APPLICATION NOTE 905

Adding POR Function to the MAX1864 Generating Two Outputs

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Abstract: This application note shows how to add power-on reset (POR) to a power-supply controller, the MAX1864. The design uses two positive regulator gain blocks to generate two outputs. Schematic and experimental waveforms are shown.

The MAX1864 power-supply controller is designed for cost-effective applications such as cable modem consumer premise equipment (CPE), xDSL CPE and set-top boxes. It includes a current mode synchronized step-down controller and two positive regulator gain blocks.

This chip does not have a power-on-reset (POR) function. This application note demonstrates how to add this function, using one of the linear regulator controllers to reset the microprocessor 140ms after the output voltage is within the regulated output voltage.

Figure 1 shows the circuit schematic. POR is used to monitor the main output, $V_{OUT1}$. When the main output, $V_{OUT1}$, reaches its specified output voltage, POR becomes active-high with 140ms delay. The synchronized buck and one positive regulator gain block ($B2$ and $FB2$) controller in the MAX1864 provide two outputs, while the second regulator gain block ($B3$ and $FB3$) monitors the main output voltage. A resistor, $R6$, is connected between the output, $V_{OUT1}$ and $FB3$, and a capacitor, $C6$, is connected from the $FB3$ pin to ground. A pull-up resistor, $R5$, is connected to the supply voltage (+5V) through $B3$, and the output from $B3$ can be used as the POR output. When the output, $V_{OUT1}$, is within the regulated range, the voltage at the $FB3$ pin gradually increases by charging the capacitor, $C6$, through the output, $V_{OUT1}$. The voltage across $C6$ is dependent on the time constant of $R6$ and $C6$. With the values shown for $R6$ and $C6$, POR will become high 140ms after the time where the voltage at the $FB3$ pin is high enough.
Figure 1. Two output with POR function.

Figure 2 shows the POR and $V_{OUT1}$ waveforms.
Figure 2. Experimental waveforms.

Related Parts

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<th>PART</th>
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