ULTRA LOW-POWER, RAIL-TO-RAIL OUT, NEGATIVE RAIL IN, VFB OP AMP

Check for Samples: OPA2835-DIE

FEATURES

- **Ultra Low Power**
  - **Quiescent Current: 250 µA (typ)**
  - **Power Down Mode: 0.5 µA (typ)**
- **Bandwidth: 56 MHz**
- **Slew Rate: 160 V/µs**
- **Rise Time: 10 ns (2 V_{STEP})**
- **Settling Time: 45 ns (2V_{STEP})**
- **Overdrive Recovery Time: 195ns**
- **CMRR: 113 dB**
- **Output Current Drive: 40 mA**
- **RRO – Rail-to-Rail Output**

APPLICATIONS

- **Low Power Signal Conditioning**
- **Audio ADC Input Buffer**
- **Low Power SAR and ΔΣ ADC Driver**
- **Portable Systems**
- **Low Power Systems**
- **High Density Systems**
- **Ultrasonic Flow Meter**

DESCRIPTION

Fabricated using the industry-leading BiCom-3x (SiGe complimentary bipolar) process, the OPA2835 is a single and dual ultra low-power, rail-to-rail output, negative rail input, voltage-feedback operational amplifier. Consuming only 250 µA per channel and a unity gain bandwidth of 56MHz, these amplifiers set an industry leading power-to-performance ratio for rail-to-rail amplifiers.

For battery powered portable applications where power is of key importance, the OPA2835's low power consumption and high frequency performance offers designers performance versus power not attainable in other devices. Coupled with a power savings mode to reduce current to <1.5 µA, the device offers an attractive solution for high frequency amplifiers in battery powered applications.

ORDERING INFORMATION[(1)]

PRODUCT	PACKAGE DESIGNATOR	PACKAGE	ORDERABLE PART NUMBER	PACKAGE QUANTITY
OPA2835	TD	Bare Die In Waffle Pack[(2)]	OPA2835TDA1	400
			OPA2835TDA2	10

(1) For the most current package and ordering information, see the Package Option Addendum at the end of this document, or see the TI web site at www.ti.com.
(2) Processing is per the Texas Instruments commercial production baseline and is in compliance with the Texas Instruments Quality Control System in effect at the time of manufacture. Electrical screening consists of DC parametric and functional testing at room temperature only. Unless otherwise specified by Texas Instruments AC performance and performance over temperature is not warranted. Visual Inspection is performed in accordance with MIL-STD-883 Test Method 2010 Condition B at 75X minimum.

Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of the Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

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This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

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.

BARE DIE INFORMATION

DIE THICKNESS	BACKSIDE FINISH	BACKSIDE POTENTIAL	BOND PAD METALLIZATION COMPOSITION	BOND PAD THICKNESS
6 mils.	Silicon with backgrind	Floating	Al5TiN	675 nm

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Table 1. Bond Pad Coordinates in Microns

DESCRIPTION	PAD NUMBER	X MIN	Y MIN	X MAX	Y MAX
VOUT1	1	6	817.8	91	902.8
VIN1-	2	6	680.1	91	765.1
VIN1+	3	6	427.6	91	512.6
VS-	4	6	247.85	91	332.85
PD1	5	6	76.1	91	161.1
mountpad	6	270.35	6	355.35	91
N/C	7	507.5	6	592.5	91
mountpad	8	744.65	6	829.65	91
PD2	9	1009	76.1	1094	161.1
N/C	10	1009	247.85	1094	332.85
VIN2+	11	1009	427.6	1094	512.6
VIN2-	12	1009	680.1	1094	765.1
VOUT2	13	1009	817.8	1094	902.8
VS+	14	744.65	817.8	829.65	902.8
N/C	15	507.5	817.8	592.5	902.8
VS+	16	270.35	817.8	355.35	902.8

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PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
OPA2835TDA1	ACTIVE			0	400	RoHS & Green	Call TI	N / A for Pkg Type	25 to 25		Samples
OPA2835TDA2	ACTIVE			0	10	RoHS & Green	Call TI	N / A for Pkg Type	25 to 25		Samples

(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.
OBSOLETE: TI has discontinued the production of the device.

(2) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".
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(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 finish/Ball material - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

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