PHILIPS

GreenChip™ III

TEA1750

MultiMarket Semiconductors

BL Power Management, PL Integrated Power

January 2005

GreenChip™ III TEA1750

- Target application
- Choosing configuration
- Modes of operation of flyback
- Low power mode operation of PFC
- Basic application diagram
- Pin assignment
- Feature overview

GreenChip™ III TEA1750, target application

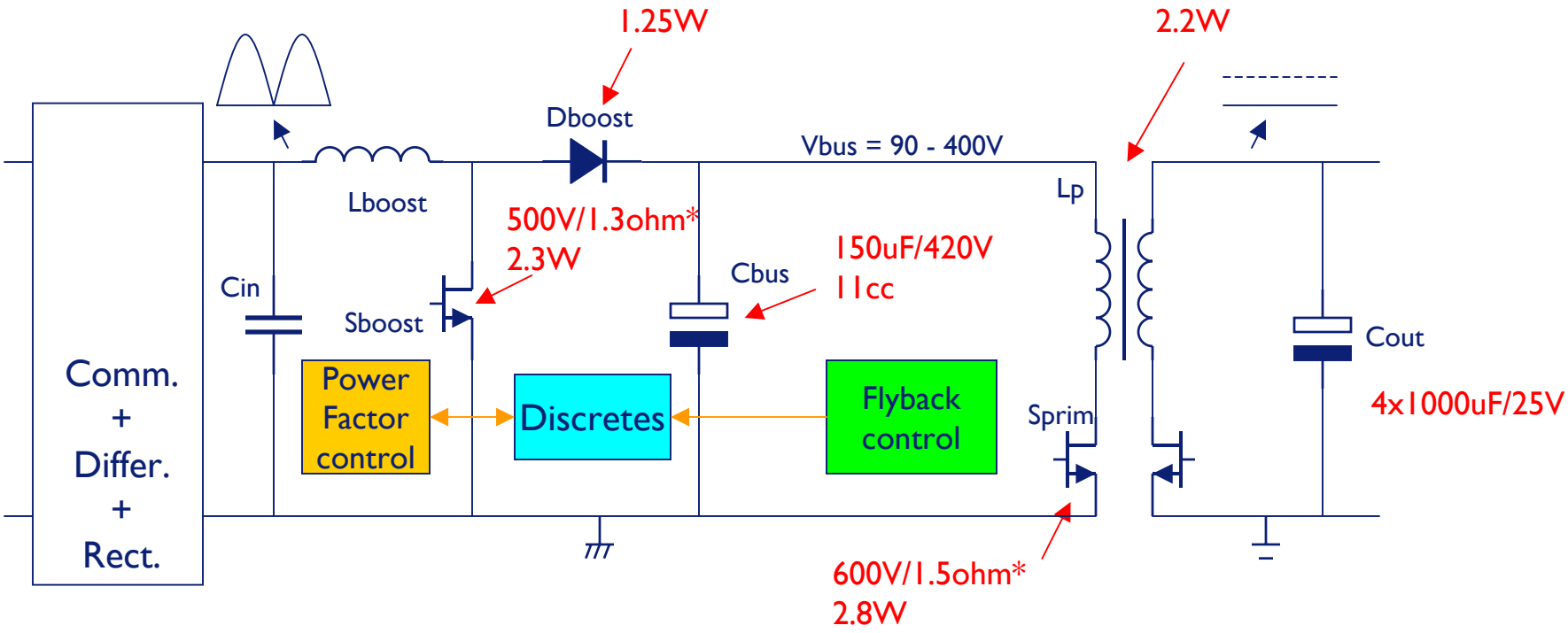
Adapters (a.o. notebook) >75W

Power Factor Correction needed

GreenChip™ III TEA1750, choosing configuration (1)

Reference adapter solution 150W

- **Follow Boost**
- **PFC switches off at low power → Flyback must be able to start from 90Vac**

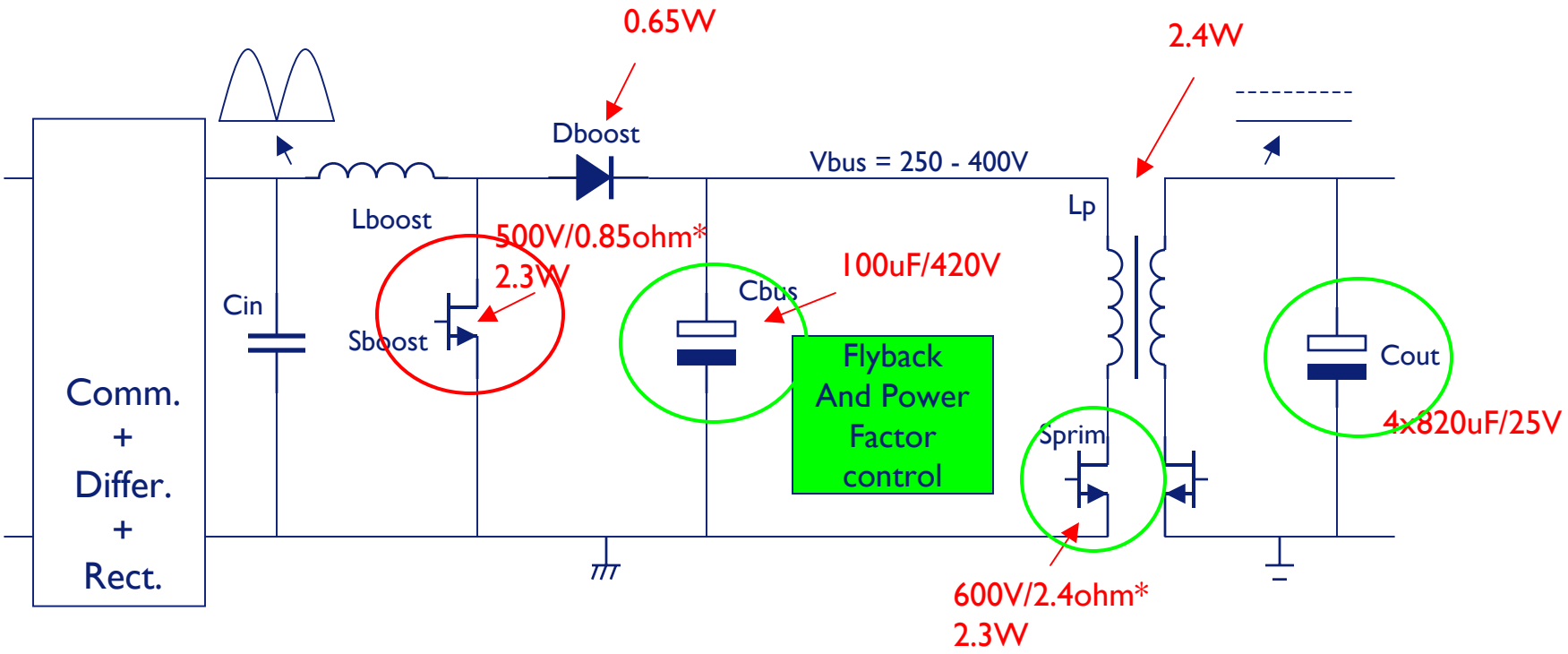


*:RdsOn@125deg.C

GreenChip™ III TEA1750, choosing configuration (2)

GreenChip™ III TEA1750 adapter solution 150W

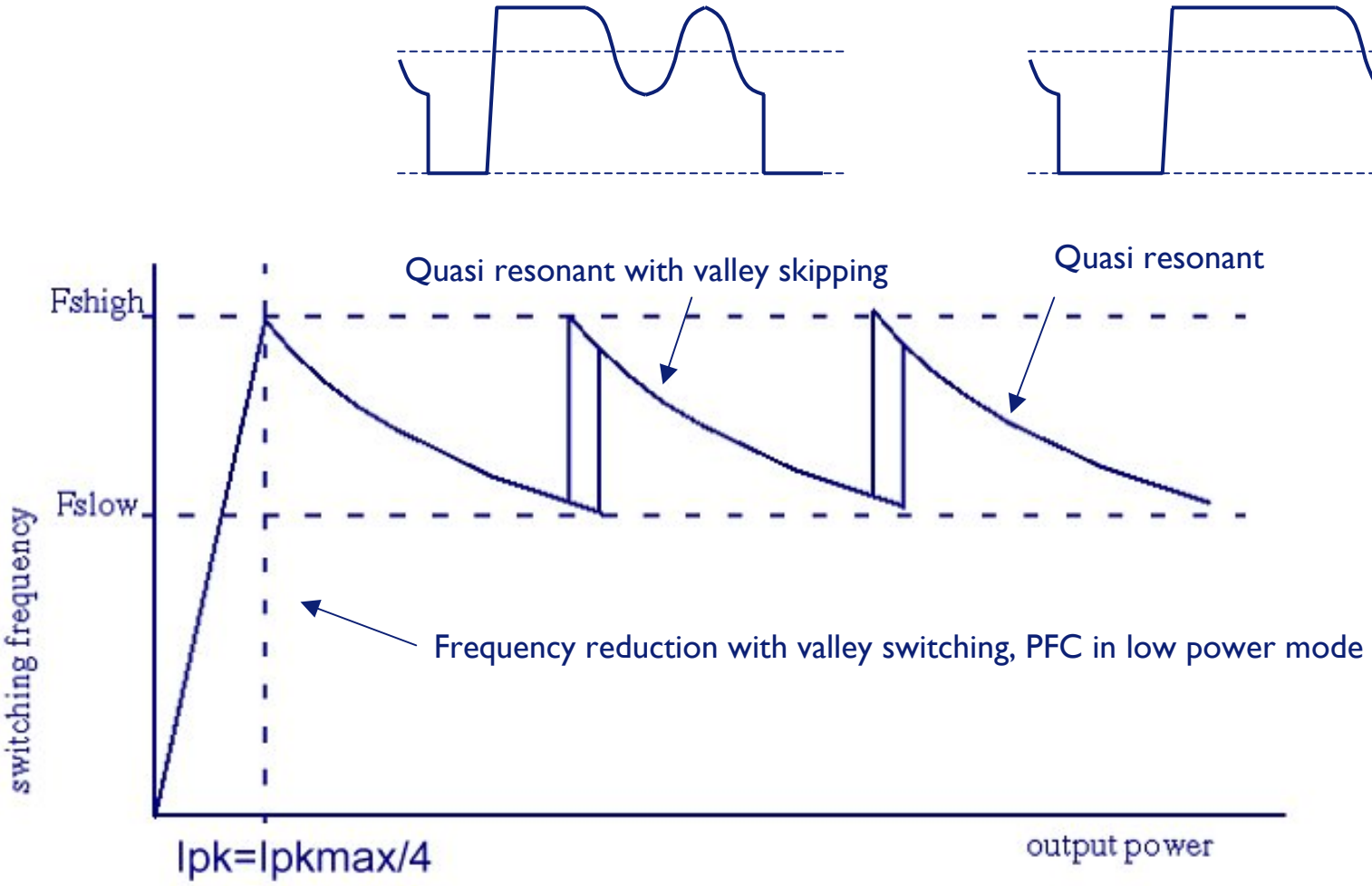
- **Boost**
- **PFC switches to low power mode during stand-by**
  → Flyback only has to operate from 250..400V
- **Same volume, lower total BOM**



*:RdsOn@125deg.C

GreenChip™ III TEA1750,

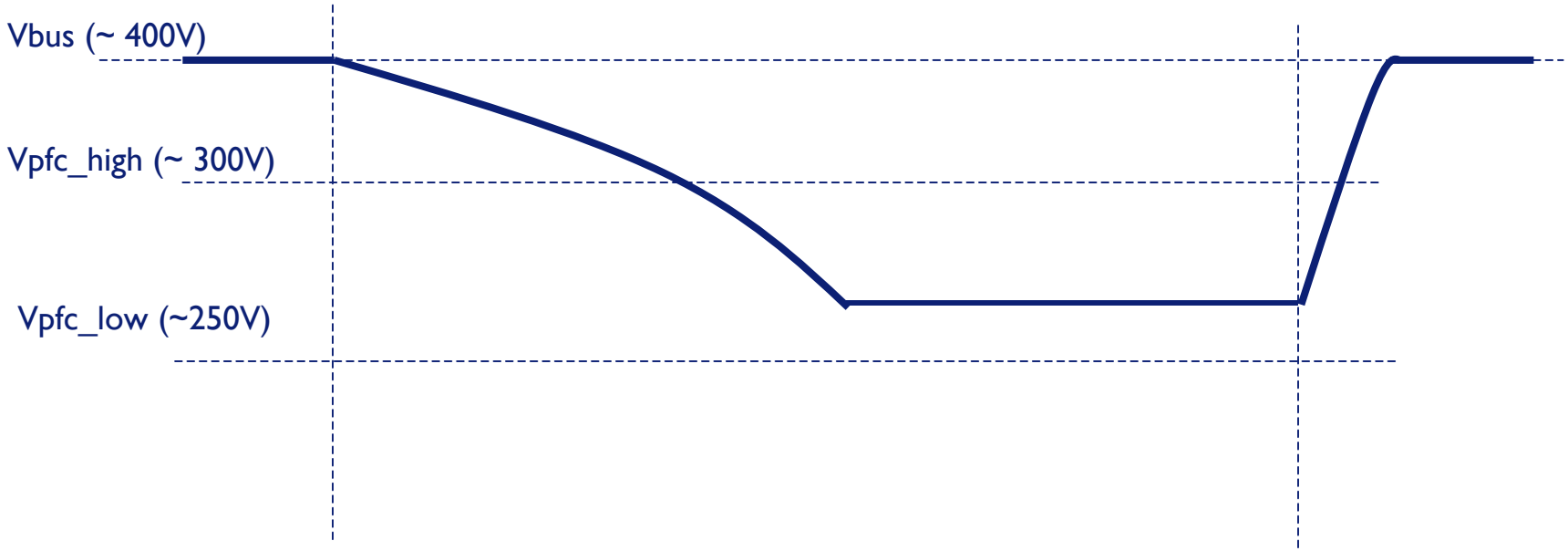
Flyback converter operating modes



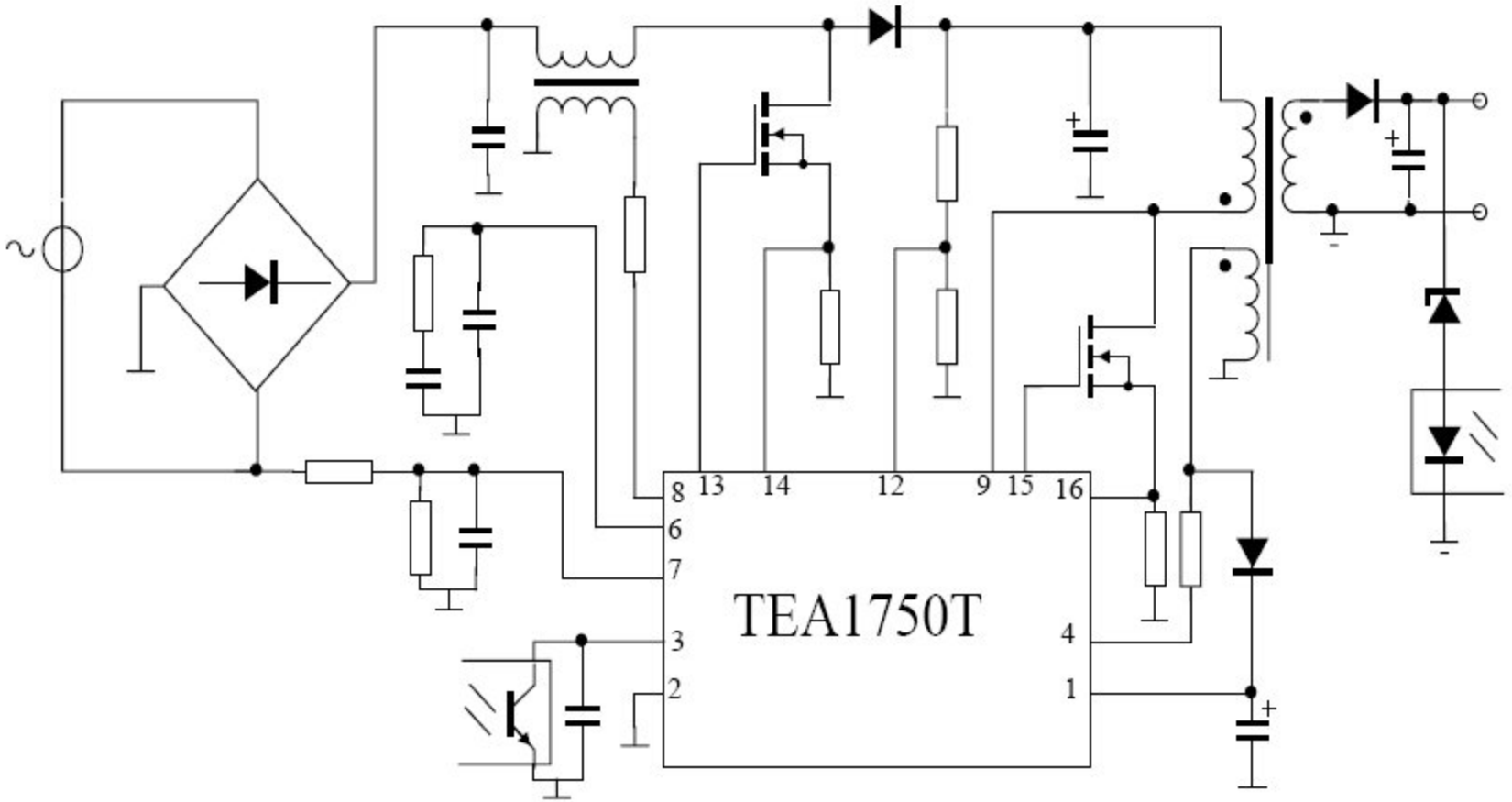
GreenChip™ III TEA1750, Low power mode PFC possible

Advantages:

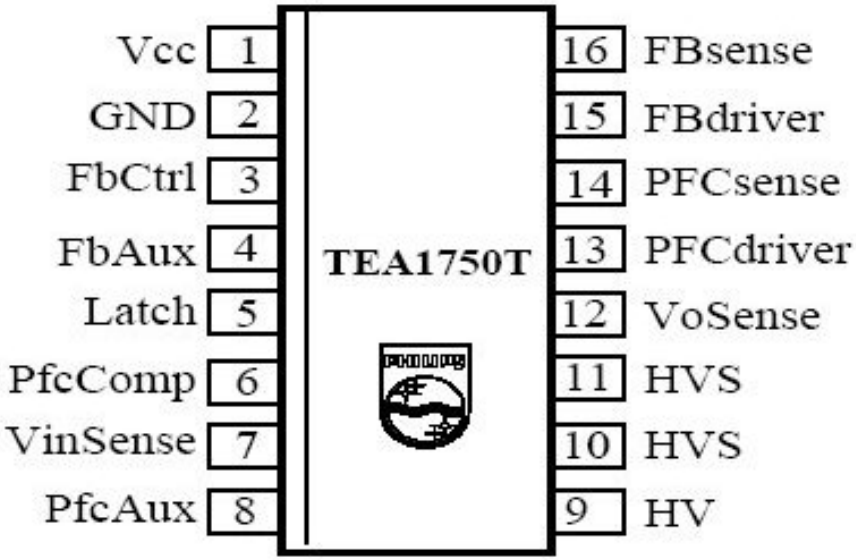
- **Smaller bus elcap possible**
- **Optimized flyback, does not have to operate from 90Vac**



GreenChip™ III TEA1750, Basic application diagram



GreenChip™ III TEA1750, Pin assignment



Multi Chip Module in SO16

BCD800: High voltage startup and valley detect

ABCD2: Control part

GreenChip™ III TEA1750, Feature overview

General

- Integrated flyback controller and power factor controller
- High level of integration, low external component count
- High voltage start-up current source
- Wide Vcc range (39V)
- Fast latch reset function implemented enabling fast recovery by mains interrupt
- Soft (re)start for both flyback- and PFC controller
- Mains under voltage- and Brown out protection integrated

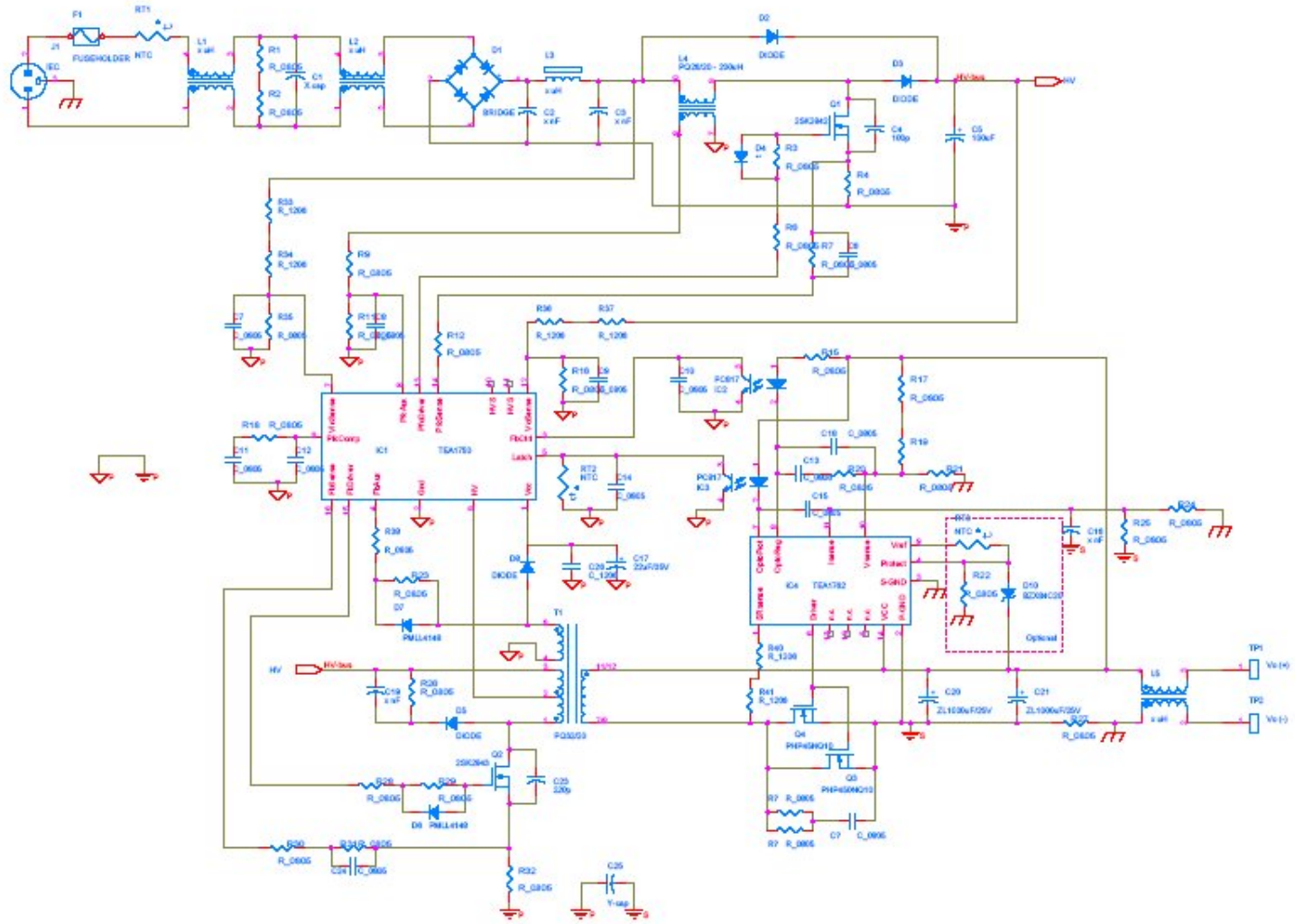
Flyback controller

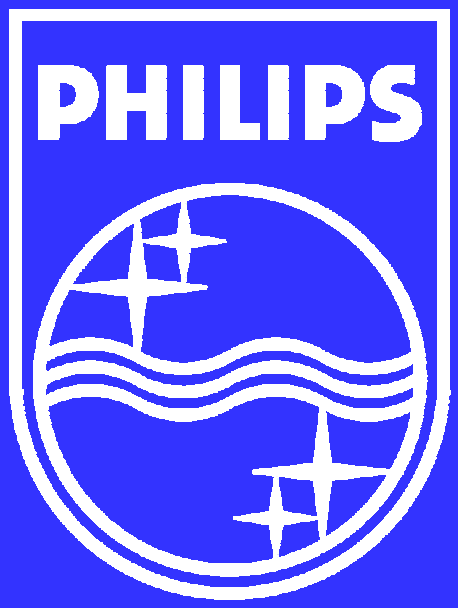
- Zero voltage switching for flyback controller
- Quasi resonant operation with frequency limitation
- Valley lock operation to eliminate possible audible noise
- Frequency reduction at low loads

Power factor controller

- Quasi resonant operation with frequency limitation
- Input voltage compensation for control loop
- Smaller mains elcap (Cbus) possible due to lower RMS currents in boost
- Low power mode operation at low output powers (controlled by flyback controller)
- Dedicated circuitry build in to prevent audible noise during low power mode.

GreenChip™ III TEA1750, Demo application (with TEA1762)

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