DTE Power over MDI: BER vs. Transformer Current

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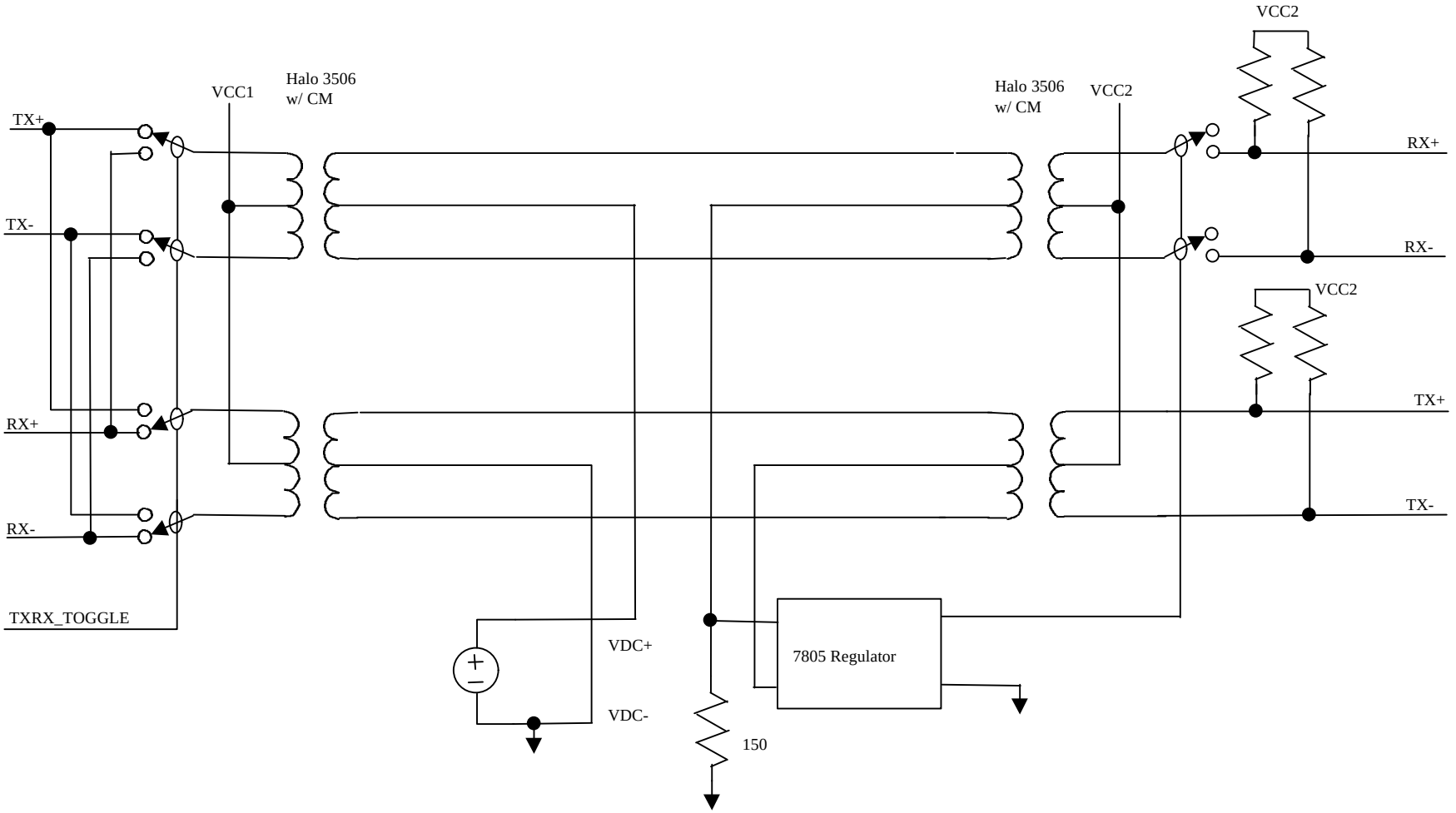
TDK SEMICONDUCTOR CORP.

Test Goal

- Demonstrate BER performance with large transformer currents
- Estimate cable resistive loss
- Show feasibility of architecture

Test Circuit



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Overview

Architecture is the same as presented by TDK Semiconductor at the November 1999 Plenary in Kauai.

Both Transceivers are powered locally, not through the power over the cable.

Common ground limits cable current to the power pair only, not the return pair.

Results

- No Cable:
  - 55V, 360ma --> 152.8 ohms
- Minimum Cable:
  - 61V, 400ma --> 152.5 ohms
    - 2 RJ45 connectors add no appreciable resistance
    - ~24W delivered to load
  - 2GB of data transmitted & received with 0 errors
- 100m Cable:
  - 61V, 390ma --> 156.5 ohms
    - 100m cable adds about 4 ohms
    - ~23W delivered to load
  - 2GB of data transmitted & received with 0 errors

Conclusions

- Existing transformers can support large currents without compromising highly attenuated signals.