Errata sheet XDPS2221 PFC + Hybrid-Flyback Combo Controller IC

Scope and purpose

With this Infineon Technologies AG errata note we would like to inform you about the known issues of XDPS2221 PFC + Hybrid-Flyback Combo Controller IC.

Intended audience

This errata sheet is intended for engineers who design power supplies using the XDPS2221 controller.

Products affected

Product Name	Marking	Ordering Code	Firmware version	Datasheet version
XDPS2221	XDPS2221	SP005630569	3.1.1	1.1

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1 Known issues

The known issues of the XDPS2221 controller with firmware version 3.1.1 are listed below.

1.1 X-capacitor discharge fail

After loss of AC input voltage with enabled X-capacitor discharge (configuration "$EN_{Xcapdischg}$ = Enabled"), X-capacitor(s) will not be discharged fast enough to comply with safety standard IEC 62368-1.

1.1.1 Reason

The implemented AC loss detection mechanism works unreliable, so that the AC loss might only be detected with some delay. Due to the delay of the AC loss detection X-capacitor discharge starts delayed.

1.1.2 Occurrence

This happens occasionally.

1.1.3 Workaround

XDPS2221 with FW v. 3.1.1 cannot be used for safe X-capacitor discharge operation. X-capacitor discharge should be deactivated by configuration ("$EN_{Xcapdischg}$ = Disabled") and safe X-capacitor discharge needs to be guaranteed by other means, e.g. passive discharge by resistors.

1.2 First ZVS pulse missing in burst mode

The first ZVS pulse in burst-mode after wake-up from sleep is shortened or skipped in case the on-time of the precharge pulses $t_{BMprepulse}$ exceeds a particular value.

1.2.1 Reason

A timing issue in the digital controller domain leads to a shortened or skipped first ZVS pulse after burst-mode wake up in case the chosen configurable value of the on-time of the precharge pulses exceeds the particular value of $t_{BMprepulse}$ = 600 ns.

1.2.2 Occurrence

This happens always in case the on-time $t_{BMprepulse}$ of the precharge pulse is lager than 600 ns.

1.2.3 Workaround

The configurable on-time of the precharge pulse $t_{BMprepulse}$ needs to be set less than or equal to 550 ns.

1.3 Missing or too short ZVS pulse in burst mode

The first ZVS pulse in burst-mode after wake-up from sleep is shortened or skipped in case the maximum time spacing $t_{BMppswmax}$ between the precharge pulses is set to a value close to the valley oscillation time.

1.3.1 Reason

A timing issue due to a race condition in the digital controller domain leads to a shortened or skipped first ZVS pulse after burst-mode wake up in case the maximum time spacing $t_{BMppswmax}$ between the precharge pulses is set to a value close to the valley oscillation time.

1.3.2 Occurrence

This happens always if the maximum time spacing $t_{BMppswmax}$ between the precharge pulses is set to a value close to the valley oscillation time.

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1.3.3 Workaround

The configurable maximum time space $t_{BMppswmax}$ needs to be set higher than the maximum expected valley oscillation time plus a margin of 250 ns. The maximum expected valley oscillation time needs to be determined empirically.

1.4 Brown-in time-out not active

In case IC operation is started but one or more conditions for full start-up are not fulfilled, e.g. AC voltage is below brown-in voltage, the timeout t_{HVbito} is not triggered. The controller keeps checking for start-up conditions and finally loses supply voltage VCC. As a consequence start-up time can be delayed when eventually all start-up conditions are fulfilled.

1.4.1 Reason

Start-up timeout rule for t_{HVbito} was not considered correctly in firmware.

1.4.2 Occurrence

This happens always.

1.4.3 Workaround

There is no workaround for this issue.

2   Revision history

Document version	Date of release	Description of changes
Rev. 1.0	2023-02-23	Initial release

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