

# Power Operational Amplifiers

## FEATURES

- **EXTENDED SUPPLY RANGE**  
UP TO  $\pm 175V$  or  
350V TOTAL
- **PROVIDES PA08 PERFORMANCE**  
UP TO  $\pm 150mA$   
PROGRAMMABLE CURRENT LIMIT  
LOW DRIFT FET INPUT



**8-PIN TO-3  
PACKAGE STYLE CE**

## APPLICATIONS

- **PROGRAMMABLE POWER SUPPLIES UP TO 340V**
- **ELECTROSTATIC TRANSDUCERS & DEFLECTION**
- **PIEZO ELECTRIC TRANSDUCERS**
- **HIGH VOLTAGE INSTRUMENTATION**

## DESCRIPTION

The PA08V is an extended supply range operational amplifier capable of output voltage swings of  $\pm 170V$  with dual supplies or 340V total supply voltage on single or non-symmetric supplies.

High accuracy is achieved with a cascode input circuit configuration. All internal biasing is referenced to a zener diode fed by a FET constant current source. As a result, the PA08 features an unprecedented supply range and excellent supply rejection. The output stage is biased class A-B for linear operation. Internal phase compensation assures stability at all gain settings. The safe operating area (SOA) can be observed with all types of loads by choosing the appropriate current limiting resistors. For operation into inductive loads, two external flyback pulse protection diodes are recommended. A heatsink may be necessary to maintain the proper case temperature under normal operating conditions.

This hybrid integrated circuit utilizes a beryllia (BeO) substrate, thick film resistors, ceramic capacitors, and semiconductor chips to maximize reliability, minimize size and give top performance. Ultrasonically bonded aluminum wires provide reliable interconnections at all operating temperatures. The 8-pin TO-3 package is hermetically sealed and electrically isolated. The use of compressible thermal isolation washers and/or improper mounting torque will void the product warranty. Please see "General Operating Considerations".

## SPECIFICATIONS

Specifications of the standard PA08 apply with the benefit of supply ratings being extended to  $\pm 175V$ . Design changes enabling the total supply rating of 350V have no effect on the shape of the typical performance graphs.

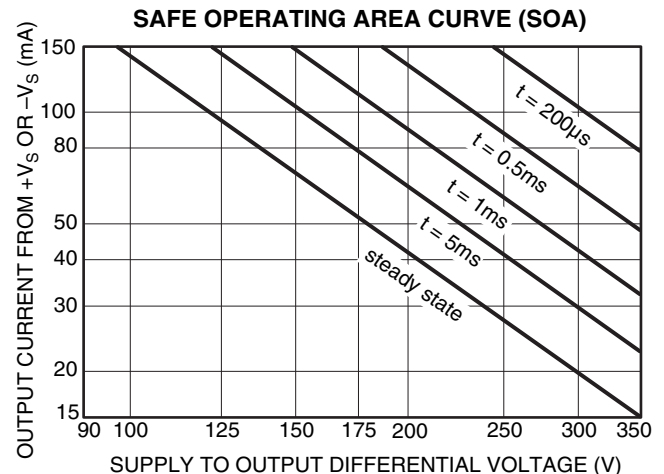
## GENERAL CONSIDERATIONS

### SAFE OPERATING AREA

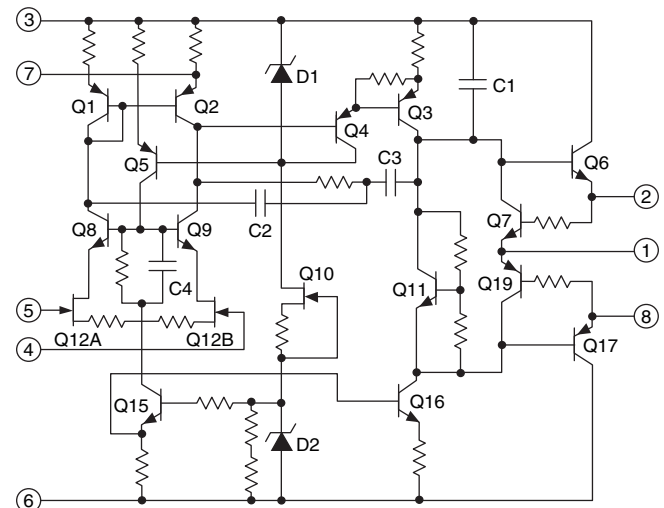
The extended safe operating area is as follows:

When operating on  $\pm 175V$ , maximum safe values of capacitive and inductive loading are  $.2\mu F$  and 200mH. Maximum safe current limit for a short to common is 50mA, and for a short to supply rails, the maximum is 15mA.

Please consult the PA08 data sheet for basic information on this amplifier, plus the application notes in this Apex Microtechnology Databook, for recommendations on stability, current limiting, heatsinks, bypassing, and suggestions for circuit functions.



## EQUIVALENT SCHEMATIC



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## **NEED TECHNICAL HELP? CONTACT APEX SUPPORT!**

For all Apex Microtechnology product questions and inquiries, call toll free 800-546-2739 in North America.

For inquiries via email, please contact [apex.support@apexanalog.com](mailto:apex.support@apexanalog.com).

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