

# Up to 3 A step-down switching regulators in small packages

A new family of compact monolithic step-down regulators in QFN8L 3x3 packages



The L598x family is composed of six monolithic step-down switching regulators capable of delivering up to 3 A. They are housed in small outline packages such as QFN8L 3x3 or, for the highest current version, also in HSOP8.

Their high, adjustable switching frequency, and a full set of embedded protection functions, reduce the size and number of external components, leading to a lower cost for the application.

Additional flexibility is guaranteed by an adjustable output voltage, wide input voltage range (from 2.9 V up to 18 V) and synchronization capability.

## Key features

- Up to 3 A DC output current
- 2.9 V to 18 V input voltage range
- Output voltage adjustable from 0.6 V
- 250 kHz switching frequency, programmable up to 1 MHz
- Internal soft start and inhibit
- 100 % duty cycle
- Voltage feed-forward
- Zero load current operation
- Overcurrent, overvoltage and thermal protection
- QFN8L 3x3 package and HSOP8 (L5986A and L5987A)

## Main applications

- Consumer:
  - STBs, DVD players, DVD recorders, LCD/PDP TVs, LCD monitors, car audio
- Networking:
  - XDSL, modems, WLAN access points, video phones, DC-DC modules
- Computer:
  - Optical storage, hard disk drives, multifunction and photo printers, audio/graphic cards
- Industrial:
  - Chargers, car batteries, programmable logic controllers, programmable logic arrays, DC-DC converters

The L598x is a family of compact step-down monolithic power switching regulators capable of delivering up to 3 A of continuous output current. The input voltage can range from 2.9 to 18 V, and it is compatible with the commonest voltage buses (3.3/5/12 V). The output voltage can be adjusted from 0.6 V up to the input voltage.

Requiring a minimum set of external components, the device includes an internal 250 kHz switching frequency oscillator that can be externally adjusted up to 1 MHz by an external resistor.

The integrated P-channel MOSFET, used for the high-side, requires no external bootstrap capacitor and allows a 100 % duty cycle.

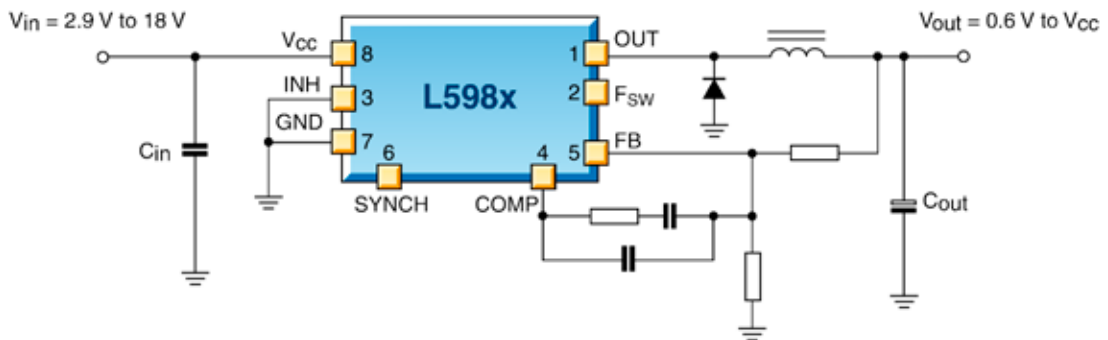
Thanks to the low RDS(on) of the embedded power element (150 mΩ typ.), the devices feature very low conduction losses.

The L598x is also suitable for MLCCs (multi-layer ceramic capacitors) as output filters.

Additional monitoring and protection functions such as overcurrent, UVLO, thermal shutdown and internal digital soft start, combined with the high-performance thermal design of the QFN8L (3x3 mm) and HSOP8 packages, which have an Rth(j-a) of 60 °C/W and 40 °C/W respectively, allow the design of robust and compact applications with a minimum number of external components.

The devices can also be synchronized with an external signal, or together in a master/slave configuration, with a phase shift of 180°.

To facilitate design-in, a full set of demonstration boards is available. Ordering codes can be found in the table below.



L598x application diagram

## L598x family overview

Part number	Iout DC [A]	Vout	Fsw	Protection	Extra features	Package	Evaluation board
L5980	0.7	Adjustable from 0.6 V to Vin	From 250 kHz up to 1 MHz	Overcurrent, thermal shutdown	Internal soft start, inhibit, suitable for MLCC as output filter	QFN8L 3X3	EVAL5980
L5981	1	Adjustable from 0.6 V to Vin	From 250 kHz up to 1 MHz	Overcurrent, thermal shutdown		QFN8L 3X3	EVAL5981
L5983	1.5	Adjustable from 0.6 V to Vin	From 250 kHz up to 1 MHz	Overcurrent, thermal shutdown		QFN8L 3X3	EVAL5983
L5985	2	Adjustable from 0.6 V to Vin	From 250 kHz up to 1 MHz	Overcurrent, thermal shutdown		QFN8L 3X3	EVAL5985
L5986/A	2.5	Adjustable from 0.6 V to Vin	From 250 kHz up to 1 MHz	Overcurrent, thermal shutdown		QFN8L 3X3 / HSOP8	EVAL5986/ EVAL5986A
L5987/A	3	Adjustable from 0.6 V to Vin	From 250 kHz up to 1 MHz	Overcurrent, thermal shutdown		QFN8L 3X3 / HSOP8	EVAL5987/ EVAL5987A



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