



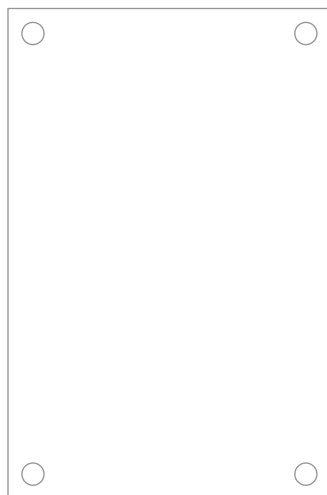
PA107DP, MP103FC

**3000 V/ μ S SINGLE CHANNEL, 15 A PEAK DUAL CHANNEL
HYBRID POWER AMPLIFIERS DRIVE PIEZOELECTRONICS**



FC MODULAR 42-PIN DIP

Open Frame Product Technology
(actual footprint 73.4 mm X 41.4 mm)



DP 12-PIN POWER SIP

(actual footprint 30.99mm X 20.17mm)

The PA107DP and MP103FC offer industry first combinations of speed, voltage, and current that target piezo drive applications in the industrial and medical market space. These hybrid, single-package solutions join the Apex Precision Power® product family of high performance, high precision power amplifiers from Cirrus Logic.

The PA107DP combines an extremely high slew rate of 3000 V/ μ s MAX, with a wide, dual voltage supply operation of 40 V to 200 V, and output current of 1.5 A continuous, or 5 A PEAK. This device also features high gain bandwidth of 180 MHz, making this driver an attractive option for driving piezos used in medical imaging and ultrasound applications, as well as programmable power for automatic test equipment. The high speed, or bandwidth, allows the PA107DP to drive voltage within the end system with greater speed and accuracy, enabling imaging equipment to scan faster and power supplies to cycle up with improved efficiency.

Housed in a 12-pin Power SIP package, the

PA107DP is equally attractive for its very small footprint that requires less than two square inches of board space.

The MP103FC is a 15 A, dual-channel device that allows designers to save significant board space in multi-channel systems. The most typical application for the MP103FC will be driving piezos in large industrial ink jet printers used to create wide format banners and billboards. Printers along this size and scale incorporate up to 150 ink jet heads with an equal number of drive channels, making the dual channel MP103FC an excellent space-saving option. The MP103FC operates on voltage supplies ranging from 30 V up to 200 V and features a slew rate of 180 V/ μ s. Packaging for the MP103FC is an industrial temperature range "open frame" form factor developed for a number of Apex Precision Power products to offer a lower per unit cost in comparison with a hermetically sealed hybrid. (see the "Open Frame Packaging" technology story on reverse side).

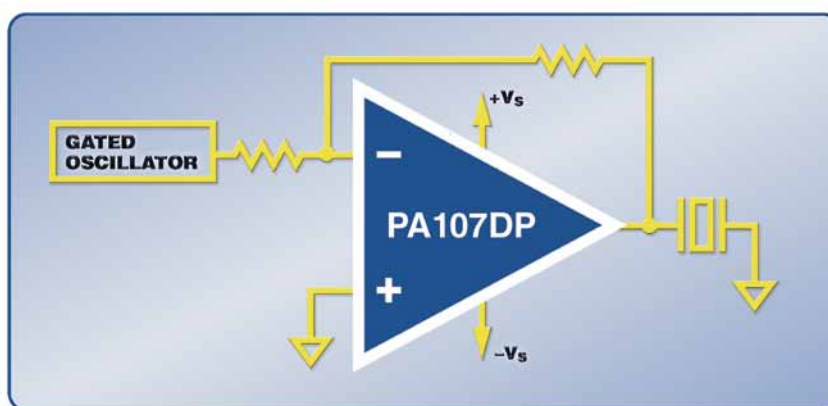
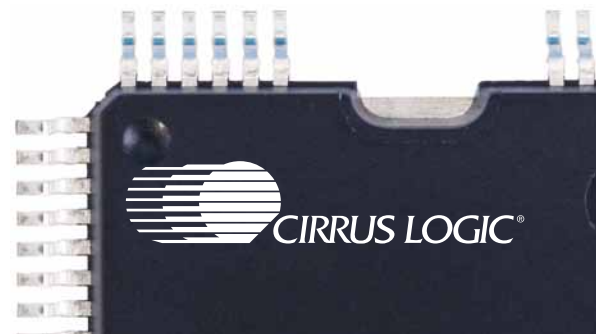


Figure 1. The PA107DP utilizes its unique combination of very high speed and high voltage operation to drive piezos transducers in ultrasonic applications for the medical market.



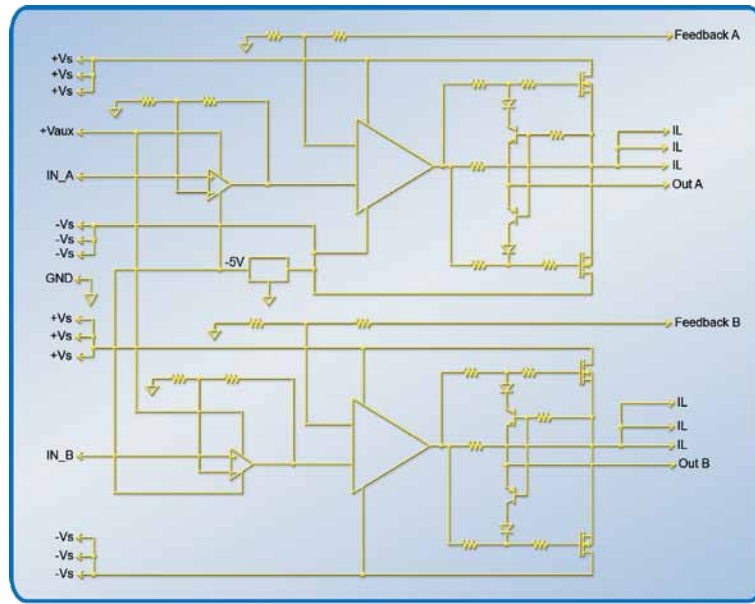
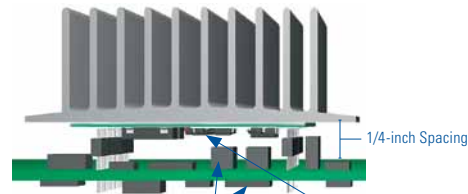


Figure 2. The dual-channel MP103FC saves board space for inkjet printer applications that require up to 150 drive channels.

KEY SPECIFICATIONS

Model	Slew Rate	Output Current	Supply Voltage Operation
PA107DP	3000 V/ μ s	1.5 A Continuous, 5 A PEAK	40 V to 200 V Dual Supply
MP103FC	180 V/ μ s	Up to 15A PEAK X 2	30 V to 200 V Dual Supply



Components can be mounted on board under the open frame, as well as underneath the board.

SAVE SPACE: OPEN FRAME HEAT SINKING AND BOARD MOUNTING

A heatsink can be flush mounted to the open frame module above the board to free up board space. Components can even be mounted on the board under the open frame, as well as underneath the board.

Apex Precision Power has been an industry leader in the design and manufacturing of high power, precision analog products for more than two decades. Many Apex products have traditionally been designed as hybrids in order to achieve voltage levels up to 1200V and 50A of output current. Hybrids are known to be very reliable, but also costly. To address this cost issue, Apex re-engineered how a power component is designed and manufactured. The Apex "open frame" product technology utilizes low cost surface mount technology (SMT) to reduce per unit costs by up to 75%.

Traditional hybrid packages achieve exceptional thermal management by soldering unpackaged power transistor die to a BeO (beryllia oxide) substrate which in turn is soldered to a metal base package. In researching lower cost alternatives, Apex design engineers discovered how to create a package with a similarly low thermal resistance at a significant cost savings by soldering surface mount packaged power transistors to an insulated metal substrate (IMS). An IMS substrate consists of an aluminum metal substrate, a thin insulating layer and a copper conductive layer. Overall the substrate is similar to a standard printed circuit board but with far lower thermal resistance.

The use of SMT construction techniques generate significant cost efficiencies because they eliminate a number of costly, time consuming manufacturing steps typically found in the process intensive, labor intensive assembly of hybrid components.

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