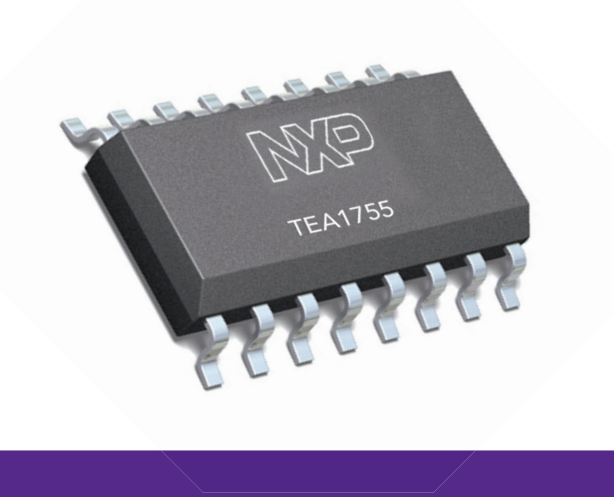


NXP GreenChip PFC and flyback controller TEA1755

Improved SMPS performance for tomorrow's requirements

This highly integrated PFC and flyback controller delivers exceptional performance, especially at low loads, and includes patented features that simplify the development of efficient, reliable supplies up to 250 W.

Key features

- Integrated PFC and flyback controller
- Universal main supply operation between 70 and 276 VAC
- Significant reduction in audible noise
- Dual-boost PFC with accurate maximum output voltage (patented)
- Improved PFC switch-on and off
- External PFC switch-on and switch-off override
- On-chip start-up current source
- Partial circuit power-down during burst mode (ErP lot 6)
- Extensive set of protection features for safe operation

Key benefits

- Very low external component count
- Lower system costs due to high integration level
- Higher efficiency, even during no-load and standby conditions

Applications

- Notebook adapters
- Power supplies up to 250 W

The TEA1755 is the latest generation of green Switched Mode Power Supply (SMPS) controller ICs. It is a Multi-Chip Module (MCM) that combines a controller for Power Factor Correction (PFC) and a flyback controller.

The proprietary high-voltage BCD800 process die makes direct start-up possible from the rectified universal mains voltage in an effective and green way. The second low voltage Silicon-On-Insulator (SOI) die is used for accurate, high speed protection functions and control.

Low power consumption

The built-in green functions provide high efficiency across all power levels. In particular, the device consumes very little power at low loads. When used on its own, without secondary-side control electronics, it consumes as little as 100 mW in a 90 W adapter. If the adapter is equipped with a TEA1703 as a secondary-side controller, the TEA1755 supply consumes even less then 50 mW.

High efficiency

During normal operation, the TEA1755 delivers the same high level of efficiency as the other devices in the GreenChip III family.

Less audible noise

An innovative control method for burst mode significantly reduces audible noise at low loads. In a 75 W open frame SMPS application, for example, under the conditions 220 VAC, 19.5 V, and 0.25 A, the TEA1752, another GreenChip III control IC, produces an audible noise measurement of 31 dB(A), while the TEA1755 produces a measurement of just 15 dB(A).

Patent-pending PFC switching

The TEA1755 uses a unique method for controlling PFC switching. Unlike previous versions of GreenChip III ICs, which use the flyback loop feedback voltage from the IC's internal oscillator frequency to switch the PFC on or off, the TEA1755 uses the application's true switching frequency. This is a patent-pending feature that eliminates the effect of valley hopping and reduces production spread in the final application.

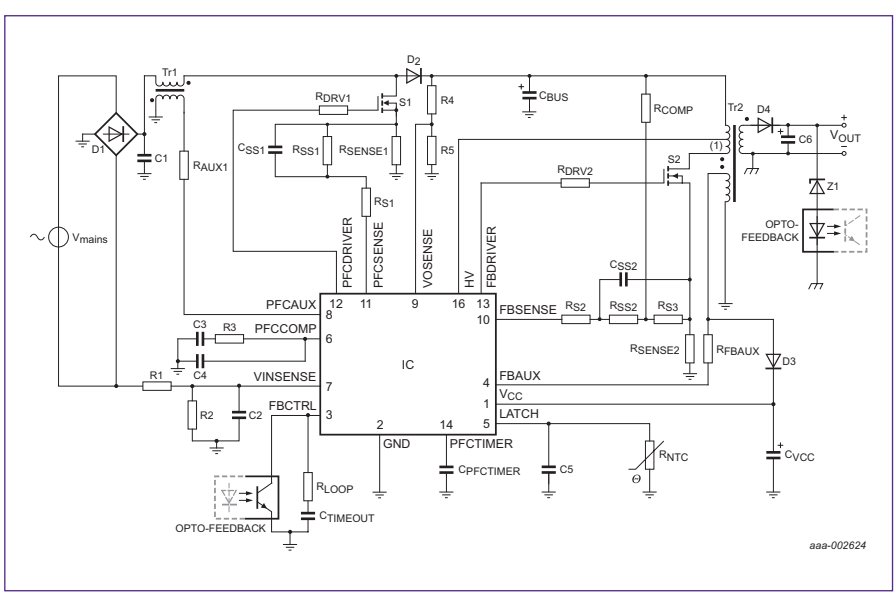
GreenChip III efficiency (115 VAC and 60 Hz)

Output load	Parameters	Input power	Efficiency
25%	19.435 V, 1.15 A	25.07 W	89.32%
50%	19.434 V, 2.311 A	49.75 W	90.28%
75%	19.432 V, 3.466 A	74.58 W	90.31%
100%	19.431 V, 4.622 A	100.55 W	89.32%
		Average	**89.77%**

GreenChip III efficiency (230 VAC and 50 Hz)

Output load	Parameters	Input power	Efficiency
25%	19.435 V, 1.15 A	24.78 W	90.19%
50%	19.432 V, 2.311 A	50.30 W	89.28%
75%	19.431 V, 3.466 A	74.22 W	90.74%
100%	19.430 V, 4.622 A	98.42 W	91.25%
		Average	**90.37%**

A typical configuration of the TEA1755



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