WIDEBAND, LOW NOISE, LOW DISTORTION FULLY DIFFERENTIAL AMPLIFIER WITH RAIL-TO-RAIL OUTPUTS

Check for Samples: THS4520-DIE

FEATURES

- **Fully Differential Architecture With Rail-to-Rail Outputs**
- **Centered Input Common-mode Range**
- **Power-Down Capability**

APPLICATIONS

- **Data Acquisition Systems**
- **High Linearity ADC Amplifier**
- **Wireless Communication**
- **Test and Measurement**
- **Voice Processing Systems**

DESCRIPTION

The THS4520-DIE is a wideband, fully differential operational amplifier designed for data acquisition systems. It has very low noise and low harmonic distortion. The slew rate is ideal for data acquisition applications. It is designed for unity gain stability.

To allow for DC coupling to ADCs, its unique output common-mode control circuit maintains the output common-mode voltage from the set voltage. The common-mode set point defaults to mid-supply by internal circuitry, which may be over-driven from an external source.

The input and output are optimized for best performance with their common-mode voltages set to mid-supply.

ORDERING INFORMATION(1)

PRODUCT	PACKAGE DESIGNATOR	PACKAGE	ORDERABLE PART NUMBER	PACKAGE QUANTITY
THS4520	TD	Bare die in waffle pack(2)	THS4520TDA1	100
			THS4520TDA2	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.

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
10.5 mils.	Silicon with backgrind	Floating	AL5TiN	675 nm

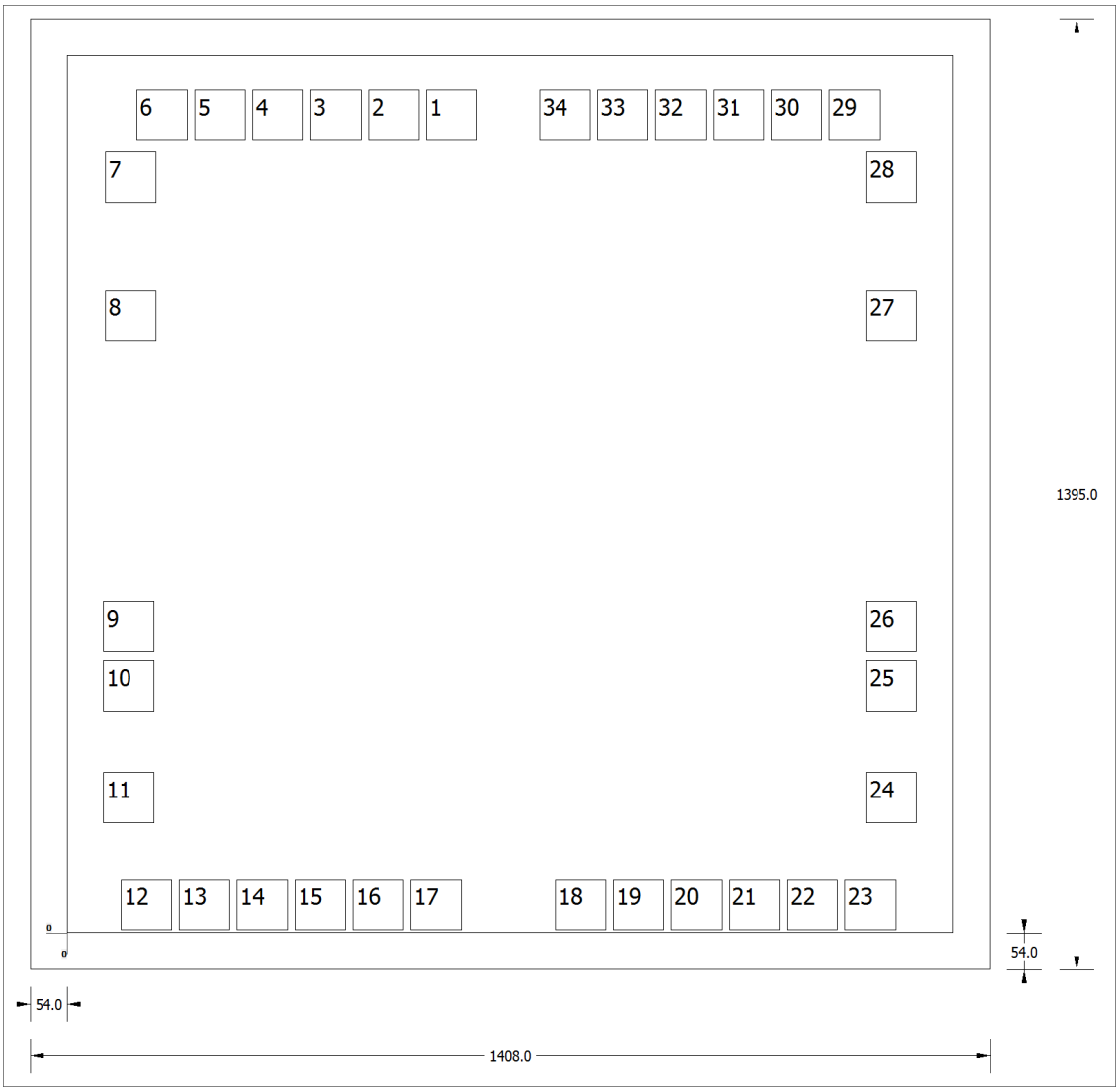

Table 1. Bond Pad Coordinates in Microns

DESCRIPTION	PAD NUMBER	X MIN	Y MIN	X MAX	Y MAX
VS-	1	526.6	1161.95	601.6	1236.95
VS-	2	441.6	1161.95	516.6	1236.95
VS-	3	356.6	1161.95	431.6	1236.95
VS-	4	271.6	1161.95	346.6	1236.95
VS-	5	186.6	1161.95	261.6	1236.95
VS-	6	101.6	1161.95	176.6	1236.95
N/C	7	55.75	1071.35	130.75	1146.35
VIN-	8	55.75	868.45	130.75	943.45
VOUT+	9	53.25	411.55	128.25	486.55
VOUT+	10	53.25	324.55	128.25	399.55
CM	11	53.25	161.05	128.25	236.05
VS+	12	78.65	4.45	153.65	79.45
VS+	13	163.65	4.45	238.65	79.45
VS+	14	248.65	4.45	323.65	79.45
VS+	15	333.65	4.45	408.65	79.45
VS+	16	418.65	4.45	493.65	79.45
VS+	17	503.65	4.45	578.65	79.45
VS+	18	715.85	4.45	790.85	79.45
VS+	19	800.85	4.45	875.85	79.45
VS+	20	885.85	4.45	960.85	79.45
VS+	21	970.85	4.45	1045.85	79.45
VS+	22	1055.85	4.45	1130.85	79.45
VS+	23	1140.85	4.45	1215.85	79.45
CM	24	1171.75	161.05	1246.75	236.05
VOUT-	25	1171.75	324.55	1246.75	399.55
VOUT-	26	1171.75	411.55	1246.75	486.55
VIN+	27	1171.75	868.45	1246.75	943.45
PD	28	1171.75	1071.35	1246.75	1146.35
VS-	29	1117.85	1161.95	1192.85	1236.95
VS-	30	1032.85	1161.95	1107.85	1236.95
VS-	31	947.85	1161.95	1022.85	1236.95
VS-	32	862.85	1161.95	937.85	1236.95
VS-	33	777.85	1161.95	852.85	1236.95
VS-	34	692.85	1161.95	767.85	1236.95

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
THS4520TDA1	ACTIVE			0	100	TBD	Call TI	N / A for Pkg Type	25 only		Samples
THS4520TDA2	ACTIVE			0	10	TBD	Call TI	N / A for Pkg Type	25 only		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) 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.
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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.

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