

## DRV8837C 1A 低电压 H 桥驱动器

### 1 特性

- 独立的 H 桥电机
  - 驱动直流电机或其他负载
  - 低 MOSFET 导通电阻: HS + LS 1  $\Omega$
- 1A 最大驱动电流
- 工作电源电压范围: 0V 至 11V
- 标准脉宽调制 (PWM) 接口 (IN1/IN2)
- 低功耗休眠模式, 休眠电流最大值仅为 120nA
  - nSLEEP 引脚
- 小型封装尺寸
  - 8 晶圆级小外形无引线 (WSON) (带外露散热焊盘)
  - 2.0mm x 2.0mm
- 保护特性
  - VCC 欠压闭锁 (UVLO)
  - 过流保护 (OCP)
  - 热关断 (TSD)

### 2 应用范围

- 摄像机
- 数字单镜头反光 (DSLR) 镜头
- 消费类产品
- 玩具
- 机器人技术
- 医疗设备

### 3 说明

DRV8837C 器件提供了一套集成型电机驱动器解决方案, 主要面向照相机、消费类产品、玩具以及其他低压和电池供电类运动控制应用。此器件能够驱动一个直流电机或其他诸如螺线管的器件。输出驱动器模块由配置为 H 桥的 N 沟道功率 MOSFET 组成, 用以驱动电机绕组。一个内部电荷泵被用来生成所需的栅极驱动电压。

DRV8837C 器件可以提供高达 1A 的输出电流。该器件的电机电源电压为 0 至 11V, 其控制逻辑工作电源轨为 1.8V 至 5V。

DRV8837C 器件有一个 PWM (IN/IN) 输入接口。

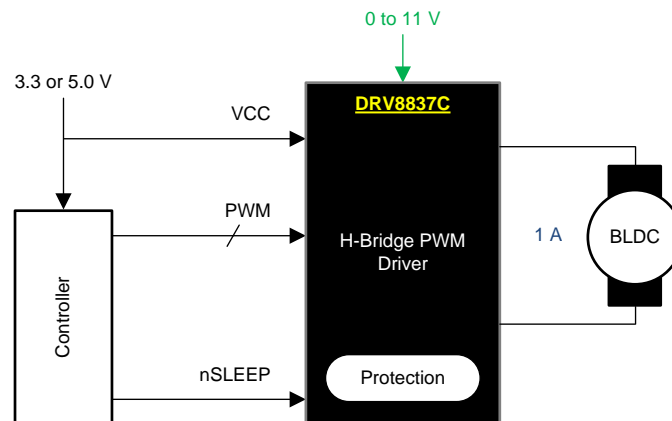
此外, 还提供用于过流保护、短路保护、欠压闭锁和过热保护的内部关断功能。

器件信息<sup>(1)</sup>

器件型号	封装	封装尺寸 (标称值)
DRV8837C	WSON (8)	2.00mm x 2.00mm

(1) 要了解所有可用封装, 请见数据表末尾的可订购产品附录。

DRV8837C 简化框图



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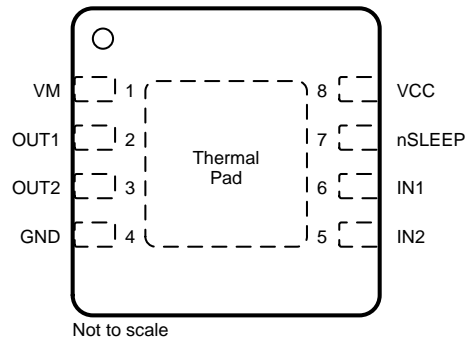
## 4 修订历史记录

注：之前版本的页码可能与当前版本有所不同。

<b>Changes from Original (July 2016) to Revision A</b>	<b>Page</b>
• 已更改 器件状态，从产品预览更改为量产数据 .....	<b>1</b>

## 5 Pin Configuration and Functions

**DSG Package  
8-Pin WSON With Exposed Thermal Pad  
Top View**



### Pin Functions

PIN		TYPE	DESCRIPTION
NAME	NO.		
<b>POWER AND GROUND</b>			
GND	4	PWR	Device ground This pin must be connected to the PCB ground.
VCC	8	PWR	Logic power supply Bypass this pin to the GND pin with a 0.1- $\mu$ F ceramic capacitor rated for VCC.
VM	1	PWR	Motor power supply Bypass this pin to the GND pin with a 0.1- $\mu$ F ceramic capacitor rated for VM.
<b>CONTROL</b>			
IN1	6	I	IN1 input
IN2	5	I	IN2 input
nSLEEP	7	I	Sleep mode input When this pin is in logic low, the device enters low-power sleep mode. The device operates normally when this pin is logic high. The pin has an internal pulldown resistor to GND.
<b>OUTPUT</b>			
OUT1	2	O	Motor output
OUT2	3	O	Connect this pin to the motor winding.

## 6 Specifications

### 6.1 Absolute Maximum Ratings

Over operating free-air temperature range (unless otherwise noted)<sup>(1)(2)</sup>

		MIN	MAX	UNIT
Motor power-supply voltage	V <sub>M</sub>	-0.3	12	V
Logic power-supply voltage	V <sub>CC</sub>	-0.3	7	V
Control pin voltage	IN1, IN2, nSLEEP	-0.5	7	V
Peak drive current	OUT1, OUT2	Internally limited		A
Operating virtual junction temperature, T <sub>J</sub>		-40	150	°C
Storage temperature, T <sub>stg</sub>		-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 voltage values are with respect to network ground pin.

### 6.2 ESD Ratings

		VALUE	UNIT
V <sub>(ESD)</sub>	Electrostatic discharge	Human-body model (HBM), per ANSI/ESDA/JEDEC JS-001 <sup>(1)</sup>	±4000
		Charged-device model (CDM), per JEDEC specification JESD22-C101 <sup>(2)</sup>	±1000

- (1) JEDEC document JEP155 states that 500-V HBM allows safe manufacturing with a standard ESD control process.
- (2) JEDEC document JEP157 states that 250-V CDM allows safe manufacturing with a standard ESD control process.

### 6.3 Recommended Operating Conditions

Over operating free-air temperature range (unless otherwise noted)

		MIN	MAX	UNIT
V <sub>VM</sub>	Motor power-supply voltage	0	11	V
V <sub>CC</sub>	Logic power-supply voltage	1.8	7	V
I <sub>OUT</sub>	Motor peak current	0	1	A
f <sub>PWM</sub>	Externally applied PWM frequency	0	250	kHz
V <sub>LOGIC</sub>	Logic level input voltage	0	5.5	V
T <sub>A</sub>	Operating ambient temperature	-40	85	°C

### 6.4 Thermal Information

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

THERMAL METRIC <sup>(1)</sup>		DRV8837C	UNIT
		DSG (WSON)	
		8 PINS	
R <sub>θJA</sub>	Junction-to-ambient thermal resistance	60.9	°C/W
R <sub>θJC(top)</sub>	Junction-to-case (top) thermal resistance	71.4	°C/W
R <sub>θJB</sub>	Junction-to-board thermal resistance	32.2	°C/W
ψ <sub>JT</sub>	Junction-to-top characterization parameter	1.6	°C/W
ψ <sub>JB</sub>	Junction-to-board characterization parameter	32.8	°C/W
R <sub>θJC(bot)</sub>	Junction-to-case (bottom) thermal resistance	9.8	°C/W

- (1) For more information about traditional and new thermal metrics, see the [Semiconductor and IC Package Thermal Metrics](#) application report.

## 6.5 Electrical Characteristics

 $T_A = 25^\circ\text{C}$ , over recommended operating conditions unless otherwise noted

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>POWER SUPPLIES (VM, VCC)</b>						
$V_{VM}$	VM operating voltage		0		11	V
$I_{VM}$	VM operating supply current	$V_{VM} = 5\text{ V}; V_{CC} = 3\text{ V};$ No PWM		40	100	$\mu\text{A}$
		$V_{VM} = 5\text{ V}; V_{CC} = 3\text{ V};$ 50 kHz PWM		0.8	1.5	mA
$I_{VMQ}$	VM sleep mode supply current	$V_{VM} = 5\text{ V}; V_{CC} = 3\text{ V};$ $n\text{SLEEP} = 0$		30	95	nA
$V_{CC}$	$V_{CC}$ operating voltage		1.8		7	V
$I_{VCC}$	$V_{CC}$ operating supply current	$V_{VM} = 5\text{ V}; V_{CC} = 3\text{ V};$ No PWM		300	500	$\mu\text{A}$
		$V_{VM} = 5\text{ V}; V_{CC} = 3\text{ V};$ 50 kHz PWM		0.7	1.5	mA
$I_{VCCQ}$	$V_{CC}$ sleep mode supply current	$V_{VM} = 5\text{ V}; V_{CC} = 3\text{ V};$ $n\text{SLEEP} = 0$		5	25	nA
<b>CONTROL INPUTS (IN1/PH, IN2/EN, nSLEEP)</b>						
$V_{IL}$	Input logic-low voltage				$0.25 \times V_{CC}$	V
$V_{IH}$	Input logic-high voltage		$0.5 \times V_{CC}$			V
$V_{HYS}$	Input logic hysteresis			$0.08 \times V_{CC}$		V
$I_{IL}$	Input logic-low current	$V_{INx} = 0\text{ V}$	-5		5	$\mu\text{A}$
$I_{IH}$	Input logic-high current	$V_{INx} = 3.3\text{ V}$			50	$\mu\text{A}$
$R_{PD}$	Pulldown resistance			100		k $\Omega$
<b>MOTOR DRIVER OUTPUTS (OUT1, OUT2)</b>						
$R_{DS(ON)}$	HS + LS FET on-resistance	$V_{VM} = 5\text{ V}; V_{CC} = 3.3\text{ V};$ $I_O = 200\text{ mA}; T_J = 25^\circ\text{C}$		1000		m $\Omega$
$I_{OFF}$	Off-state leakage current	$V_{OUTx} = 0\text{ V}$	-200		200	nA
<b>PROTECTION CIRCUITS</b>						
$V_{UVLO}$	$V_{CC}$ undervoltage lockout	$V_{CC}$ falling			1.7	V
		$V_{CC}$ rising			1.8	V
$I_{OCP}$	Overcurrent protection trip level		1.2			A
$t_{DEG}$	Overcurrent deglitch time			1		$\mu\text{s}$
$t_{RETRY}$	Overcurrent retry time			1		ms
$T_{TSD}^{(1)}$	Thermal shutdown temperature	Die temperature $T_J$	150	160	180	$^\circ\text{C}$

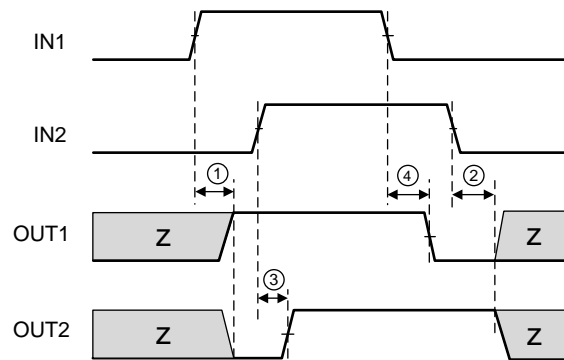
(1) Not tested in production; limits are based on characterization data

**DRV8837C**

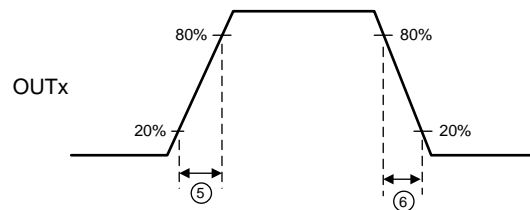
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**6.6 Timing Requirements**
 $T_A = 25^\circ\text{C}$ ,  $V_{VM} = 5\text{ V}$ ,  $V_{CC} = 3\text{ V}$ ,  $R_L = 20\ \Omega$ 

NO.			MIN	MAX	UNIT
1	$t_7$	Output enable time		300	ns
2	$t_8$	Output disable time		300	ns
3	$t_9$	Delay time, INx high to OUTx high		160	ns
4	$t_{10}$	Delay time, INx low to OUTx low		160	ns
5	$t_{11}$	Output rise time	20	188	ns
6	$t_{12}$	Output fall time	20	188	ns
—	$t_{\text{wake}}$	Wake time, nSLEEP rising edge to part active		30	$\mu\text{s}$

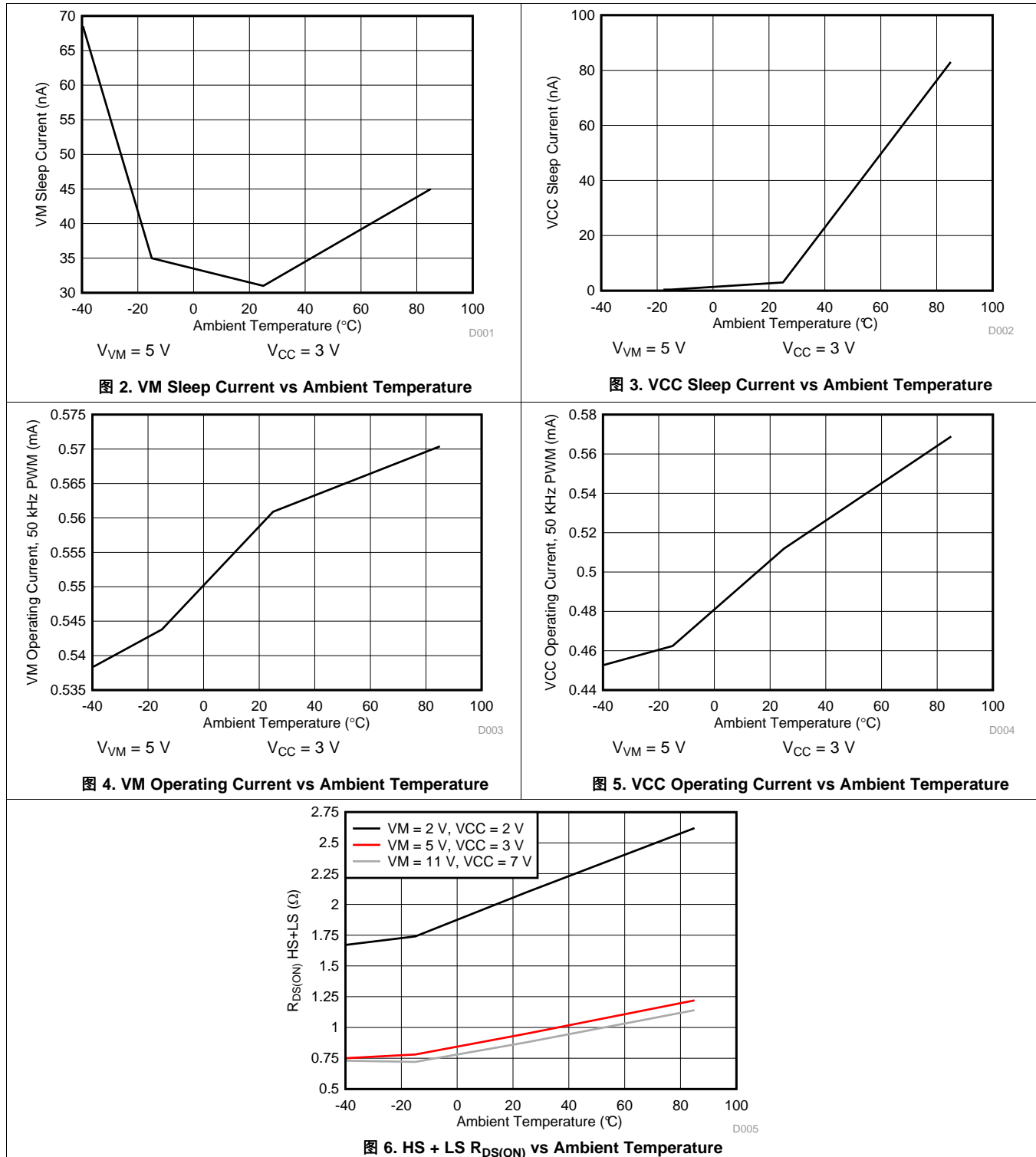


DRV8837C


**图 1. Input and Output Timing for DRV8837C**

## 6.7 Typical Characteristics

Plots generated using characterization data.



## 7 Detailed Description

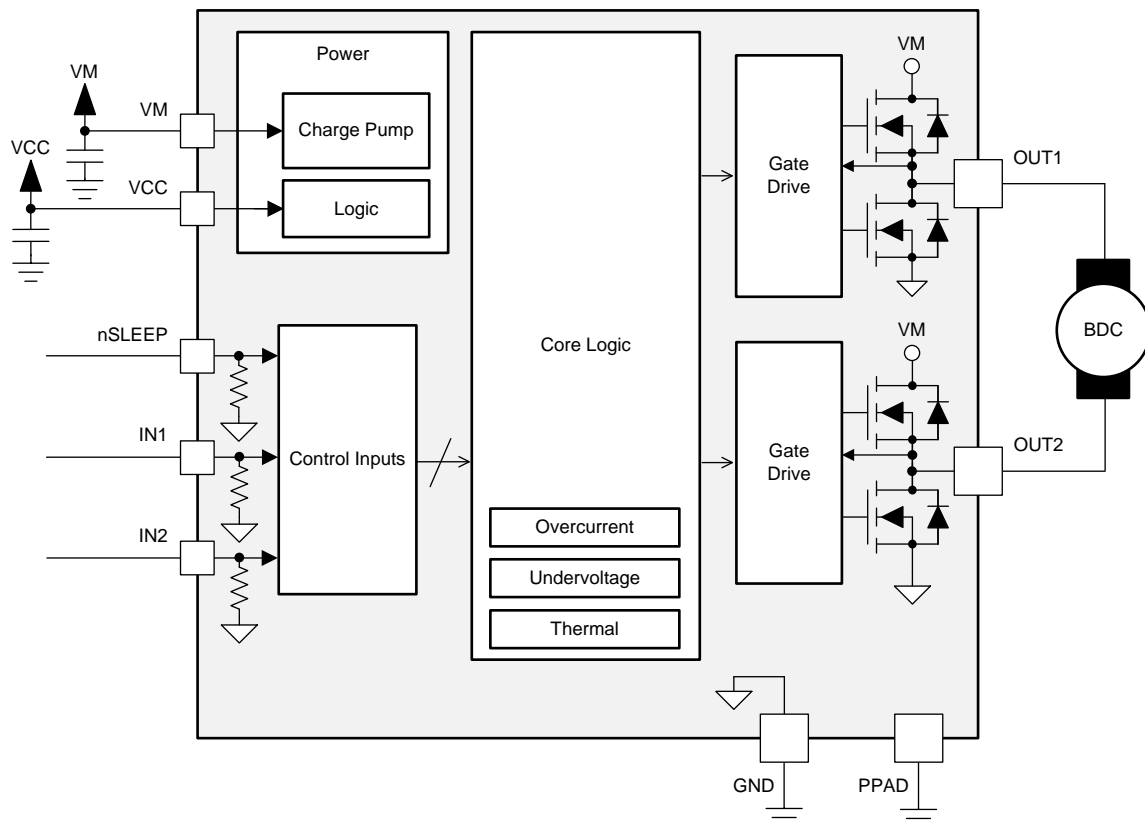
### 7.1 Overview

The DRV8837C device is an H-bridge driver that can drive one DC motor or other devices like solenoids. The outputs are controlled using a PWM interface (IN1/IN2).

A low-power sleep mode is included, which can be enabled using the nSLEEP pin.

This device greatly reduces the component count of motor driver systems by integrating the necessary driver FETs and FET control circuitry into a single device. In addition, the DRV8837C device adds protection features beyond traditional discrete implementations: undervoltage lockout, overcurrent protection, and thermal shutdown.

### 7.2 Functional Block Diagram



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## 7.3 Feature Description

### 7.3.1 Bridge Control

The DRV8837C device is controlled using a PWM input interface, also called an IN/IN interface. Each output is controlled by a corresponding input pin.

表 1 shows the logic for the DRV8837C device.

表 1. DRV8837C 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

### 7.3.2 Sleep Mode

If the nSLEEP pin is brought to a logic-low state, the DRV8837C device enters a low-power sleep mode. In this state, all unnecessary internal circuitry is powered down.

### 7.3.3 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 exists to the supply. Each input pin has a weak pulldown resistor (approximately 100 k $\Omega$ ) 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 1.8 and 7 V.

The VM voltage supply does not have any undervoltage-lockout protection (UVLO). As long as  $V_{CC} > 1.8$  V, the internal device logic remains active which means that the VM pin voltage can drop to 0 V, however, the load may not be sufficiently driven at low VM voltages.

### 7.3.4 Protection Circuits

The DRV8837C is fully protected against VCC undervoltage, overcurrent, and overtemperature events.

**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.

**Overcurrent protection (OCP)** 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 devices. A short to the VM pin, GND, or from the OUT1 pin to the OUT2 pin results in an overcurrent condition.

**Thermal shutdown (TSD)** 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.

表 2. Fault Behavior

FAULT	CONDITION	H-BRIDGE	RECOVERY
VCC undervoltage (UVLO)	$V_{CC} < 1.7$ V	Disabled	$V_{CC} > 1.8$ V
Overcurrent (OCP)	$I_{OUT} > 1.2$ A (MIN)	Disabled (retries automatically)	$t_{RETRY}$ elapses
Thermal Shutdown (TSD)	$T_J > 150^{\circ}\text{C}$ (MIN)	Disabled (retries automatically)	$T_J < 150^{\circ}\text{C}$

## 7.4 Device Functional Modes

The DRV8837C device is active unless the nSLEEP pin is brought logic low. In sleep mode the H-bridge FETs are disabled Hi-Z. The DRV8837C device 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.

**表 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 (retries automatically)

## 8 Application and Implementation

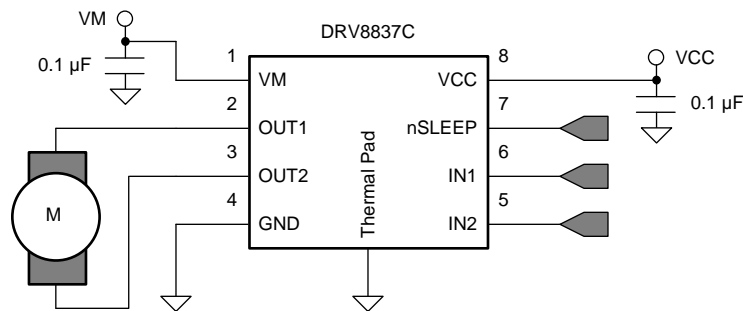
### 注

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

### 8.1 Application Information

The DRV8837C device is used to drive one DC motor or other devices like solenoids. The following design procedure can be used to configure the DRV8837C device.

### 8.2 Typical Application



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图 7. Schematic of DRV8837C Application

#### 8.2.1 Design Requirements

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

表 4. System Design Requirements

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

#### 8.2.2 Detailed Design Procedure

##### 8.2.2.1 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.

##### 8.2.2.2 Low-Power Operation

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

### 8.2.3 Application Curves

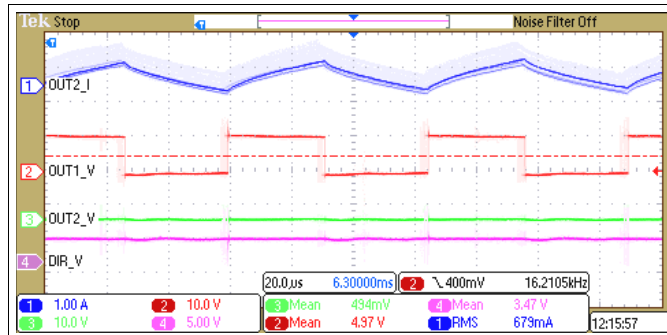


图 8. 50% Duty Cycle, Forward Direction

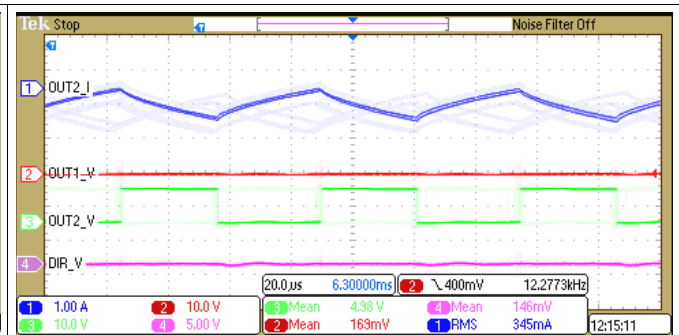


图 9. 50% Duty Cycle, Reverse Direction

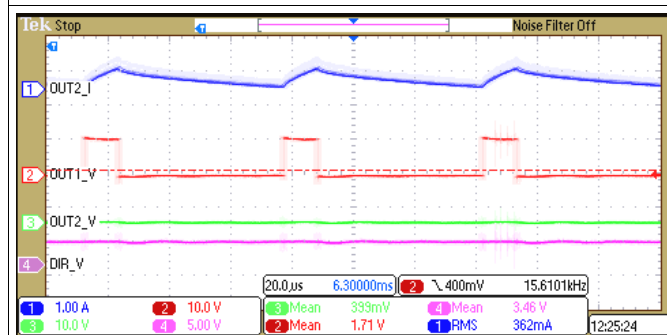


图 10. 20% Duty Cycle, Forward Direction

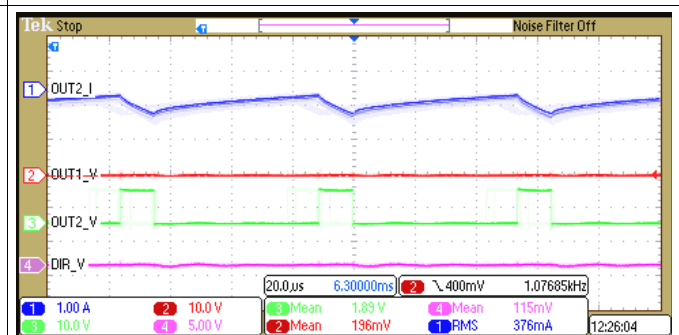


图 11. 20% Duty Cycle, Reverse Direction

## 9 Power Supply Recommendations

### 9.1 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.

Bulk Capacitance (接下页)

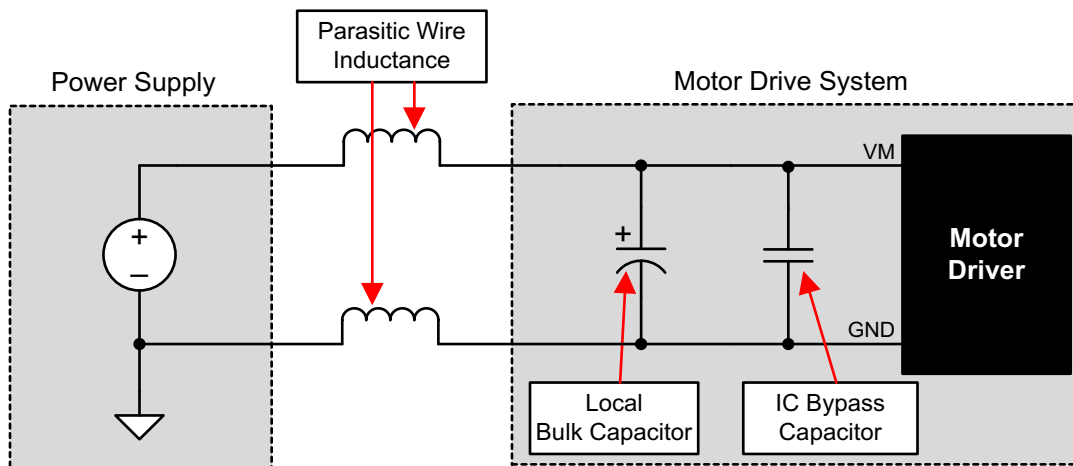


图 12. Example Setup of Motor Drive System With External Power Supply

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

## 10 Layout

### 10.1 Layout Guidelines

The VM and VCC pins should be bypassed to GND using low-ESR ceramic bypass capacitors with a recommended value of 0.1  $\mu\text{F}$  rated for the VM and VCC supplies. 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. In addition bulk capacitance is required on the VM pin.

### 10.2 Layout Example

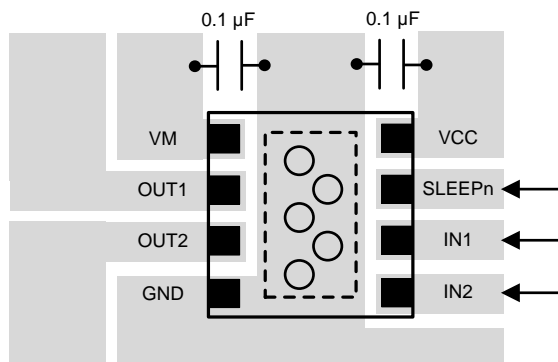


图 13. Simplified Layout Example

### 10.3 Power Dissipation

Power dissipation in the DRV8837C device is dominated by the power dissipated in the output FET resistance, or  $R_{\text{DS(ON)}}$ . Use 公式 1 to estimate the average power dissipation when running a brushed-DC motor.

$$P_{\text{TOT}} = R_{\text{DS(ON)}} \times (I_{\text{OUT(RMS)}})^2$$

where

- $P_{\text{TOT}}$  is the total power dissipation
  - $R_{\text{DS(ON)}}$  is the resistance of the HS plus LS FETs
  - $I_{\text{OUT(RMS)}}$  is the RMS or DC output current being supplied to the load
- (1)

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

#### 注

The value of  $R_{\text{DS(ON)}}$  increases with temperature, so as the device heats, the power dissipation increases.

The DRV8837C device has thermal shutdown protection. If the die temperature exceeds approximately 150°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.

## 11 器件和文档支持

### 11.1 文档支持

#### 11.1.1 相关文档

相关文档请参见以下部分：

- 《[计算电机驱动器功耗](#)》（文献编号：SLVA504）
- [用户指南《DRV8837C 评估模块》](#)（文献编号：SLVUAS3）。
- 《[了解电机驱动器电流额定值](#)》（文献编号：SLVA505）

#### 11.2 接收文档更新通知

如需接收文档更新通知，请访问 [www.ti.com.cn](http://www.ti.com.cn) 网站上的器件产品文件夹。点击右上角的提醒我 (Alert me) 注册后，即可每周定期收到已更改的产品信息。有关更改的详细信息，请查阅已修订文档中包含的修订历史记录。

#### 11.3 社区资源

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**Design Support** *TI's Design Support* Quickly find helpful E2E forums along with design support tools and contact information for technical support.

#### 11.4 商标

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ESD 的损坏小至导致微小的性能降级，大至整个器件故障。精密的集成电路可能更容易受到损坏，这是因为非常细微的参数更改都可能会导致器件与其发布的规格不相符。

#### 11.6 Glossary

[SLYZ022](#) — *TI Glossary*.

This glossary lists and explains terms, acronyms, and definitions.

## 12 机械、封装和可订购信息

以下页中包括机械、封装和可订购信息。这些信息是针对指定器件可提供的最新数据。这些数据会在无通知且不对本文档进行修订的情况下发生改变。欲获得该数据表的浏览器版本，请查阅左侧的导航栏。

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放大器和线性器件	<a href="http://www.ti.com.cn/amplifiers">www.ti.com.cn/amplifiers</a>	计算机及周边	<a href="http://www.ti.com.cn/computer">www.ti.com.cn/computer</a>
数据转换器	<a href="http://www.ti.com.cn/dataconverters">www.ti.com.cn/dataconverters</a>	消费电子	<a href="http://www.ti.com.cn/consumer-apps">www.ti.com.cn/consumer-apps</a>
DLP® 产品	<a href="http://www.dlp.com">www.dlp.com</a>	能源	<a href="http://www.ti.com.cn/energy">www.ti.com.cn/energy</a>
DSP - 数字信号处理器	<a href="http://www.ti.com.cn/dsp">www.ti.com.cn/dsp</a>	工业应用	<a href="http://www.ti.com.cn/industrial">www.ti.com.cn/industrial</a>
时钟和计时器	<a href="http://www.ti.com.cn/clockandtimers">www.ti.com.cn/clockandtimers</a>	医疗电子	<a href="http://www.ti.com.cn/medical">www.ti.com.cn/medical</a>
接口	<a href="http://www.ti.com.cn/interface">www.ti.com.cn/interface</a>	安防应用	<a href="http://www.ti.com.cn/security">www.ti.com.cn/security</a>
逻辑	<a href="http://www.ti.com.cn/logic">www.ti.com.cn/logic</a>	汽车电子	<a href="http://www.ti.com.cn/automotive">www.ti.com.cn/automotive</a>
电源管理	<a href="http://www.ti.com.cn/power">www.ti.com.cn/power</a>	视频和影像	<a href="http://www.ti.com.cn/video">www.ti.com.cn/video</a>
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无线连通性	<a href="http://www.ti.com.cn/wirelessconnectivity">www.ti.com.cn/wirelessconnectivity</a>	德州仪器在线技术支持社区	<a href="http://www.deyisupport.com">www.deyisupport.com</a>

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**PACKAGING INFORMATION**

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
DRV8837CDSGR	ACTIVE	WSON	DSG	8	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 85	837C	<a href="#">Samples</a>
DRV8837CDSGT	ACTIVE	WSON	DSG	8	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 85	837C	<a href="#">Samples</a>

(1) The marketing status values are defined as follows:

**ACTIVE:** Product device recommended for new designs.

**LIFEBUY:** TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

**NRND:** Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

**PREVIEW:** Device has been announced but is not in production. Samples may or may not be available.

**OBSELETE:** TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

**TBD:** The Pb-Free/Green conversion plan has not been defined.

**Pb-Free (RoHS):** TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

**Pb-Free (RoHS Exempt):** This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

**Green (RoHS & no Sb/Br):** TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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## TAPE AND REEL INFORMATION



### QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



\*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
DRV8837CDSGR	WSON	DSG	8	3000	180.0	8.4	2.3	2.3	1.15	4.0	8.0	Q2
DRV8837CDSGT	WSON	DSG	8	250	180.0	8.4	2.3	2.3	1.15	4.0	8.0	Q2

**TAPE AND REEL BOX DIMENSIONS**


\*All dimensions are nominal

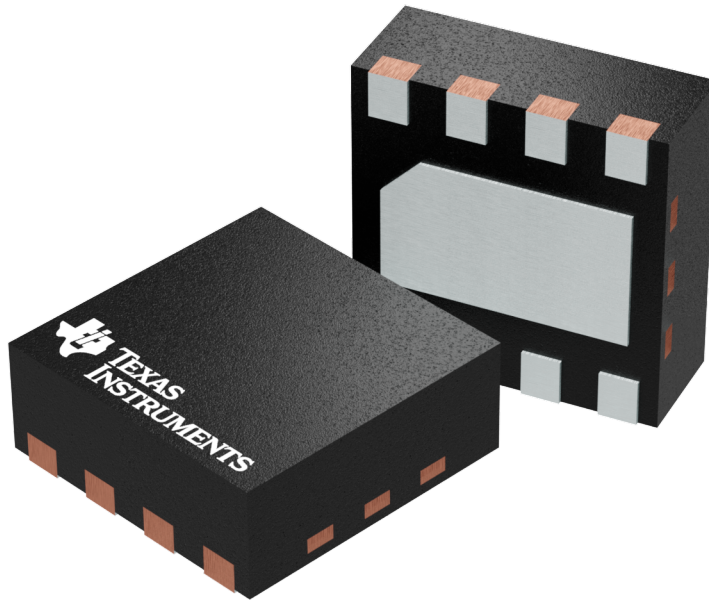
Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
DRV8837CDSGR	WSON	DSG	8	3000	210.0	185.0	35.0
DRV8837CDSGT	WSON	DSG	8	250	210.0	185.0	35.0

## GENERIC PACKAGE VIEW

**DSG 8**

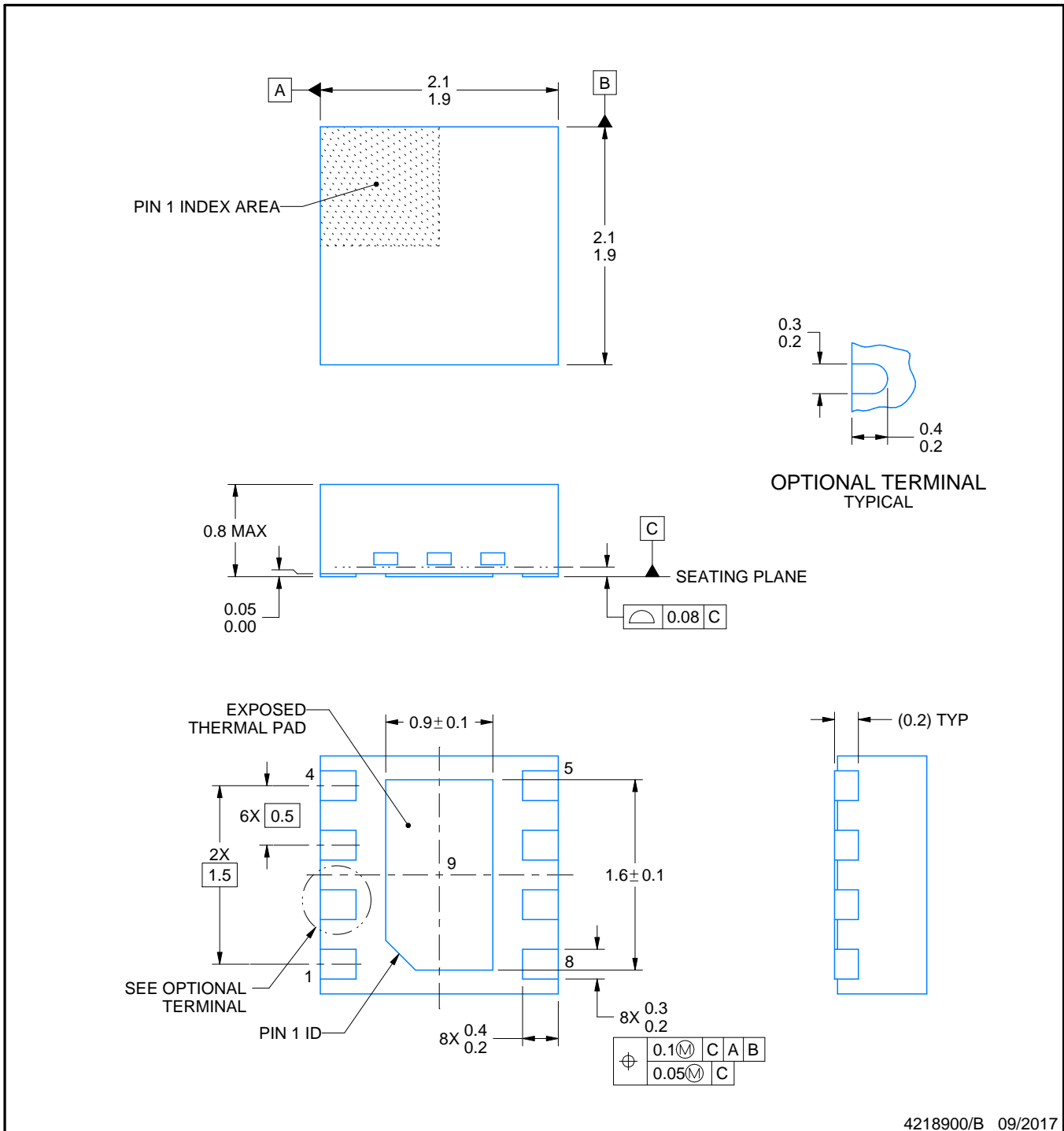
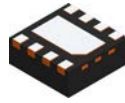
**WSON - 0.8 mm max height**

PLASTIC SMALL OUTLINE - NO LEAD



Images above are just a representation of the package family, actual package may vary.  
Refer to the product data sheet for package details.

4208210/C



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NOTES:

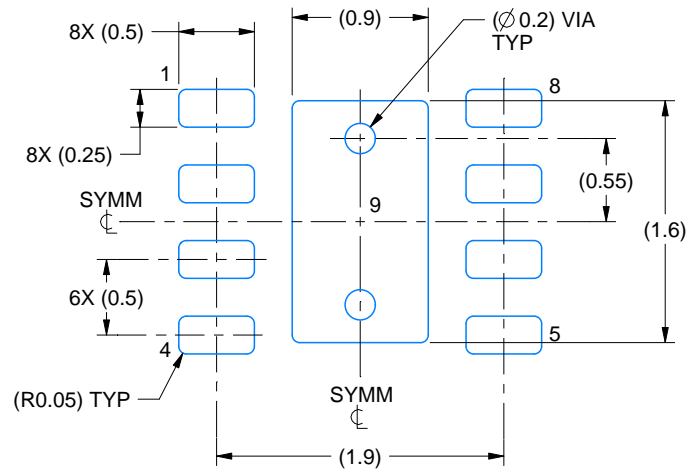
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. The package thermal pad must be soldered to the printed circuit board for thermal and mechanical performance.

# EXAMPLE BOARD LAYOUT

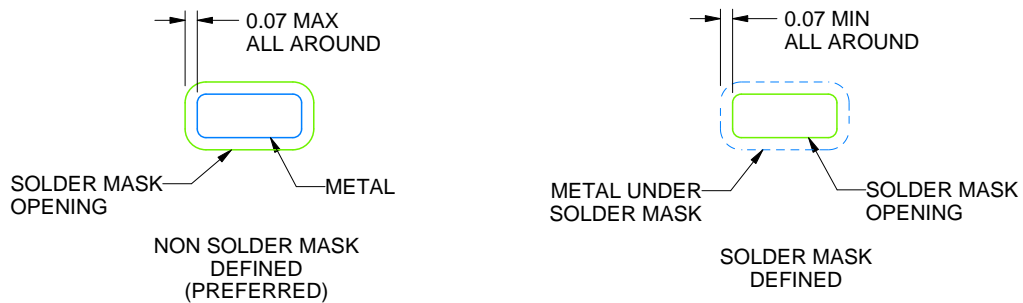
DSG0008A

WSON - 0.8 mm max height

PLASTIC SMALL OUTLINE - NO LEAD



LAND PATTERN EXAMPLE  
SCALE:20X



SOLDER MASK DETAILS

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NOTES: (continued)

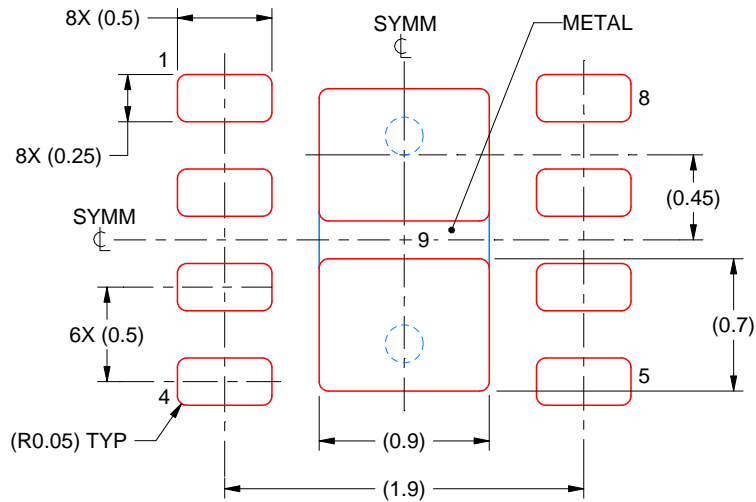
4. This package is designed to be soldered to a thermal pad on the board. For more information, see Texas Instruments literature number SLUA271 ([www.ti.com/lit/slua271](http://www.ti.com/lit/slua271)).
5. Vias are optional depending on application, refer to device data sheet. If any vias are implemented, refer to their locations shown on this view. It is recommended that vias under paste be filled, plugged or tented.

# EXAMPLE STENCIL DESIGN

DSG0008A

WSON - 0.8 mm max height

PLASTIC SMALL OUTLINE - NO LEAD



SOLDER PASTE EXAMPLE  
BASED ON 0.125 mm THICK STENCIL

EXPOSED PAD 9:  
87% PRINTED SOLDER COVERAGE BY AREA UNDER PACKAGE  
SCALE:25X

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NOTES: (continued)

6. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.



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