



## ABSTRACT

This user's guide contains support documentation for the 5-8-NL-LOGIC-EVM Evaluation Module (EVM). Included is a description of how to set up and configure the EVM, the printed circuit board (PCB) layout, and the bill of materials (BOM) of the 5-8-NL-LOGIC-EVM.

---

## Table of Contents

<b>1 Introduction</b> .....	2
1.1 Kit Contents.....	2
1.2 Features.....	2
<b>2 Hardware</b> .....	3
2.1 PCB Overview.....	3
2.2 Hardware Setup.....	4
<b>3 Board Layout</b> .....	6
<b>4 Bill of Materials</b> .....	6

## List of Figures

Figure 2-1. 5-8-NL-LOGIC-EVM PCB.....	3
Figure 2-2. 6-pin DRY Placement.....	4
Figure 2-3. Single Supply Configuration.....	5
Figure 2-4. Fully Populated Section.....	5
Figure 3-1. 5-8-NL-LOGIC-EVM Layout Top View.....	6
Figure 3-2. 5-8-NL-LOGIC-EVM Layout Bottom View.....	6

## List of Tables

Table 1-1. Package and Pin Support Table.....	2
Table 1-2. 5-8-NL-LOGIC-EVM Kit Contents.....	2
Table 4-1. Bill of Materials.....	6

## Trademarks

All trademarks are the property of their respective owners.

## 1 Introduction

The 5-8-NL-LOGIC-EVM is a generic EVM developed to support non-leaded Logic and Translation devices in the DPW, DQE, DQM, DRY, DSF, DTM, DTQ, and DTT packages. This EVM can be used to evaluate any device in the package family and pin counts described in [Table 1-1](#). The PCB can be broken down into seven sections with each section supporting certain packages indicated on the board. This EVM provides the user flexibility when evaluating non-leaded Logic and Translation devices.

**Table 1-1. Package and Pin Support Table**

TI Package Name	Package Family	# of Pins
DPW	X2SON	5
DQE	X2SON	8
DQM	X2SON	8
DRY	USON	6
DSF	X2SON	6
DTM	X2SON	8
DTQ	X2SON	6
DTT	X1QFN	8

### 1.1 Kit Contents

**Table 1-2. 5-8-NL-LOGIC-EVM Kit Contents**

Item	Description	Quantity
5-8-NL-LOGIC-EVM	PCB	1
Headers	4 position, 100-mil (2.54 mm), thru-hole	12
Red Test Points	Miniature, thru-hole, red test point	2
Black Test Points	Miniature, thru-hole, red test point	2

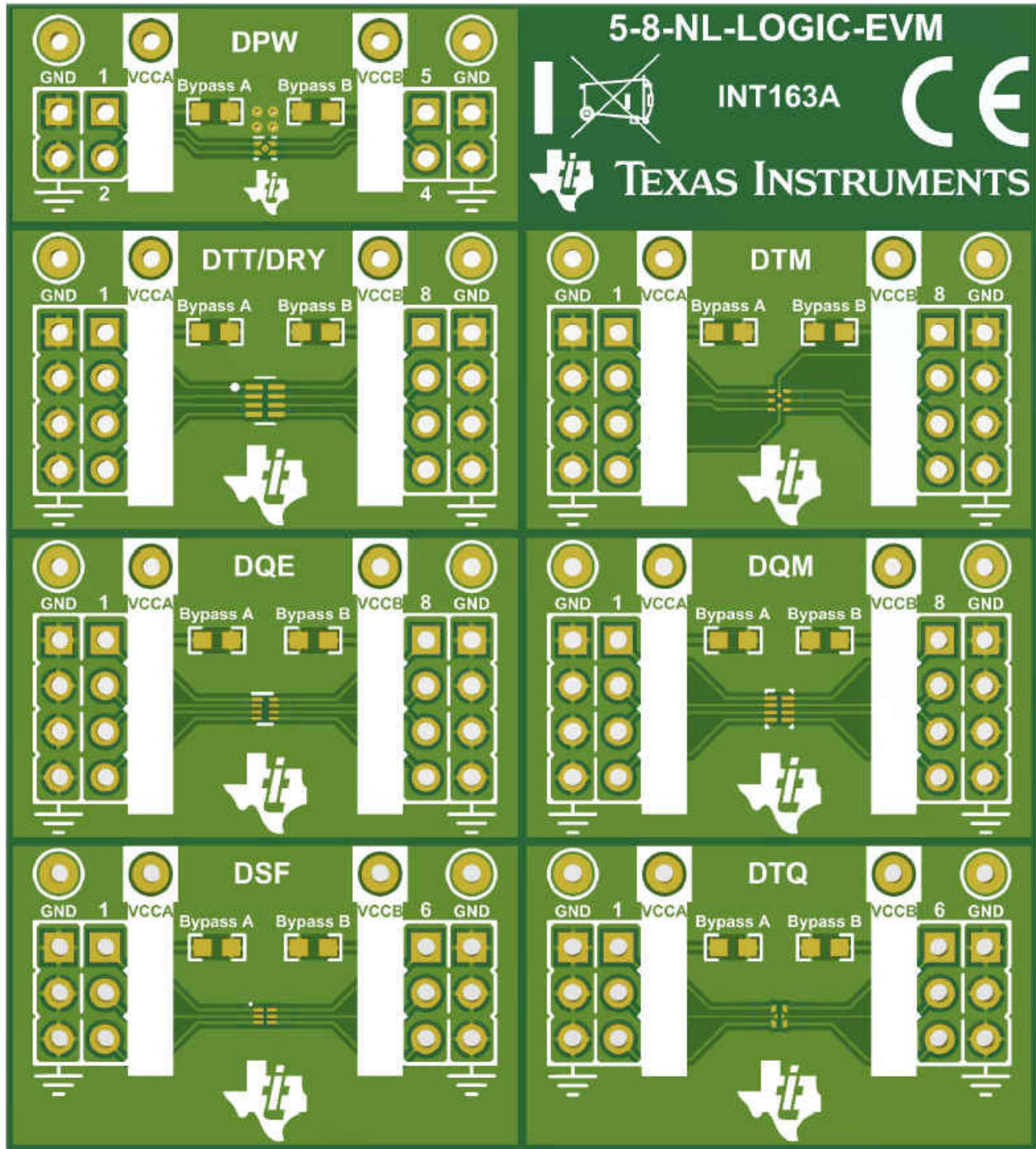
### 1.2 Features

The 5-8-NL-LOGIC-EVM has the following features:

- Multiple package support
- Breadboard compatible
- Easy-to-use and flexible evaluation
- Support for both single supply and dual supply devices
- Small form factor for system integration

## 2 Hardware

### 2.1 PCB Overview



**Figure 2-1. 5-8-NL-LOGIC-EVM PCB**

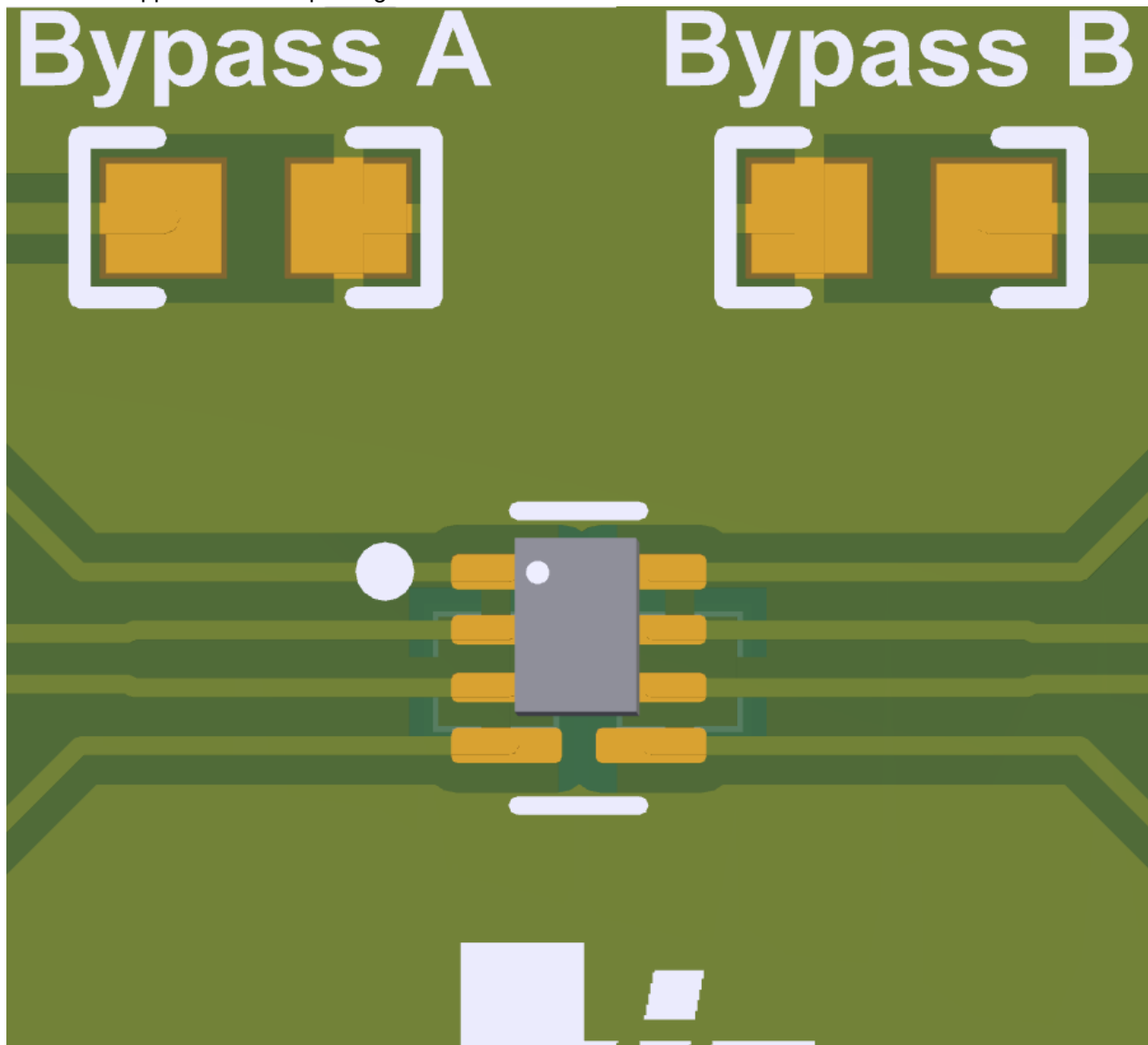
The 5-8-NL-LOGIC-EVM PCB is designed to be straightforward for new users to begin evaluating non-leaded Logic and Translation devices. This section will highlight a few aspects of the PCB that are helpful to the user.

- Board breakable into smaller sections with the inclusion of v-scored grooves
- Each section has headers connected to device pins,  $V_{CCA}$ ,  $V_{CCB}$ , and GND
- Designated supply inputs with included thru-hole test points
- Bypass capacitor footprints included for device supplies
- Option for single supply or dual supply evaluation with easy configuration

## 2.2 Hardware Setup

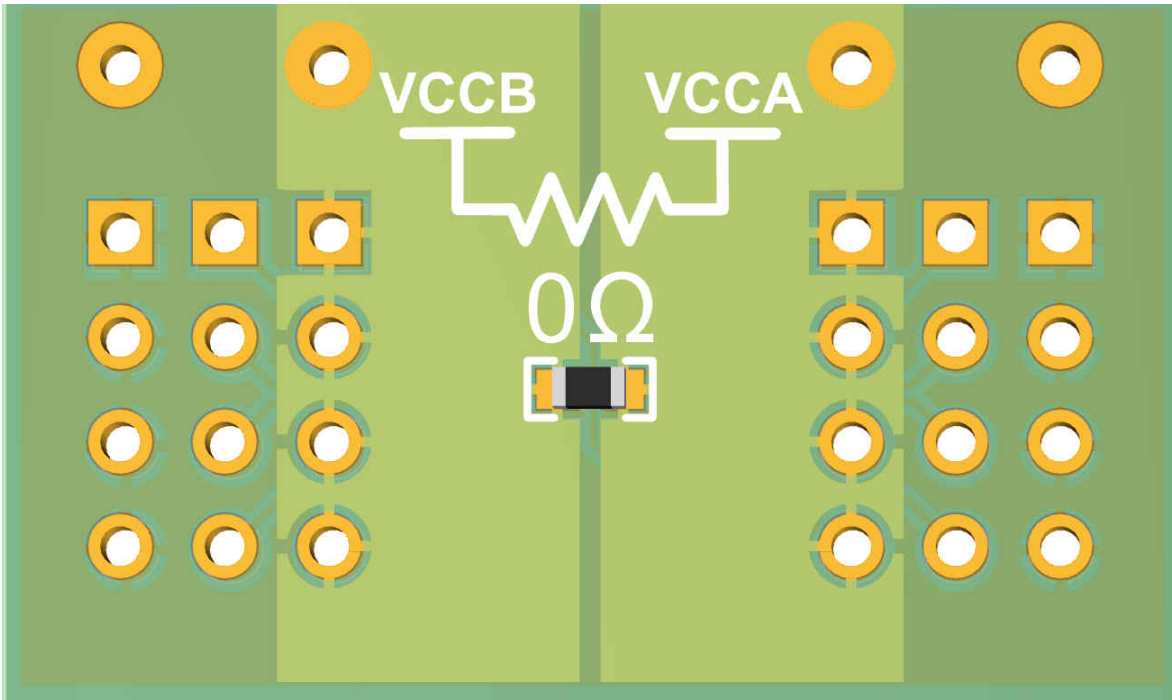
This section will cover the six steps to take when evaluating a leaded Logic device using this EVM.

1. Identify the package you will be using for the device being evaluated. As stated previously, this EVM has seven sections each of which supporting a non-leaded footprint. Break off the selected section (optional).
2. Solder down the device. Since this EVM supports small, non-leaded packages, this will likely require a hot air rework station. [Figure 2-2](#) illustrates an example of proper placement of a DRY device on the footprint that also supports the DTT package.



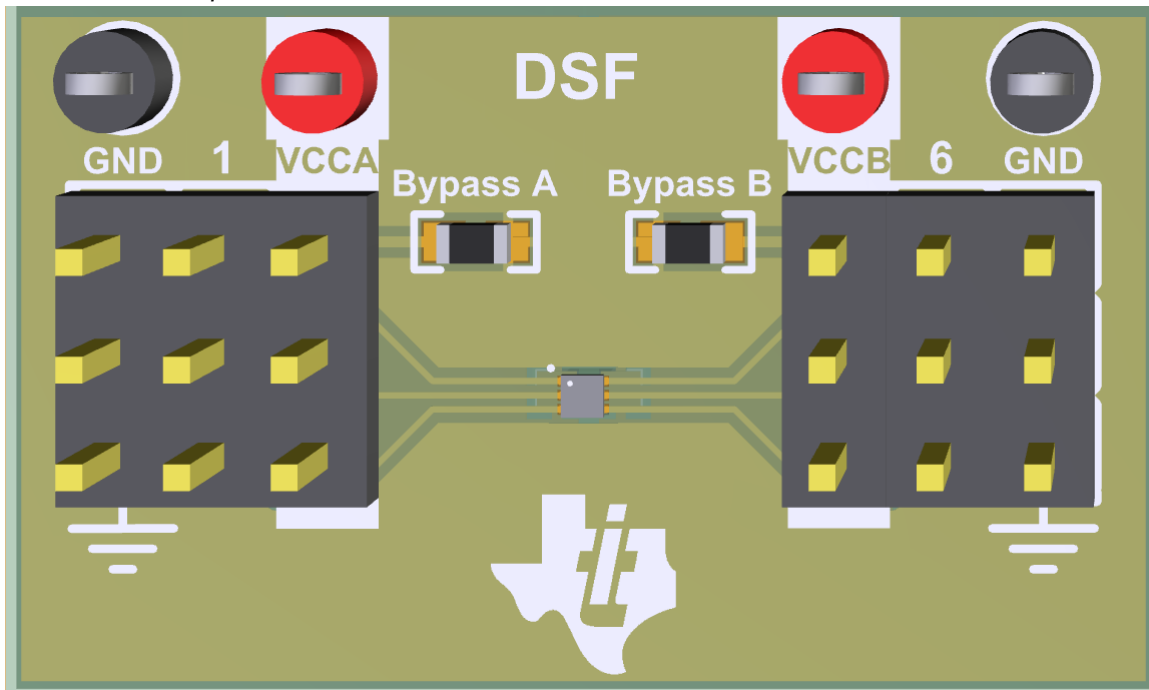
**Figure 2-2. 6-pin DRY Placement**

3. Ensure EVM is configured accordingly for dual supply or single supply device. EVM comes default configured for dual supply devices, but is easily configured using a 0- $\Omega$  resistor for single supply devices. [Figure 2-3](#) illustrates how this is done.



**Figure 2-3. Single Supply Configuration**

- Interface with device pins. The kit includes twelve 4-pin headers and four supply test points. The headers can be cut to accommodate the 5-pin and 6-pin footprints. An example of this, with the addition of bypass capacitors for the supplies, can be seen in [Figure 2-4](#). *Note: The DPW section has the middle pad grounded to accommodate the pin-3 GND of DPW devices.*



**Figure 2-4. Fully Populated Section**

- Before applying power to the EVM, ensure the proper supply configuration is in place to avoid shorting two supplies together.

### 3 Board Layout

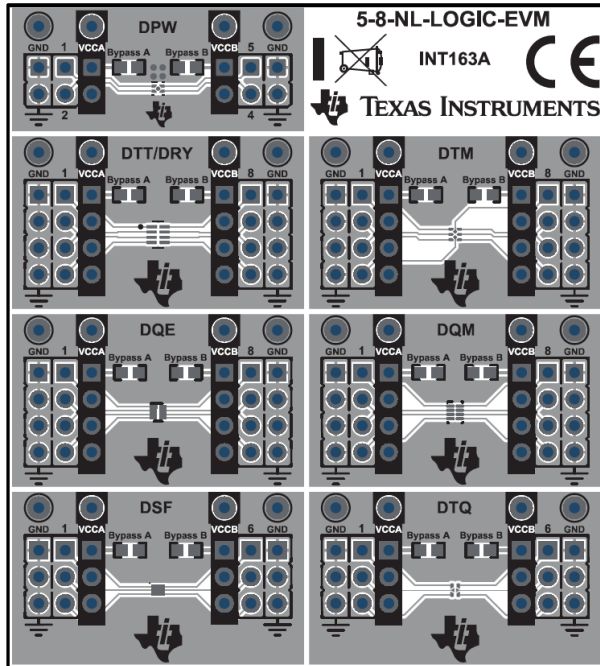


Figure 3-1. 5-8-NL-LOGIC-EVM Layout Top View

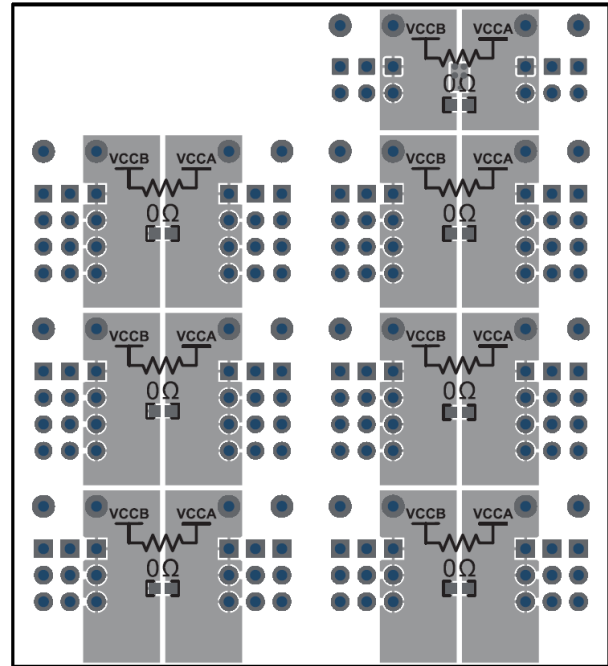


Figure 3-2. 5-8-NL-LOGIC-EVM Layout Bottom View

### 4 Bill of Materials

This section provides information on the components that can be used with the 5-8-NL-LOGIC-EVM. Other components can be used as long as they are able to fit the provided plated holes and pads.

Table 4-1. Bill of Materials

Item	Description	Package Reference	Part Number	Manufacturer
Bypass Capacitor	CAP, CERM, 0.1 $\mu$ F, 25 V, $\pm$ 10%, X7R, 0603	0603	C1608X7R1E104K080AA	TDK
Header	Header, 100mil, 4x1, Tin, TH	Header, 4x1, 100mil, TH	PEC04SAAN	Sullins Connector Solutions
Red Test Point	Test Point, Miniature, Red, TH	Red Miniature Testpoint	5000	Keystone
Black Test Point	Test Point, Miniature, Black, TH	Black Miniature Testpoint	5001	Keystone

## IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATA SHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, regulatory or other requirements.

These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to [TI's Terms of Sale](#) or other applicable terms available either on [ti.com](http://ti.com) or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products.

TI objects to and rejects any additional or different terms you may have proposed.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265  
Copyright © 2022, Texas Instruments Incorporated