



# Quasi-Resonant Current Mode PWM Controller

## Line Current-Limit Feed-Forward

To improve the overpower limit accuracy over the full Universal Input Line, the LM5023-2 integrates Line Current-Limit Feed-Forward.



Figure 2. Typical QR switching waveforms

Line Current-Limit Feed-Forward improves the overpower limit by summing a current proportional to the input rectified line into the current sense resistor ( $R_{sense}$ ), refer to Figure 3. The current proportional to the input line biases up the current sense pin which turns off the Flyback MOSFET earlier at high input line. This feature compensates for the propagation delays creating an overpower protection that is nearly constant over the Universal Input Line.

## Hiccup Mode

Hiccup Mode is a method to prevent the power supply from over-heating during an extended overload condition. In an overload fault, the current limit comparator turns off the driver output on pulse-by-pulse basis. This starts the Over Load Detection Timer and after the Over Load Detection Timer (OLDT) times out, the current limit comparator is re-checked. If the power supply is still in an overload condition, the OUT drive is latched-off and VCC is allowed to drop to  $V_{CC\ OFF}$  (7.5 V).

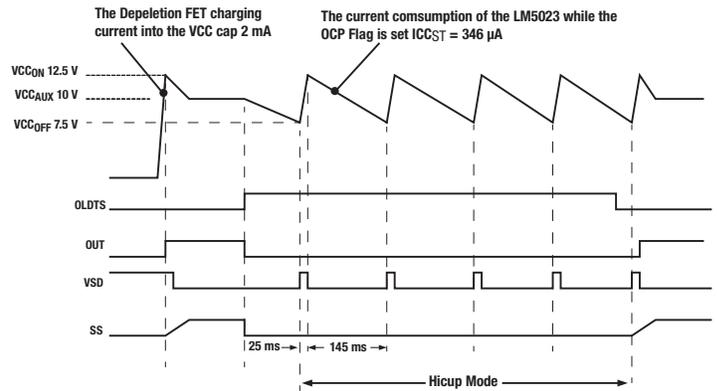


Figure 4. Hiccup Mode operation

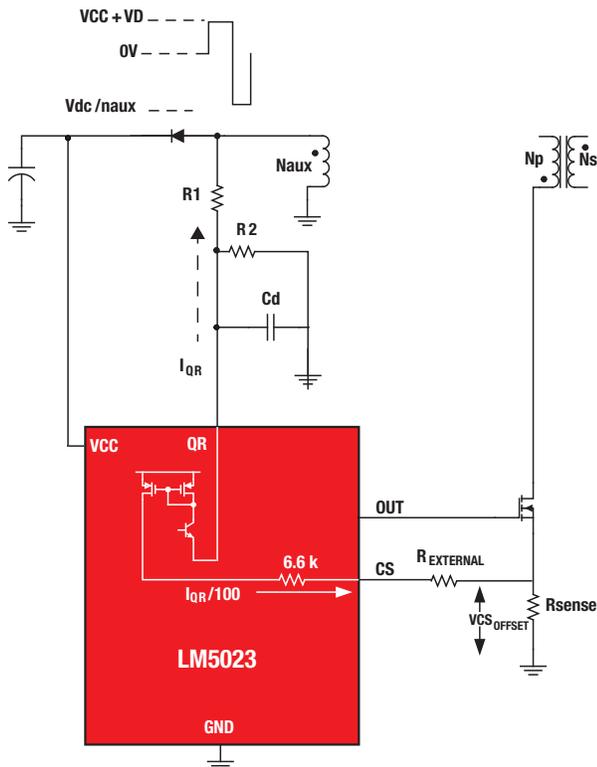


Figure 3. Line Current-Limit Feed-Forward diagram

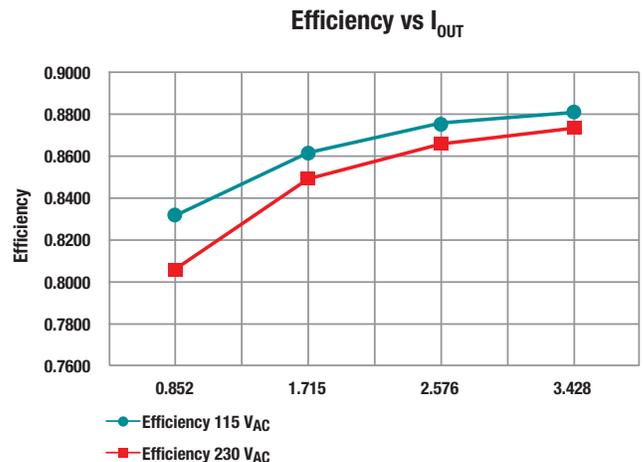


Figure 5. Efficiency vs.  $I_{OUT}$ ,  $V_{IN}$  115 V<sub>AC</sub> and 230 V<sub>AC</sub>

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