Conditions	min	typ	max	Unit
Current drain	I_{CC0}	$IN1 = IN2 = V_m = 0\text{ V}$, $V_C = V_{ref}$ at standby mode		0.1	10	μA
	I_{CC1}	Forward/reverse, control, load OPEN		2	3	mA
	I_{CC2}	Forward/reverse, saturation, load OPEN		3	5	mA
	I_{CC3}	Braking, load OPEN		5	8	mA
Output saturation voltage	V_{sat1}	$I_O = 40\text{ mA}$ (upper + lower)		0.2	0.3	V
	V_{sat2}	$I_O = 80\text{ mA}$ (upper + lower)		0.4	0.6	V
Reference voltage	V_{ref}	$I_{Vref} = 1\text{ mA}$	1.85	2.0	2.15	V
Voltage characteristics of output voltage	$\frac{\Delta V_O}{\Delta V_{CC}}$	$V_O = 5\text{ V}$, $V_{CC} = 5.5\text{ to }9\text{ V}$, $I_O = 40\text{ mA}$			80	mV
Current characteristics of output voltage	$\frac{\Delta V_O}{\Delta I_{CC}}$	$V_O = 5\text{ V}$, $V_{CC} = 6\text{ V}$, $I_O = 10\text{ to }80\text{ mA}$			50	mV
Input current	I_{IN}	$V_{IN} = 5\text{ V}$		90	150	μA
Output voltage	V_O	$V_C = 2\text{ V}$	$2.3 \times V_C$		$2.5 \times V_C$	V

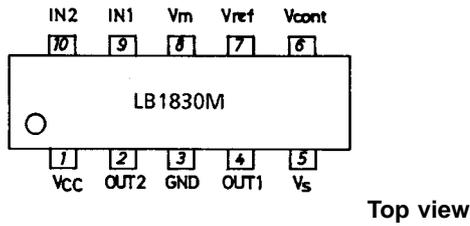


Equivalent Circuit Block Diagram

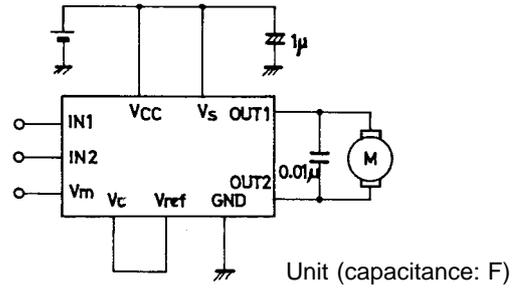


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Pin Assignment



Sample Application Circuit



Truth Table

Input			Output		Mode
IN1	IN2	Vm	OUT1	OUT2	
L	L	L	off	off	Standby
H	L	L	H	L	Forward (Regulated)
H	L	H	H	L	Forward (Saturation)
L	H	L	L	H	Reverse (Regulated)
L	H	H	L	H	Reverse (Saturation)
H	H	*	L	L	Brake

*: When in saturation mode, $V_C = V_S$ available

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