NXP GreenChip flyback controller TEA1731(L)

Low-cost, high-efficiency & reliable power supplies up to 75 W

This compact yet highly featured SMPS controller delivers exceptional efficiency over the total load range and includes Over-Power compensation.

Key features

- SMPS controller IC enabling low-cost applications
- Large input voltage range (12 to 30 V)
- Integrated over-voltage protection on V_{CC}
- Very low supply current during start-up and restart (10 µA typ)
- Low supply current during normal operation (0.58 mA typ without load)
- Internal Over-Power time-out
- Over-Power or high/low line compensation
- Fixed switching frequency with frequency jitter to reduce EMI
- Frequency reduction at medium power operation to maintain high efficiency
- Frequency reduction with fixed minimum peak current at low-power operation to maintain high efficiency at low output power levels
- Frequency increase at peak power operation
- Low and adjustable trip level for Over-Current Protection (OCP)
- Adjustable soft start
- Protection input (e.g. for OTP)
- Over-Temperature protection
- Space-saving TSOP6 package

Applications

- Adapters for notebooks, netbooks, tablets, printers
- Power supplies for LCD monitors, STBs, Blu-ray and DVD players, etc.

The NXP GreenChip TEA1731(L) is a low-cost Switched Mode Power Supply (SMPS) controller IC intended for fixed-frequency flyback topologies. The TEA1731TS operates in peak current and frequency control mode. To reduce electromagnetic interference (EMI), the device implements frequency jitter. To support Continuous Conduction Mode (CCM) of operation, the device also includes slope compensation.

The Over-Power Protection (OPP) feature lets the device accept an Over-Power situation for a limited amount of time (60 msec typ). One pin is reserved for protection purposes, such as external Over-Temperature Protection (OTP) and external Over-Voltage Protection (OVP), using a minimal number of external components.

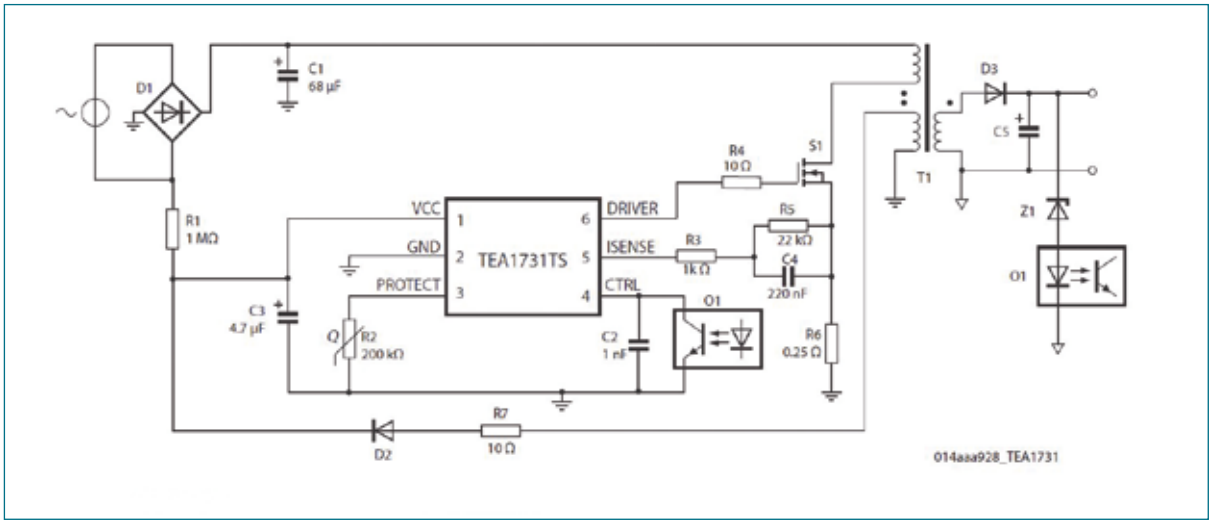
At low power levels, the primary peak current is set to 25% of the maximum peak current and, to limit switching losses, the switching frequency is reduced. The combination of continuous conduction mode operation at high output power and frequency reduction at low output power provides high efficiency over the total load range.

In the TEA1731L version, which offers latched protection, dedicated circuitry for preventing false OPP triggering (due to mains dip) and for preventing false latched protection reset due to premature V_{CC} UVLO has been implemented.

Demo adapter

To simplify design-in and reduce time-to-market, the TEA1731 is available in a demo adapter that supports 19.5 V and 40 W output. The board yields highly efficient operation, and features very low power consumption at no load (only 90 mW at 230 V).

TEA1731 block diagram



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