It's not just size that counts

But, when it comes to DC-DC converters, the input voltage range as well. RICHARD WILSON looks at what's on offer.

Input voltage range seems to be just as important as module size for the latest generation of point of load DC-DC power converters. Vicor Electronics Power Systems is one supplier which has increased the input voltage range and added sequencing on the outputs to its existing range of non-isolated point of load (POL) DC-DC converters.

For example, the 6A Micro Lynx II, 10A Austin Lynx II and 16A Super Lynx II nominal 12V converters can accept input voltages ranging between 3.3V-14V and produce a regulated output voltage of 0.75Vdc-5Vdc programmable using an external resistor. Similarly, the 6A Micro Lynx II, 10A Austin Lynx II and 16A Super Lynx II converters, all with nominal 5V input voltages, take inputs in the range of 5.5V-2.2V. The regulated output voltage of 0.75Vdc-3.3Vdc is programmable within one percent, using an external resistor.

These are surface mount modules with the largest being the Austin Lynx II and Super Lynx II measuring 33.00x13.50x28.60mm, while the Micro Lynx II converters are only 27.90x11.35x7.29mm.

The number of small format non-isolated DC-DC converters available to the designer has been growing over the last few months. Artesyn Technologies' E-class series contains 12V input POL DC-DC converters with 5, 8, 10 or 15A outputs. The input voltage range is marginally narrower than for the comparable Vicor part, accepting 10V-14V. Output voltages can be set anywhere from 60V to 3.3V by means of a single external resistor.

Power-One's 17A non-isolated POL converter has an even wider input voltage range from 5.8 to 12.5V and a programmable output 0.7 to 3.6V. It effectively covers both nominal 5V and 12V variants of other suppliers in one product. The vertical SIP package is also small, measuring 7.85x5.22x2mm.

 Lambda's turbo range of POL converters has an input voltage range of 3.3V to 12V. SynQor's NiQor has a narrow input range of 1.8V to 5.3V but delivers up to 20A at 3.3V, 2.5V, 1.8V, 1.5V, 1.2V and 0.9V.

Artesyn's 10A and 15A variants are available in surface mount packages measuring 23.5x13.5x6.5mm. The 5A is available in a 20.3x11.4x5.97mm package. The 15A version is also available in a single inline form factor for through-hole mounting.

Artesyn is one of three suppliers which have formed an alliance to promote the use of small, on-the-board point-of-load modules in distributed power designs.

Artesyn Technologies and Emerson's Aspec Power division have signed a second source license agreement with Texas Instruments to standardize technology for pin-compatible, non-isolated, point-of-load and DC-DC voltage converters.

"By combining our complementary strengths, Aspec Power, Artesyn and TI are uniquely positioned to stimulate the rapid growth of this market by offering pin-compatible modules," said Mark Rice, v-p DC-DC sales at Aspec Power.

In September Vicor introduced its first in a range of POL power converters which is designed to sit on its factorised bus architecture. Vicor's approach differs from other suppliers in that it offers isolated point of load devices, believing there is a problem with ground currents, generating unwanted noise with the more traditional non-isolated device.

Working from a 48V input and measuring 32x21.5x6mm, this device called the V1-chip voltage transformation module, will deliver an impressive 80A at 1.5V.

Another isolated DC-DC converter comes from Aspec Power. This standard sixteenth-brick converter is a 50W surface mount module.

The ALX series operates from a 30V to 75V input bus voltage and delivers up to 20A of current from the 1.8V and 1.2V output, 18A from the 2.5V and 15A from the 3.3V output.

Ericsson Power Modules' 80A PKM-C family of DC-DC modules come in the larger quarter-brick format and incorporate a footprint design called "Double-F" to improve thermal behaviour. And to keep the maximum current per pin below 50A, and preferably to a maximum of 40A.

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**Products**

**EMI filter for DC-DC conversion**

Vicor has introduced an active EMI filter for 48V DC-DC converter applications. The QPI-1 delivers over 40dB of common-mode and more than 80dB of differential-mode noise attenuation at 50kHz from a 24.5x24.5x31mm surface-mount package, said the firm. Active filtering eliminates ringing on the input of the converter in response to load and line transients. An active filter attenuates noise over the entire frequency range. There are no resonant elements that can amplify the noise. The QPI-1 meets the specifications of the international 36 to 70Vdc telecoms bus, including the 100V, 100ms surge. Rated at 12A, the unit supports single or multiple DC-DC converters up to 57.6W at nominal line voltage. Units can be placed in series for higher attenuation or parallel for higher currents.

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**Network processors perk up with security features**

Despite concerns over the networking market, processor developers Agere Systems, Motorola and Winhugra are offering enhanced network processors with designs that have features such as voice-over-ATM, security and Gigabit Ethernet.

Aimed at asynchronous transfer mode (ATM)-based wireless infrastructure networking, Agere Systems is offering a performance boosting processor to support its APF 5000 series network processor chips. The APF100 effectively takes on the ATM adaptation layer 2 functions needed for voice over ATM processing, usually run on the host CPU. It processes voice signals at speeds of up to 622Mbit/s. The chip also simultaneously processes 32,000 voice channels. It is sampling later this month with production quantities are planned for next April.

Motorola has added security features to its PowerQUICC III family of communication processors. The PowerPC-based MPC855 also comes with 256Kbyte of Level 2 cache. The chip offers a security core capable of single-pass encryption and authentication that is required by security protocols such as IPsec, SSL and 802.11i.

The MPC855 delivers two main processing blocks: 650 PowerPC core with 256Kbyte of Level 2 cache and a RISC-based communications processor module for the peripheral tasks. The PowerPC core will be offered with clock speeds ranging from 533MHz to 833MHz.

Winhugra’s latest access packet processors are the WinPath W7147 and W7140 are intended to support DSLAM access device design employing Gigabit Ethernet uplinks or requiring on-board support of numerous TDM channels.

The devices feature two F/S24E and two 10/100/1000Mbit Ethernet MACs. 16 serial ports, each provide 10BaseT and 100BaseT(X) connectivity. The two devices also provide multi-PHY support, 127 on each 10/100BaseT port. In addition, the control plane device (W7147) integrates a 56K MPPP core.

The Win747 and Win740 are scheduled to be available in Q1 2004.

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**Sensors for OEMs**

The X-Sensors range of proximity sensors from Swintech includes inductive, thru-beam, area and contrast sensors. Sensors are aimed at OEMs and end users in the packaging industry, for use as safety devices, for product line management and in automotive applications. Thru beam devices offer easy alignment and high contamination immunity for use in "dirty" applications. The receiver/ emitter combination is able to operate at up to 4m apart. Inductive sensors compare amplified sensors operating at a nominal 10 to 30Vdc over a switching distance of 2mm in shielded form and 4mm unshielded.

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