

# Power-Up Guidelines for the LSI53C1030/LSI53C1020

## System Engineering Note

S11051, Version 1.0

### 1 Revision Record

Revision	Date	Remarks
Version 1.0	4/2003	Initial release of document

### 2 Introduction

This engineering note provides signaling guidelines for powering up the LSI53C1030/LSI53C1020 controller. Designs must meet these guidelines to guarantee successful power-up of the LSI53C1030/LSI53C1020.

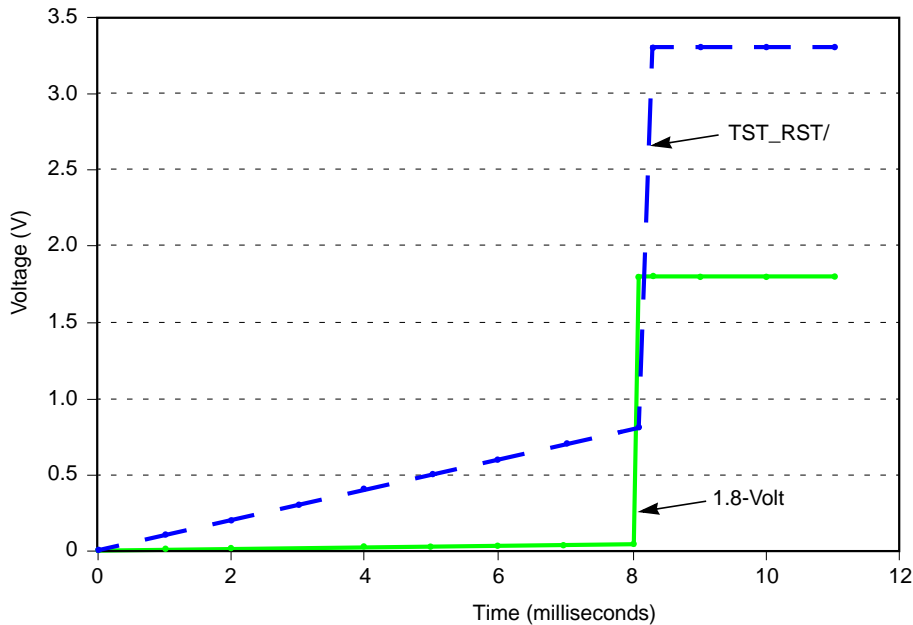
### 3 Signaling Guidelines

Designs must meet one of the following conditions to properly reset the controller. It is not necessary that designs meet both conditions.

- The 1.8 volt (V) power rail cannot be more than 50 millivolts (mV) above ground before the 1.8 V core voltage switches on. The optimal conditions are to hold the 1.8 V core voltage at ground until switching it on and driving it to 1.8 V. The 1.8 V core voltage can drift as high as 50 mV above ground without affecting the internal POR cell. If the 1.8 V power rail drifts above 50 mV, LSI Logic cannot guarantee the operation of the internal POR cell and, as such, cannot guarantee a proper reset of the phase lock loop (PLL) circuits.
- Hold the TST\_RST/ signal lower than 800 mV when powering the 1.8 V supply. If the TST\_RST/ pin is higher than 800 mV, LSI Logic cannot guarantee a proper reset of the PLL circuits.

Figure 1 illustrates the LSI53C1030/LSI53C1020 power-up sequence.

**Figure 1 LSI53C1030/LSI53C1020 Power-Up Sequence**



If neither of the above guidelines can be met, then LSI Logic recommends connecting an external POR circuit to TST\_RST/ to hold the pin low until all the power supplies are in a known, good state.

These voltage values assume worst-case scenarios. LSI Logic cannot guarantee proper operation of the LSI53C1030/LSI53C1020 under conditions that violate these guidelines.

## 4 Other Guidelines

The above guidelines are in conjunction with the power-up sequencing guidelines stated in SEN S11019, and do not supersede the SEN S11019 guidelines. Figure 2 illustrates the SEN S11019 power-up sequencing guidelines.

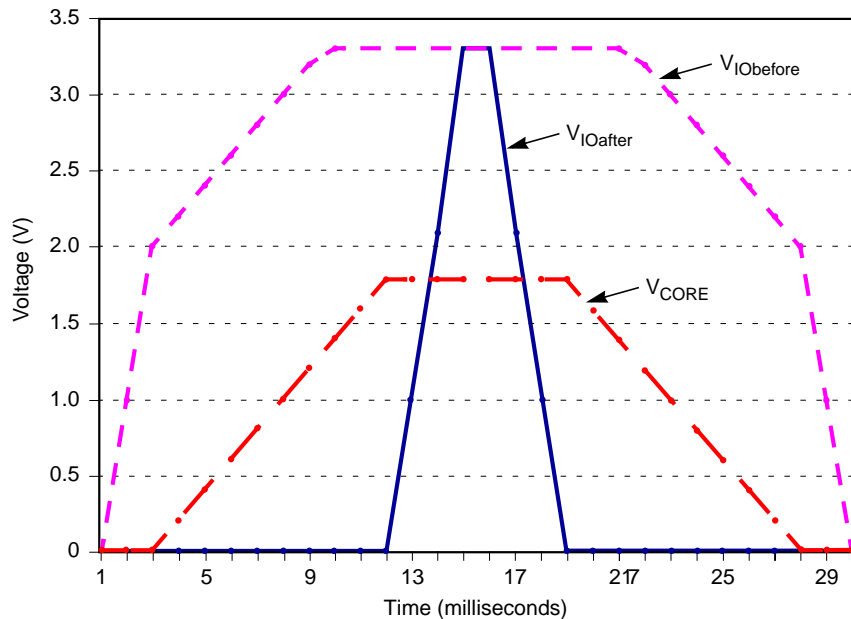
The power-up sequencing guidelines in SEN S11019 are:

- Power-up  $V_{\text{CORE}}$  (1.8 V) before  $V_{\text{IO}}$  (3.3 V). Figure 2 shows that  $V_{\text{CORE}}$  is stable at 1.8 V before  $V_{\text{IOafter}}$  begins to rise.
- If powering-up  $V_{\text{CORE}}$  first is not possible, ensure that:

$$V_{\text{IO}} < (V_{\text{CORE}} + 2 \text{ V})$$

applies at all times. In Figure 2,  $V_{\text{IObefore}}$  rises before  $V_{\text{CORE}}$ , but at no time is  $V_{\text{IObefore}}$  greater than  $V_{\text{CORE}} + 2 \text{ V}$ .

**Figure 2 LSI53C1030/LSI53C1020 Power Cycling**



## 5 Symptoms of Incorrect Power-Up Sequence

The most common symptoms of improper power-up sequencing are:

- The host bus adapter (HBA) is unresponsive, which causes an “Adapter Malfunctioning” report from the LSI Logic SCSI BIOS.
- The HBA responds to limited PCI commands, but cannot interact with devices on the SCSI bus.

This behavior is a result of the PLLs not resetting.

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# Notes

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## Headquarters

LSI Logic Corporation  
North American Headquarters  
Milpitas CA  
Tel: 408.433.8000

LSI Logic Europe Ltd  
European Headquarters  
Bracknell England  
Tel: 44.1344.426544  
Fax: 44.1344.481039

LSI Logic K.K.  
Headquarters  
Tokyo Japan  
Tel: 81.3.5463.7821  
Fax: 81.3.5463.7820

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