TI Unveils Integrated Power over Ethernet Solution with Four Independent Ports

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Building on innovation to enable the seamless sharing of power and data over the same Ethernet cable, Texas Instruments Incorporated (TI) today announced a next-generation power management integrated circuit (IC) that simplifies design of IEEE 802.3af-compliant power source equipment (PSE). The versatile, quad-port power manager can support operation at -40º to +125º C for a wide range of commercial, industrial and military applications such as sophisticated enterprise systems with up to 128 ports to low-port count hub Ethernet switches for small office/home office applications.

"As the Power over Ethernet market expands, designers are being asked to implement PoE-compliant designs that withstand considerable heat dissipation," said Rich Valley, vice president of TI's system power management business. "TI leverages its advanced analog semiconductor manufacturing process to create this new integrated PoE semiconductor technology rugged enough to continue operating over this extreme temperature range."

Next-Generation Power over Ethernet Manager

TI´s easy-to-use TPS2384 Power over Ethernet (PoE) manager effectively manages discovery, classification and delivery of direct-current (DC) power source equipment to a powered device. The IC offers increased flexibility and performance over TI´s TPS2383 PoE manager, introduced in April 2003, while providing necessary power

management control and protection. In addition the ability to detect new PoE-compliant powered devices (PDs) coming on-line, the TPS2384 also can recognize legacy devices.

A designer can select from three different modes of operation using the versatile TPS2384 device - automatic mode, port-management mode or manual operation. The use of a multi-point or slope detection method for the PD signature resistor allows accurate detection, even when series steering diodes are present. In auto mode, if a proper PD is not detected, the TPS2384 will alert the system to not connect the power. In the port management mode, the host can read the contents of the A2D resistor register after each discovery is completed, and it can set limits for accepting or rejecting the power device. Also while in port-management mode, the TPS2384 can work with a microcontroller to perform advanced power-management functions and detect legacy capacitance loads.

Leveraging TI´s advanced linear Bi-CMOS, 1-µ copper interconnect process technology and circuit design expertise, the TPS2384 in automatic mode minimizes the number of required external components to only one external capacitor per port. In addition to reducing overall system cost, TI´s manufacturing capability also allows the TPS2384 to achieve low RDSon with integrated power field effect transistors (FETs).

Delivering a Complete PSE Solution with RJ-45

Providers PSE system designers can leverage leading-edge reference designs to implement the device in their PSE designs. However, TI also works closely with several RJ-45 connector leaders, such as Molex and Amphenol, to provide a complete TPS2384-based PoE module or "mod-jacks" solution with RJ-45, PoE-compliant connectors. The quad-port PoE solutions come with a complete set of collateral, reference designs

and evaluation modules.

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