

# TPS40304 Datasheet(SLUS964D) page 10 Figure13

## Start-Up sequence and Timing

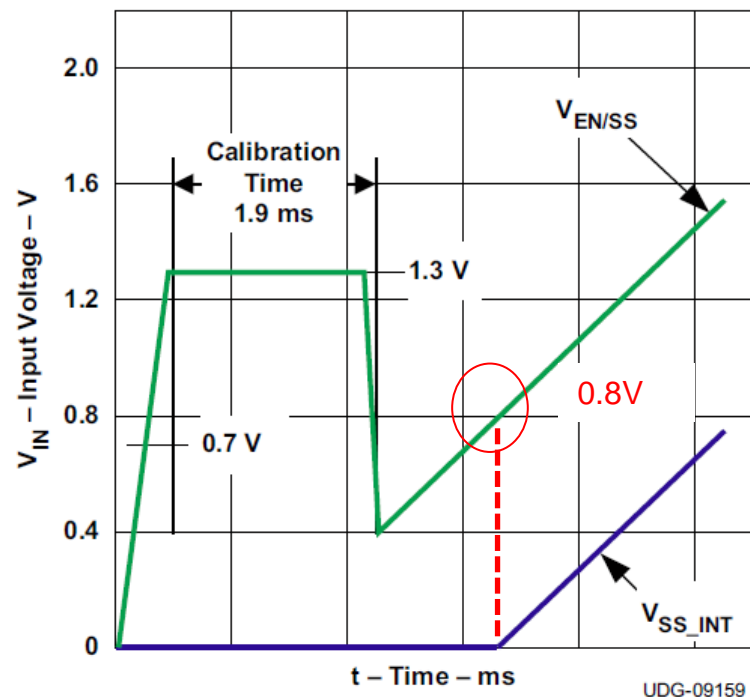


Figure 13. Start-Up Sequence and Timing

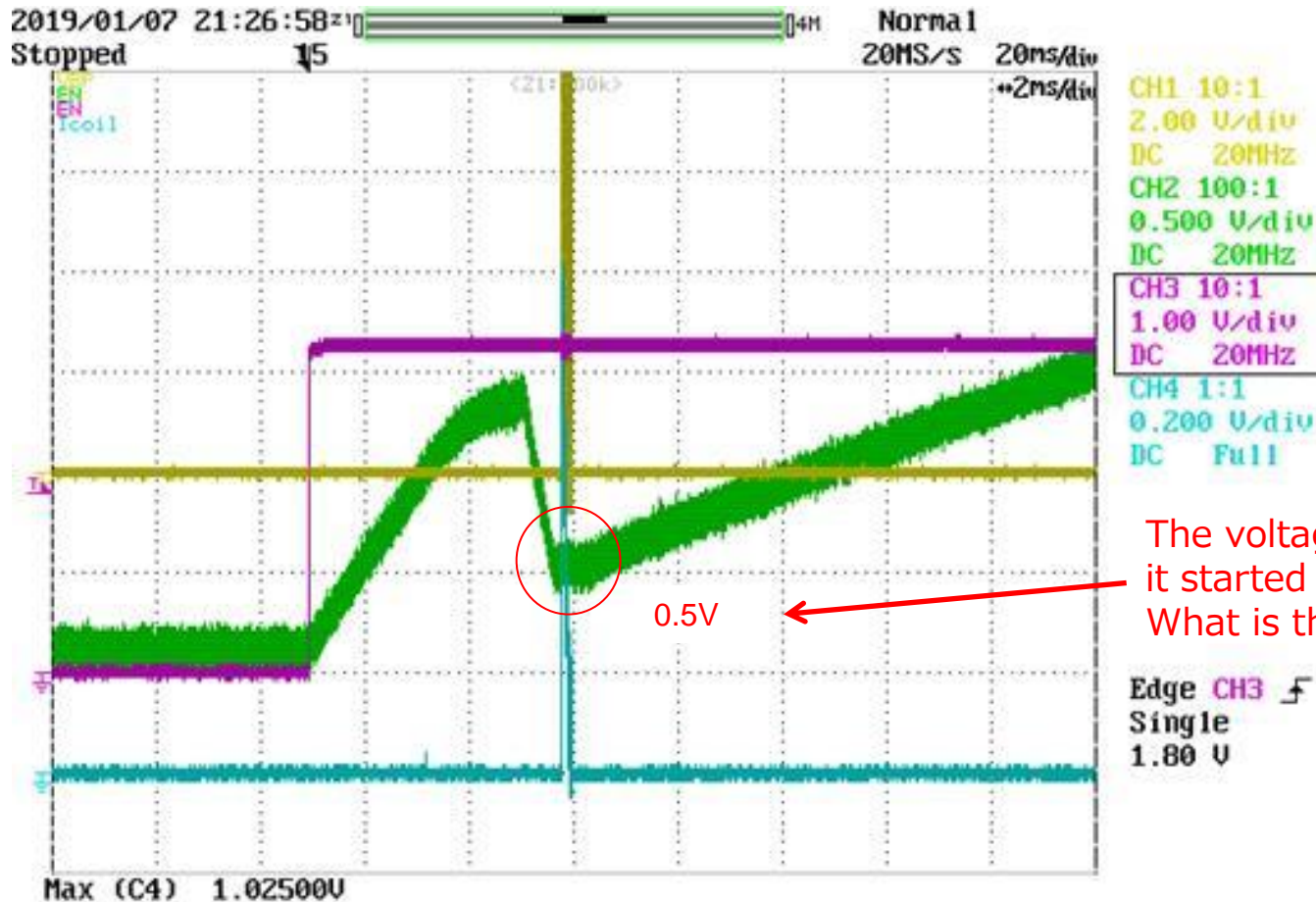
### 7.3.2 Enable Functionality, Start-Up Sequence and Timing

After input power is applied, an internal current source of 40  $\mu\text{A}$  starts to charge up the soft-start capacitor connected from EN/SS to GND. When the voltage across that capacitor increases to 0.7 V, it enables the internal BP regulator followed by a calibration. The total calibration time is about 1.9 ms. See Figure 13. During the calibration, the device performs in the following way. It disables the LDRV drive and injects an internal 10- $\mu\text{A}$  current source to the resistor connected from LDRV to GND. The voltage developed across that resistor is then sampled and latched internally as the OCP trip level until one cycles the input or toggles the EN/SS.

The voltage at EN/SS is internally clamped to 1.3 V before and/or during calibration to minimize the discharging time once calibration. The discharging current is from an internal current source of 140  $\mu\text{A}$  and it pulls the voltage down to 0.4 V. The discharging current then initiates the soft-start by charging up the capacitor using an internal current source of 10  $\mu\text{A}$ . The resulting voltage ramp on this pin is used as a second noninverting input to the error amplifier after an 800 mV (typical) downward level-shift; therefore, actual soft-start does not occur until the voltage at this pin reaches 800 mV.

If EN/SS is left floating, the controller starts automatically. EN/SS must be pulled down to less than 270 mV to ensure that the chip is in shutdown mode.

# 1. TPS40304 Waveform Abnormal Phenomenon occurs at low temperature



CH1:SW (DC)  
CH2:SS/ENA(DC)  
CH3 : System ENA  
CH4 : Inductor  
Current

The voltage of SS was not 0.8 V,  
it started switching at 0.5 V.  
What is this something related?

This waveform isn't same by Datasheet(SLUS964D)page10 Figure13.

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