

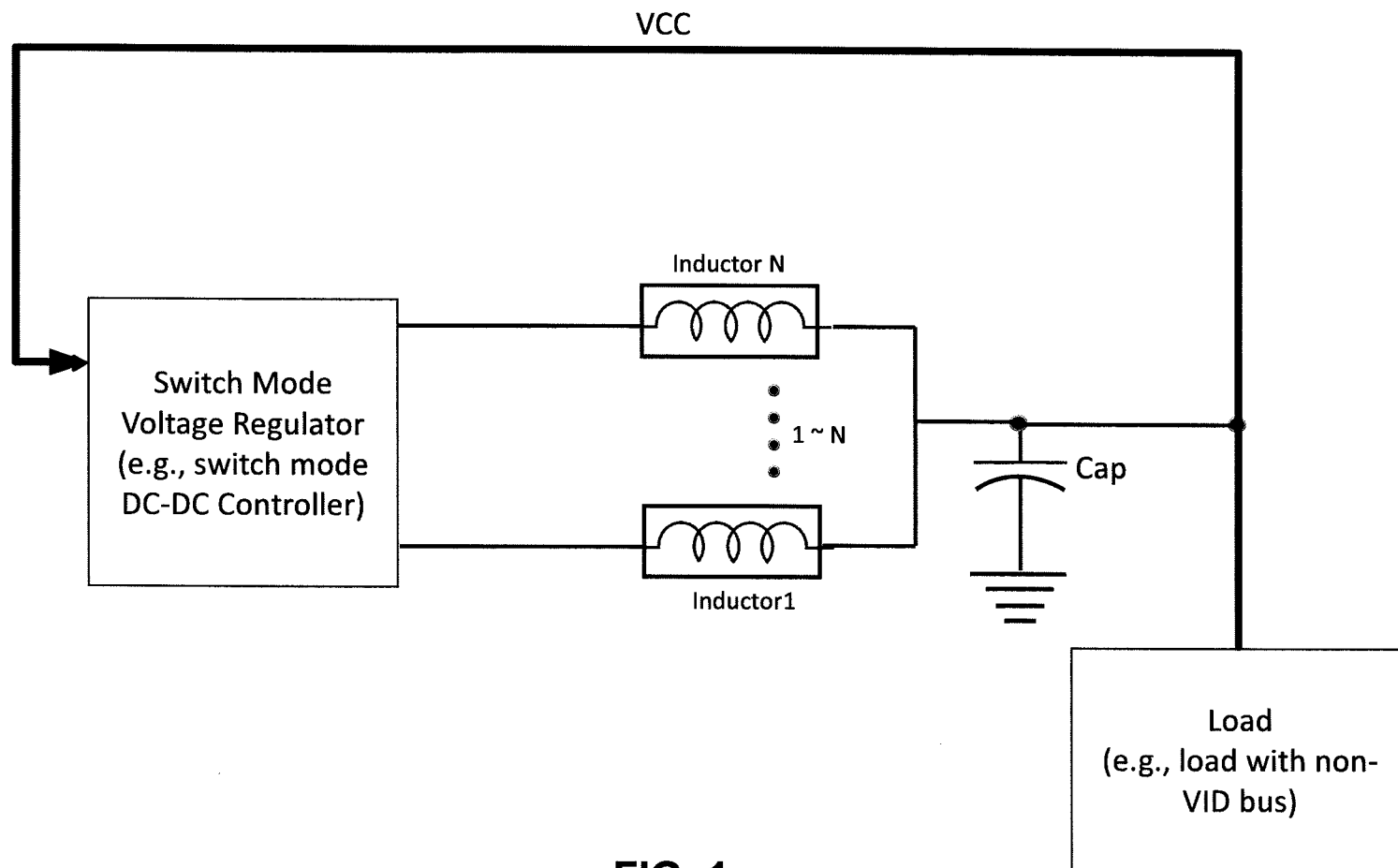


FIG. 1
PRIOR ART

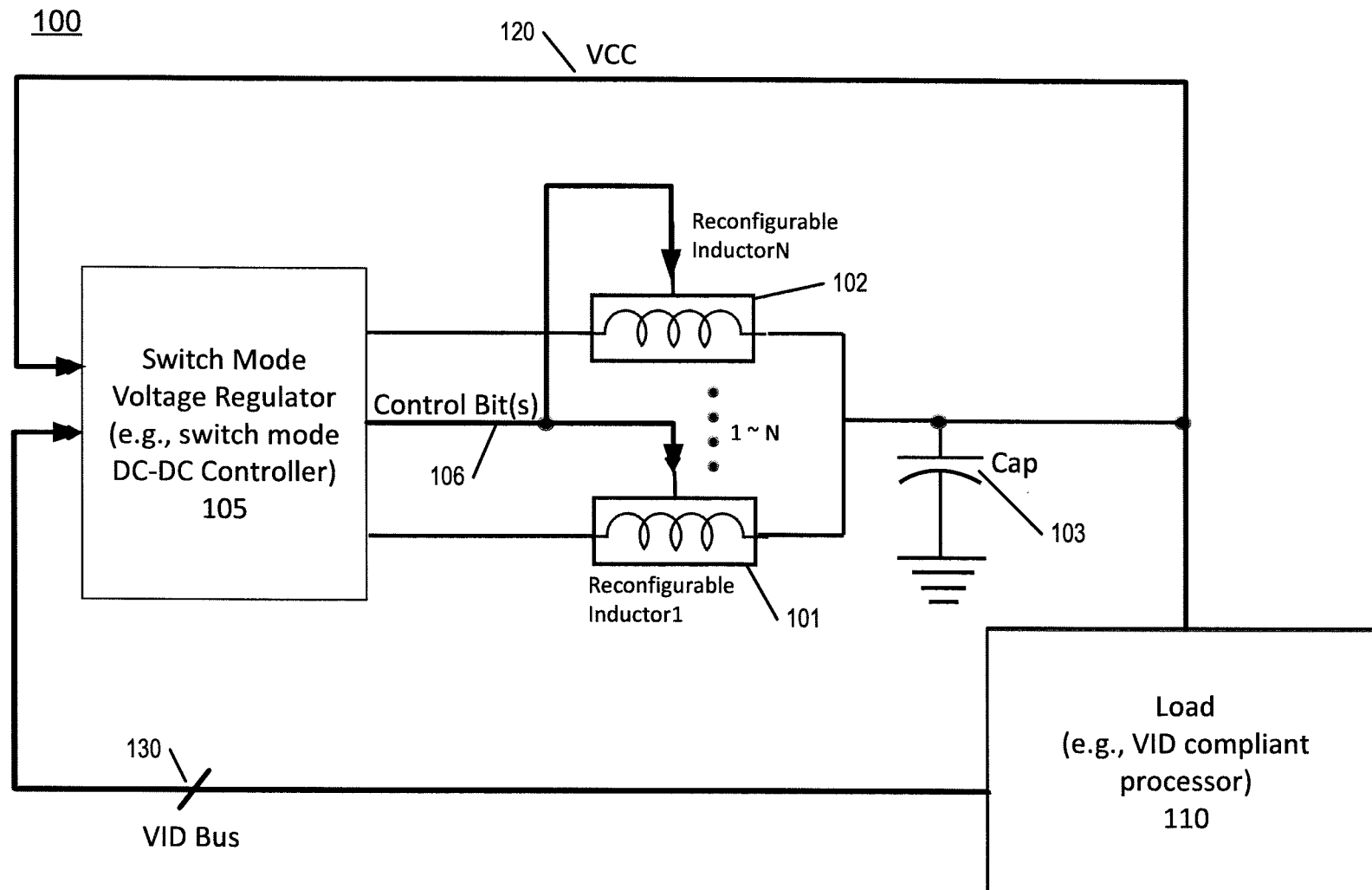


FIG. 2A

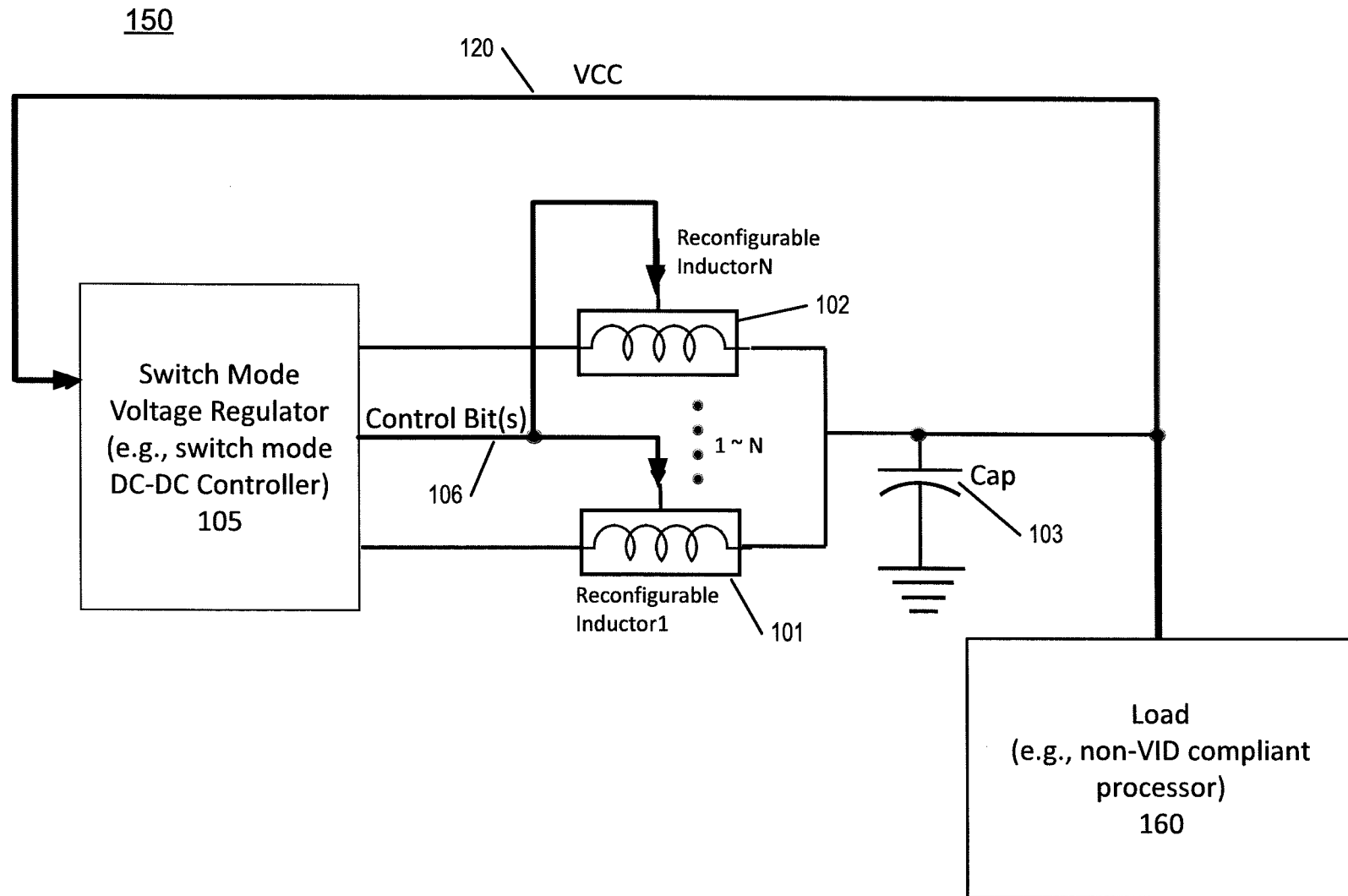
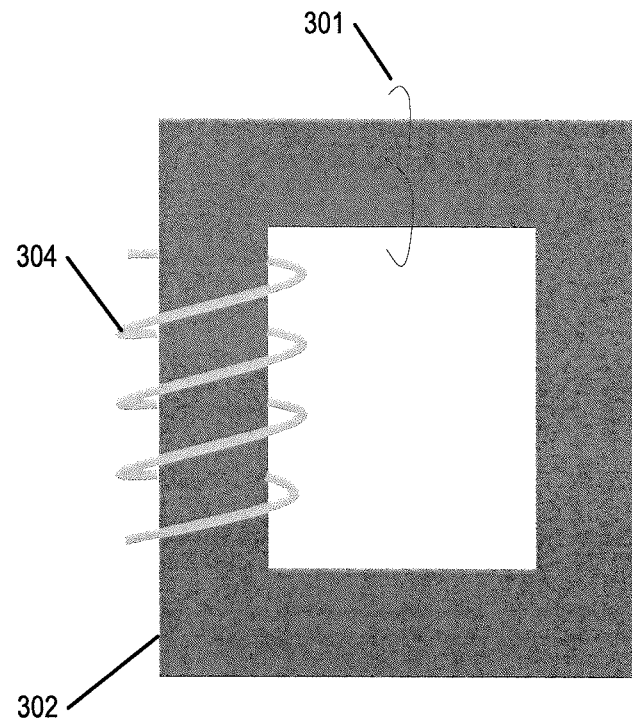


FIG. 2B

300**FIG. 3**

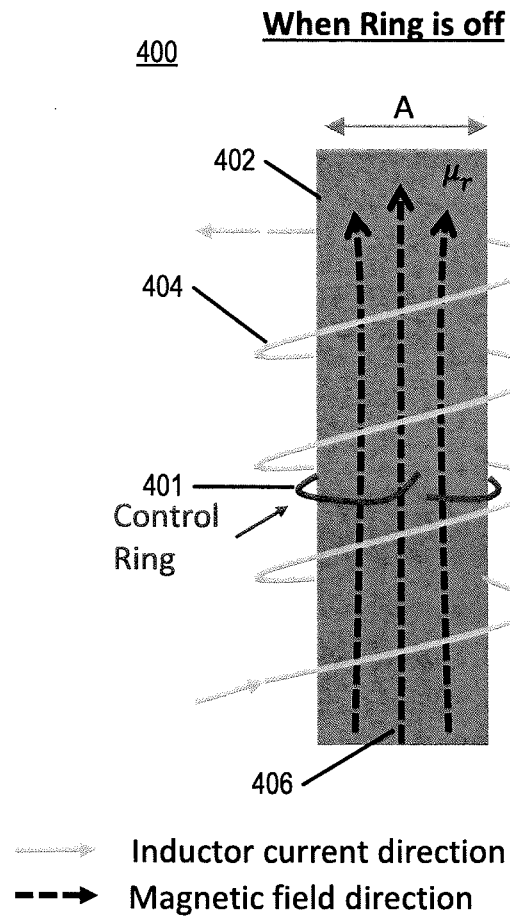


FIG. 4A

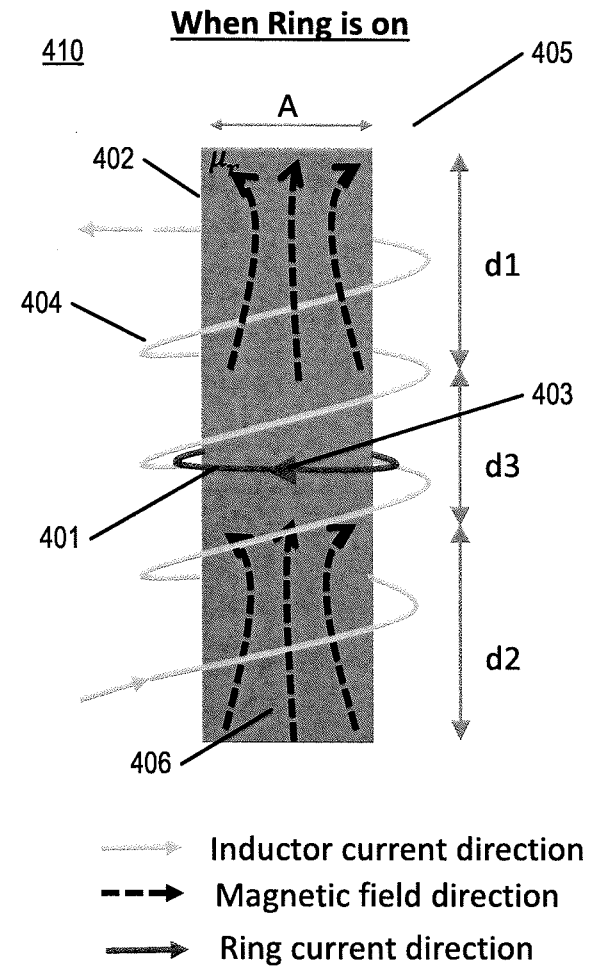
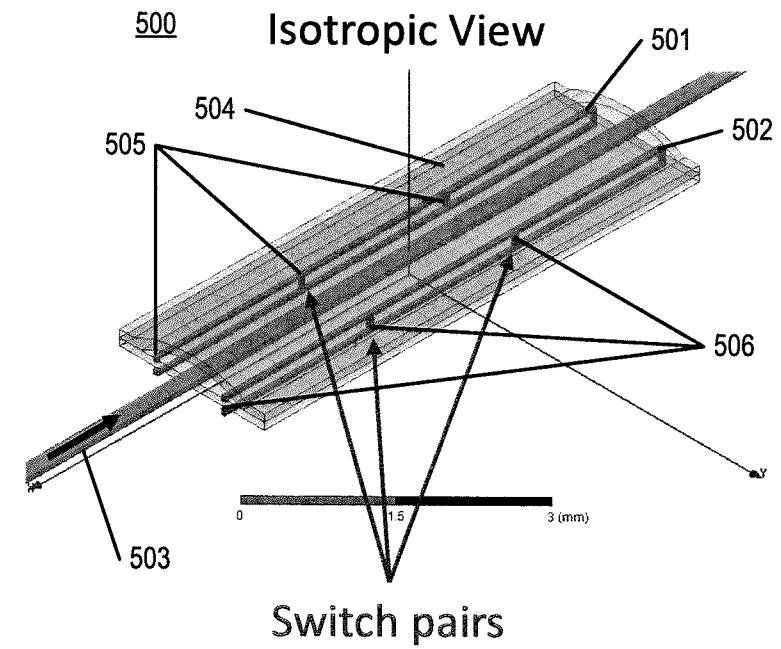
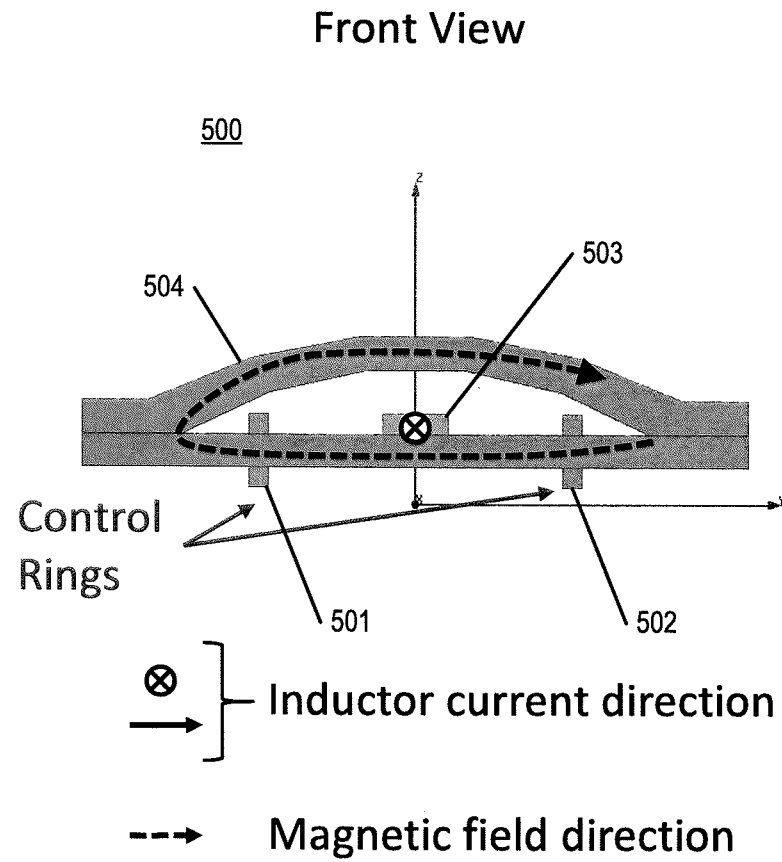
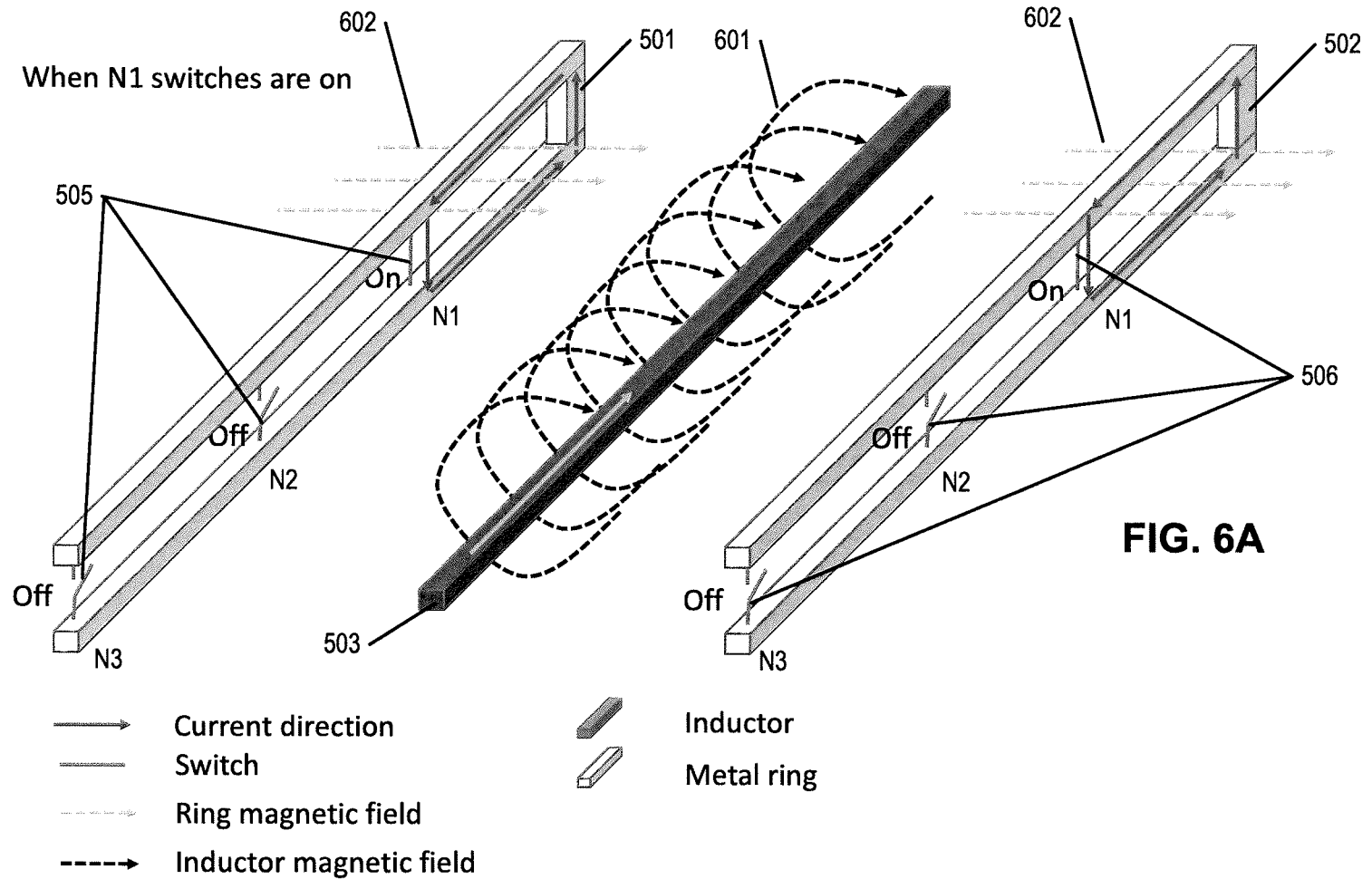


FIG. 4B



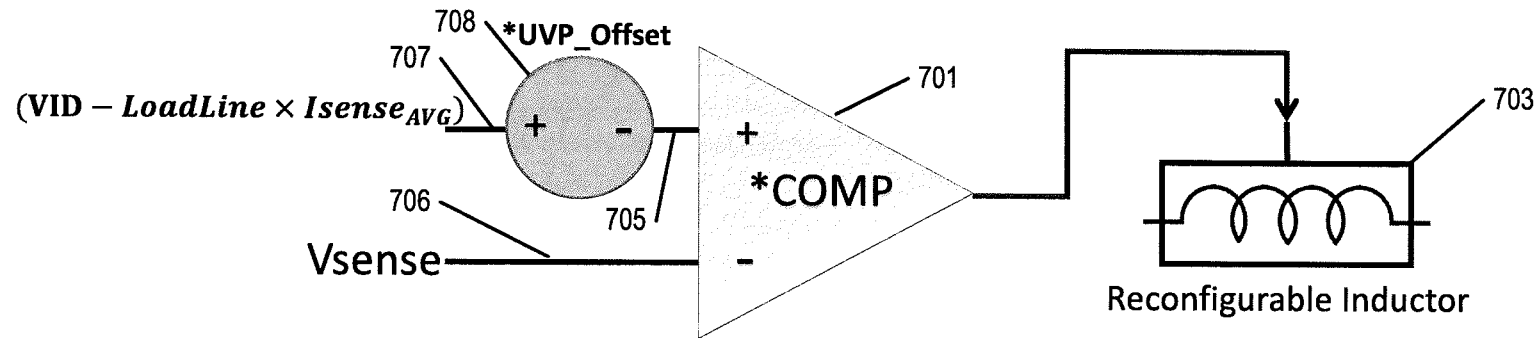


N (state level)	Freq (MHz)	Reconfigurable Inductor Inductance (nH)
0	1	303.03
1	1	225.36
2	1	142.92

FIG. 6B

700

FIG. 7A



1. V_{sense} : VR output voltage at package sense point.
2. I_{sense_AVG} : sensed average inductor current from power stage.
3. $LoadLine$: $\text{abs}(\Delta V_{SENSE}/\Delta I_{LOAD})$
3. UVP_Offset is programmable and used for preventing faulty triggering.
4. *In addition to $OVP_Threshold$ and UVP_Offset , $COMP$ (a comparator) can be designed to have a hysteresis featuring a hysteretic rise/fall triggering threshold.
5. All implementation in this illustration can be in digital domain.
6. VID: Voltage Identification (ID)

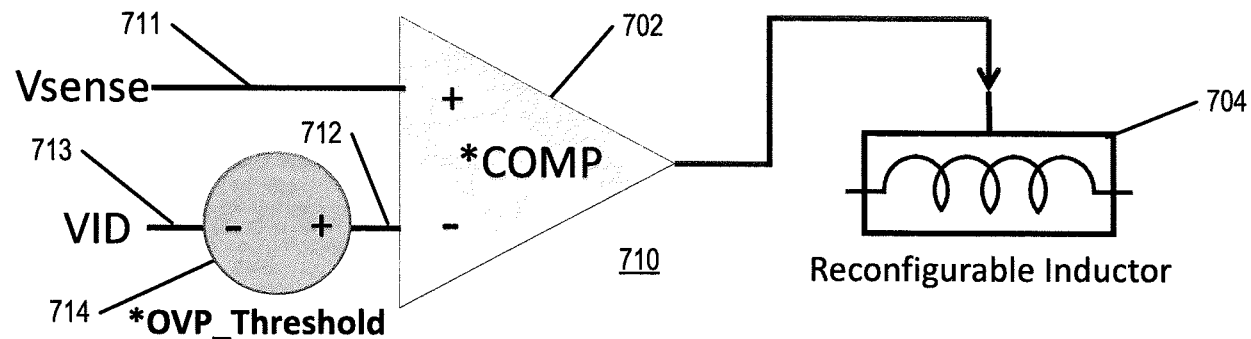
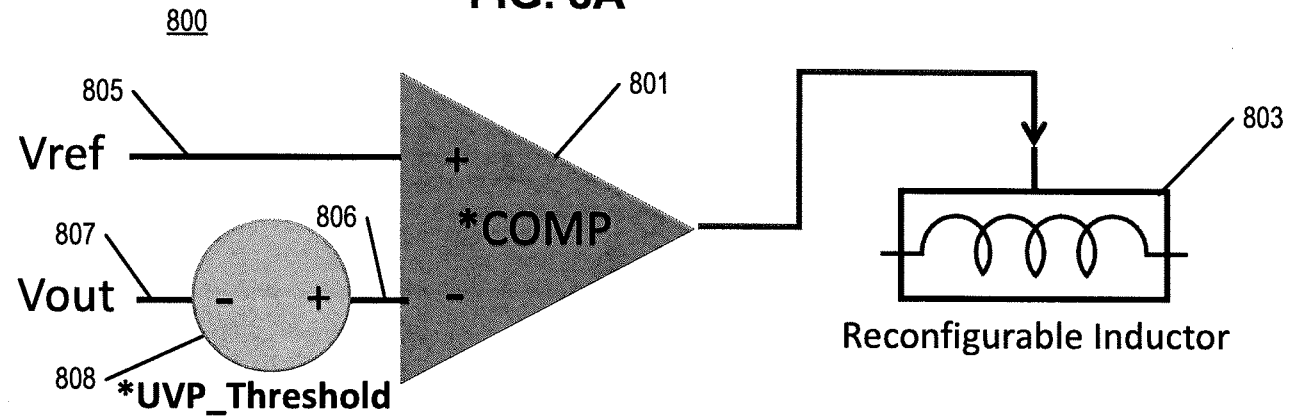
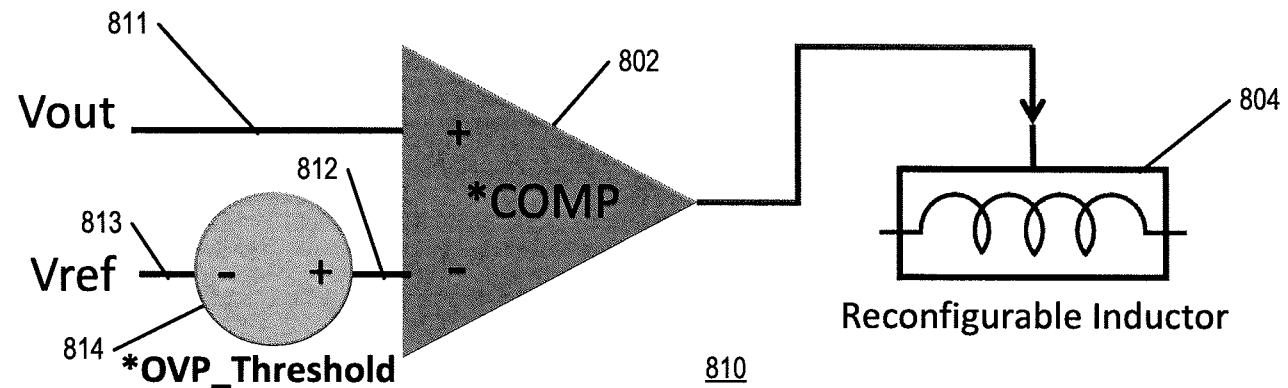


FIG. 7B

FIG. 8A

1. Vout: VR output voltage.
2. Vref: Reference voltage (ex. Target Vout).
3. *In addition to OVP_Threshold and UVP_Threshold, COMP (a comparator) can be designed to have a hysteresis featuring a hysteretic rise/fall triggering threshold.
4. All implementation in this illustration can be in digital domain.

**FIG. 8B**

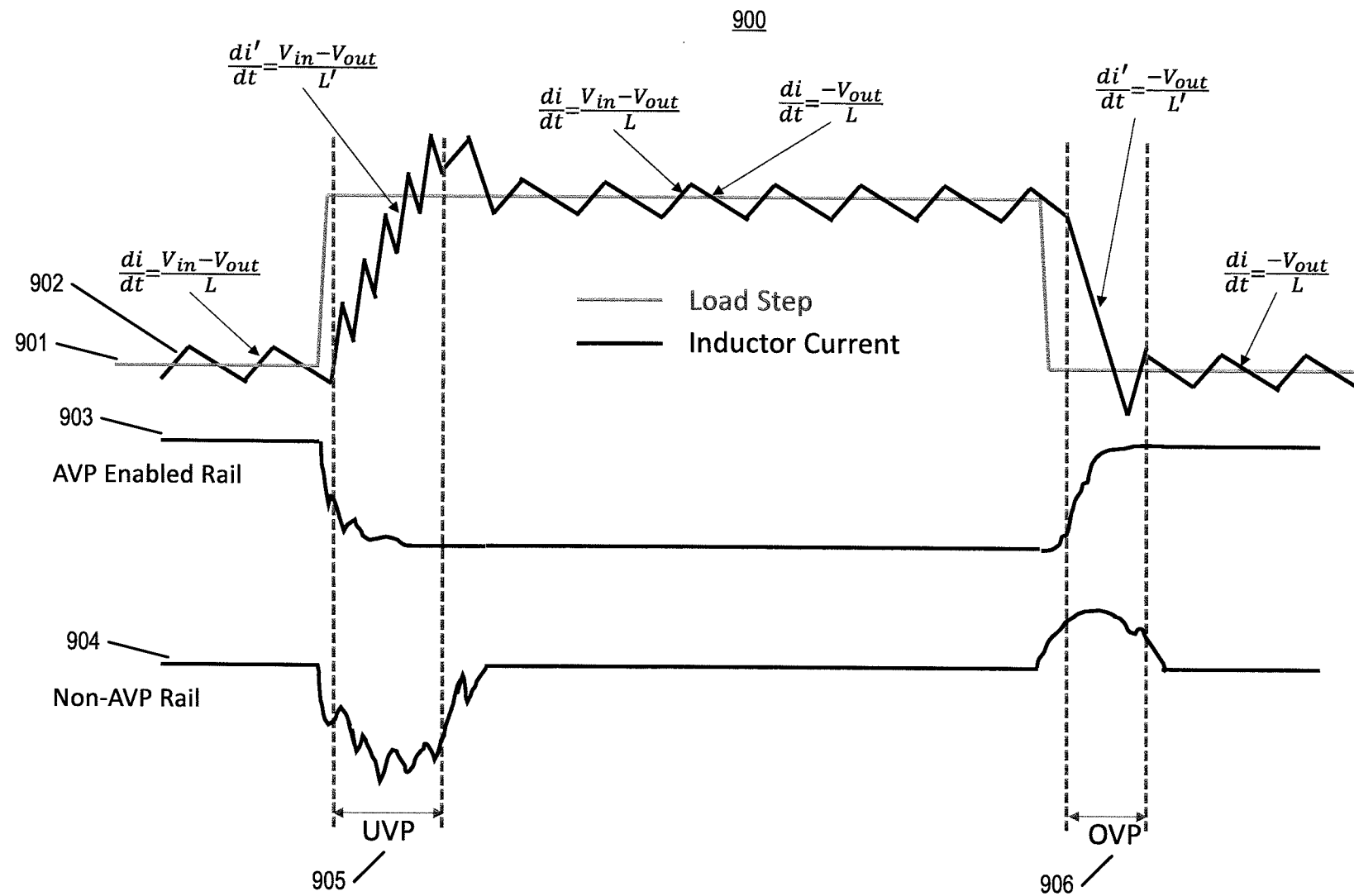


FIG. 9

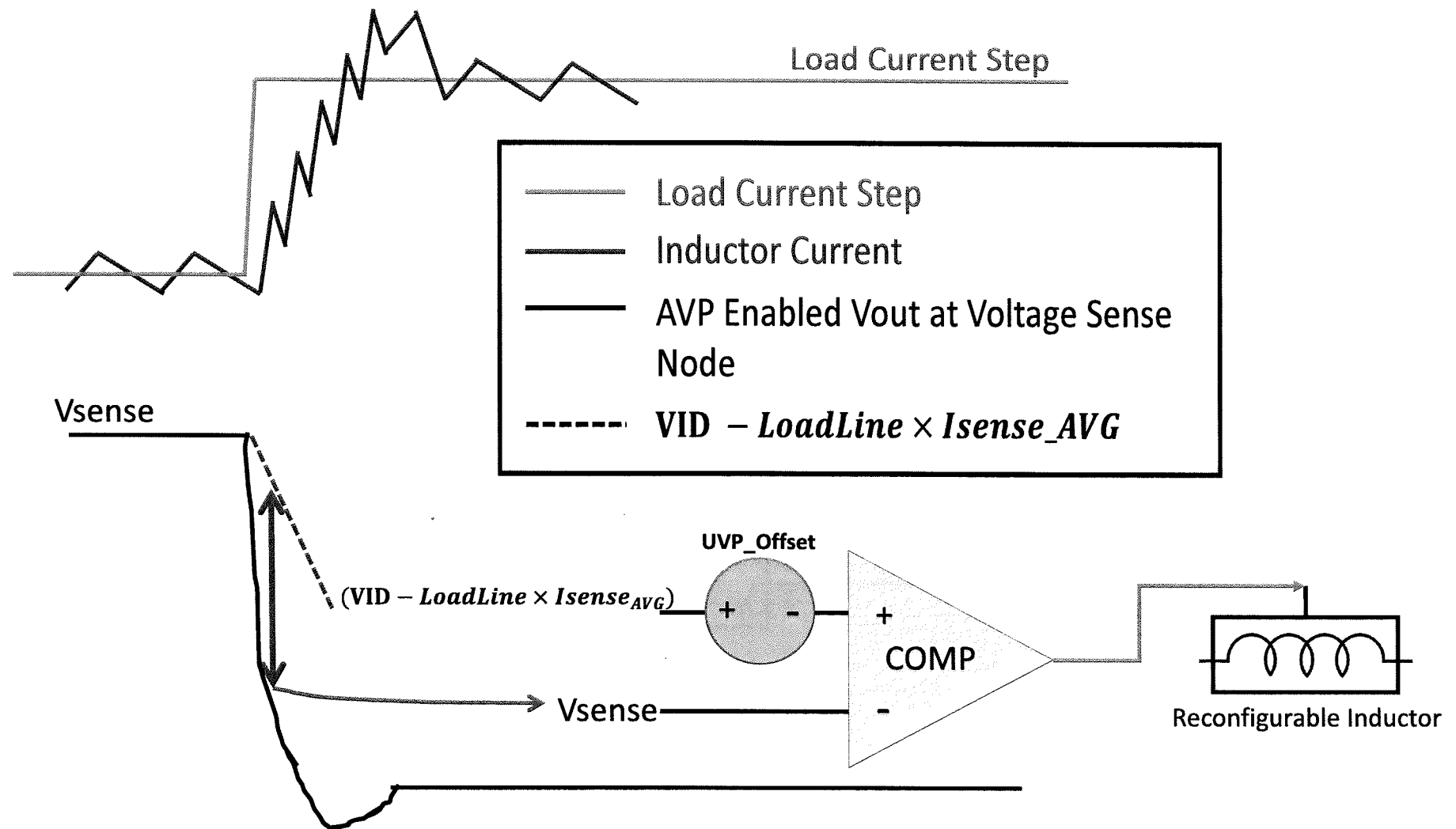
1000

FIG. 10

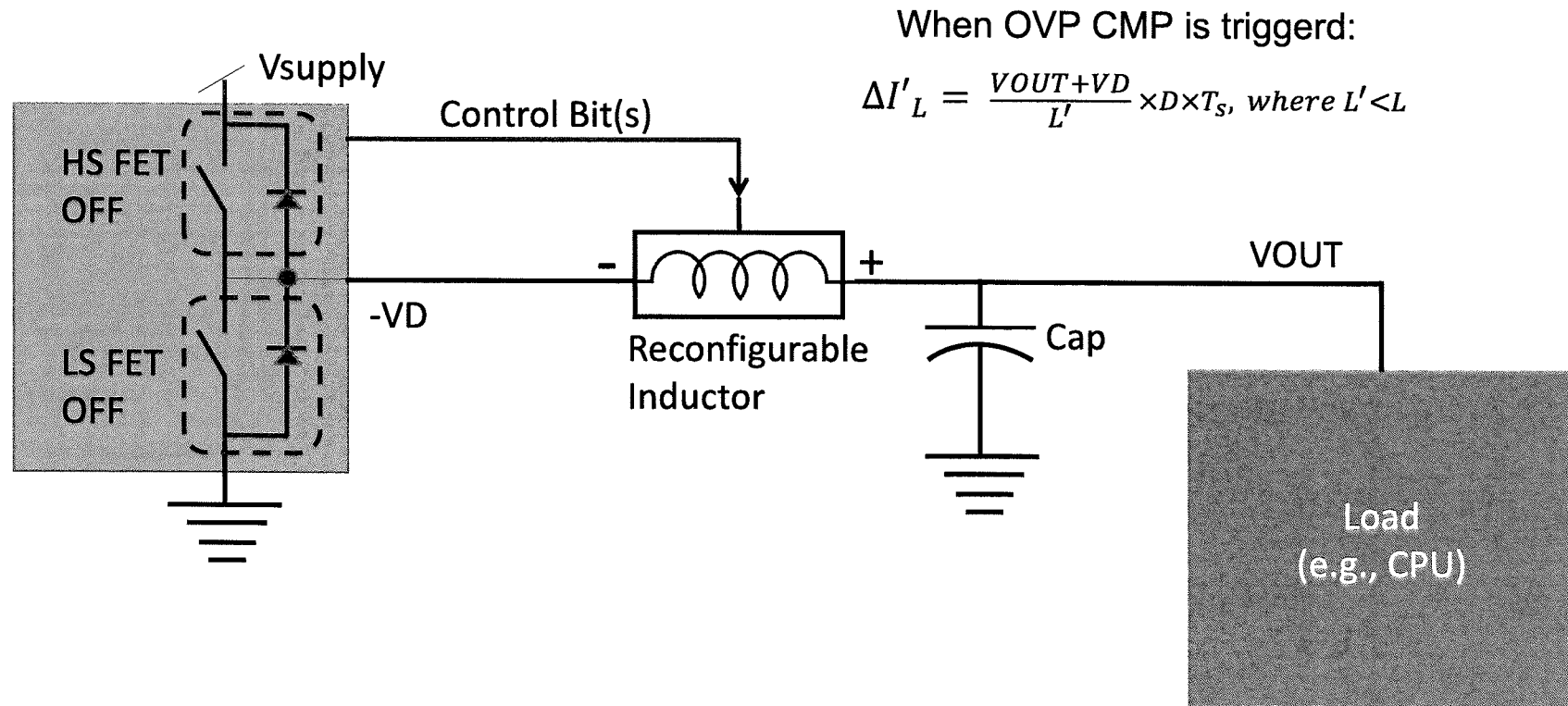


FIG. 11

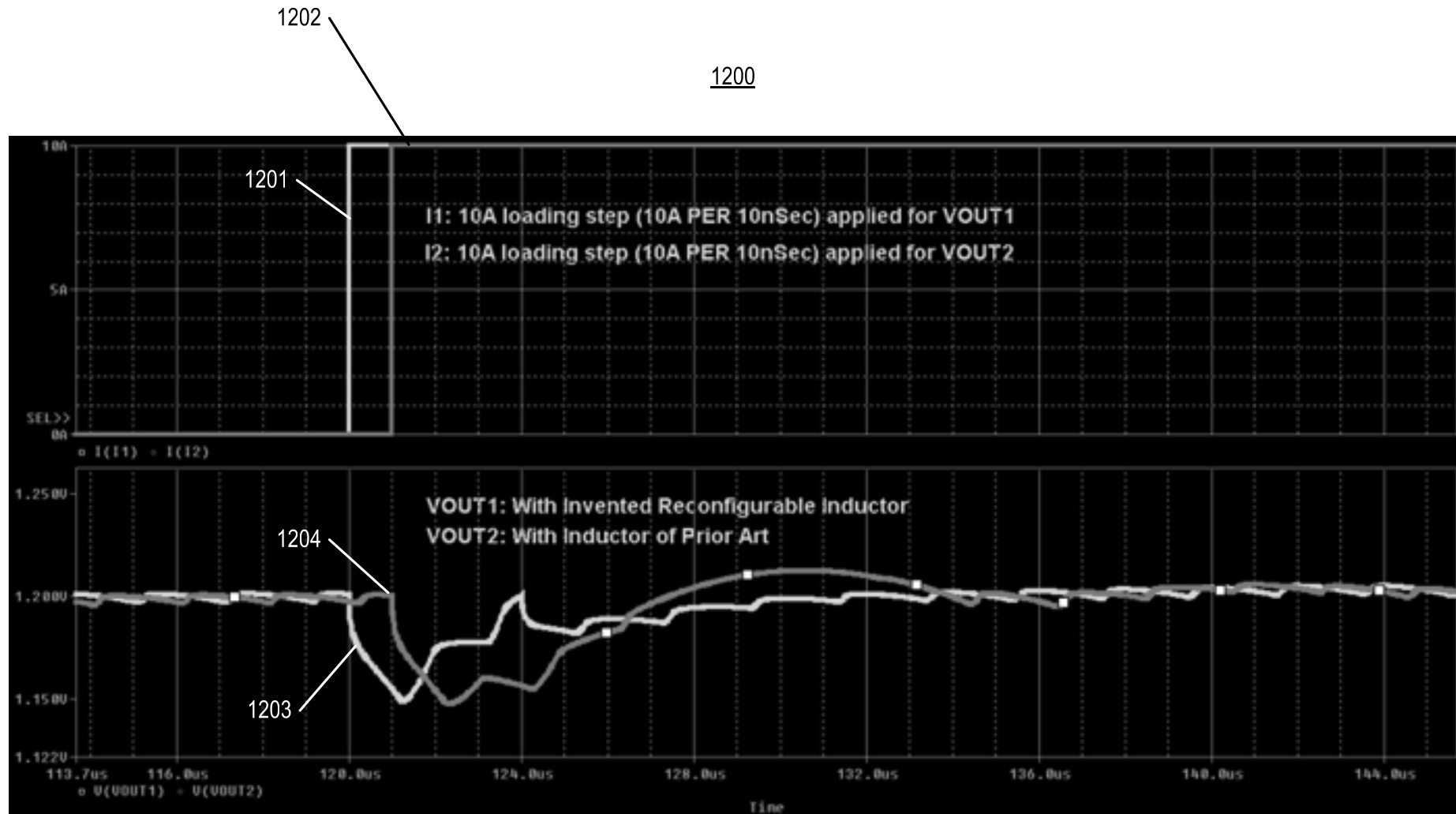


FIG. 12

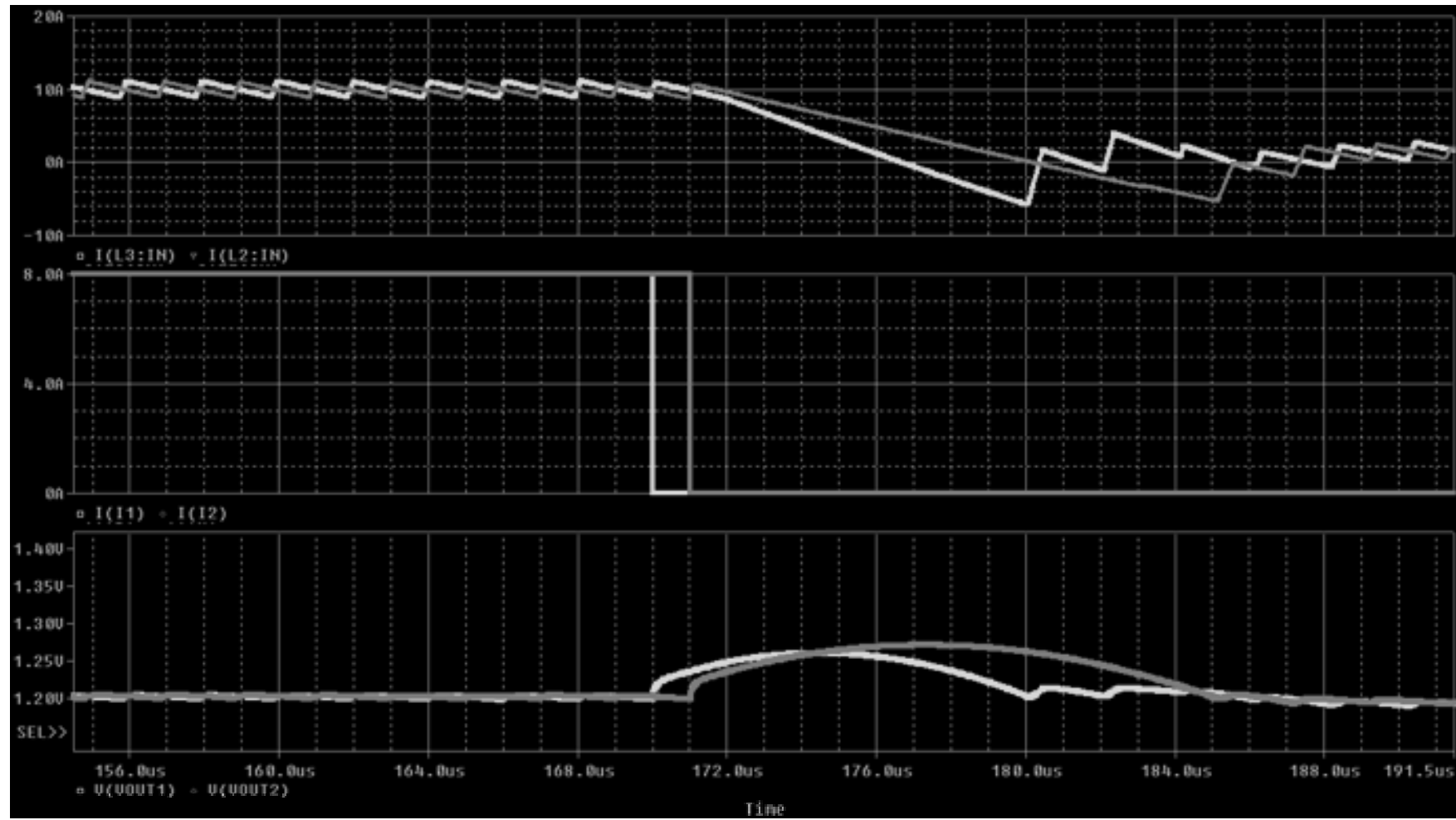


FIG. 13

1400

	1.1uH (No reconfiguration)	1.1uH to 0.7uH	1.1uH to 0.5uH	1.1uH to 0.3uH
1401 Overshoot Voltage (V)	1.2718	1.2609	1.254	1.25
1402 Overshoot Duration (uSec)	14	10	8	6

FIG. 14