

# Elantec Semiconductor Has Power Supply Solutions for Virtex-II Pro Platform FPGAs

High efficiency and fewer components give you high reliability while reducing printed circuit board real estate.

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Virtex-II Pro™ series Platform FPGAs use separate supply voltages for the core circuitry and I/O interface power supplies. Typically, the I/O interface requires 2.5V and the core circuitry requires 1.8V. As a designer, you need to minimize board space and maximize the reliability of the power supplies.

Elantec Semiconductor Inc. has highly integrated solutions to fulfill your local power needs. Elantec's family of integrated FET DC:DC converters provides optimal solutions for Virtex-II Pro designs. These power products are unique synchronous buck converters with integrated FETs and internal current sensing. These features, as well as other embedded functions, enable high efficiency and higher frequencies, which lead to smaller inductors. These features and functions require fewer external components, giving you the advantage of minimum board space. Additionally, higher reliability is achieved through lower die temperature.

### Integrated FET DC:DC Converters

When you are designing a local power supply for a Virtex-II Pro system, several factors allow you to achieve a small PC board area. Elantec power products include the following features:

- Synchronous DC:DC switching regulators running at higher frequencies
  - Up to 1 MHz switching frequency
- Higher frequencies, allowing use of smaller external capacitors and inductors
  - Steady peak-to-peak ripple voltage with fewer external parts
- Higher integration, resulting in fewer external components
  - No external FETs
- Reduced parts count.

### Embedded Functions Reduce ICs

When designing a local power supply for a Virtex-II Pro system, you need certain features for a complete solution. To achieve these complete solutions usually requires additional ICs. Elantec parts, however, feature embedded functions, including:

- Current mode control
  - On-chip current sensing feedback for internal PWM controller
- Over-current protection
  - Cycle-by-cycle current sensing and limiting
- Over-temperature protection
  - Junction temperature monitor circuit on die
  - Control circuits with hysteresis for automatic supply restart
- Adjustable switching frequency
  - User-selectable frequency to avoid switching interference
- Soft start
  - Internal power-up control
- Power sequencing
  - Sequential activation of multiple power supplies without additional control ICs
- Simultaneous power tracking with controlled voltage out.

### High Reliability Components

The following list of functions in Elantec power products improve the reliability of your power supply:

- Synchronous converter
  - Both upper and lower power switches on-chip
  - Up to 95% efficiency
- Integrated Power FETs
  - Reduced power dissipation versus external FETs with resistive connections
- Advanced packages
  - Optional low die temperature, small HTSSOP.



Figure 1 - Integrated FET 4A and 8A DC:DC converter packages

### Complete DC:DC Converter Family

Different designs will have varying requirements for voltage and current, switching frequency, and available board space. The Elantec family of DC:DC products meets Virtex-II Pro local system needs by providing:

- Continuous output currents
  - Products to choose from with currents up to 1A, 2A, 4A, 6A, and 8A
- Flexible output voltages
  - Adjustable voltages from 1.0V to 3.3V available from each product
- Multiple package types
  - HTSSOP, QSOP, MSOP, HSOP, and SOL available.

Table 1 shows a comprehensive summary of Elantec power products. Figure 1 shows packages and board area space for 4A and 8A products.

### Conclusion

Design engineers engaged in Virtex-II Pro board designs need to have power supplies that provide a complete solution for local power in their systems. Elantec DC:DC converters have all of the features and embedded functions to get the job done. For data sheets, application briefs, and additional information, visit Elantec online at [www.elantec.com](http://www.elantec.com), or send an e-mail to [tech@elantec.com](mailto:tech@elantec.com). ❧

Part No.	Type	Supply Voltage	Output Voltage	Output Current	Package
EL7558BC	Buck	4.5V to 5.5V	1.0V to 3.8V	8A	HSOP28
EL7556BC	Buck	4.5V to 5.5V	1.0V to 3.8V	6A	S028
EL7564C	Buck	4.5V to 5.5V	1.0V to 3.8V	4A	HTSSOP28
EL7563C	Buck	3.0V to 3.6V	1.0V to 2.5V	4A	HTSSOP28
EL7562C	Buck	4.5V to 5.5V	1.0V to 3.8V	2A	QSOP16
EL7551C	Buck	4.5V to 5.5V	1.0V to 3.8V	1A	QSOP16
EL7512C	Boost	2.0V to 14V	5.0V to 16V	0.2A to 0.5A	MSOP10

Table 1 - Elantec power products