

Power Management for AM18xx and AM17xx Processors



The Sitara™ ARM9™-based micro-processors address the needs of industrial, medical, communications and portable applications. Unlike the other ARM9 offerings, TI's AM1808, AM1806, AM1707 and AM1705 micro-processors integrate notable interfaces such as serial ATA, universal parallel port and TI's unique programmable real-time unit. A complete suite of software, demos and development tools complement the scalability of the AM1x hardware and software to reduce the customers' time to market.

The TPS650006 is a single-chip power-management unit (PMU) designed for point-of-load, embedded processor power and portable applications. This device contains one step-down regulator with a fixed output of 1.2 V; and two low-dropout regulators (LDOs) with fixed outputs, one at 1.8 V and the other at 3.3 V. The TPS650006 is available in a 3 x 3-mm, 16-pin QFN package.

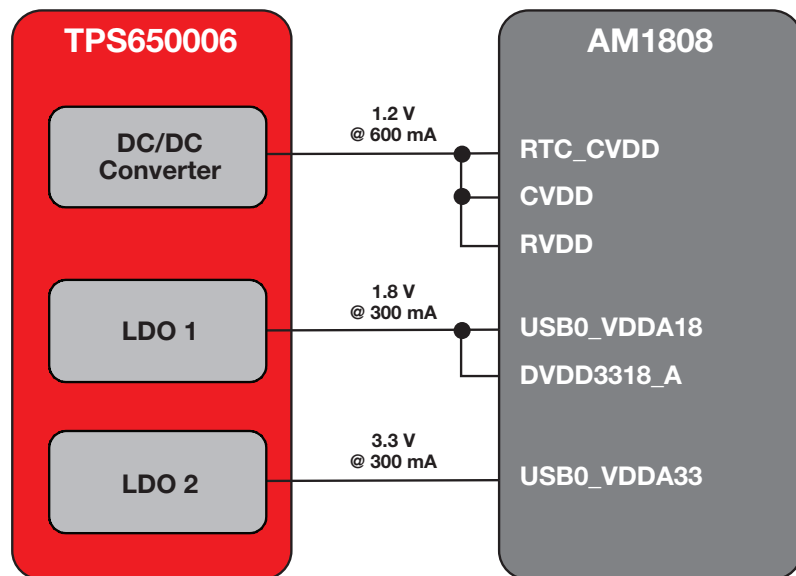
The TPS650061 is a single-chip power-management integrated circuit (IC) for portable applications. It combines two LDOs with fixed outputs, one at 3.3 V and the other at 1.8 V. The integrated step-down converter has a configurable output voltage at 1 A. This device contains a supply-voltage supervisor (SVS) and is available in a 3 x 3-mm, 20-pin QFN package.

The TPS65001 is a single-chip power-management IC for portable applications. It is TI's smallest PMU with one step-down converter and two LDOs. The TPS65001 also has an SVS and is available in a 3 x 3-mm, 20-pin QFN package.

The TPS65070 is a single-chip power-management IC for portable applications. One typical application is a battery charger with power-path management that is powered by a single Li-Ion or Li-Polymer cell. The charger can also be powered by a USB port (USB input pin) or by a DC voltage from an AC wall adapter (AC input pin). Three highly-efficient, 2.25-MHz step-down converters provide the core, memory and I/O voltages for a processor-based system. These step-down converters can enter a low-power mode at light loads for optimum efficiency across the widest possible range of load currents. For low-noise applications, the I²C interface can be used to force the converters into the fixed-frequency PWM mode. The TPS65070 converters allow using small inductors and capacitors to achieve a small solution size.

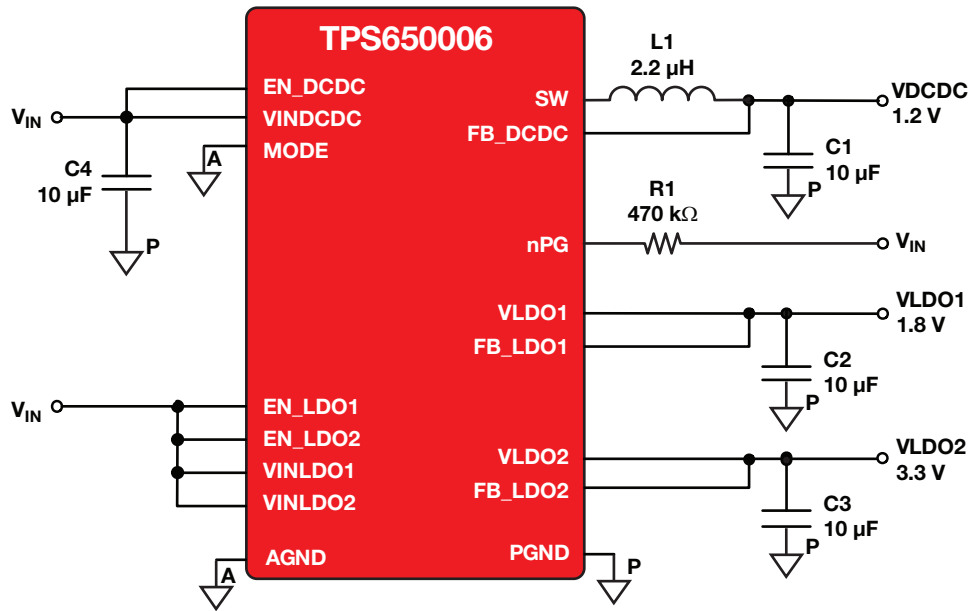
The TPS65910 is an integrated power-management IC that is available in a 48-pin QFN package. This IC is ideal for applications powered by a single Li-Ion/Li-Polymer cell, three Ni-MH cells in series, or a 5-V input, however, multiple power rails are required. The TPS65910 provides three step-down converters, one step-up converter, and eight LDOs. Two of the step-down converters provide power for dual processor cores and are controllable by a dedicated class-3 SmartReflex™ interface for optimum power savings. The third converter provides power for the I/Os and memory in the system. The TPS65910 also includes eight general-purpose LDOs that provide a wide range of voltage and current capabilities. The LDOs are fully controllable by the I²C interface.

AM18xx and TPS650006 System Power Block Diagram



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AM18xx/17xx Reference-Design Schematic



Bill of Material

Count	RefDes	Value	Description	Size	Part Number	Manufacturer
4	C1, C2, C3, C4	10 μ F	Capacitor, ceramic, 10 V, X5R, 10%	0805	Standard	Standard
1	L1	2.2 μ H	Inductor, SMT, 2.0 A, 110 m Ω	0.118 x 0.118"	LPS3015-222ML	Coilcraft
1	R1	470 k Ω	Resistor, chip, 1/16 W, 1%	0603	Standard	Standard
1	U1	TPS650006RTE	IC, 2.25-MHz step-down converter with dual LDOs and SVS	QFN	TPS650006RTE	TI

TI Power Solutions for AM18xx/17xx Processors

Device	Converter V_{IN} (V)	LDO V_{IN} (V)	No. of Outputs	Supply-Voltage Supervisor	Battery Charger	WLED	Package	Price*
TPS650061	2.3 to 6.0	1.6 to 6.0	3	✓			20-QFN (3 x 3 mm)	2.00
TPS65000	2.3 to 6.0	1.6 to 6.0	3				16-QFN (3 x 3 mm)	1.65
TPS650001	2.3 to 6.0	1.6 to 6.0	3	✓			16-QFN (3 x 3 mm)	1.65
TPS65001	2.3 to 6.0	1.6 to 6.0	3	✓			20-QFN (3 x 3 mm)	2.00
TPS650006	2.3 to 6.0	1.6 to 6.0	3				16-QFN (3 x 3 mm)	1.65
TPS65070	2.8 to 6.3	1.8 to 6.3	5		✓	✓	48-VQFN (6 x 6 mm)	3.95
TPS65910	2.7 to 5.5	2.7 to 5.5	11				48-VQFN (6 x 6 mm)	3.45

*Suggested resale price in U.S. dollars in quantities of 1,000.

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