USB-PD3.0 / QC4.0 Smart Charging Design Tool

SMART-CHARGING-DST

Last Updated: Nov 11, 2022

The NXP® USB-PD3.0 / QC4.0 smart charging design tool helps you design a fast charging adapter supporting BC1.2, USB-PD3.0 and/or QC4.0 charging protocol. NXP's primary QR Flyback controller TEA1936x and secondary side synchronous rectifier controller TEA199x are very suited for a low-cost solution.

The design tool is downloadable and is able to save/print all design parameters, results and graphs automatically for post-processing or presentation purposes.

USB-PD/QC TA Design Tool Block Diagram

USB-PD/QC TA Design Tool

- QR Flyback: TEA19361, SR: TEA1993, Protocol: TEA19051

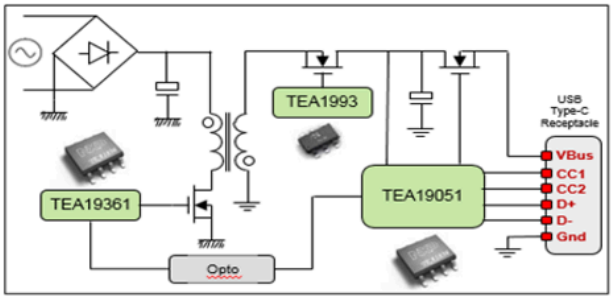
Note: "User Input" is for users to enter design or component parameter; "Default" is recommended parameter or calculation result;

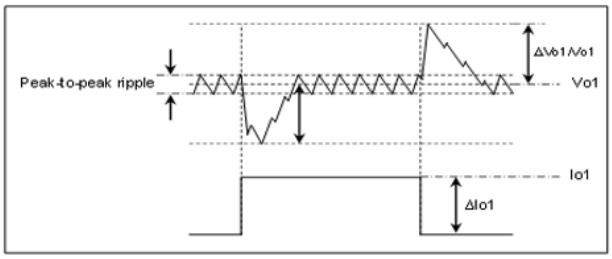
1. TA Specifications

1.1. Input	User Input	Default	Unit
Min AC line voltage	90	90	Vrms
Max AC line voltage	264	264	Vrms
Min AC line frequency	47	47	Hz
Max ambient temperature	50	50	C

1.2. Max Output Setting	User Input	Default	Unit
Norminal output voltage (Vo1)	12.15	12.15	V
Max output current (Io1)	2.5	2.5	A
CV regulation tolerance (+/-)	3	3	%
Min CV regulation band		11.786	V
Max output voltage ripple (+/-)	3	3	%
Max output peak-to-peak ripple (+/-)		364.5	mV
Max load release step change (ΔIo1/Io1)	100	100	%
Peak transient voltage deviation at load release (ΔVo1/Vo1)	5	5	%
Output OVP level	112	112	%
Max output voltage (at OVP)		13.608	V
Max output power		30.375	W
Estimated efficiency at min input & max load	90	90	%
Max input power (Pin1)		33.75	W
Forward V drop of output diode or SR MOSFET	0.1	0.1	V

1.3. Min Output Setting	User Input	Default	Unit
Norminal output voltage (Vo2)	5.15	5.15	V
Max output current (Io2)	3	3	A
CV regulation tolerance (+/-)	3	3	%
Min CV regulation band		4.996	V
Min Voltage in CC mode	3.5	3.5	V
Estimated efficiency at min input & max load	88	88	%
Max output power		15.45	W
Max input power (Pin2)		17.56	W





View additional information for USB-PD3.0 / QC4.0 Smart Charging Design Tool.

Note: The information on this document is subject to change without notice.