



# High Speed PWM Controller

## FEATURES

- Improved versions of the UC3823/UC3825 PWMs
- Compatible with Voltage or Current-Mode Topologies
- Practical Operation at Switching Frequencies to 1MHz
- 50ns Propagation Delay to Output
- High Current Dual Totem Pole Outputs (2A Peak)
- Trimmed Oscillator Discharge Current
- Low 100µA Startup Current
- Pulse-by-Pulse Current Limiting Comparator
- Latched Overcurrent Comparator With Full Cycle Restart

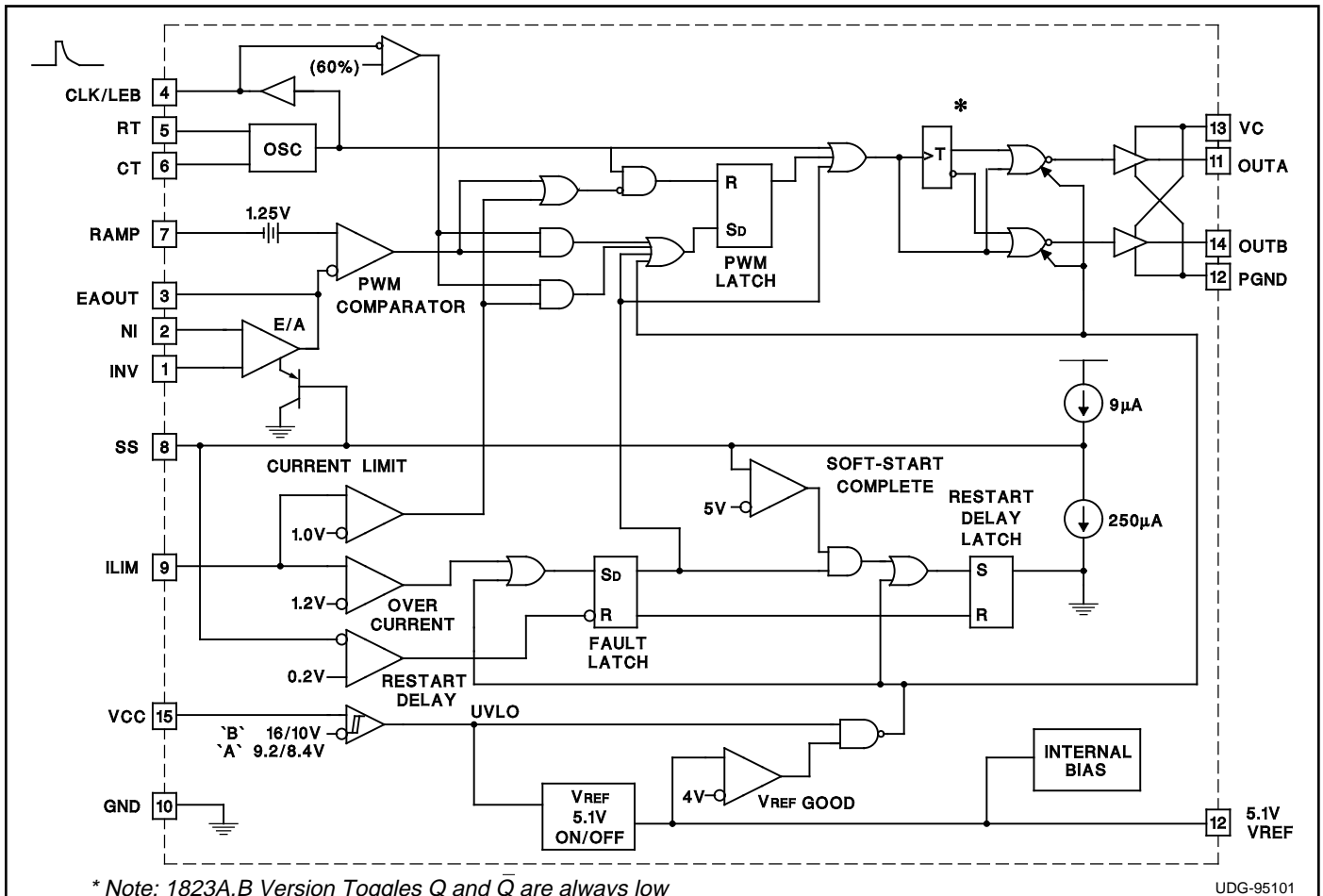
## DESCRIPTION

The UC3823A & B and the UC3825A & B family of PWM control ICs are improved versions of the standard UC3823 & UC3825 family. Performance enhancements have been made to several of the circuit blocks. Error amplifier gain bandwidth product is 12MHz while input offset voltage is 2mV. Current limit threshold is guaranteed to a tolerance of 5%. Oscillator discharge current is specified at 10mA for accurate dead time control. Frequency accuracy is improved to 6%. Startup supply current, typically 100µA, is ideal for off-line applications. The output drivers are redesigned to actively sink current during UVLO at no expense to the startup current specification. In addition each output is capable of 2A peak currents during transitions.

Functional improvements have also been implemented in this family. The UC3825 shutdown comparator is now a high-speed overcurrent comparator with a threshold of 1.2V. The overcurrent comparator sets a latch that ensures full discharge of the soft start capacitor before allowing a restart. While the fault latch is set, the outputs are in the low state. In the event of continuous faults, the soft start capacitor is fully charged before discharge to insure that the fault frequency does not exceed the designed soft start period. The UC3825 Clock pin has become CLK/LEB. This pin combines the functions of clock output and leading edge blanking adjustment and has been buffered for easier interfacing.

continued

## BLOCK DIAGRAM



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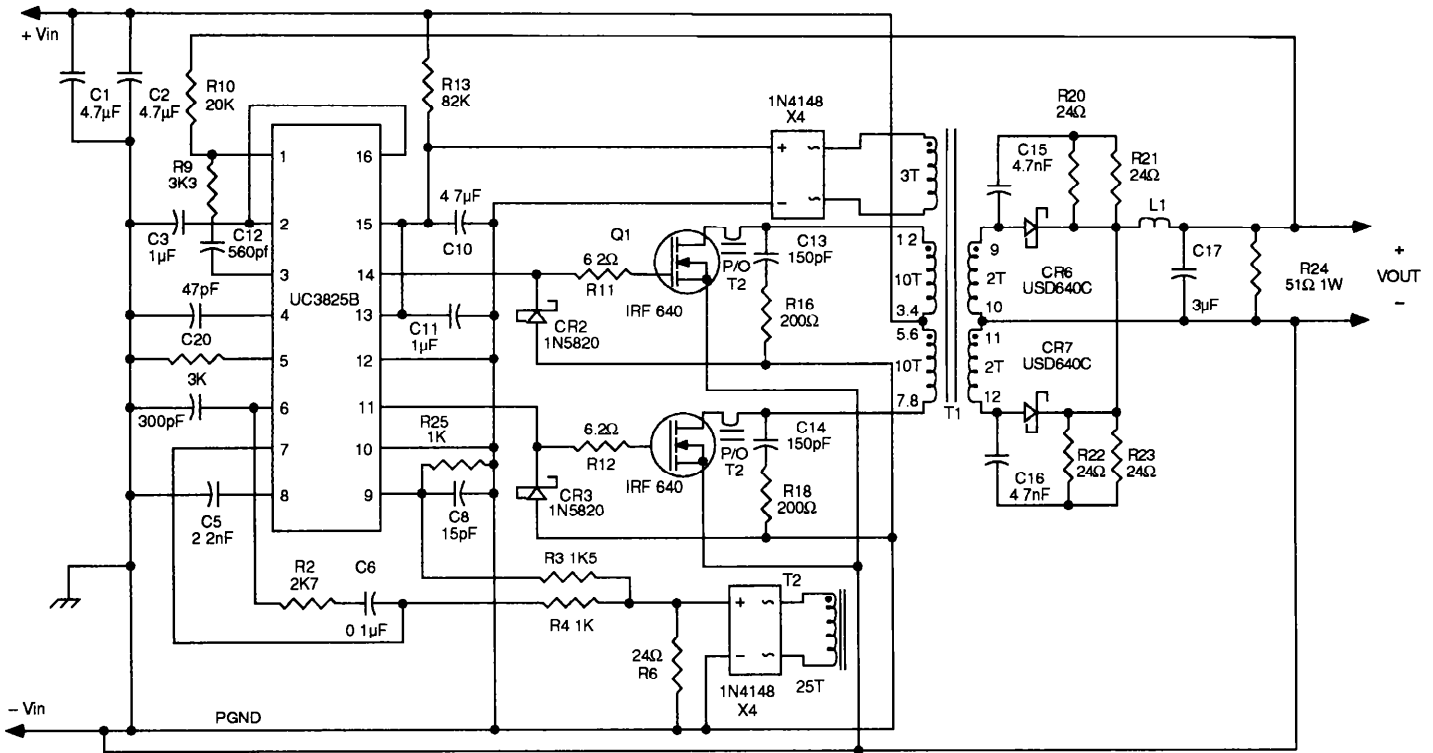


Figure 17 UC3825B Controlled 1.5 MHz Push Pull Converter

**CONVERTER PERFORMANCE**

The redesigned converter exhibited similar line, load and transient response to the original converter, which was excellent due to the high conversion frequency. A significant improvement was made in the short circuit performance by comparison. While operating into a continuous short circuited output, the UC3825B controlled version reduced the converter input power (and dissipation) to approximately one-hundredth of the original design. Featuring the programmable Restart Delay circuitry, the redesigned 50 Watt converter draws only one-quarter of a Watt (1/4 W) of input power with a shorted circuited output.

**SUMMARY**

This new generation of UC3823A,B and UC3825A,B PWM controllers features a multitude of performance advantages over its predecessors. Higher precision, increased protection and programmable new functions are just a few of the benefits obtainable with these enhanced versions of PWMs. And as the level of sophistication in today's power supplies increases, so too must that of its components - especially control ICs. Containing an expanded list of integrated features, this new era of enhanced UC3823A,B and UC3825A,B controllers overcomes the challenges of the power supply industry for higher levels of power, protection and performance.

**ADDITIONAL INFORMATION AND REFERENCES**

1. New Pulse Width Modulator Chip Controls 1 MHz Switchers; UNITRODE Application Note # U-107
2. 1.5 MegaHertz Current Mode IC Controlled 50 Watt Power Supply; UNITRODE IC Databook, Application Note # U-110
3. "Practical Considerations in Current Mode Power Supplies"; UNITRODE IC Databook, Application Note # U-111