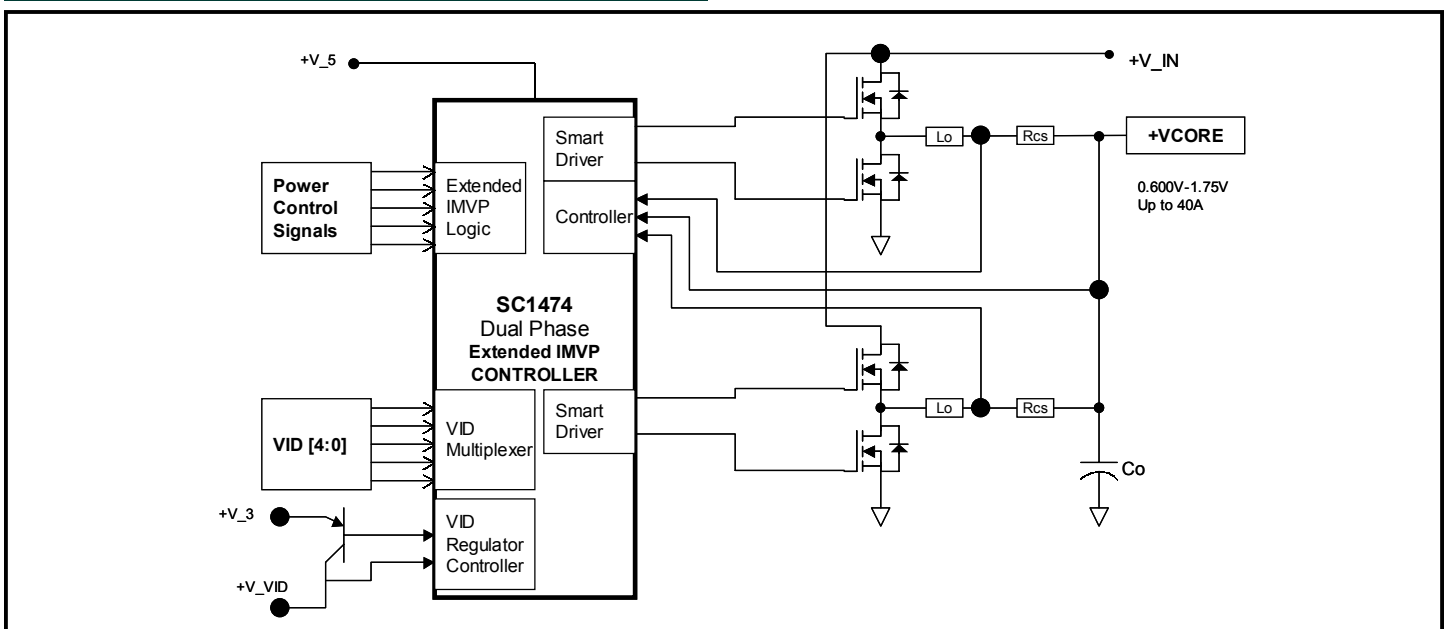## POWER MANAGEMENT

Description

The SC1474 PowerStep III™ IC is a single chip high-performance Hysteretic PWM controller. With dual integrated Smart™ Drivers, it powers advanced Pentium® 4 processors. The SC1474 features extended Intel Mobile Voltage Positioning (IMVP) to increase battery life by reducing the voltage at the processor when it is heavily loaded. It directly supports Intel's SpeedStep™ requirements for even longer battery life. The SC1474 automatically detects performance and battery mode VIDs. In addition, it integrates direct "deeper sleep" mode support. All operating modes incorporate automatic "power-save" to prevent negative current flow in the low-side FET during light loading conditions, saving even more power.

A 5-bit DAC, accurate to 0.85%, sets the output voltage reference, and implements the 0.600V to 1.750V range required by the processor. The hysteretic converter uses a comparator without an error amplifier, and so provides the fastest possible transient response, while avoiding the stability issues inherent to classical PWM controllers. The SC1474 incorporates a controller for V_VID and automatically provides the proper sequencing.

The SC1474 operates from +3.3Vdc Vcca and dual 5V DC drive inputs. It also features soft-start, an open-drain PWRGD signal with power-good blanking, and an enable input. Programmable current limiting latches the SC1474 off after 32 current limit pulses. It comes in a space-saving TSSOP-38 package.

Features

- ◆ **IMVP3 compliant single chip solution**
- ◆ High speed Dual phase hysteretic controller
- ◆ VID programmable output
- ◆ **Dual integrated 2A/4A drivers**
- ◆ Integrated VID regulator controller
- ◆ Automatic performance/battery mode detection
- ◆ **Dynamic phase current matching**
- ◆ Under-voltage lock out on all Vcc inputs
- ◆ Over-voltage protection on CORE
- ◆ Current Limit protection on CORE
- ◆ Thermal protection
- ◆ Programmable soft-start
- ◆ Powergood flag with blanking during VID changes
- ◆ Automatic powersave at light load
- ◆ TSSOP-38 package
- ◆ Industrial temperature range

Applications

- ◆ Advanced Intel microprocessors

Typical Application Circuit