Switching loss measurement for Wide-bandgap semiconductors

• Measuring switching losses under real working conditions **without** commutation loop current measurement
• This measurement method does not add parasitics to the switching cell and does not influence the switching behavior
• Principle:
  • Measuring the input power with a high class power analyzer and subtract the known losses of the inductor
  • Measuring short period of time to reduce the thermal influence (100 ms)
  • Well known air core inductor with low losses
  • Very accurate PWM Unit
  • Forced air cooling of semiconductors and inductor
• Features:
  • Separating turn-on and turn-off losses by different control modes
    • Zero Voltage switching to measure the switching-off losses
    • Hard switching mode for measuring switching-on and -off losses
  • System controlled by software
    • Software communicates with
      • Precision power meter
      • PWM signal timer
      • Oscilloscope
      • Power supply
  • High resolution control signal
    • Up to 4 gate signals
    • Pulse and dead time resolution up to 250 ps
  • Coil for measurement purpose
    • Calibrated up to 100 MHz
    • Low stray field due to toroid shape
    • Low HF losses due to litz wire
    • Pulse resistant up to 150 A because no magnetic material is used
    • Inductor losses can be determined precisely due to calculation and impedance measurement