

ADS9324 BoosterPack™ Plug-In Evaluation Module



Description

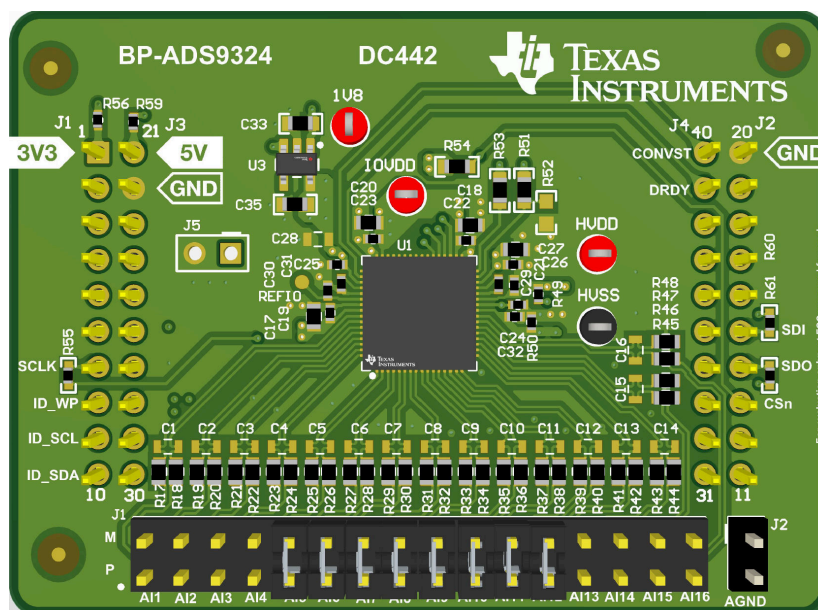
The ADS9324 BoosterPack™ Plug-in Module (BP-ADS9324) provides a cost effective and accessible platform for developing applications using the ADS9324. This module is compatible with the [LAUNCHXL-F28P65X](#) LaunchPad™ evaluation kit, and includes headers to support use with other controllers. Example code demonstrating basic device functionality is provided to serve as an open starting point for application development.

Features

- 16-Channel, 16-bit ADC with integrated analog front-end
- Channel-independent programmable inputs: $\pm 12.5V$, $\pm 10V$, $\pm 6.25V$, $\pm 5V$, $\pm 2.5V$
- Analog bandwidth options: 25kHz and 325kHz
- LaunchPad-compatible header pins
- Flexible controller interfacing capability
- Compatible with other ADS9324 family devices, ADS9308V8I, as well as other variants

Get Started

1. Order the [BP-ADS9324](#).
2. Download the software example for ADS9324 ([ADS9324-BOOSTERPACK-C2000-CODE](#)).
 - a. For evaluation with LaunchPad, order the [LAUNCHXL-F28P65X](#). See [Hardware](#) and [Software](#) sections for evaluation with LaunchPad.
 - b. For evaluation with an existing controller, use [Figure 1-1](#) as a guide to connect to the BoosterPack and, if applicable, use the example code as reference.



1 Evaluation Module Overview

1.1 Introduction

The ADS9324 BoosterPack Plug-in Module enables the evaluation of Texas Instruments ADS9324, a 16-bit, 16-channel, 1MSPS ADC with up to $\pm 12.5V$ input range. This BoosterPack provides a hardware platform to quickly begin evaluation and application development using the ADS9324.

This document describes the module design and includes the schematic, printed circuit board (PCB) layout, and bill of materials (BOM)

The [BP-ADS9324](#) BoosterPack can be evaluated with the [LAUNCHXL-F28P65X](#) LaunchPad. The [C2000™ F28P65x LaunchPad Development Kit User's Guide](#) provides additional details regarding the LaunchPad platform.

The [ADS9324-BOOSTERPACK-C2000-CODE](#) demonstrates basic ADC register read, register write, and conversion data read operations and is intended to serve as a starting point for full application development.

1.2 Kit Contents

The ADS9324 BoosterPack plug-in module is equipped with two LaunchPad-compatible headers (J3 and J4) for ease of integration with the TI Launchpad development kits, as well as an additional header that provides direct access to the eight input channels. This configuration enables flexible interfacing with a wider range of controllers and user-designed signal chains.

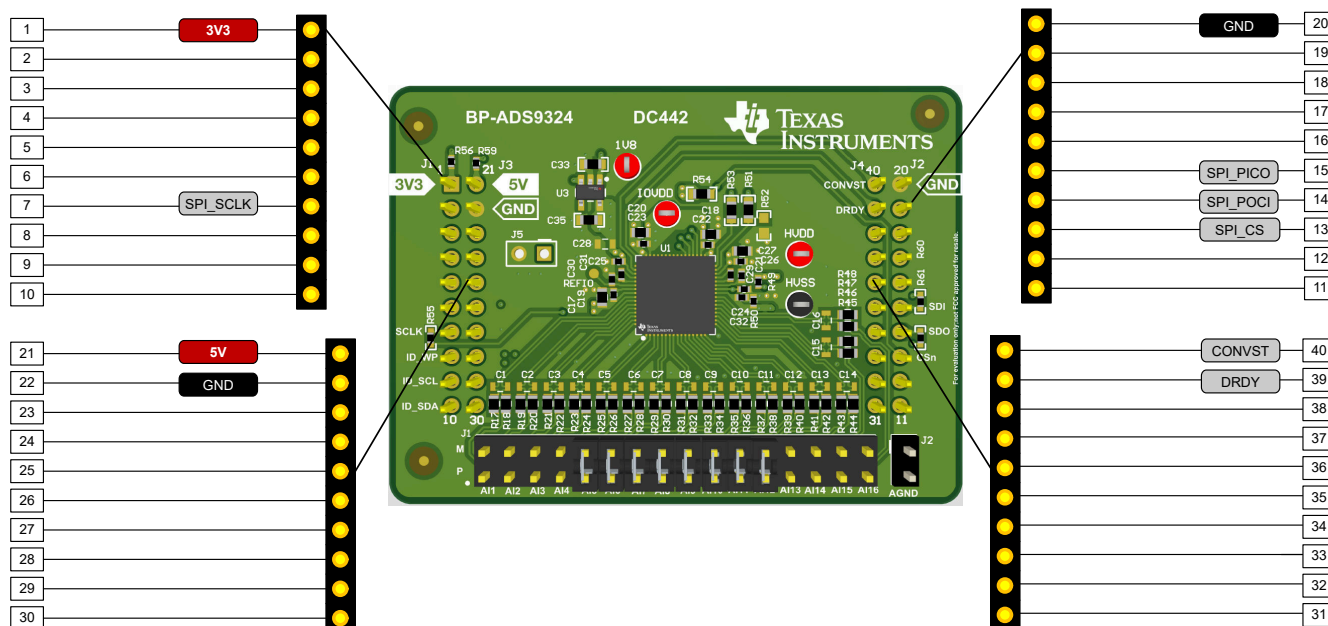


Figure 1-1. Interface Pinout

Table 1-1. Kit Contents

Item	Quantity
BP-ADS9324 BoosterPack	1

Table 1-2. Components Not Included With Kit

Item	Quantity
LAUNCHXL-F28P65X LaunchPad	1

Purchase the [LAUNCHXL-F28P65X](#) LaunchPad from [www.ti.com](#).

1.3 Specification

This module provides direct hardware access to the ADS9324 device to support user-defined signal conditioning, control, and system integration. The board includes the ADS9324 with supporting power-supply decoupling and routing to LaunchPad-compatible headers. No fixed signal-conditioning circuitry is implemented, enabling application-specific front-end design. Integrated test points and configurable component footprints facilitate evaluation, modification, and debugging within a compact form factor.

1.4 Device Information

The ADS9324 is a 16-bit, 16-channel, 1MSPS ADC with up to $\pm 12.5\text{V}$ input voltage range. The device features integrated analog front-end circuitry for each input channel, including integrated PGA, low-pass filter and an on-chip 4.096V reference with low temperature drift.

2 Hardware

2.1 Board Settings

The [BP-ADS9324](#) BoosterPack provides electrical connections to the device supply pins.

Input Configuration:

- Populate R1R16 as needed to short AINxM to GND.
- Place jumpers on J1 as needed to short AINxP and AINxM together.

2.2 Setup

- Align the BoosterPack with the LaunchPad headers J1, J3 and J4, J2. Visually align the silkscreen for 3V3, 5V and GND on the BoosterPack with the LaunchPad as shown below.
- Power-up the LaunchPad by connecting a USB cable.

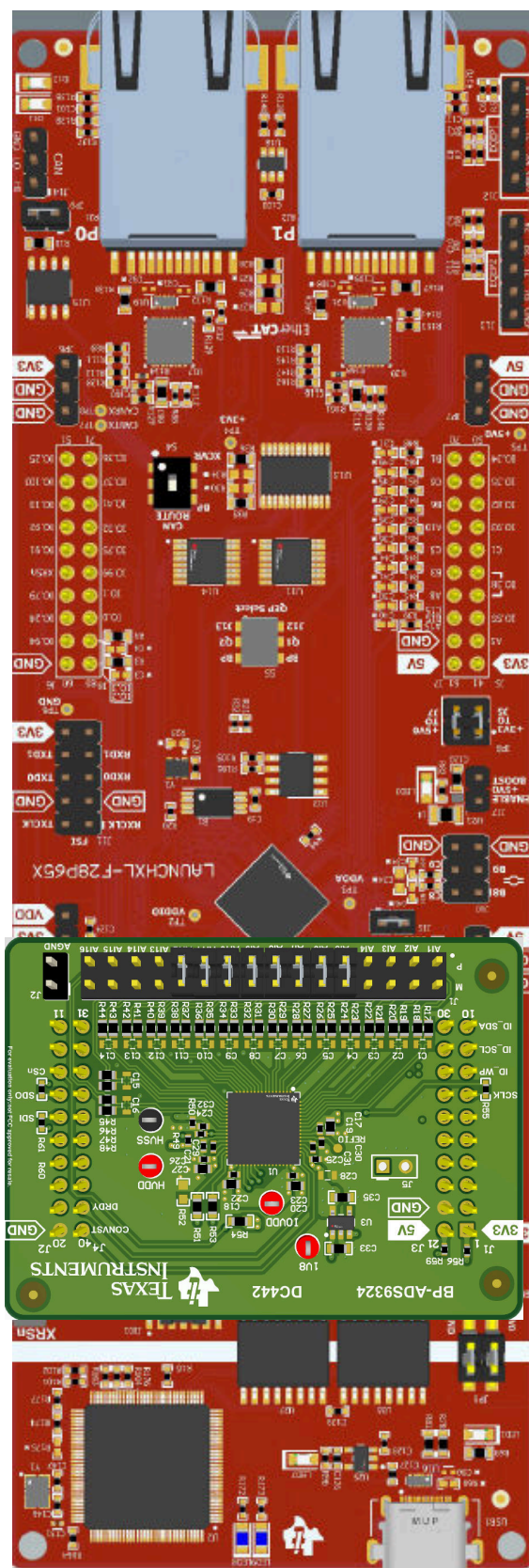


Figure 2-1. Hardware Setup

3 Software

3.1 Software Installation

- Program the LaunchPad with the [ADS9324-BOOSTERPACK-C2000-CODE](#) as a starting point, using the [Code Composer Studio™](#) integrated development environment.

Please view the README file included for more information.

Note

For help using the Code Composer Studio or using the LaunchPad, find available resources in the C2000 software development kit (SDK), visit the [TI Cloud Developer Zone](#). C2000 MCUs are also supported by extensive online collateral, training with C2000 Academy, and online support through the [TI E2E™ support forums](#).

4 Hardware Design Files

4.1 Schematics

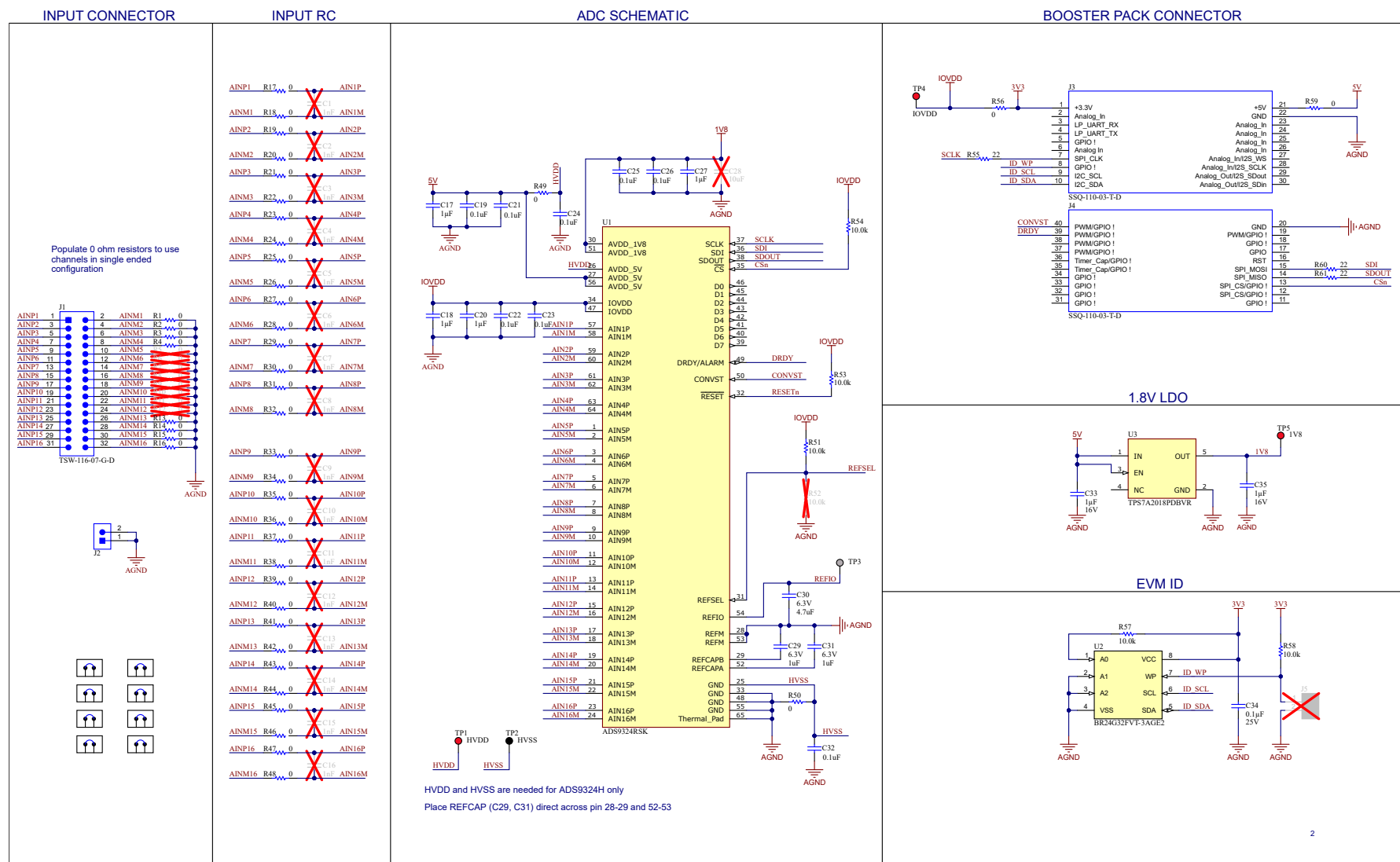


Figure 4-1. Schematic

4.2 PCB Layouts

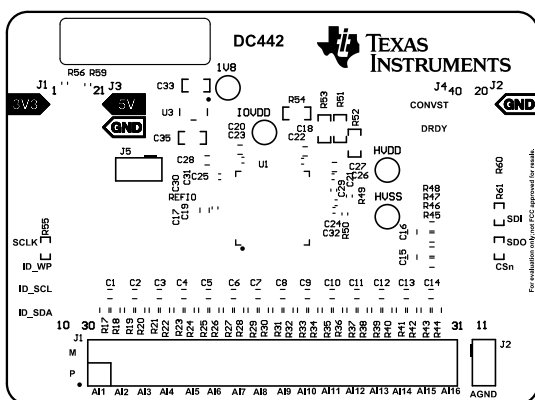


Figure 4-2. PCB Top Layer Overlay

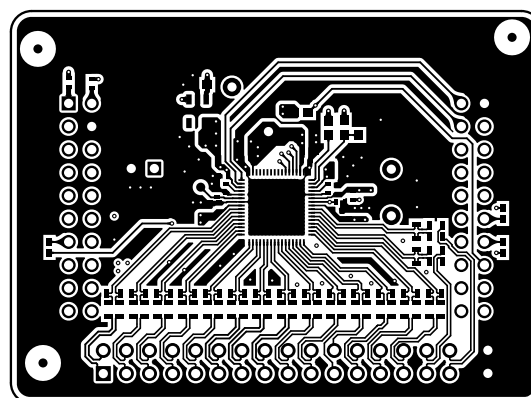


Figure 4-3. PCB Top Layer

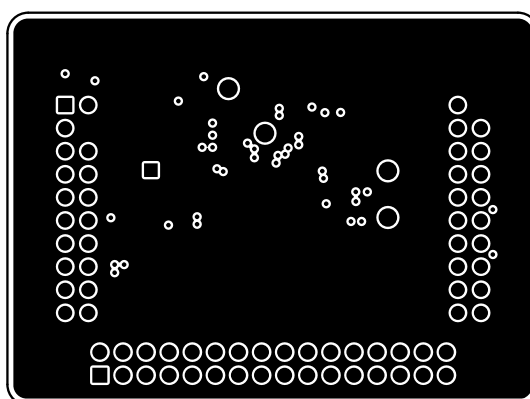


Figure 4-4. PCB Signal Layer 1

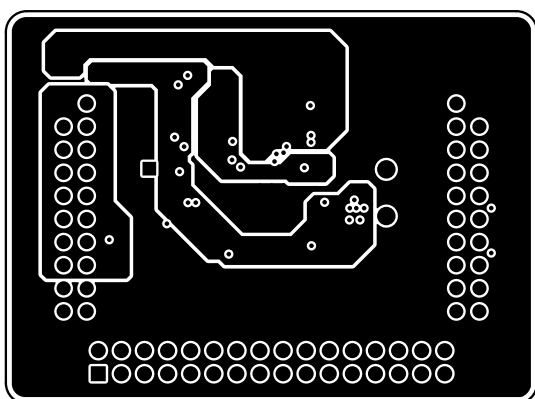


Figure 4-5. PCB Signal Layer 2

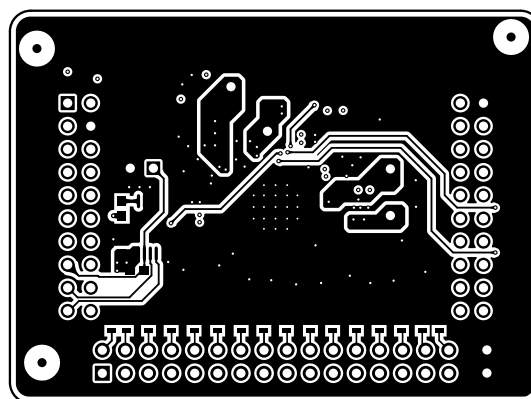


Figure 4-6. PCB Bottom Layer

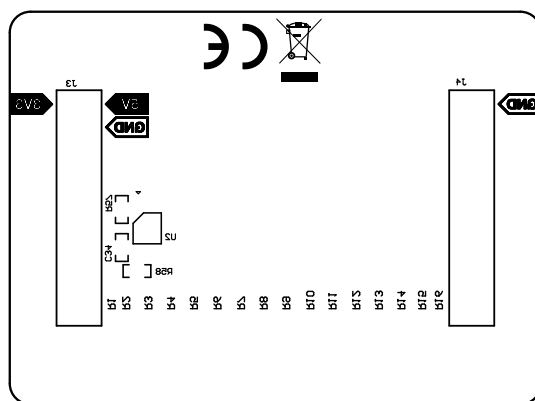


Figure 4-7. PCB Bottom Layer Overlay

4.3 Bill of Materials (BOM)

Designator	Part Number	Value	Quantity	Description	Manufacturer	Package Reference
C17, C18, C20, C27	CGA3E1X7R1E105K080AC	1uF	4	CAP, CERM, 1 μ F, 25V, +/- 10%, X7R, AEC-Q200 Grade 1, 0603	TDK	0603
C19, C21, C22, C23, C24, C25, C26, C32	GRM155R61C104KA88D	0.1uF	8	CAP, CERM, 0.1uF, 16V, +/- 10%, X5R, 0402	MuRata	0402
C29, C31	GRM155R70J105KA12D	1uF	2	CAP, CERM, 1uF, 6.3V, +/- 10%, X7R, 0402	MuRata	0402
C30	GRM155R60J475ME87D	4.7uF	1	CAP, CERM, 4.7uF, 6.3V, +/- 20%, X5R, 0402	MuRata	0402
C33, C35	C1608X7R1C105K080AC	1uF	2	CAP, CERM, 1uF, 16V, +/- 10%, X7R, 0603	TDK	0603
C34	CL10A104KA8NNNC	0.1uF	1	CAP, CERM, 0.1 μ F, 25V, +/- 10%, X5R, 0603	Samsung Electro-Mechanics	0603
J1	TSW-116-07G-D		1	Header, 100mil, 16x2, Gold, TH	Samtec	16x2 Header
J2	PEC02SAAN		1	Header, 100mil, 2x1, Tin, TH	Sullins Connector Solutions	Header, 2 PIN, 100mil, Tin
J3, J4	SSQ-110-03T-D		2	Receptacle, 2.54mm, 10x2, Tin, TH	Samtec	10x2 Receptacle
R1, R2, R3, R4, R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48	ERJ-3GEY0R00V	0	40	RES, 0, 5%, 0.1W, AEC-Q200 Grade 0, 0603	Panasonic	0603
R49, R50, R56, R59	CRCW04020000Z0ED	0	4	RES, 0, 5%, 0.063W, AEC-Q200 Grade 0, 0402	Vishay-Dale	0402
R51, R53, R54, R57, R58	CRCW060310K0FKEA	10.0k	5	RES, 10.0k, 1%, 0.1W, AEC-Q200 Grade 0, 0603	Vishay-Dale	0603
R55, R60, R61	CRCW040222R0JNED	22	3	RES, 22, 5%, 0.063W, AEC-Q200 Grade 0, 0402	Vishay-Dale	0402

Designator	Part Number	Value	Quantity	Description	Manufacturer	Package Reference
TP1, TP4, TP5	5000		3	Test Point, Miniature, Red, TH	Keystone Electronics	Red Miniature Testpoint
TP2	5001		1	Test Point, Miniature, Black, TH	Keystone Electronics	Black Miniature Testpoint
U1	ADS9324RSK		1	16-Channel, 16-Bit, 1MSPS, Simultaneous-Sampling SAR ADC With Integrated Analog Front-End	Texas Instruments	QFN64
U2	BR24G32FVT-3AGE2		1	I2C BUS EEPROM (2-Wire), TSSOP-B8	Rohm	TSSOP-8
U3	TPS7A2018PDBVR		1	Linear Voltage Regulator IC Positive Fixed 1 Output 300mA SOT-23-5	Texas Instruments	SOT23-5
C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16	GRM188R72A102KA01D	1000pF	0	CAP, CERM, 1000pF, 100V, +/- 10%, X7R, 0603	MuRata	0603
C28	GRM188R61E106MA73D	10uF	0	CAP, CERM, 10uF, 25V, +/- 20%, X5R, 0603	MuRata	0603
J5	PEC02SAAN		0	Header, 100mil, 2x1, Tin, TH	Sullins Connector Solutions	Header, 2 PIN, 100mil, Tin
R5, R6, R7, R8, R9, R10, R11, R12	ERJ-3GEY0R00V	0	0	RES, 0, 5%, 0.1W, AEC-Q200 Grade 0, 0603	Panasonic	0603
R52	CRCW060310K0FKEA	10.0k	0	RES, 10.0k, 1%, 0.1W, AEC-Q200 Grade 0, 0603	Vishay-Dale	0603

5 Additional Information

5.1 Trademarks

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