OPA855IDSGEVM

The OPA855EVM is an evaluation module for the single OPA855 in the DSG (8-pin WSON) package.

The OPA855EVM is designed to quickly demonstrate the functionality and versatility of the amplifier. The EVM is ready to connect to power, signal source, and test instruments by using on-board connectors. The default amplifier configuration is a noninverting gain of 7 configuration and split-supply operation. The EVM can be easily configured for other gains and single-supply operation.

Contents

1 Features 1
2 EVM Specifications 1
3 EVM Schematic, Layout, and Bill of Materials (BOM) 2

List of Figures

1 OPA855 and OPA855EVM Schematic 3
2 Top Layer 4
3 Ground Layer 2 4
4 VCC and VEE Layer 3 4
5 Bottom Layer 4

List of Tables

1 EVM Input and Output Limits 1
2 OPA855EVM Bill of Materials 6

Trademarks

1 Features

- Configured for split-supply operation and modified for single-supply operation
- Default noninverting gain of 7 configuration is reconfigurable for other gains
- Designed for connection to standard 50-Ω impedance test equipment
- Inputs and outputs include SMA connectors

2 EVM Specifications

This section provides a general description of the OPA855EVM. Table 1 lists limits for the EVM input and output.

Table 1. EVM Input and Output Limits

PARAMETER	MIN	TYP	MAX	UNIT
Single–supply voltage range (VEE = ground)	3.2		5.2	V
Split–supply voltage range (VCC – VEE)	±1.6		±2.6	V
Supply current, I_S		19		mA
Input voltage, V_I	VEE + 0.2		VCC – 1.25	V
Output drive, I_O with ±2.5–V or 5–V supply		±30		mA

Copyright © 2018, Texas Instruments Incorporated

2.1 Power Connections

The OPA855EVM is equipped with banana jacks for easy connection of power. The positive supply input is labeled VCC, the negative supply input is labeled VEE, and ground is labeled GND.

2.1.1 Split-Supply Operation

To operate in split-supply operation, apply the positive supply voltage to VCC, the negative supply voltage to VEE, and the ground reference from supply to GND.

2.1.2 Single-Supply Operation

To operate in single-supply operation, apply a jumper from VEE to GND and from the positive supply voltage to VCC. Inputs and outputs must be biased per data sheet specifications for proper operation.

2.2 Input and Output Connections

The OPA855EVM is equipped with SMA connectors to connect to signal generators and analysis equipment. As shipped, the EVM is configured for a noninverting gain of 7 configuration and split-supply operation with termination for connection to 50-Ω test equipment. For best results, signals must be routed to and from the EVM with cables with a characteristic impedance of 50 Ω. See the OPA855 data sheet, schematics, and layouts for details on how to reconfigure for other gain configurations.

3 EVM Schematic, Layout, and Bill of Materials (BOM)

This section provides a complete schematic diagram, board layouts, and bill of materials for the OPA855EVM.

Copyright © 2018, Texas Instruments Incorporated

3.1 EVM Schematic

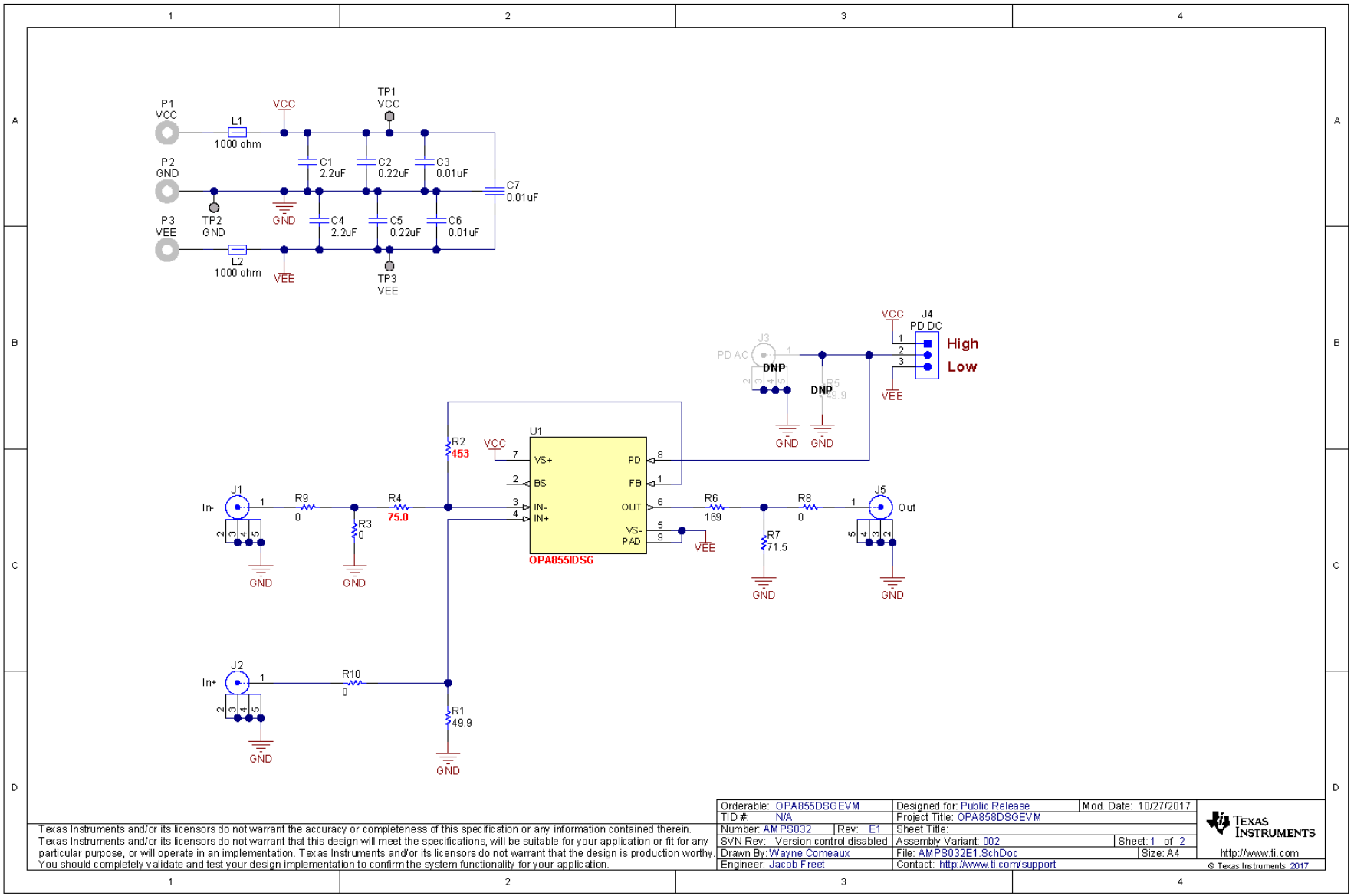

Figure 1. OPA855 and OPA855EVM Schematic

Copyright © 2018, Texas Instruments Incorporated

3.2 EVM Layers

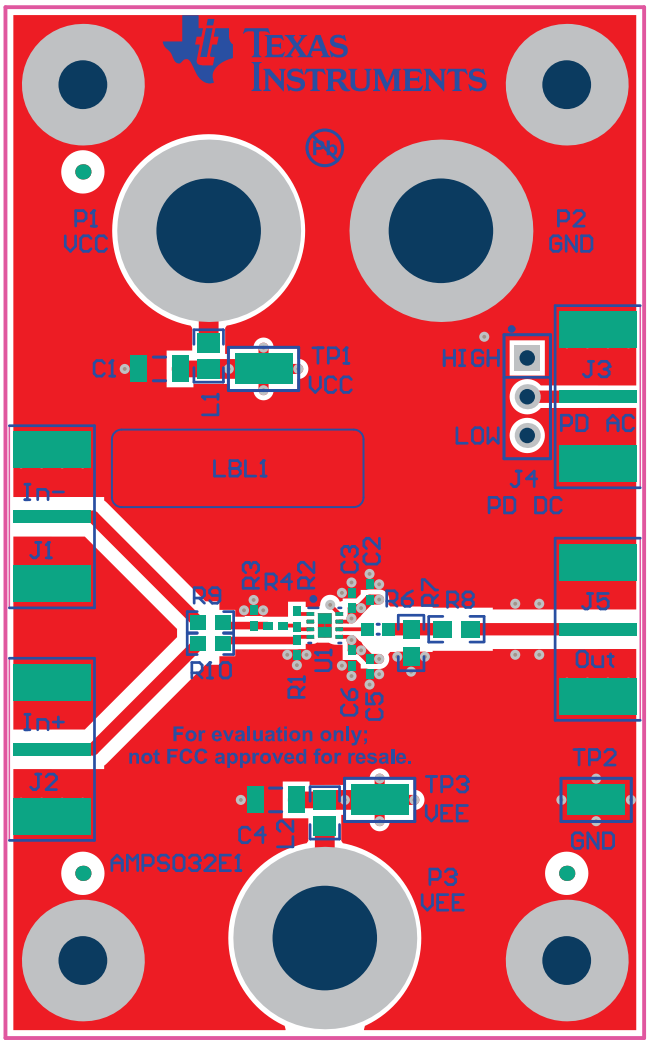

Figure 2. Top Layer

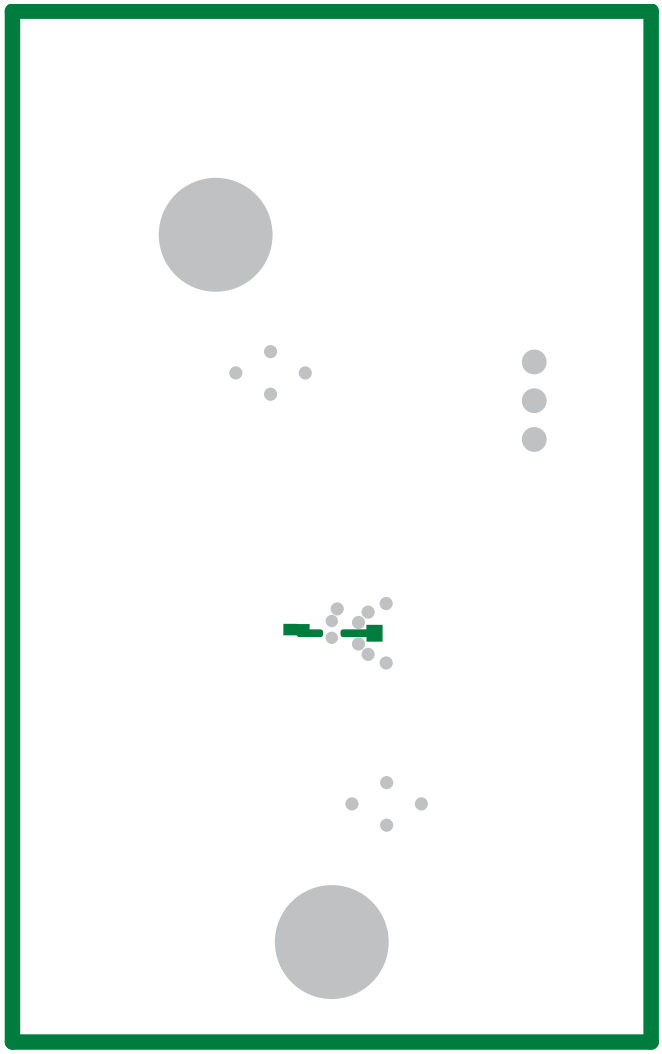

Figure 3. Ground Layer 2

Copyright © 2018, Texas Instruments Incorporated

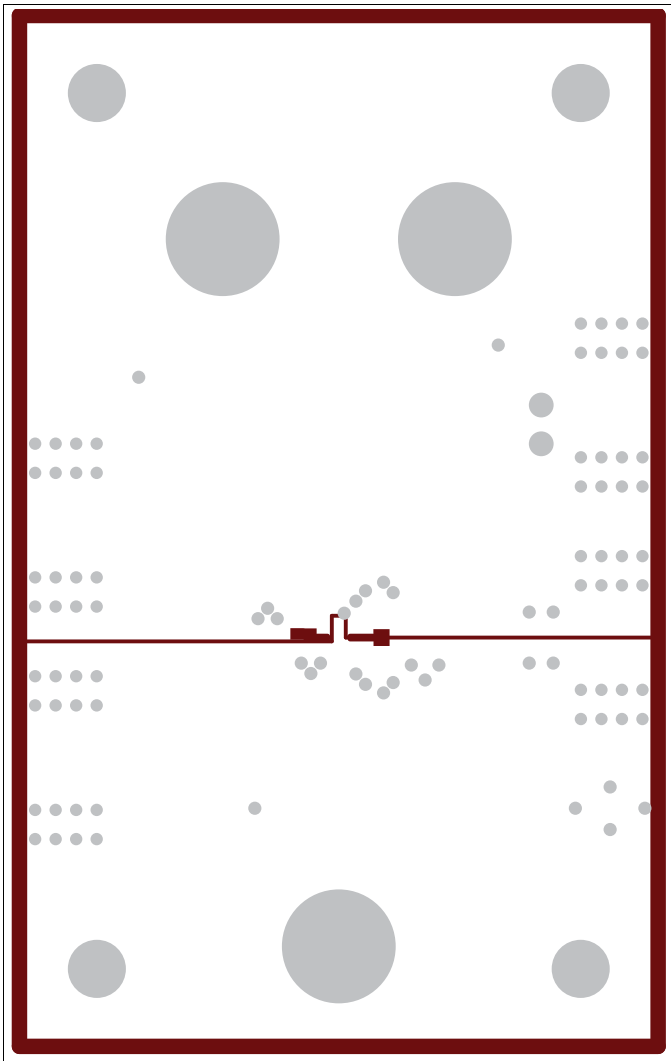

Figure 4. VCC and VEE Layer 3

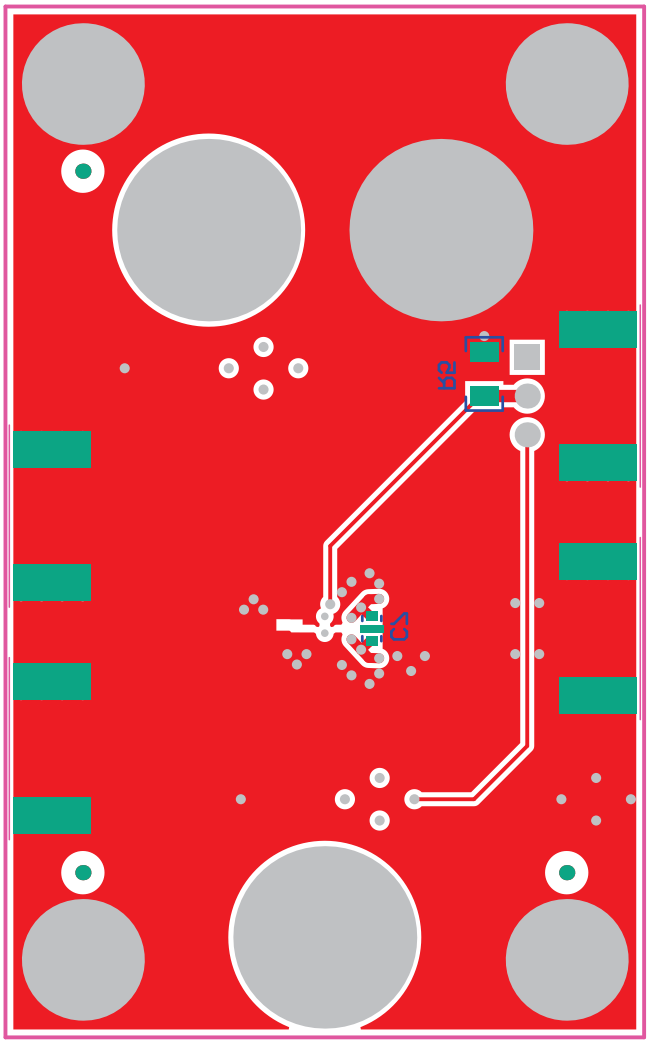

Figure 5. Bottom Layer

Copyright © 2018, Texas Instruments Incorporated

3.3 Bill of Materials

Table 2. OPA855EVM Bill of Materials

ITEM	DESCRIPTION	SMD SIZE	REFERENCE DESIGNATOR	PCB QUANTITY	PART NUMBER OF MANUFACTURER
1	CAP, CERM, 2.2 uF, 25 V, +/- 10%, X7R	1206	C1, C4	2	(MuRata) GRM31MR71E225KA93L
2	CAP, CERM, 0.22 uF, 25 V, +/- 20%, X5R	0402	C2, C5	2	(TDK) C1005X5R1E224M050BC
3	CAP, CERM, 0.01 uF, 25 V, +/- 10%, X7R	0402	C3, C6	2	(MuRata) GRM155R71E103KA01D
4	CAP, CERM, 0.01 uF, 50 V, +/- 20%, X7R	0603	C7	1	(Johanson Technology) 500X14W103MV4T
5	Machine Screw, Round, #4-40 x 1/4, Nylon, Philips panhead	Screw	H1, H2, H3, H4	4	(B&F Fastener Supply) NY PMS 440 0025 PH
6	Standoff, Hex, 0.5"L #4-40 Nylon	Standoff	H5, H6, H7, H8	4	(Keystone) 1902C
7	Connector, End launch SMA, 50 ohm	SMA End Launch	J1, J2, J5	3	(Cinch Connectivity) 142-0701-851
8	Header, 100mil, 3x1, Gold, TH	3x1 Header	J4	1	(Samtec) TSW-103-07-G-S
9	Ferrite Bead, 1000 ohm @ 100 MHz, 0.5 A	0805	L1, L2	2	(MuRata) BLM21AG102SN1D
10	Thermal Transfer Printable Labels, 0.650" W x 0.200" H	PCB Label 0.650"H x 0.200"W	LBL1	1	(Brady) THT-14-423-10
11	Standard Banana Jack, Uninsulated	Keystone_6095	P1, P2, P3	3	(Keystone) 6095
12	RES, 49.9, 1%, 0.063 W	0402	R1	1	(Vishay-Dale) CRCW040249R9FKED
13	RES, 453, 1%, 0.063 W	0402	R2	1	(Vishay-Dale) CRCW0402453RFKED
14	RES, 0, 5%, 0.063 W	0402	R3	1	(Vishay-Dale) CRCW04020000Z0ED
15	RES, 75.0, 1%, 0.063 W	0402	R4	1	(Vishay-Dale) CRCW040275R0FKED
16	RES, 169, 1%, 0.1 W	0603	R6	1	(Vishay-Dale) CRCW0603169RFKEA
17	RES, 71.5, 1%, 0.1 W	0603	R7	1	(Vishay-Dale) CRCW060371R5FKEA
18	RES, 0, 5%, 0.1 W	0603	R8, R9, R10	3	(Vishay-Dale) CRCW06030000Z0EA
19	Shunt, 100mil, Gold plated, Black		SH-J1	1	(AMP) 382811-6
20	Test Point, Miniature	Test Point, Miniature, SMT	TP1, TP2, TP3	3	(Keystone) 5019
21	IC, OPA855IDSG (WSON-8)		U1	1	(Texas Instruments) OPA855IDSGT
22	Connector, End launch SMA, 50 ohm	SMA End Launch	J3	0	(Cinch Connectivity) 142-0701-851
23	RES, 49.9, 1%, 0.25 W	1206	R5	0	(Vishay-Dale) CRCW120649R9FKEA

Copyright © 2018, Texas Instruments Incorporated

IMPORTANT NOTICE FOR TI DESIGN INFORMATION AND RESOURCES

Texas Instruments Incorporated ('TI") technical, application or other design advice, services or information, including, but not limited to, reference designs and materials relating to evaluation modules, (collectively, "TI Resources") are intended to assist designers who are developing applications that incorporate TI products; by downloading, accessing or using any particular TI Resource in any way, you (individually or, if you are acting on behalf of a company, your company) agree to use it solely for this purpose and subject to the terms of this Notice.

TI's provision of TI Resources does not expand or otherwise alter TI's applicable published warranties or warranty disclaimers for TI products, and no additional obligations or liabilities arise from TI providing such TI Resources. TI reserves the right to make corrections, enhancements, improvements and other changes to its TI Resources.

You understand and agree that you remain responsible for using your independent analysis, evaluation and judgment in designing your applications and that you have full and exclusive responsibility to assure the safety of your applications and compliance of your applications (and of all TI products used in or for your applications) with all applicable regulations, laws and other applicable requirements. You represent that, with respect to your applications, you have all the necessary expertise to create and implement safeguards that (1) anticipate dangerous consequences of failures, (2) monitor failures and their consequences, and (3) lessen the likelihood of failures that might cause harm and take appropriate actions. You agree that prior to using or distributing any applications that include TI products, you will thoroughly test such applications and the functionality of such TI products as used in such applications. TI has not conducted any testing other than that specifically described in the published documentation for a particular TI Resource.

You are authorized to use, copy and modify any individual TI Resource only in connection with the development of applications that include the TI product(s) identified in such TI Resource. NO OTHER LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE TO ANY OTHER TI INTELLECTUAL PROPERTY RIGHT, AND NO LICENSE TO ANY TECHNOLOGY OR INTELLECTUAL PROPERTY RIGHT OF TI OR ANY THIRD PARTY IS GRANTED HEREIN, including but not limited to any patent right, copyright, mask work right, or other intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information regarding or referencing third-party products or services does not constitute a license to use such products or services, or a warranty or endorsement thereof. Use of TI Resources may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

TI RESOURCES ARE PROVIDED "AS IS" AND WITH ALL FAULTS. TI DISCLAIMS ALL OTHER WARRANTIES OR REPRESENTATIONS, EXPRESS OR IMPLIED, REGARDING TI RESOURCES OR USE THEREOF, INCLUDING BUT NOT LIMITED TO ACCURACY OR COMPLETENESS, TITLE, ANY EPIDEMIC FAILURE WARRANTY AND ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT OF ANY THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

TI SHALL NOT BE LIABLE FOR AND SHALL NOT DEFEND OR INDEMNIFY YOU AGAINST ANY CLAIM, INCLUDING BUT NOT LIMITED TO ANY INFRINGEMENT CLAIM THAT RELATES TO OR IS BASED ON ANY COMBINATION OF PRODUCTS EVEN IF DESCRIBED IN TI RESOURCES OR OTHERWISE. IN NO EVENT SHALL TI BE LIABLE FOR ANY ACTUAL, DIRECT, SPECIAL, COLLATERAL, INDIRECT, PUNITIVE, INCIDENTAL, CONSEQUENTIAL OR EXEMPLARY DAMAGES IN CONNECTION WITH OR ARISING OUT OF TI RESOURCES OR USE THEREOF, AND REGARDLESS OF WHETHER TI HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

You agree to fully indemnify TI and its representatives against any damages, costs, losses, and/or liabilities arising out of your non-compliance with the terms and provisions of this Notice.

This Notice applies to TI Resources. Additional terms apply to the use and purchase of certain types of materials, TI products and services. These include; without limitation, TI's standard terms for semiconductor products http://www.ti.com/sc/docs/stdterms.htm), evaluation modules, and samples (http://www.ti.com/sc/docs/sampterms.htm).

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2018, Texas Instruments Incorporated