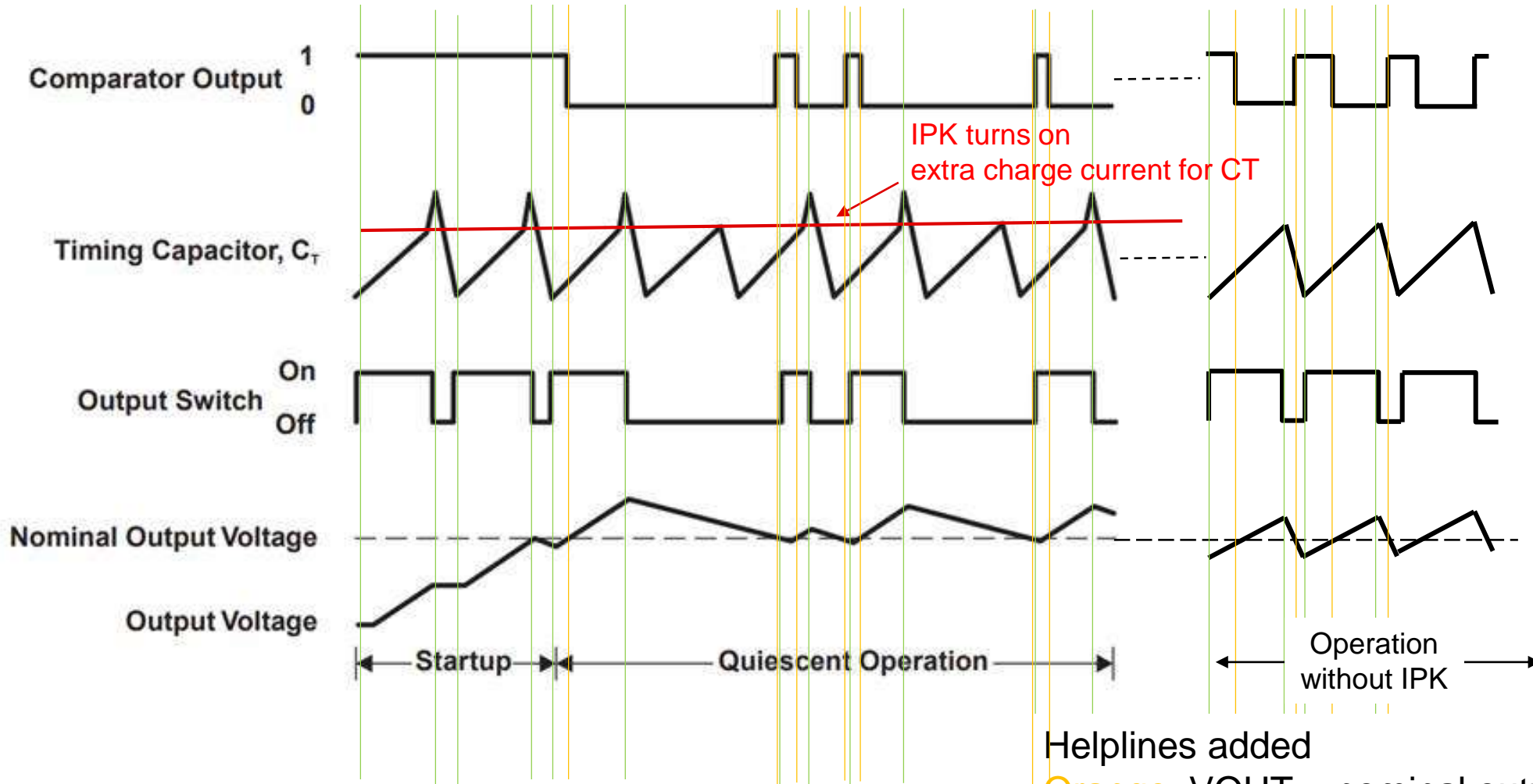# MC33063A - functionality

November 7, 2024

Brigitte Hauke

MC33063A-Q1 – not a fixed frequency converter

- The switch is only turned on if the output voltage is below the target voltage.

- If the output voltage is lower than the target level AND the timing capacitor voltage is ramping.

- The switch keeps on until the voltage on the CT capacitor is reaching typically 1.25V.
  - If during this cycle the current limit is not triggered, no extra current is added to CT and the converter is switching with the switching cycle given only by CT.
  - If the peak current level (set by the resistor from VIN to IPK) is triggered, an additional current source is added to charge CT. This shall increase the CT voltage quickly to 1.25V to turn off the switch quicker than given by CT charge current only.

TEXAS INSTRUMENTS

Operating waveforms

Comparator Output

IPK turns on
extra charge current for CT

Timing Capacitor, C_T

Output Switch

Nominal Output Voltage

Output Voltage

Startup — Quiescent Operation

Operation without IPK

Helplines added
Orange: VOUT < nominal output voltage
Green: turn on and off of switch

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