SBOS391–DECEMBER 2007

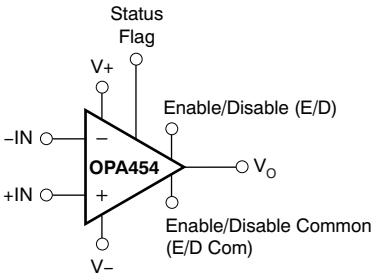
High-Voltage (100V), High-Current (50mA) OPERATIONAL AMPLIFIERS, G = 1 Stable

FEATURES

- **WIDE POWER-SUPPLY RANGE: ±5V (10V) to ±50V (100V)**
- **HIGH OUTPUT LOAD DRIVE: I_O > ±50mA**
- **WIDE OUTPUT VOLTAGE SWING: 1V to Rails**
- **INDEPENDENT OUTPUT DISABLE OR SHUTDOWN**
- **WIDE TEMPERATURE RANGE: –40°C to +85°C**
- **PACKAGES: SO and HSOP PowerPAD™**

APPLICATIONS

- **TEST EQUIPMENT**
- **AVALANCHE PHOTODIODE: High-V Current Sense**
- **PIEZOELECTRIC CELLS**
- **TRANSDUCER DRIVERS**
- **SERVO DRIVERS**
- **AUDIO AMPLIFIERS**
- **HIGH-VOLTAGE COMPLIANCE CURRENT SOURCES**
- **GENERAL HIGH-VOLTAGE REGULATORS/POWER**



DESCRIPTION

The OPA454 is a low-cost operational amplifier with high voltage (100V) and relatively high current drive (25mA). It is unity-gain stable and has a gain-bandwidth product of 2.5MHz.

The OPA454 is internally protected against over-temperature conditions and current overloads. It is fully specified to perform over a wide power-supply range of ±5V to ±50V or on a single supply of 10V to 100V. The status flag is an open-drain output that allows it to be easily referenced to standard low-voltage logic circuitry. This high-voltage op amp provides excellent accuracy, wide output swing, and is free from phase inversion problems that are often found in similar amplifiers.

The output can be independently disabled using the Enable/Disable Pin that has its own common return pin to allow easy interface to low-voltage logic circuitry. This disable is accomplished without disturbing the input signal path, not only saving power but also protecting the load.

Featured in a small exposed metal pad package, the OPA454 is easy to heatsink over the extended industrial temperature range, –40°C to +85°C.

Table 1. OPA454 RELATED PRODUCTS

PRODUCT	DESCRIPTION
OPA445 (1)	80V, 15mA
OPA452	80V, 50mA
OPA547	60V, 750mA
OPA548	60V, 3A
OPA549	60V, 9A
OPA551	60V, 200mA
OPA567	5V, 2A
OPA569	5V, 2.4A

(1) The OPA445 is pin-compatible with the OPA445, except in applications using the offset trim, and NC pins other than open.

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.

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

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.

Copyright © 2007, Texas Instruments Incorporated

THERMAL PAD MECHANICAL DATA

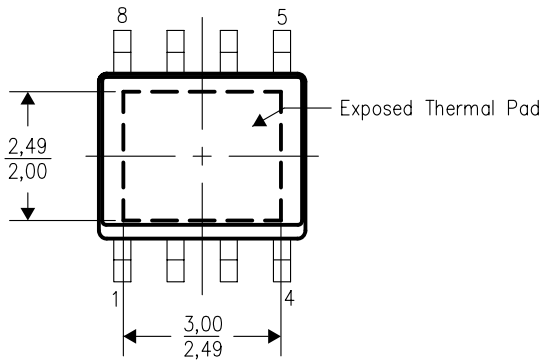
DDA (R–PDSO–G8)

THERMAL INFORMATION

This PowerPAD™ package incorporates an exposed thermal pad that is designed to be attached directly to an external heatsink. The thermal pad must be soldered directly to the printed circuit board (PCB). After soldering, the PCB can be used as a heatsink. In addition, through the use of thermal vias, the thermal pad can be attached directly to the appropriate copper plane shown in the electrical schematic for the device, or alternatively, can be attached to a special heatsink structure designed into the PCB. This design optimizes the heat transfer from the integrated circuit (IC).

For additional information on the PowerPAD package and how to take advantage of its heat dissipating abilities, refer to Technical Brief, PowerPAD Thermally Enhanced Package, Texas Instruments Literature No. SLMA002 and Application Brief, PowerPAD Made Easy, Texas Instruments Literature No. SLMA004. Both documents are available at www.ti.com.

The exposed thermal pad dimensions for this package are shown in the following illustration.



Top View

NOTE: All linear dimensions are in millimeters

Exposed Thermal Pad Dimensions

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information 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.

Reproduction of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, unless officers of the parties have executed an agreement specifically governing such use. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications, notwithstanding any applications-related information or support that may be provided by TI. Further, Buyers must fully indemnify TI and its representatives against any damages arising out of the use of TI products in such safety-critical applications.

TI products are neither designed nor intended for use in military/aerospace applications or environments unless the TI products are specifically designated by TI as military-grade or "enhanced plastic." Only products designated by TI as military-grade meet military specifications. Buyers acknowledge and agree that any such use of TI products which TI has not designated as military-grade is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI products are neither designed nor intended for use in automotive applications or environments unless the specific TI products are designated by TI as compliant with ISO/TS 16949 requirements. Buyers acknowledge and agree that, if they use any non-designated products in automotive applications, TI will not be responsible for any failure to meet such requirements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products		**Applications**	
Amplifiers	amplifier.ti.com	Audio	www.ti.com/audio
Data Converters	dataconverter.ti.com	Automotive	www.ti.com/automotive
DSP	dsp.ti.com	Broadband	www.ti.com/broadband
Clocks and Timers	www.ti.com/clocks	Digital Control	www.ti.com/digitalcontrol
Interface	interface.ti.com	Medical	www.ti.com/medical
Logic	logic.ti.com	Military	www.ti.com/military
Power Mgmt	power.ti.com	Optical Networking	www.ti.com/opticalnetwork
Microcontrollers	microcontroller.ti.com	Security	www.ti.com/security
RFID	www.ti-rfid.com	Telephony	www.ti.com/telephony
RF/IF and ZigBee® Solutions	www.ti.com/lprf	Video & Imaging	www.ti.com/video
		Wireless	www.ti.com/wireless

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright 2008, Texas Instruments Incorporated