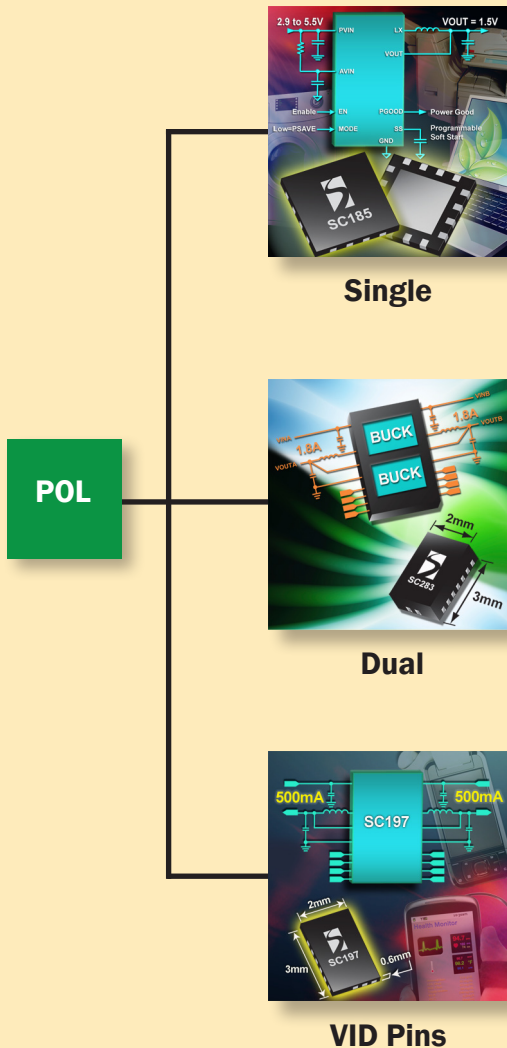




Low-Voltage Point-of-Load

Regulators Optimized for 5V, 3.3V and Li-Ion Inputs
Supplying 500mA – 4A



Semtech offers a wide selection of low-power, single and dual point-of-load (POL) regulators ranging from 0.5A to 4A. These devices provide the high efficiency, fast transient response, design simplicity and small size needed for today's demanding green energy applications.

Ultra Simple

All Semtech POL regulators are simple to use, with internal compensation and few external components. One device even integrates the inductor, offering an efficient switching regulator that is as easy to use as an LDO.

Ultra Small

All Semtech POL regulators offer small packages and some dual devices come in packages that are even smaller than conventional single regulators.

Efficient

All Semtech POL devices are highly efficient. Many include a PSAVE function that maximizes efficiency even at light loads. These include our new family of EcoSpeed® regulators that set a new standard for efficiency, speed, size and simplicity in green applications.

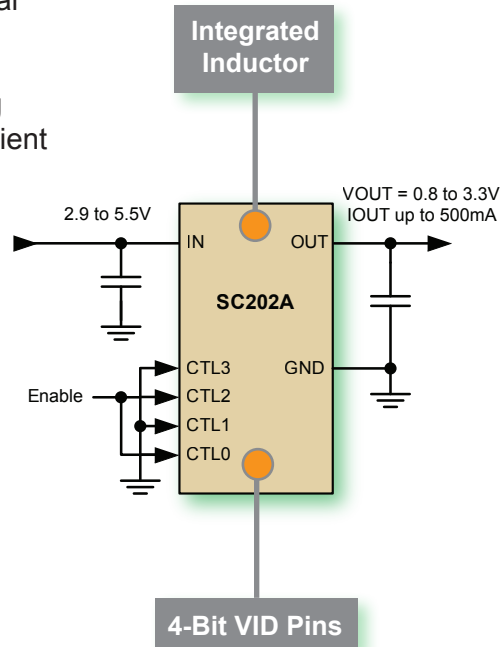
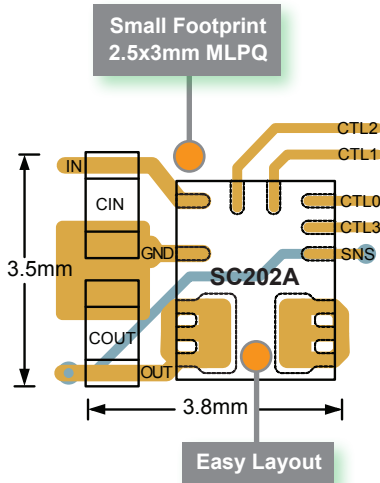
VID Pins, Too . . .

Many of Semtech's POL regulators include on-chip VID pins that can be used to pin-select preset output voltages. This eliminates the need for feedback resistors and simplifies inventory management by enabling ONE device to support a multitude of different output voltages.

Switching Regulator - as Easy to Use as LDOs

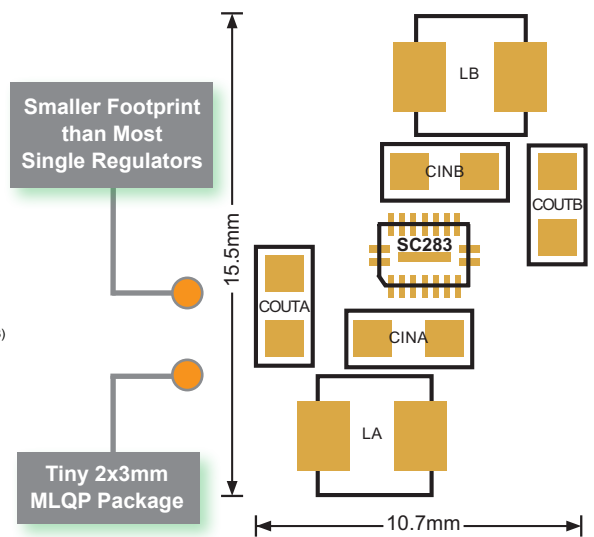
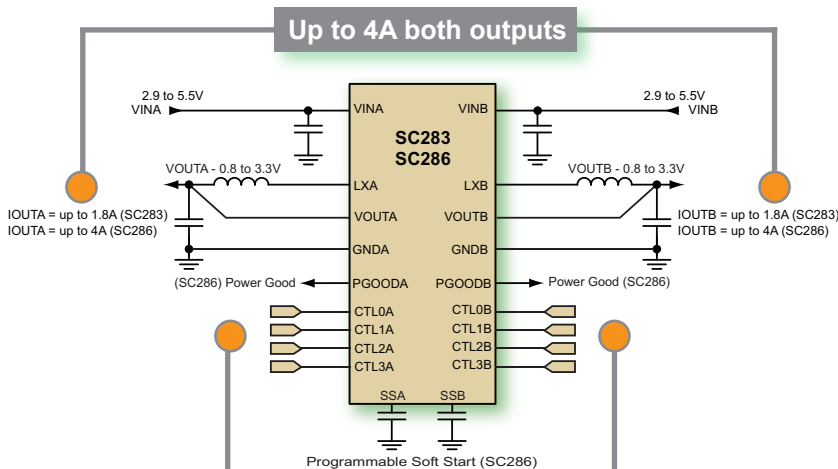
The SC202A combines the ease-of-use of an LDO with the high efficiency (up to 94%) of a synchronous buck converter by integrating an inductor in a tiny, 2.5x3x1mm package. A programmable output voltage eliminates the need for external programming resistors, further reducing total PCB space.

The combination of high integration and ultra-small packaging occupies a footprint of less than 14mm², to offer a more efficient switching regulator as an alternative to LDOs.



World's Smallest Dual POL Regulators

Most POL applications derive more than one load voltage from a 5V or 3.3V bus. The SC283 (1.8A) and SC286 (4A) address this need, combining two high performance, high efficiency synchronous buck regulators in a single package. Full independent control of both outputs provides the flexibility of two discrete regulators combined with an amazingly small footprint.



15 Preset Output Voltages with Independent Control
4-Bit VID Pins

Part Number	I _{out} max	Power Good	Prog. Soft Start	Power Save	Package
SC283	1.8A	No	No	No	MLPQ-W18 (2x3x0.8mm)
SC286	4A	Yes	Yes	Yes	MLPQ-UT28 (4x4x0.6mm)

Low-Voltage POL Product Portfolio

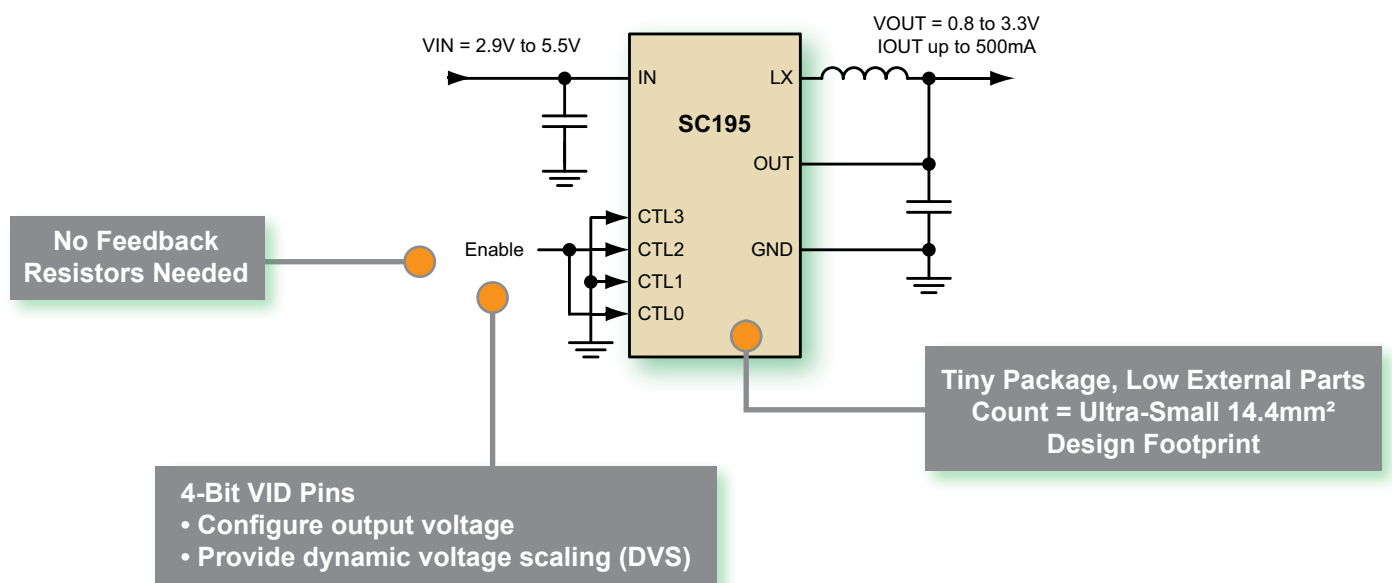
	Part Number	I _{OUT} max	V _{IN} Range	V _{OUT} Range	VID Pins	f _{sw}	Soft Start	Power Good	PSAVE	100% Duty Cycle	Package
Single Output	SC195	0.5A	2.9 - 5.5V	0.8 - 3.3V	Yes	3500kHz	Internal	No	Yes	Yes	MLPQ-UT8 (1.5x1.5x0.6mm)
	SC202A	0.5A	2.9 - 5.5V	0.8 - 3.3V	Yes	3500kHz	Internal	No	Yes	Yes	MLPQ-13 (2.5x3x1mm)
	SC4626	1.0A	2.9 - 5.5V	1.0 - 3.3V	No	2500kHz	Internal	No	No	Yes	SOT23-5
	SC189	1.5A	2.9 - 5.5V	1.0 - 3.3V	No	2500kHz	Internal	No	No	Yes	MLPD-UT6 (2x2x0.6mm) SOT23-5
	SC183C	2.0A	2.9 - 5.5V	0.8 - 3.3V	Yes	2500kHz	Internal	No	No	Yes	MLPQ-UT16 (3x3x0.6mm)
	SC171	1.0A	3.0-5.5V	0.75V - 0.95%V _{DD}	No	200-1000kHz	Internal	Yes	Ultrasonic	No	MLPD-10 (3x3x1mm)
	SC172	2.0A	3.0-5.5V	0.75V - 0.95%V _{DD}	No	200-1000kHz	Internal	Yes	Ultrasonic	No	MLPD-10 (3x3x1mm)
	SC173	3.0A	3.0-5.5V	0.75V - 0.95%V _{DD}	No	200-1000kHz	Internal	Yes	Ultrasonic	No	MLPD-10 (3x3x1mm)
	SC173A	3.0A	3.0-5.5V	0.75V - 0.95%V _{DD}	No	200-1000kHz	Internal	Yes	Automatic	No	MLPD-10 (3x3x1mm)
	SC174	4.0A	3.0-5.5V	0.75V - 0.95%V _{DD}	No	200-1000kHz	Internal	Yes	Ultrasonic	No	MLPD-10 (3x3x1mm)
	SC185	4.0A	2.9 - 5.5V	1.0 - 3.3V	No	1500kHz	Programmable	Yes	Yes	Yes	MLPQ-UT16 (3x3x0.6mm)
	SC186	4.0A	2.9 - 5.5V	0.8 - 3.3V	Yes	1500kHz	Programmable	Yes	Automatic	Yes	MLPQ-UT16 (3x3x0.6mm)
Dual Output	SC197	0.5A	2.9 - 5.5V	0.8 - 3.3V	Yes	3500kHz	Internal	No	Yes	Yes	MLPQ-UT18 (2x3x0.6mm)
	SC283	1.8A	2.9 - 5.5V	0.8 - 3.3V	Yes	2500kHz	Internal	No	No	Yes	MLPQ-W18 (2x3x0.8mm)
	SC286	4.0A	2.9 - 5.5V	0.8 - 3.3V	Yes	1600kHz	Programmable	Yes	Automatic	Yes	MLPQ-UT28 (4x4x0.6mm)



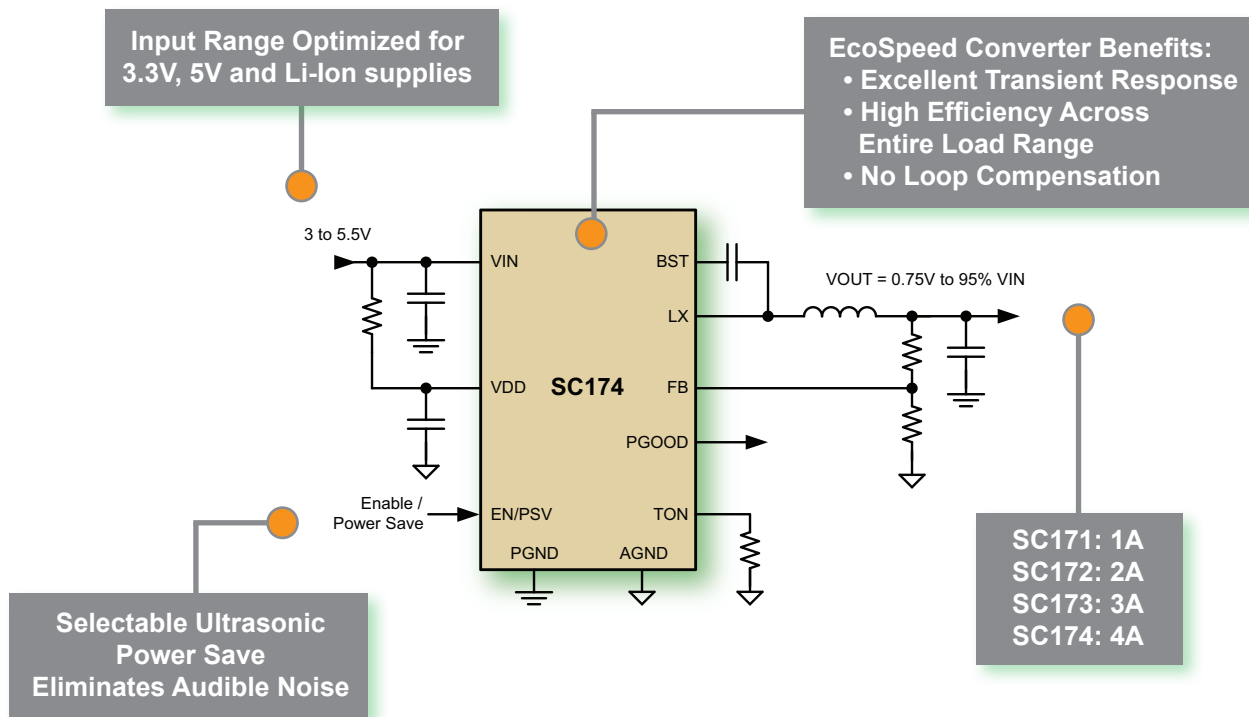
VID Pins Select 15 Preset Outputs and DVS

VID pins can be used to pin-select the output voltage, or in applications where voltage levels change on the fly for dynamic voltage scaling (DVS). VID pins eliminate the need for external feedback resistors, saving space and cost and increasing reliability. The 15 preset output voltages eliminate the inventory challenges and cost of

stocking individual, fixed output voltage regulators for each different load. Instead, just one device can be sourced for multiple sockets. Dual POL regulators with VID pins enable one device to support as many as 225 voltage output combinations.

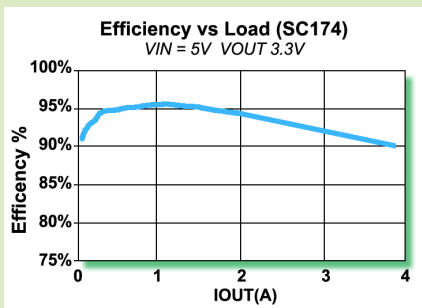


EcoSpeed® Regulators: High Efficiency with High Performance



EcoSpeed® Converters

Best-in-Class DC-DC Converter Performance



High Efficiency Across the Entire Load Range

EcoSpeed converters are a new class of DC-DC buck regulators and controllers that use Semtech's patented AOT* architecture to enable:

- Very high efficiency across the entire load range
- Ultra-fast transient response
- Easy-to-use, small and highly integrated solutions

The AOT topology dynamically adjusts the on-time, based upon input and output voltages. This results in pseudo-fixed frequency operation with $\pm 15\%$ accuracy – similar to voltage mode and current mode, and better than constant on-time and hysteretic topologies.

AOT core simplifies design, reduces components:

- Eliminates need for loop compensation components
- Enables use of ceramic input/output capacitors

*AOT = Adaptive On-Time architecture; U.S. Patent No. 7,714,547