

# LB1837M

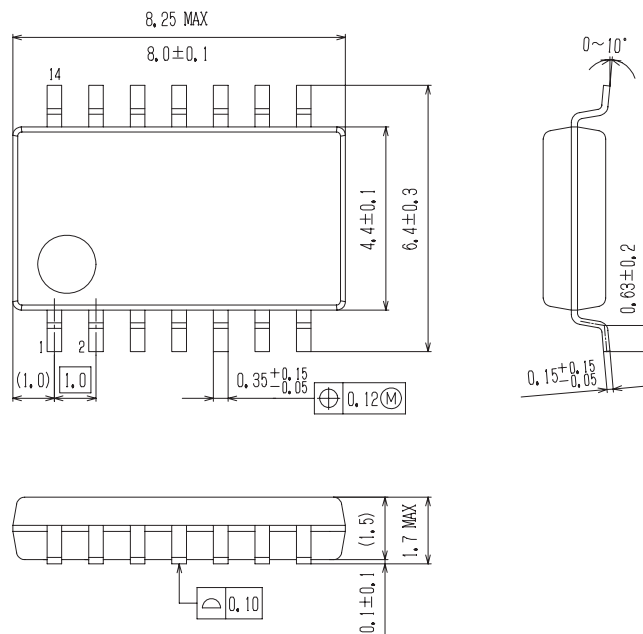
**Electrical Characteristics** at Ta = 25°C, VCC = 6V

| Parameter                              | Symbol                         | Conditions  | Ratings  |      |          | Unit |
|--|--------------------------------|---|----------|------|----------|------|
|  |                                |   | min      | typ  | max      |      |
| Supply current                         | ICC0                           | During standby  |          | 0.1  | 10       | μA   |
|  | ICC1                           | (For one channel) During bidirectional operation during control, load open    |          | 2    | 3        | mA   |
|  | ICC2                           | (For one channel) During bidirectional operation during saturation, load open |          | 3    | 5        | mA   |
|  | ICC3                           | During braking (for one channel)  |          | 6.5  | 9        | mA   |
| Output saturation voltage              | Vsat1                          | IO = 100 mA (upper side + lower side)   |          | 0.3  | 0.4      | V    |
|  | Vsat2                          | IO = 200 mA (upper side + lower side)   |          | 0.4  | 0.55     | V    |
|  | Vsat3                          | IO = 200 mA (lower side)  | 0.07     | 0.10 | 0.15     | V    |
| Reference voltage                      | Vref                           | Ivref = 1 mA  | 1.85     | 2.0  | 2.15     | V    |
| Output voltage voltage characteristics | $\frac{\Delta VO}{\Delta VCC}$ | VO = 5 V, VCC = 5.5 to 9 V, IO = 100 mA                                       |          |      | 20       | mV   |
| Output voltage current characteristics | $\frac{\Delta VO}{\Delta ICC}$ | VO = 5 V, VCC = 6 V, IO = 10 to 100 mA  |          |      | 50       | mV   |
| Input current                          | IIN                            | VIN = 5 V   |          | 90   | 150      | μA   |
| Output voltage                         | VO                             | Between OUT and GND   | 2.5 x VC |      | 2.7 x VC | V    |

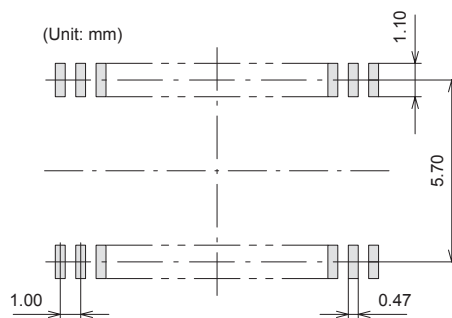
## Package Dimensions

unit:mm

**SOIC14 W / MFP14S (225 mil)**  
CASE 751CB  
ISSUE A



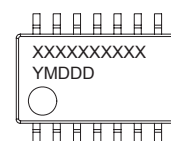
### SOLDERING FOOTPRINT\*



NOTE: The measurements are not to guarantee but for reference only.

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

### GENERIC MARKING DIAGRAM\*

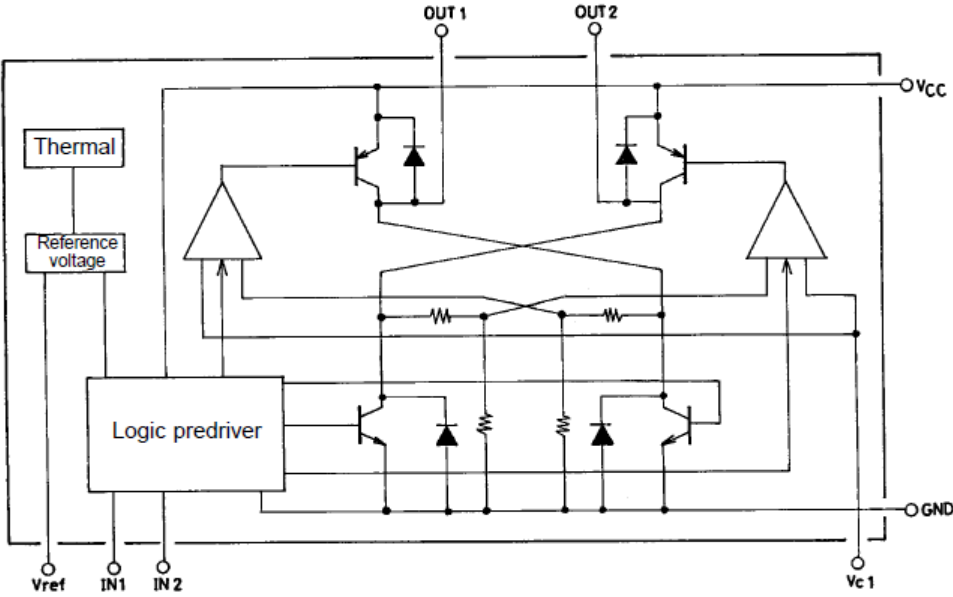


XXXXXX = Specific Device Code  
Y = Year  
M = Month  
DDD = Additional Traceability Data

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present.

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Equivalent Circuit Block Diagram  
(For one channel)

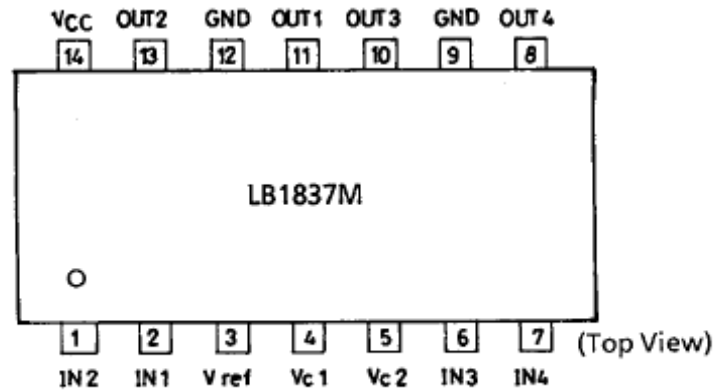


Truth Table

| Input  |        | Output  |         | Mode   |
|--------|--------|---------|---------|--|
| IN 1/3 | IN 2/4 | Out 1/3 | Out 2/4 |  |
| L      | L      | OFF     | OFF     | Standby                                      |
| H      | L      | H       | L       | Constant-voltage regulated forward operation |
| L      | H      | L       | H       | Constant-voltage regulated reverse operation |
| H      | H      | L       | L       | Brake  |

The constant-voltage regulated output  $V_O$  (= voltage between H side output and GND) is controlled by  $2.5 \times V_C$ .  
The output is in the saturated state when the  $V_C$  input range is 0.2 to 6 V and  $V_O \geq V_{CC}$ .

Pin Assignment

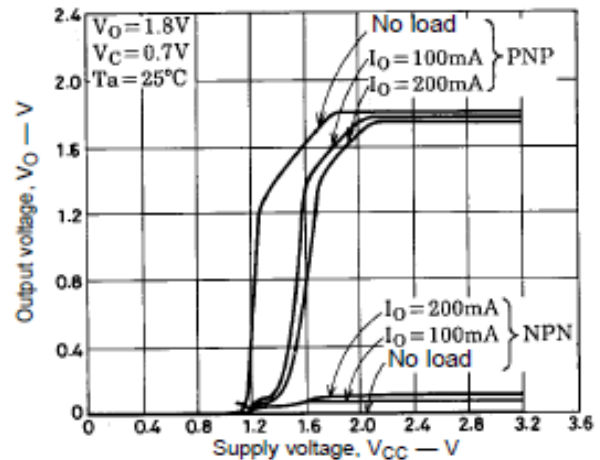
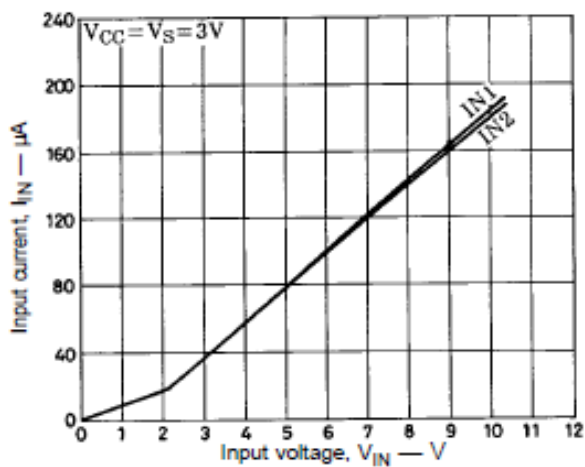
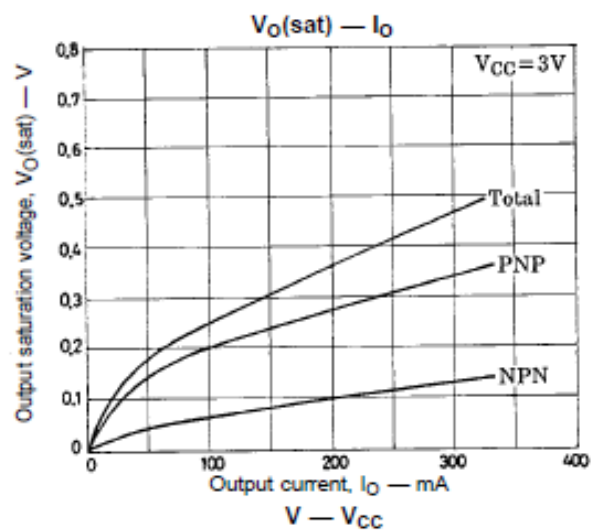
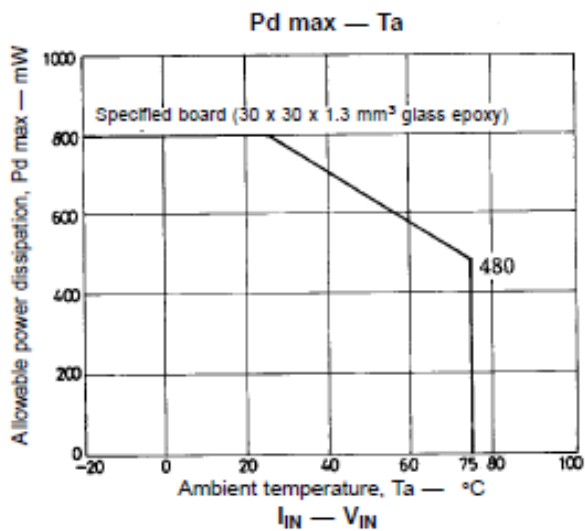
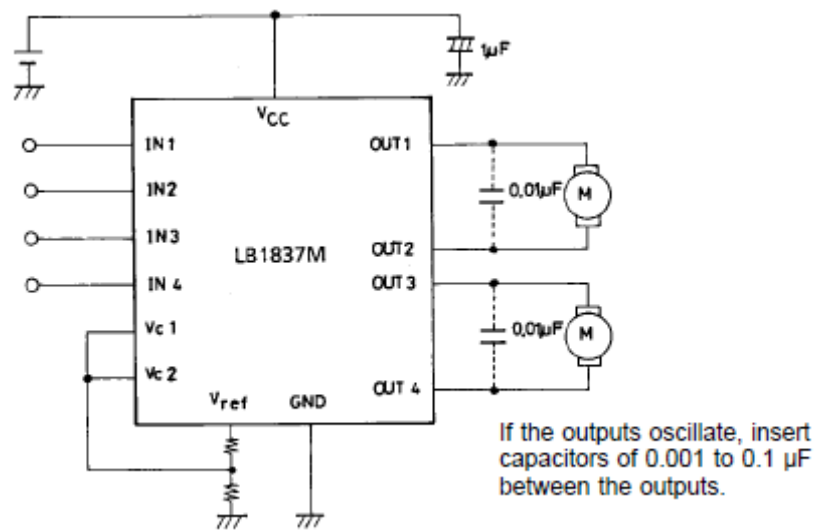


Note: Both GND pins must be grounded.

# Pin Functions

| Pin No.             | Symbol                       | Equivalent Circuit Diagram | Pin Function  |
|---------------------|------------------------------|----------------------------|---|
| 14                  | VCC                          |                            | Power supply pin for output and controller.   |
| 9<br>12             | GND                          |                            | GND pins for output and controller. Both must be grounded.  |
| 1<br>2<br>6<br>7    | IN2<br>IN1<br>IN3<br>IN4     |                            | <p>Input pins that determine the excitation of the outputs.</p> <p>IN1 and IN2 control outputs OUT1 and OUT2; IN3 and IN4 control outputs OUT3 and OUT4.</p> <p>When inputs IN1 through IN4 are all low or open, the device goes into standby mode and current consumption drops to 10 <math>\mu</math>A or less.</p> <p>L: -0.3 to +0.7 V</p> <p>H: 3.0 to 9.0 V</p> <p>There are no limitations on the magnitude relationships between the VCC and VIN supply voltages.</p> |
| 8<br>10<br>11<br>13 | OUT4<br>OUT3<br>OUT1<br>OUT2 |                            | <p>Output pins.</p> <p>Have built-in spark killer diodes. Braking provides short braking that turns on the lower transistor.</p>  |
| 3                   | Vref                         |                            | Reference voltage (= 2.0 V).  |
| 4<br>5              | VC1<br>VC2                   |                            | <p>Input pins that determine the constant voltage regulated output level.</p> <p>The constant-voltage regulated output VO (= voltage between H side output and GND) is controlled by <math>VO = 2.5 \times VC</math>. There are no limitations on the magnitude relationships between the VCC, VC1 and VC2 supply voltages.</p>   |

## Sample Application Circuit



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