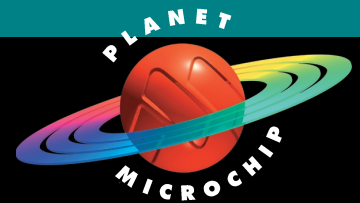


TC1XX DC-to-DC Switching Regulator Family

Product Information

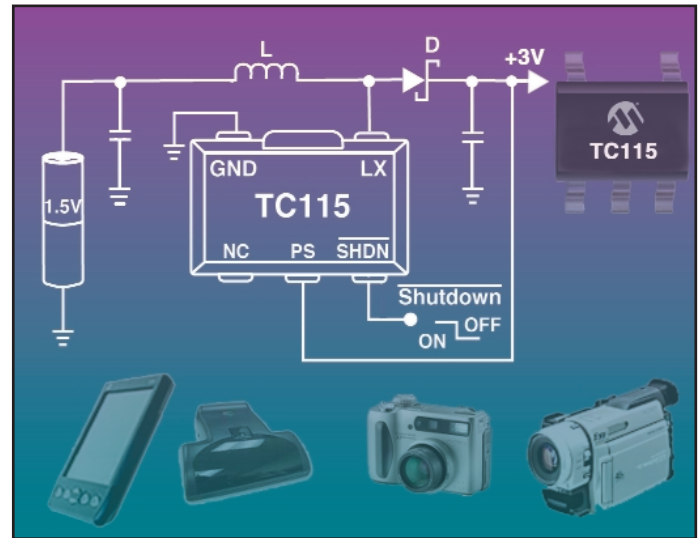


The Microchip **TC1XX** is a family of low cost, low power and high efficiency DC-to-DC switching regulators. These devices are ideal for powering a wide variety of small-size, battery operated applications. The TC1XX family contains step-down (Buck) switching controllers for down-converting DC voltages and step-up (Boost) switching controllers for up-converting DC voltages.

Switching regulators use an internal oscillator with a fixed switching frequency to modulate an external switch (transistor) to create the DC output voltage. The TC1XX family uses PWM (pulse width modulation) as the primary modulation scheme, but automatically converts to PFM (pulse frequency modulation) at low output loads to achieve higher operating efficiency. Typical efficiencies are up to 95% for step-down regulators and 85% for step-up regulators. The oscillator frequency for the TC105 and TC120 are fixed at 300kHz. The TC115, TC125, and TC126 are fixed at 100kHz. The TC110 offers 100kHz and 300kHz versions.

The TC1XX family offers three voltage output choices; 3.0V, 3.3V, and 5.0V and come in 5-pin SOT packages except for the TC120 step-down regulator/controller combination IC, which comes in an 8-pin SOP package. The TC105 and TC120 switching regulators step-down from a higher input voltage and offer 1A and 2A output current, respectively. The TC110, TC115, TC125, and TC126 are step-up type switching regulators that can produce 80mA to 300mA output depending on the device. These step-up converters can start-up from as low as 0.9V, which is very attractive for battery-powered systems when the battery can drain below optimal operating conditions.

The TC1XX family offers superior performance with a small low-cost package. A variety of options and features makes these devices flexible for many types of applications.



Features:

- Low operating current at 57 μ A typical
- Low power shutdown mode at 0.5 μ A maximum
- High output current offered in a small 5-pin SOT package
- Small inductor size
- High output efficiency
- Programmable soft-start
- Automatic pulse frequency modulation (PFM) and pulse width modulation (PWM) switch-mode for high efficiency
- Low installation cost

TC1XX DC-to-DC Switching Regulator Family *Continued*

Additional Information:

- Microchip's web site: www.microchip.com
- Microchip's *Technical Library* CD-ROM, Order No. [DS00161](#)
- *Analog Interface Handbook*, Order No. [DS00207](#)
- Product Line Card, Order No. [DS00148](#)
- *Analog Design Pack* CD-ROM, Order No. [DS51205](#)
- Product Specific Datasheets
 - TC105, Order No. [DS21349](#)
 - TC110, Order No. [DS21355](#)
 - TC115, Order No. [DS21361](#)
 - TC120, Order No. [DS21365](#)
 - TC125/126, Order No. [DS21372](#)

TC1XX DC-to-DC Switching Regulator Family

Device	Input Voltage Range	Output Voltage	Control Scheme	Switching Frequency (kHz)	Supply Current (μA)	Output Current (mA)	Features	# of Pins/Package
TC105	2.2V to 10V	3.0V, 3.3V, or 5.0V	Step Down PWM/PFM	300	57	1,000	Low-power Shutdown Mode	5CT
TC110	0.9V to 10V	3.0V, 3.3V, 5.0V	Step-Up PWM/PFM	100/300	50/120	300	Soft-start, Low-power, Shutdown Mode	5CT
TC115	0.9V to 10V	3.0V, 3.3V, or 5.0V	Step-Up PWM/PFM	100	80	140	Feedback Voltage Sensing, Low-power, Shutdown Mode	5MT
TC120	1.8V to 10V	3.0V, 3.3V, or 5.0V	Step Down PWM/PFM	300	52	2,000	PWM Controller, Soft-start, Low-power Shutdown mode	8HA
TC125	0.9V to 10V	3.0V, 3.3V, or 5.0V	Step-Up PFM	100	20	80	Low-power, Shutdown Mode	5CT
TC126	0.9V to 10V	3.0V, 3.3V, or 5.0V	Step-Up PFM	100	20	80	Feedback Voltage Sensing	5CT

Package Key: **CT** = SOT-23, **MT** = SOT-89, **HA** = SOP

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