



voltage alone can be measured and used for feedback to the PWM control IC. The negative output voltage will track along reasonably well, and is adequate for many applications. This adaptation significantly reduces the complexity of regulating both outputs simultaneously, which would otherwise require two separate converters and control ICs.

The circuit shown in Figure 1. develops a plus and minus 12 volt output at 80 milliamps each from a +5V input supply. Excellent regulation is obtained with identical loading on both outputs, and degrades only slightly with differential loading. A small amount of preloading can be added to improve cross-regulation for more demanding conditions. Note that both transformer primaries are electrically in a parallel configuration, and energy is stored and released from both simultaneously. This is advantageous during differential loading, as energy stored in one core can be delivered to the other transformer's secondary. The result is a significant improvement in overall and cross regulation if they have low leakage induc-

tances. Magnetic modelling [1,2] can be used to further gain familiarity with this application.

#### REFERENCES

1. DIXON, Lloyd : " Coupled Inductor Design ", UNITRODE Power Supply Design Seminar Manual SEM-900, Topic 8
2. DIXON, Lloyd : " How to Put Leakage and Wiring Inductances in the High Frequency Circuit Model ", reprinted in the Reference section of UNITRODE Power Supply Design Seminar Manual SEM-900, Topic M4

**APPENDIX** - List of some Transformer Manufacturers and Products

COILCRAFT : DLF, LAX, P104, TTDLF, TRF, and WB Series', phone # 1-800-322-2645 (U.S.A.)

COILTRONIX : CTX series of two winding coupled inductors, also the VERSAPACK series of multiple winding transformers is applicable, phone # 1-561-241-7876 (U.S.A.)

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