# RS8837 Low-Voltage H-Bridge Driver

## 1 FEATURES

- **H-Bridge Motor Driver**
  **- DC Motor or Other Loads**
  **- DFN2X2-8: HS+LS 250mΩ**
  **- SOP8: HS+LS 320mΩ**
- **1.8A Maximum Drive Current**
- **Separate Motor and Logic Supply Pins:**
  **- Motor VM: 0 to 14V**
  **- Logic VCC: 2.5V to 7V**
- **Low-Power Sleep Mode With 0.1μA TYP Sleep Current**
- **VCC Under-Voltage Lockout**
- **Over-Current Protection**
- **Thermal Shutdown Protection**
- **Lead-Free Packages: DFN2X2-8, SOP8**

## 2 APPLICATIONS

- **DSLR Lenses**
- **Cameras**
- **Robotics**
- **Consumer Products, such as Toys, Smart Locks**
- **Medical Devices**

## 3 DESCRIPTIONS

The RS8837 is an integrated H-bridge driver designed for dc motors and coils bi-directional turning. Usually used for small current driving, such as camera, smart locks, toys, smart sweeper, electromagnetic valve, and other low-voltage or battery-powered motion control applications.

The RS8837 can drive one DC motor or other devices like solenoids, supply up to 1.8A maximum output current. The output driver block consists of N-channel power MOSFET configured as an H-bridge to drive the motor winding. An internal charge pump generates needed gate drive voltages.

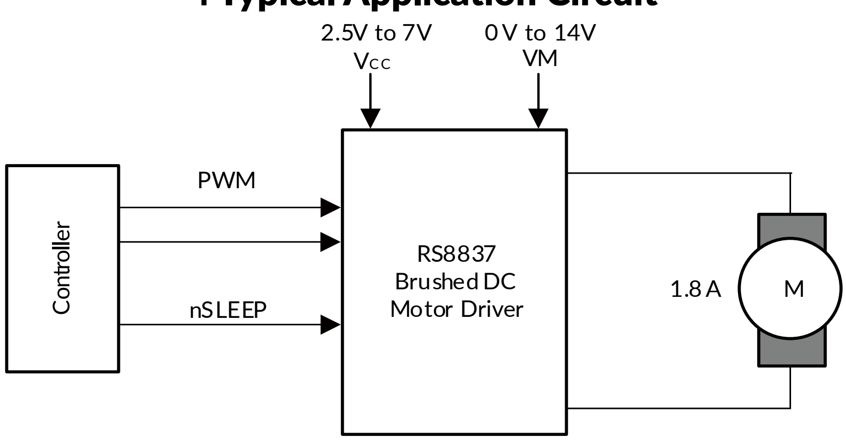
The RS8837 operates on a motor power supply voltage from 0 to 14V, and a device power supply voltage of 2.5V to 7V. Also provide internal shutdown functions for over-current protection, short-circuit protection, under-voltage lockout and over-temperature.

**Device Information** (1)

| PART NUMBER | PACKAGE | BODY SIZE (NOM) |
|---|---|---|
| RS8837 | DFN2X2-8 | 2.00mm×2.00mm |
| | SOP8 | 4.90mm×3.90mm |

(1) For all available packages, see the orderable addendum at the end of the data sheet.

## 4 Typical Application Circuit



# Table of Contents

# 5 Revision History

Note: Page numbers for previous revisions may different from page numbers in the current version.

| VERSION | Change Date | Change Item |
|---|---|---|
| A.0 | 2023/03/09 | Initial version completed |
| A.1 | 2023/06/29 | 1. Update VCC Operating Voltage<br>2. Update Electrical Characteristics<br>3. Update VM Operating Voltage |
| A.2 | 2023/08/23 | 1. Update VM Operating Voltage<br>2. Update Electrical Characteristics<br>3. Update Typical Characteristics |
| A.2.1 | 2024/02/23 | Modify packaging naming |

# 6 PACKAGE/ORDERING INFORMATION [1]

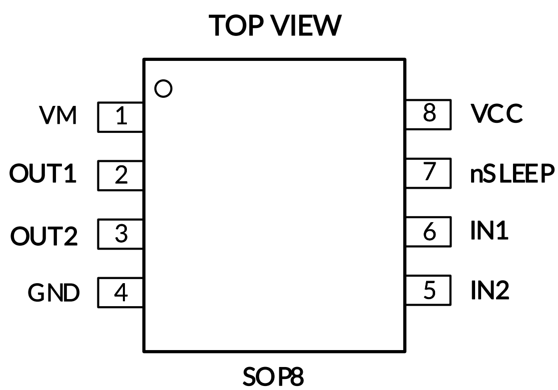
| PRODUCT | ORDERING NUMBER | TEMPERATURE RANGE | PACKAGE LEAD | PACKAGE MARKING [2] | PACKAGE OPTION |
|---|---|---|---|---|---|
| RS8837 | RS8837YTDE8 | -40°C ~ +85°C | DFN2X2-8 | 8837 | Tape and Reel,3000 |
| | RS8837YK | -40°C ~ +85°C | SOP8 | RS8837 | Tape and Reel,4000 |

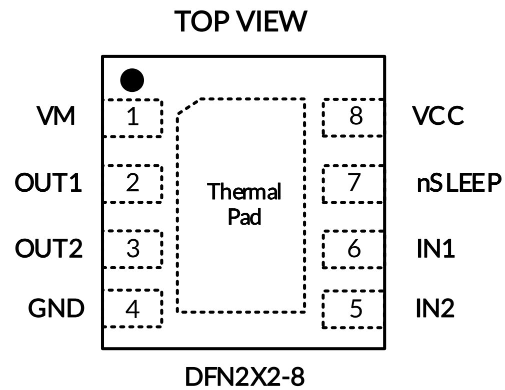
NOTE:

(1) This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the right-hand navigation.

(2) There may be additional marking, which relates to the lot trace code information(include data code and vendor code)，the logo or the environmental category on the device.

# 7 PIN CONFIGURATIONS




## Pin Description

| NAME | PIN | I/O (1) | DESCRIPTION |
|---|---|---|---|
| | SOP8/ DFN2X2-8 | | |
| VM | 1 | I | Motor power supply<br>Bypass this pin to the GND pin with a 0.1µF ceramic capacitor rated for VM. |
| OUT1 | 2 | O | Motor output<br>Connect these pins to the motor winding. |
| OUT2 | 3 | O | |
| GND | 4 | - | Device ground (This pin must be connected to ground.) |
| IN2 | 5 | I | IN2 input |
| IN1 | 6 | I | IN1 input |
| nSLEEP | 7 | I | Sleep mode input. When this pin is in logic low, the device enters low-power sleep mode. When this pin is logic high, the device operates normally. |
| VCC | 8 | I | Logic power supply<br>Bypass this pin to the GND pin with a 0.1µF ceramic capacitor rated for VCC. |

(1) I = Input, O = Output.

# 8 SPECIFICATIONS

## 8.1 Absolute Maximum Ratings

over operating free-air temperature range (unless otherwise noted) (1)(2)

| | | | MIN | MAX | UNIT |
|---|---|---|---|---|---|
| VM | Motor power-supply voltage (3) | | -0.3 | 16 | V |
| VCC | Logic power-supply voltage | | -0.3 | 7 | V |
| nSLEEP | Control pin voltage | | -0.5 | 7 | V |
| IN1, IN2 | Control pin voltage | | -0.5 | 5.5 | V |
| OUT1, OUT2 | Peak drive current | | Internally limited 2.7A (TYP) | | A |
| $\theta_{JA}$ | Package thermal impedance (4) | DFN2X2-8 | | 62 | °C/W |
| | | SOP8 | | 110.88 | °C/W |
| Temperature | Junction, $T_J$ (5) | | -40 | 150 | °C |
| | Storage, $T_{stg}$ | | -60 | 150 | °C |

(1) Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under Recommended Operating Conditions is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.
(2) All voltages are with respect to the GND pin.
(3) To protect the chip, the VM voltage should not exceed 16V under any operating conditions and the VM capacitance should be increased to suppress spikes when using inductive loads.
(4) The package thermal impedance is calculated in accordance with JESD-51.
(5) The maximum power dissipation is a function of $T_{J(MAX)}$, $R_{\theta JA}$, and $T_A$. The maximum allowable power dissipation at any ambient temperature is $P_D = (T_{J(MAX)} - T_A) / R_{\theta JA}$. All numbers apply for packages soldered directly onto a PCB.

## 8.2 ESD Ratings

The following ESD information is provided for handling of ESD-sensitive devices in an ESD protected area only.

| | | | VALUE | UNIT |
|---|---|---|---|---|
| $V_{(ESD)}$ | Electrostatic discharge | Human-body model (HBM), MIL-STD-883K METHOD 3015.9 | ±4000 | V |
| | | Charged-device model (CDM), ANSI/ESDA/JEDEC JS-002-2018 | ±1500 | V |
| | | Machine Model (MM), JESD22-A115C (2010) | ±200 | V |

**ESD SENSITIVITY CAUTION**

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

## 8.3 Recommended Operating Conditions

over operating free-air temperature range (unless otherwise noted) (1).

| Characteristics | Symbol | MIN | NOM | MAX | UNIT |
|---|---|---|---|---|---|
| Motor power supply voltage | VM | 0 | | 14 | V |
| Logic power supply voltage | VCC | 2.5 | | 7 | V |
| Motor peak current | $I_{OUT}$ | 0 | | 1.8 | A |
| Externally applied PWM frequency | $f_{PWM}$ | 0 | | 250 | KHz |
| Logic level input voltage | $V_{LOGIC}$ | -0.5 | | 5.5 | V |
| Operating Temperature | $T_A$ | -40 | | 85 | °C |

(1) Power dissipation and thermal limits must be observed.

## 8.4 Electrical Characteristics

$T_A$ = +25°C, over recommended operating condition unless otherwise noted. (1)

| SYMBOL | PARAMETER | TEST CONDITION | MIN(2) | TYP(3) | MAX(2) | UNIT |
|---|---|---|---|---|---|---|
| **POWER SUPPLIES (VM, VCC)** | | | | | | |
| VM | VM Operating Voltage | | 0 | | 14 | V |
| $I_{VM}$ | VM Operating Supply Current | VM=5V, VCC=3V, No PWM | | 150 | 600 | µA |
| | | VM=5V, VCC=3V, 50kHz PWM | | 510 | 600 | µA |
| $I_{VMQ}$ | VM Sleep Mode Supply Current | VM=5V, VCC=3V, nSLEEP = 0 | | 0.1 | 1 | µA |
| VCC | VCC Operating Voltage | | 2.5 | | 7 | V |
| $I_{VCC}$ | VCC Operating Supply Current | VM=5V, VCC=3V, No PWM | | 260 | 350 | µA |
| | | VM=5V, VCC=3V, 50kHz PWM | | 280 | 350 | µA |
| $I_{VCCQ}$ | VCC Sleep Mode Supply Current | VM=5V, VCC=3V, nSLEEP = 0 | | 0.1 | 1 | µA |
| **CONTROL INPUTS (IN1, IN2, nSLEEP)** | | | | | | |
| $V_{IH}$ | Input Logic-High Voltage Rising Threshold | nSLEEP | 1.3 | | | V |
| | | IN1, IN2 | 0.7×VCC | | | V |
| $V_{IL}$ | Input Logic-Low Voltage Falling Threshold | nSLEEP | | | 0.8 | V |
| | | IN1, IN2 | | | 0.3×VCC | V |
| $I_{IL}$ | Input Logic Low Current | $V_{IN}$=0V | | | 1 | µA |
| $I_{IH}$ | Input Logic High Current | $V_{IN}$=3.3V | | 30 | | µA |
| $R_{PD}$ | Pulldown Resistance | | | 100 | 110 | kΩ |
| **MOTOR DRIVER OUTPUTS (OUT1, OUT2)** | | | | | | |
| $R_{DS(ON)}$ | HS + LS FET On-Resistance DFN2X2-8 | VM=5V, VCC =3V, $I_O$=0.8A, $T_J$ =25°C | | 250 | 500 | mΩ |
| | HS + LS FET On-Resistance SOP8 | VM=5V, VCC =3V, $I_O$=0.8A, $T_J$ =25°C | | 320 | 500 | mΩ |
| $I_{OFF}$ | Off-State Leakage Current | VOUT = 0V | -200 | | 200 | nA |
| **PROTECTION CIRCUITS** | | | | | | |
| $V_{UVLO}$ | VCC Undervoltage Lockout | VCC rising | | 2.2 | | V |
| | | VCC falling | | 2.0 | | V |
| $I_{OCP}$ | Overcurrent Protection Trip Level | VM=5V, VCC =3V | 2.05 | 2.7 | | A |
| $t_{DEG}$ | Overcurrent Deglitch Time | VM=5V, VCC =3V | | 1 | | µs |
| $t_{RETRY}$ | Overcurrent Retry Time | VM=5V, VCC =3V | | 1.2 | | ms |
| $T_{TSD}$ | Thermal Shutdown Temperature | $T_J$ temperature | | 160 | | °C |
| $T_{RES}$ | Thermal Resume Temperature | | | 120 | | °C |

NOTE:
(1) Electrical table values apply only for factory testing conditions at the temperature indicated. Factory testing conditions result in very limited self-heating of the device.
(2) Limits are 100% production tested at 25°C. Limits over the operating temperature range are ensured through correlations using statistical quality control (SQC) method.
(3) Typical values represent the most likely parametric norm as determined at the time of characterization. Actual typical values may vary over time and will also depend on the application and configuration.

## 8.5 Timing Requirements

$T_A$=25°C，VM=5V, VCC=3V，RL=20Ω between OUT1 and OUT2.

| NUM | PARAMETER | TEST CONDITION | MIN[2] | TYP[3] | MAX[2] | UNIT |
|---|---|---|---|---|---|---|
| 1 | t1 | Output enable time<br>IN1 high and IN2 low to OUT1=0.97×VM | | 285 | | ns |
| 2 | t2 | Output disable time<br>IN1 low and IN2 low to OUT2=0.9×VM | | 170 | | ns |
| 3 | t3 | Delay time, INx high to OUTx high<br>IN1 low IN2 high to OUT2=0.5×VM | | 125 | | ns |
| 4 | t4 | Delay time, INx low to OUTx low<br>IN1 low IN2 low to OUT1=0.5×VM | | 110 | | ns |
| 5 | t5 | Output rise time<br>OUT1=0.2×VM to OUT1=0.8×VM | | 165 | | ns |
| 6 | t6 | Output fall time<br>OUT2=0.8×VM to OUT1=0.2×VM | | 40 | | ns |
| $t_{Wake}$ | $t_{Wake}$ | Wake time, nSLEEP rising edge to part active | | 9 | | us |

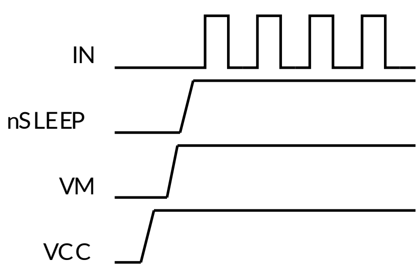



**Figure 1. power-on sequence**

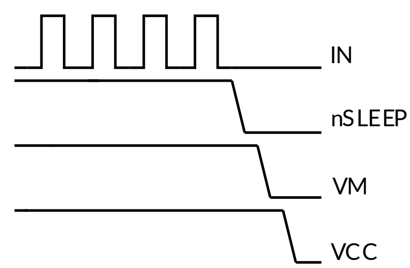



**Figure 2. power-down sequence**

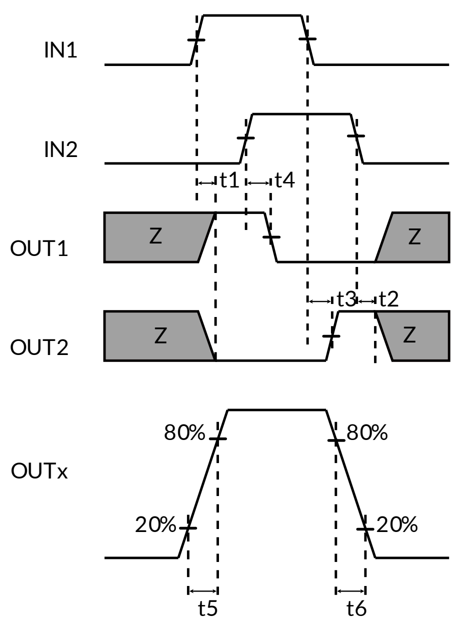



**Figure 3. Input and Output Timing for RS8837**

## 8.6 Typical Characteristics

NOTE: The graphs and tables provided following this note are a statistical summary based on a limited number of samples and are provided for informational purposes only.

At $T_A$ = +25℃, unless otherwise noted.

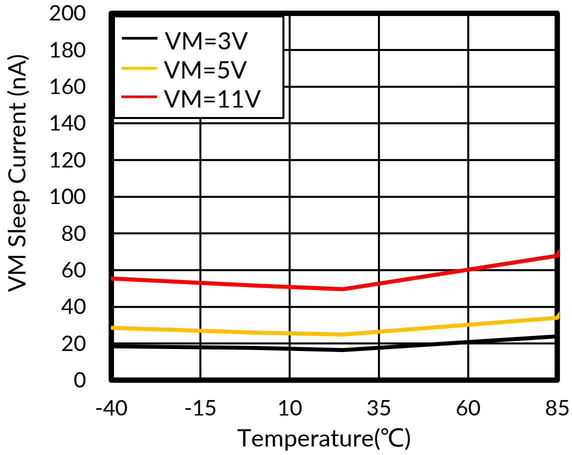



**Figure 4.** $I_{VMQ}$ **vs Temperature**

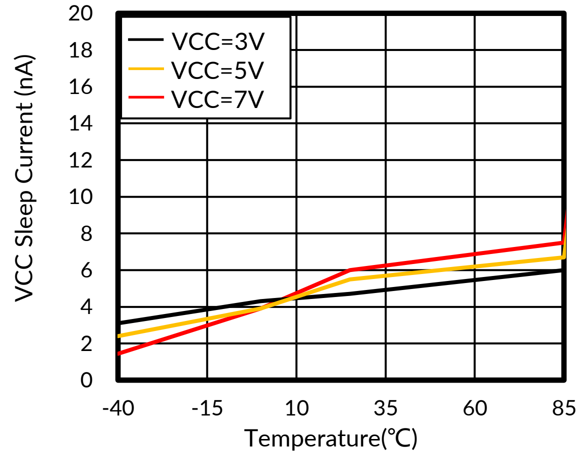



**Figure 5.** $I_{VCCQ}$ **vs Temperature**

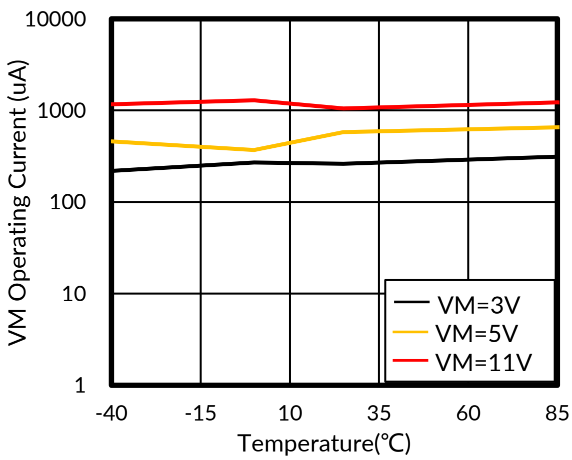



**Figure 6.** $I_{VM}$ **vs Temperature (50-kHz PWM)**

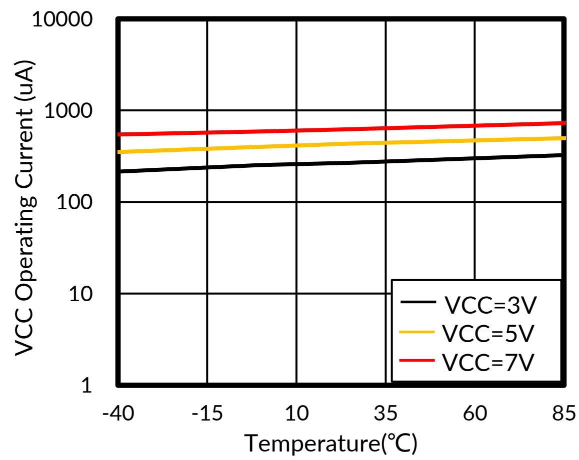



**Figure 7.** $I_{VCC}$ **vs Temperature (50-kHz PWM)**

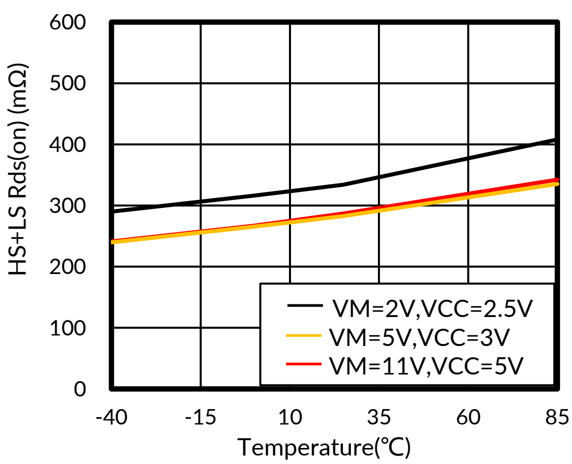



**Figure 8. HS+LS** $R_{ds(on)}$ **vs Temperature**

# 9 DETAILED DESCRIPTION

## 9.1 Overview

The RS8837 is an H-bridge driver that can drive one dc motor or other devices like solenoids. The outputs are controlled using either a PWM interface (IN1 and IN2). A low-power sleep mode is included, which can be enabled using the nSLEEP pin.

These devices greatly reduce the component count of motor driver systems by integrating the necessary driver FETs and FET control circuitry into a single device. In addition, the RS8837 adds protection features beyond traditional discrete implementations: undervoltage lockout, overcurrent protection, and thermal shutdown.

## 9.2 Functional Block Diagram

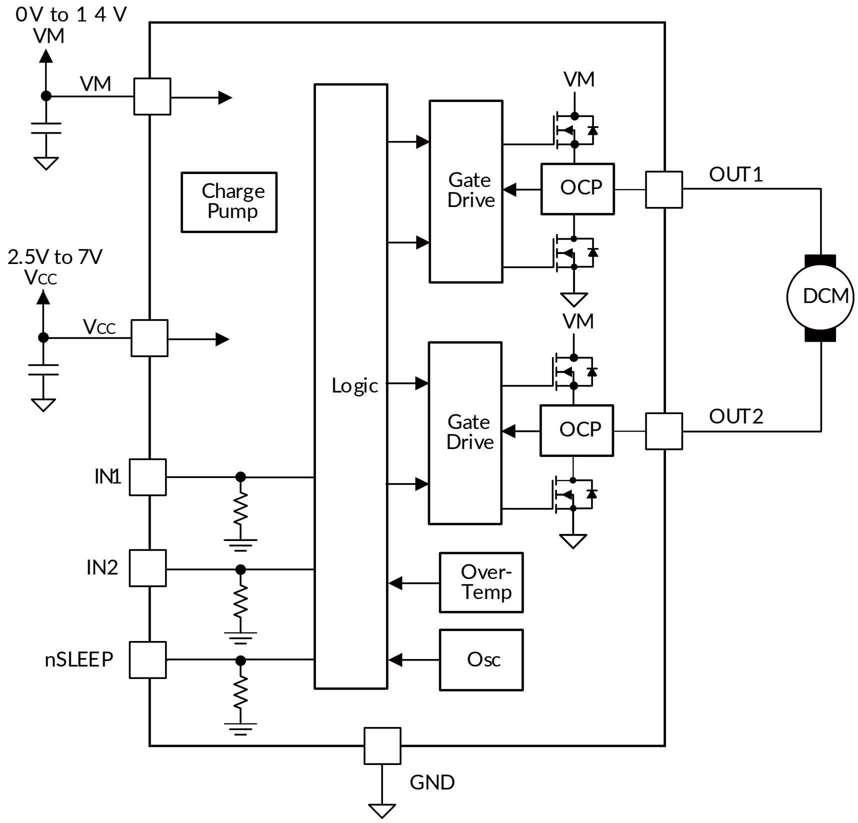



**Figure 9. RS8837 Functional Block Diagram**

## 9.3 Feature Description

### 9.3.1 Bridge Control

The RS8837 device is controlled using a PWM input interface, also called an IN-IN interface. Each output is controlled by a corresponding input pin. Table 1 shows the logic for the RS8837 device.

**Table 1. RS8837 Device Logic**

| nSLEEP | IN1 | IN2 | OUT1 | OUT2 | FUNCTION (DC MOTOR) |
|---|---|---|---|---|---|
| 0 | X | X | Z | Z | Coast |
| 1 | 0 | 0 | Z | Z | Coast |
| 1 | 0 | 1 | L | H | Reverse |
| 1 | 1 | 0 | H | L | Forward |
| 1 | 1 | 1 | L | L | Brake |

### 9.3.2 Sleep Mode

If the nSLEEP pin is brought to a logic-low state, the RS8837 enters a low-power sleep mode. In this state, all unnecessary internal circuitry is powered down.

### 9.3.3 Power Supplies and Input Pins

The input pins can be driven within the recommended operating conditions with or without the VCC, VM, or both power supplies present. No leakage current path will exist to the supply. Each input pin has a weak pulldown resistor (approximately 100 kΩ) to ground.

The VCC and VM supplies can be applied and removed in any order. When the VCC supply is removed, the device enters a low-power state and draws very little current from the VM supply. The VCC and VM pins can be connected together if the supply voltage is between 2.5V and 7 V.

The VM voltage supply does not have any undervoltage-lockout protection (UVLO) so as long as VCC > 2.2 V; the internal device logic remains active, which means that the VM pin voltage can drop to 0 V. However, the load cannot be sufficiently driven at low VM voltages.

### 9.3.4 Protection Circuits

The RS8837 is fully protected against VCC undervoltage, overcurrent, and overtemperature events.

### 9.3.5 VCC Undervoltage Lockout

If at any time the voltage on the VCC pin falls below the undervoltage lockout threshold voltage, all FETs in the H-bridge are disabled. Operation resumes when the VCC pin voltage rises above the UVLO threshold.

### 9.3.6 Overcurrent Protection

An analog current-limit circuit on each FET limits the current through the FET by removing the gate drive. If this analog current limit persists for longer than $t_{DEG}$, all FETs in the H-bridge are disabled. Operation resumes automatically after $t_{RETRY}$ has elapsed. Overcurrent conditions are detected on both the high-side and low-side FETs. A short to the VM pin, GND, or from the OUT1 pin to the OUT2 pin results in an overcurrent condition.

### 9.3.7 Thermal Shutdown

If the die temperature exceeds safe limits, all FETs in the H-bridge are disabled. After the die temperature falls to a safe level, operation automatically resumes.

**Table 2. Fault Behavior**

| FAULT | CONDITION | H-BRIDGE | RECOVERY |
|---|---|---|---|
| VCC undervoltage | VCC < 2V | Disabled | VCC > 2.2V |
| Over current | $I_{OUT}$ >2.7A (TYP) | Disabled | $t_{RETRY}$ elapses |
| Thermal Shutdown | $T_J$ > 160°C(TYP) | Disabled | $T_J$ < 120°C |

## 9.4 Device Functional Modes

The RS8837 is active unless the nSLEEP pin is brought logic low. In sleep mode, the H-bridge FETs are disabled Hi-Z. The RS8837 is brought out of sleep mode automatically if nSLEEP is brought logic high.

The H-bridge outputs are disabled during undervoltage lockout, overcurrent, and overtemperature fault conditions.

**Table 3. Operation Modes**

| MODE | CONDITION | H-BRIDGE |
|---|---|---|
| Operating | nSLEEP pin=1 | Operating |
| Sleep mode | nSLEEP pin=0 | Disabled |
| Fault encountered | Any fault condition met | Disabled |

# 10 Application and Implementation

Information in the following applications sections is not part of the RUNIC component specification, and RUNIC does not warrant its accuracy or completeness. RUNIC's customers are responsible for determining suitability of components for their purposes. Customers should validate and test their design implementation to confirm system functionality.

## 10.1 Application Information

The RS8837 is device is used to drive one dc motor or other devices like solenoids. The following design procedure can be used to configure the RS8837.

## 10.2 Typical Application

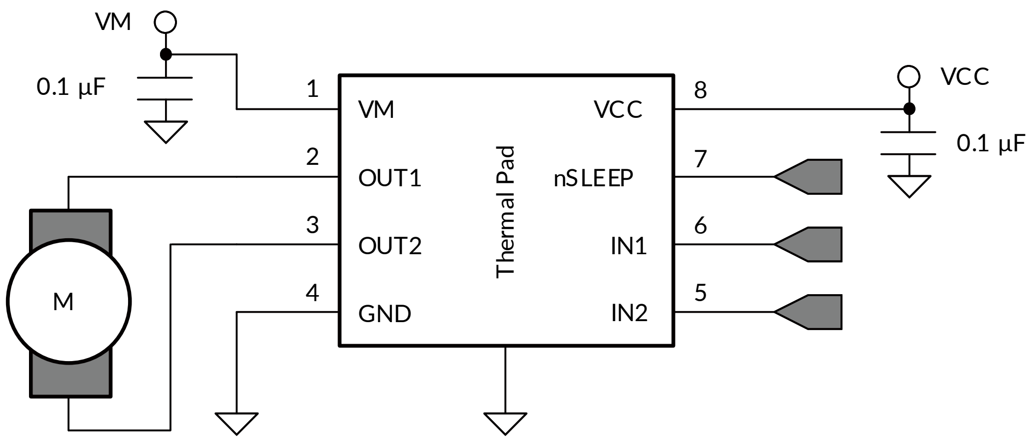



**Figure 10. Schematic of RS8837 Application**

## 10.3 Design Requirements

Table 4 lists the required parameters for a typical usage case.

**Table 4. System Design Requirements**

| DESIGN PARAMETER | REFERENCE | EXAMPLE VALUE |
|---|---|---|
| Motor supply voltage | VM | 9V |
| Logic supply voltage | VCC | 3.3V |
| Target rms current | $I_{OUT}$ | 0.8A |

## 10.4 Detailed Design Procedure

### 10.4.1 Motor Voltage

The appropriate motor voltage depends on the ratings of the motor selected and the desired RPM. A higher voltage spins a brushed dc motor faster with the same PWM duty cycle applied to the power FETs. A higher voltage also increases the rate of current change through the inductive motor windings.

### 10.4.2 Low-Power Operation

When entering sleep mode, RUNIC recommends setting all inputs as a logic low to minimize system power.

# 11 Power Supply Recommendations

## 11.1 Bulk Capacitance

Having appropriate local bulk capacitance is an important factor in motor-drive system design. It is generally beneficial to have more bulk capacitance, while the disadvantages are increased cost and physical size.
The amount of local capacitance needed depends on a variety of factors, including:

- The highest current required by the motor system
- The power-supply capacitance and ability to source current
- The amount of parasitic inductance between the power supply and motor system
- The acceptable voltage ripple
- The type of motor used (brushed dc, brushless dc, stepper)
- The motor braking method

The inductance between the power supply and motor drive system limits the rate at which current can change from the power supply. If the local bulk capacitance is too small, the system responds to excessive current demands or dumps from the motor with a change in voltage. When adequate bulk capacitance is used, the motor voltage remains stable and high current can be quickly supplied.
The data sheet generally provides a recommended value, but system-level testing is required to determine the appropriate size of bulk capacitor.

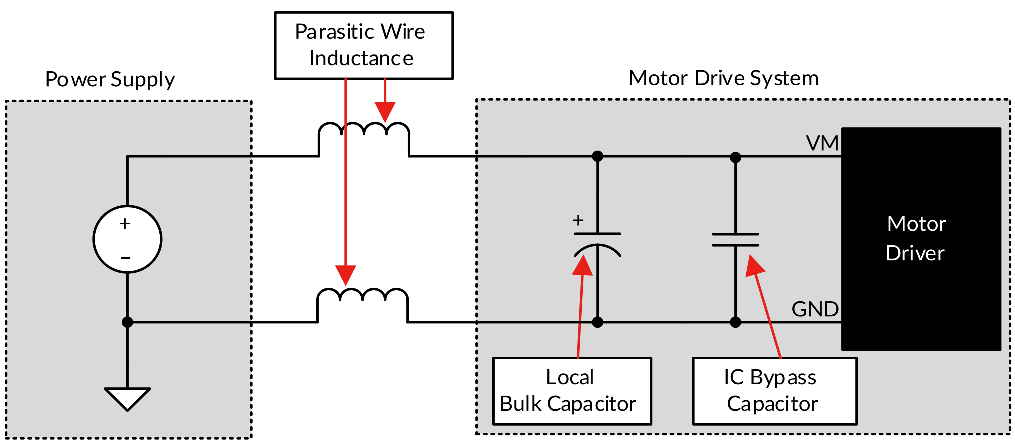



**Figure 11. Example Setup of Motor Drive System With External Power Supply**

The voltage rating for bulk capacitors should be higher than the operating voltage, to provide margin for cases when the motor transfers energy to the supply.

# 12 Layout

## 12.1 Layout Guidelines

The VM and VCC pins should be bypassed to GND using low-ESR ceramic bypass capacitors with a recommended value of 0.1µF rated for VM and VCC. These capacitors should be placed as close to the VM and VCC pins as possible with a thick trace or ground plane connection to the device GND pin.

## 12.2 Layout Example

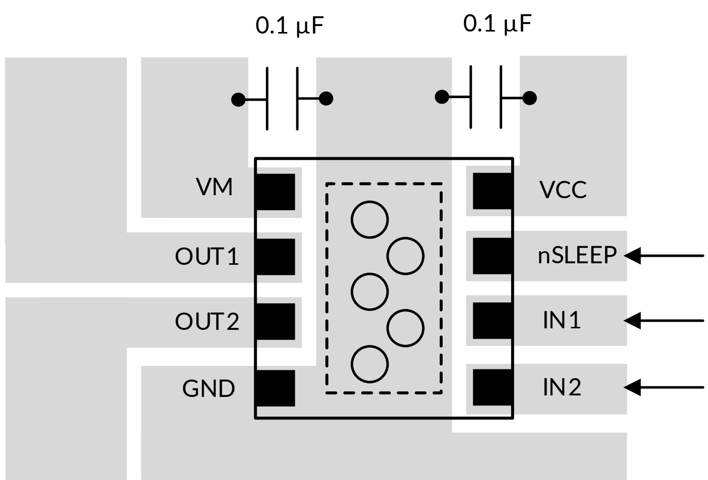



**Figure 12. Simplified Layout Example**

## 12.3 Power Dissipation

Power dissipation in the RS8837 is dominated by the power dissipated in the output FET resistance, or $R_{DS(on)}$. Use Equation 1 to estimate the average power dissipation when running a stepper motor.

$$P_{TOT} = R_{DS(on)} \times (I_{OUT(RMS)})^2 \quad (1)$$

where

- $P_{TOT}$ is the total power dissipation
- $R_{DS(on)}$ is the resistance of the HS plus LS FETs
- $I_{OUT(RMS)}$ is the rms or dc output current being supplied to the load

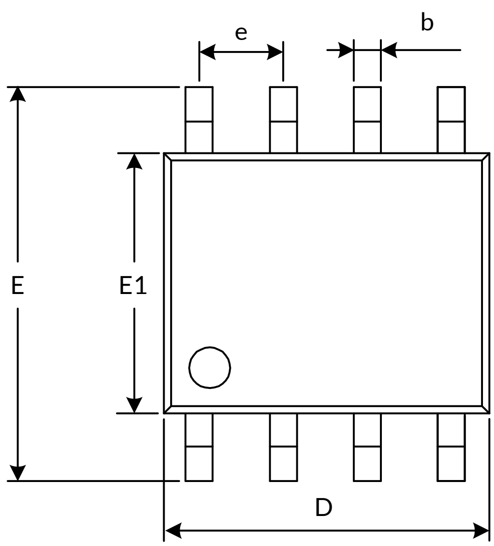
The maximum amount of power that can be dissipated in the device is dependent on ambient temperature and heatsinking.

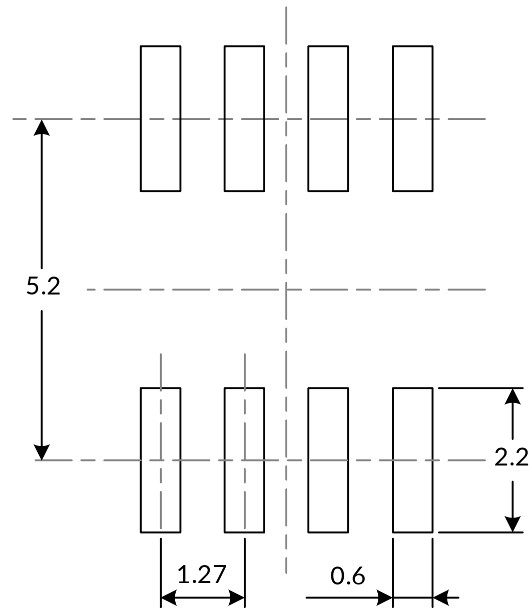
**Note:** The value of $R_{DS(on)}$ increases with temperature, so as the device heats, the power dissipation increases.

The RS8837 has thermal shutdown protection. If the die temperature exceeds approximately 160°C, the device is disabled until the temperature drops to a safe level. Any tendency of the device to enter thermal shutdown is an indication of either excessive power dissipation, insufficient heatsinking, or too high an ambient temperature.

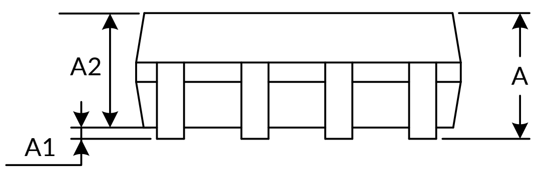
# 13 PACKAGE OUTLINE DIMENSIONS

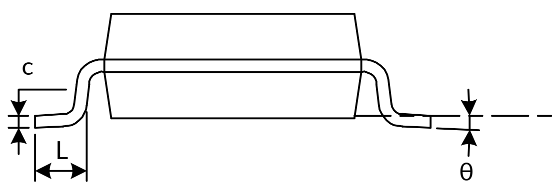
## SOP8 (3)




**RECOMMENDED LAND PATTERN** (Unit: mm)



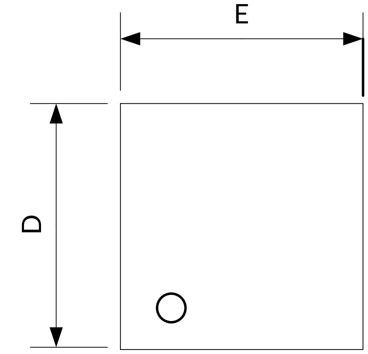




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | **Min** | **Max** | **Min** | **Max** |
| A (1) | 1.350 | 1.750 | 0.053 | 0.069 |
| A1 | 0.100 | 0.250 | 0.004 | 0.010 |
| A2 | 1.350 | 1.550 | 0.053 | 0.061 |
| b | 0.330 | 0.510 | 0.013 | 0.020 |
| c | 0.170 | 0.250 | 0.007 | 0.010 |
| D (1) | 4.800 | 5.000 | 0.189 | 0.197 |
| e | 1.270 (BSC) (2) | | 0.050 (BSC) (2) | |
| E | 5.800 | 6.200 | 0.228 | 0.244 |
| E1 (1) | 3.800 | 4.000 | 0.150 | 0.157 |
| L | 0.400 | 1.270 | 0.016 | 0.050 |
| θ | 0° | 8° | 0° | 8° |

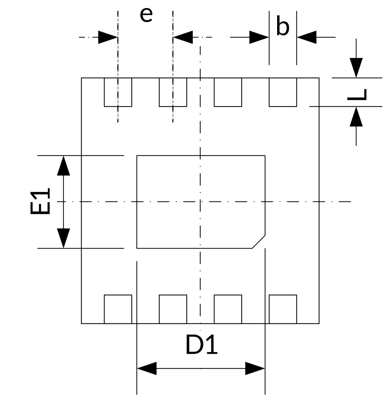
NOTE:

1. Plastic or metal protrusions of 0.15mm maximum per side are not included.
2. BSC (Basic Spacing between Centers), "Basic" spacing is nominal.
3. This drawing is subject to change without notice.

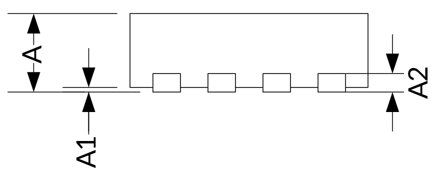
## DFN2X2-8 (2)



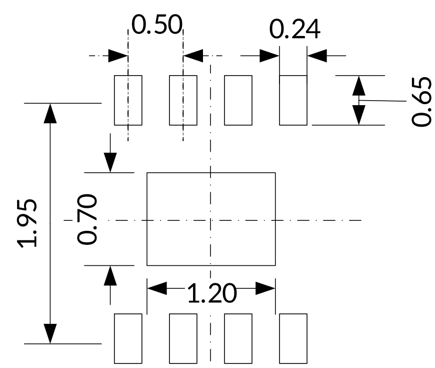

TOP VIEW




BOTTOM VIEW




SIDE VIEW



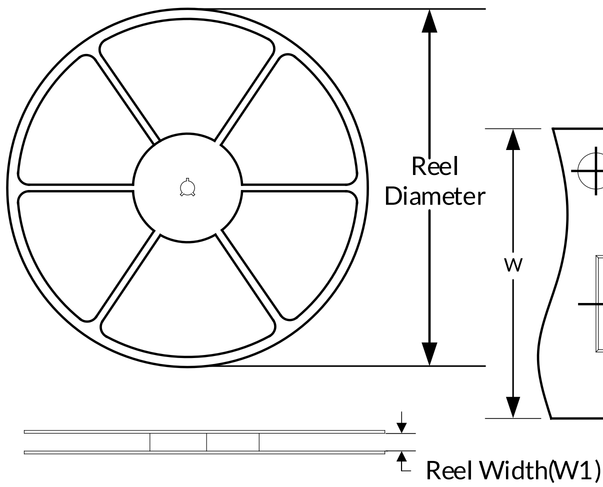

RECOMMENDED LAND PATTERN
(Unit: mm)

| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A (1) | 0.700 | 0.800 | 0.028 | 0.031 |
| A1 | 0.000 | 0.050 | 0.000 | 0.002 |
| A2 | 0.203(TYP) | | 0.008(TYP) | |
| b | 0.180 | 0.300 | 0.007 | 0.012 |
| D (1) | 1.900 | 2.100 | 0.075 | 0.083 |
| D1 | 1.100 | 1.300 | 0.043 | 0.051 |
| E (1) | 1.900 | 2.100 | 0.075 | 0.083 |
| E1 | 0.600 | 0.800 | 0.024 | 0.031 |
| e | 0.500(TYP) | | 0.020(TYP) | |
| L | 0.250 | 0.450 | 0.010 | 0.018 |

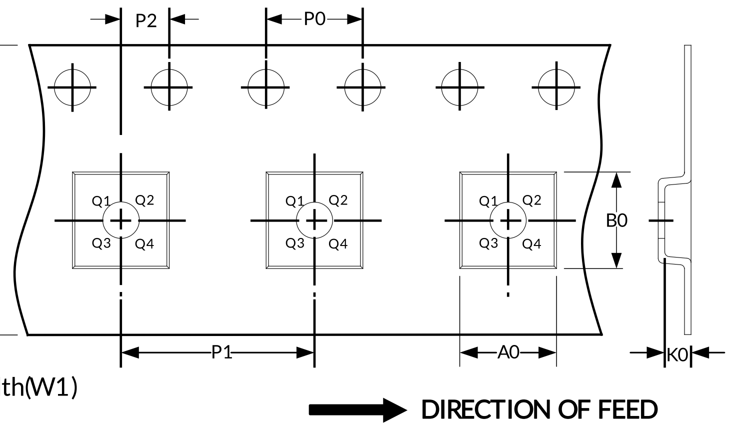
NOTE:
1. Plastic or metal protrusions of 0.075mm maximum per side are not included.
2. This drawing is subject to change without notice.

# 14 TAPE AND REEL INFORMATION

### REEL DIMENSIONS




### TAPE DIMENSION




NOTE: The picture is only for reference. Please make the object as the standard.

## KEY PARAMETER LIST OF TAPE AND REEL

| Package Type | Reel Diameter | Reel Width (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P0 (mm) | P1 (mm) | P2 (mm) | W (mm) | Pin1 Quadrant |
|---|---|---|---|---|---|---|---|---|---|---|
| SOP8 | 13” | 12.4 | 6.40 | 5.40 | 2.10 | 4.0 | 8.0 | 2.0 | 12.0 | Q1 |
| DFN2X2-8 | 7” | 9.5 | 2.30 | 2.30 | 1.10 | 4.0 | 4.0 | 2.0 | 8.0 | Q2 |

NOTE:
1. All dimensions are nominal.
2. Plastic or metal protrusions of 0.15mm maximum per side are not included.

# IMPORTANT NOTICE AND DISCLAIMER

Jiangsu RUNIC Technology Co., Ltd. will accurately and reliably provide technical and reliability data (including data sheets), design resources (including reference designs), application or other design advice, WEB tools, safety information and other resources, without warranty of any defect, and will not make any express or implied warranty, including but not limited to the warranty of merchantability Implied warranty that it is suitable for a specific purpose or does not infringe the intellectual property rights of any third party.

These resources are intended for skilled developers designing with RUNIC products You will be solely responsible for: (1) Selecting the appropriate products for your application; (2) Designing, validating and testing your application; (3) Ensuring your application meets applicable standards and any other safety, security or other requirements; (4) RUNIC and the RUNIC logo are registered trademarks of RUNIC INCORPORATED. All trademarks are the property of their respective owners; (5) For change details, review the revision history included in any revised document. The resources are subject to change without notice. Our company will not be liable for the use of this product and the infringement of patents or third-party intellectual property rights due to its use.