

TPS543B22 SIMPLIS Transient Model Features and Limitations

* TPS543B22

* (C) Copyright 2020 Texas Instruments Incorporated. All rights reserved.

** This model is designed as an aid for customers of Texas Instruments.

** TI and its licensors and suppliers make no warranties, either expressed

** or implied, with respect to this model, including the warranties of

** merchantability or fitness for a particular purpose. The model is

** provided solely on an "as is" basis. The entire risk as to its quality

** and performance is with the customer

*

* This model is subject to change without notice. Texas Instruments

* Incorporated is not responsible for updating this model.

*

*

** Released by: Texas Instruments Inc.

* Part: TPS543B22

* Date: 21DEC2022

* Model Type: TRANSIENT

* Simulator: SIMPLIS

* Simulator Version: 8.40h

* EVM Order Number: TPS543B22EVM

* EVM Users Guide: SLUUCH6 – SEPTEMBER 2022

* Datasheet: SLVSW2 – March 2022

* Topologies Supported: Buck

*

* Model Version: Final 1.00

*

*

* Updates:

*

* Final 1.00

* Release to Web.

*

*

* Model Usage Notes:

*

* A. Features have been modelled

* 1. Output Voltage Setting

* 2. Programmable Soft-Start

* 3. Frequency and Operation Mode Selection

* 4. Low-side FET Zero-Crossing

* 5. Current Sense and Positive Overcurrent Protection(OCP)

* 6. Low-side FET Negative Current Limit

* 7. Power Good

- * 8. Over Voltage Protection(OVP)
- * 9. Under Voltage Protection(UVP)
- * 10. Output Voltage Discharge
- * 11. EN/VIN UVLO Protection
- * 12. VCC UVLO Protection
- * 13. BOOT functionality
- * 14. This model can be used to simulate all the above features for the TPS543B25, TPS543A26, and TPS543A22 by selecting the right device in F11 window.

*

* B. Features have not been modelled

- * 1. Operating Quiescent Current
- * 2. Shutdown Current
- * 3. Temperature dependent characteristics
- * 4. Ground Pins have been tied to 0V internally and hence model does not support Inverting topologies.

*

* C. Application Notes

- * 1. The parameter STEADY_STATE has been used to reach the steady state faster.
 - * Keep STEADYSTATE = 0 to observe startup behaviour.
 - * Keep STEADYSTATE = 1 and appropriate IC on Inductor and capacitor to observe for faster Steady state and is must for AC Analysis.
- * 2. This model can be used to simulate TPS543B25, TPS543A26, and TPS543A22 by selecting the right device in F11 window.

*

