UCC28063: Summary of Improvements over UCC28061

Same for UCC28063 as in UCC28063:

- Dual-interleaved TM boost-PFC
- ZCD-winding inputs and thresholds
- UVLO: VCC_{ON} and VCC_{OFF} thresholds
- No AC-input range-change (same as is -061)
- AC-line zero-crossing distortion correction
- VREF voltage trim and current capability
- TSET gain factor setting and trim
- VSENSE enable threshold & HVSEN thresholds
- COMP offset and clamp levels
- GDA & GDB drive capability and speed
- VINAC brownout 1.4V threshold and 440ms delay
- Phase-fail detection and 12ms delay
- PHB single-phase on and off thresholds
- PWMCNTL function and drive capability

What is Different for UCC28063?

- COMP: to minimize audible-noise potential
  - 2-level Error Amp gain, no slew-rate correction current
    - lower 50uS g_M allows lower compensation component values
    - higher 250uS g_M replaces slew-rate correction for fast response
  - internal 2kΩ pull-down on LOW_OV, soft-start
  - 20mV full-soft-start enable threshold
  - 2-level soft-start currents, 5.9V end-of-ss threshold
- VSENSE: two, higher OVP thresholds
  - LOW_OV @ +8%, tugs COMP down with 2kΩ, clears @ +6%
  - HIGH_OV @ +11%, shuts off gate-drive, clears @ +6%
- VINAC: dropout detection
  - 0.35V threshold, 5.3ms delay before action, 0.71V immediate clear
  - suspend COMP voltage, add 4uA pull-down current
- Lower VINAC and HVSEN hysteresis currents
- Lower VSENSE input bias current
- (continued...)

TEXAS INSTRUMENTS

What is Different for UCC28063?

- New fault protection added:
  - TSET has open- and short-circuit fault protection
  - CS has open-circuit fault protection
  - Note: this new fault protection is disabled in UCC28063A
- Full-soft-start on:
  HVSEN-OVP, Brownout (after 440ms), VSENSE disable, UVLO, Thermal-shutdown, TSET fault, CS fault
- 2-level over-current thresholds on CS input:
  - -200mV when in two-phase mode (same as -060/-061)
  - -167mV when in single-phase mode
- GDx: UVLO off-drive stronger down to VCC = 3V
- Flatter VREF temperature-coefficient
- 100ns blanking on ZCD inputs

Summary of Major Changes For UCC28063

- Reduced hysteresis currents on high-voltage sense inputs
- Variable gain for small- and large-signal transients to have fast response but minimize audible noise
- Special dropout-handling to avoid recovery peaks & noise
- Revised OVP levels and actions on VSENSE input
- Single-phase condition reduces CS threshold to 0.167V
- Short and Open protection on TSET input; Open on CS
- Leading and trailing-edge blanking on CS and ZCD signals
- Lower transconductance allows smaller COMP values