

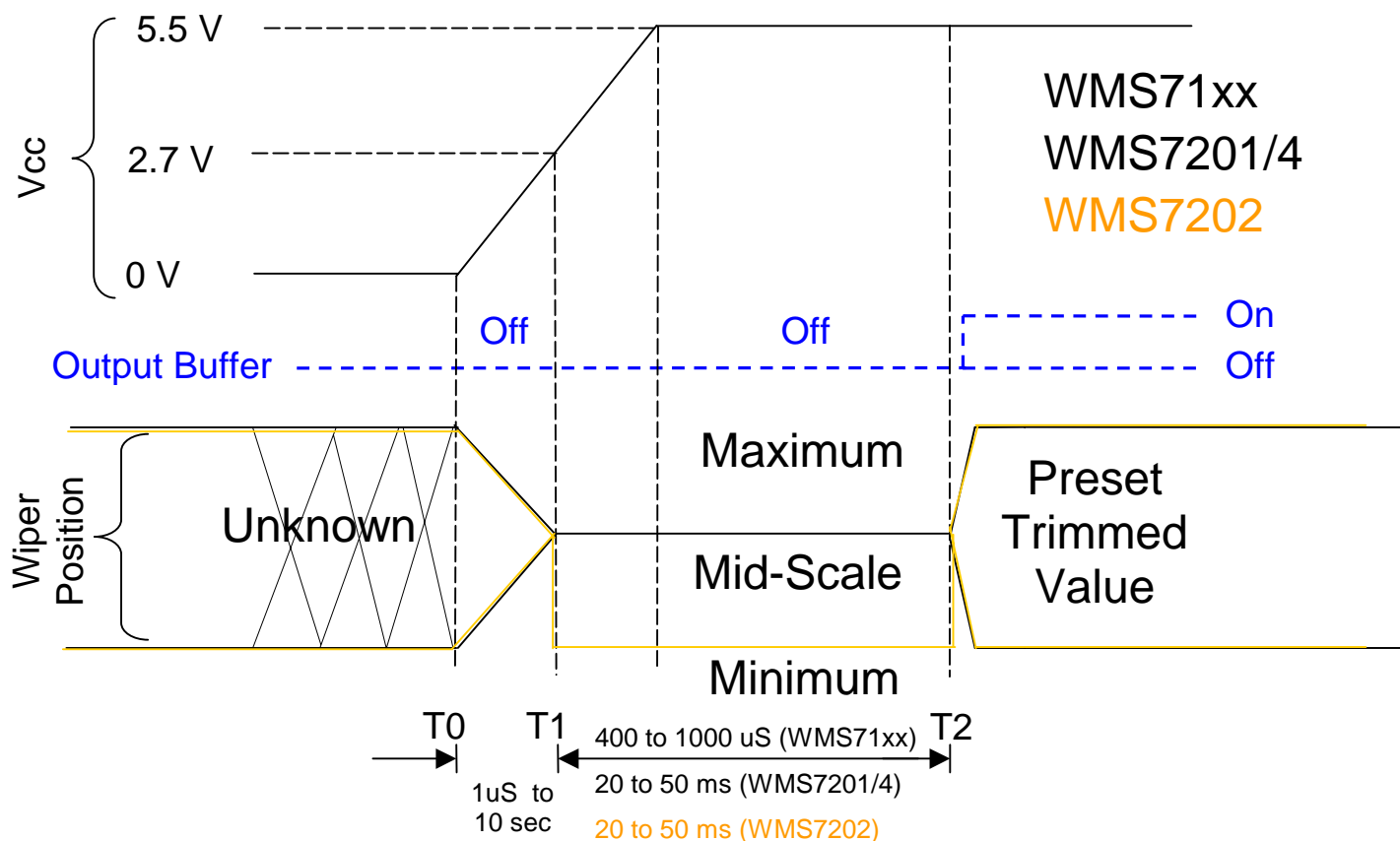
WinPot Power-up Timing

AN-WP03001

Providing the correct power-up timing to the WinPot device will ensure correct initialization of the internal state machine and enable the device to operate glitch free from the outset. In all cases, the final V_{DD} must be between 2.7V and 5.5V. Proper operation outside this range is not guaranteed.

For normal operation, all digital input lines must be connected or pulled up/down - not floating.

Figure 1 : WinPot Power-Up Timing Diagram



Notes:

T_0 is the time when V_{CC} starts to ramp up

T_1 is the time when V_{CC} reaches 2.7 V

T_2 is the time when Wiper and output buffer settings are set to pre-stored value

The previous timing diagram shows how the supply voltage ramps up from 0V to desired V_{DD} vs. wiper and output buffer operations.

The power-up timing characteristic for the WinPot products can be divided into three groups (WMS71xx, WMS7201/4 & WMS7202).

In general, the (T0–T1) timing is a minimum of 1us to a maximum of 10 secs, the same for each product. This is the time when the power-up voltage ramps to 2.7V. During such period, the wiper position is undetermined.

- 1) **WMS71xx**: The WMS71xx are a single channel WinPot devices. They use an Up/Down interface protocol and have 16/32/64/128/256/100-tap positions. At time T1, the device is set to Mid-Scale level. The (T1-T2) timing is a minimum of 400us and a maximum of 1msec. During this period, the wiper remains at Mid-Scale level. At time T2, the wiper position is moved to its pre-stored value.
- 2) **WMS7201** and **WMS7204**: The WMS7201 is a single channel device while the WMS7204 is a quad channel device. They both use the SPI interface. At time T1, the part is set to Mid-Scale level. The (T1-T2) timing is a minimum of 20msec and a maximum of 50msec. During this period, the wiper remains at Mid-Scale level. At time T2, the wiper position is moved to its pre-stored value.
- 3) **WMS7202**: This device is a dual channel WinPot with SPI interface. At time T1, the part is set to minimum level, NOT Mid-Scale. This means that the wiper is at minimum level during the power-up cycle. The (T1-T2) timing is a minimum of 20msec and a maximum of 50msec, same as the WMS7201 and WMS7204 devices. During this period, the wiper remains at Mid-Scale level. At time T2, the wiper position is moved to its pre-stored value.

The output buffer feature is a fixed configuration for the WMS71xx devices, if available. Unlike the WMS72xx device, the output buffer is user-selectable.

For the WinPot devices with output buffer feature, the output buffer remains at the Off state until the time T2 is reached, then it will become On.