



TAS5421-Q1 20-W Mono Automotive Digital Amplifier With Diagnostics

1 Features

- Mono BTL Digital Power Amplifier
- Differential Analog Input
- Typical Output Power at 1% and 10% THD+N
 - 20 Watts at 1% and 26W at 10% into 4 Ω
 - 10 Watts at 1% and 13W at 10% into 8 Ω
- 70-dB PSRR
- Channel Gains: 20 dB, 26 dB, 32 dB, 36 dB
- Load Diagnostic Functions:
 - Open and Shorted Output Load
 - Output to Power and Ground Shorts
- Protection and Monitoring Functions:
 - Short-Circuit Protection
 - Load-Dump Protection to 40 V
 - Fortuitous Open-Ground and -Power Tolerant
 - Output DC Level Detection While Music Is Playing
 - Overtemperature Protection
 - Over- and Undervoltage Protection
- 16-Terminal TSSOP (PWP) Package With PowerPAD™ Package (Pad Down)
- Designed for Automotive EMC Requirements
- Qualified According to AEC-Q100 Grade 2
- ISO9000: 2002 TS16949 Certified

- –40°C to 125°C Ambient Temperature Range

2 Applications

- Automotive Emergency Call (E-Call) Amplifier
- Telematics Systems
- Instrument Cluster Systems
- Infotainment Audio

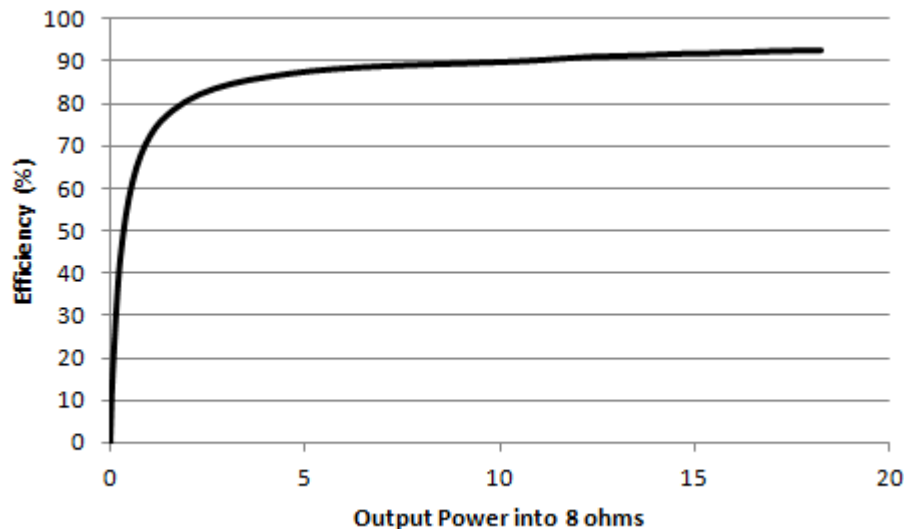
3 Description

The TAS5421-Q1 is a mono digital audio amplifier designed for use in the automotive emergency call (E-Call), telematics, instrument cluster, and infotainment applications. The device provides 20 W into 4 Ω at less than 1% THD+N from a 14.4-Vdc automotive battery. The wide operating voltage range and excellent efficiency make the device ideal for start-stop support or running from a backup battery when required. The integrated load-dump protection reduces external voltage clamp cost and size, and the on-board load diagnostics report the status of the speaker through I²C.

Device Information

ORDER NUMBER	PACKAGE	BODY SIZE
TAS5421QPWPRQ1	PWP (16)	5 mm x 4,4 mm

4 Output Power Efficiency



5 Device and Documentation Support

5.1 Trademarks

PowerPAD is a trademark of Texas Instruments.
All other trademarks are the property of their respective owners.

5.2 Electrostatic Discharge Caution



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.

5.3 Glossary

[SLYZ022](#) — *TI Glossary*.

This glossary lists and explains terms, acronyms and definitions.

6 Mechanical, Packaging, and Orderable Information

The following pages include mechanical packaging and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and without revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

PRODUCT PREVIEW

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
TAS5421QPWPRQ1	PREVIEW	HTSSOP	PWP	16	2000	TBD	Call TI	Call TI	-40 to 125		

(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.

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

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.

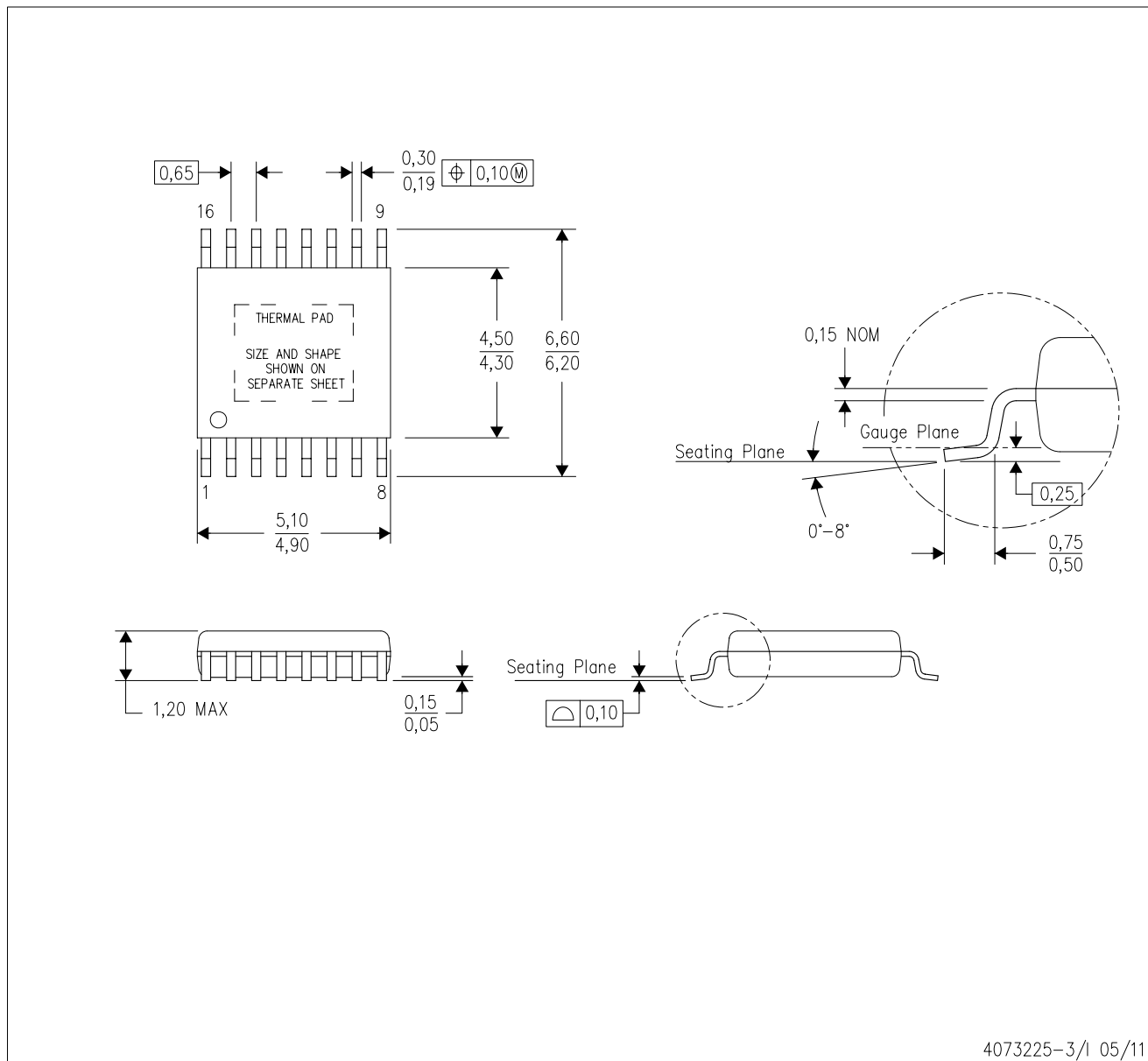
(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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PWP (R-PDSO-G16)

PowerPAD™ PLASTIC SMALL OUTLINE



- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. Body dimensions do not include mold flash or protrusions. Mold flash and protrusion shall not exceed 0.15 per side.
 - D. This package is designed to be soldered to a thermal pad on the board. Refer to Technical Brief, PowerPad Thermally Enhanced Package, Texas Instruments Literature No. SLMA002 for information regarding recommended board layout. This document is available at www.ti.com <<http://www.ti.com>>.
 - E. See the additional figure in the Product Data Sheet for details regarding the exposed thermal pad features and dimensions.
 - E. Falls within JEDEC MO-153

PowerPAD is a trademark of Texas Instruments.

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TI has specifically designated certain components as meeting ISO/TS16949 requirements, mainly for automotive use. In any case of use of non-designated products, TI will not be responsible for any failure to meet ISO/TS16949.

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