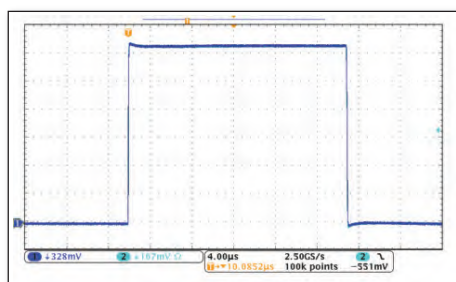


CWT Ultra-mini



The CWT Ultra-mini has an extremely thin, clip-around Rogowski coil of typically 1.6mm cross-section. Such a thin coil enables currents to be measured in the most difficult to reach parts of a power electronic converter with negligible disruption to the circuit under test.



Pulsed current:
100Apk, 21 μ s

Ch1-CWT (300A)

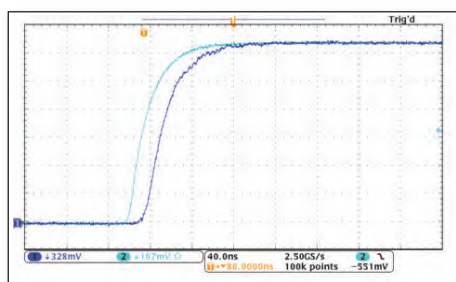
Ch2-Co-ax shunt 2GHz

Timebase 4 μ s/div

Expanded rising edge:
10 to 90% is 42ns

Predictable time delay

Timebase 40ns/div



This latest release of the CWT Ultra-mini has improved:

- high frequency (-3dB) bandwidth of 30MHz
- operating temperature range of -40°C to +125°C



CWT UM coil
through the
legs of a
TO-220 device

Applications

- Switching current waveforms in power electronic circuits, for example
 - in MOSFET or IGBT devices as small as TO-220 or TO-47
 - in bond wires in power devices
 - to measure power losses in semiconductors
 - monitoring currents in small inductors, capacitors, snubber circuits, etc
- Measuring small AC currents in the presence of large DC currents (e.g. monitoring capacitor ripple)
- Power converter development and diagnostics
- Measuring high frequency sinusoidal, pulsed or transient currents
- Measuring high order harmonics

Key features

- Expanded operating temperature range -40°C to +125°C
- Extended (-3dB) bandwidth from a few Hz to 30MHz
- Current ratings from 30Apk to 6000Apk
- Improved peak di/dt capabilities up to 70kA/ μ s
- 1.7mm (max) cross section, flexible, clip-around coil
- $\pm 6V$ into 1M Ω , and 50 Ω drive capability
- Loads the circuit under test by only a few pF
- Positional accuracy typically $\pm 2\%$



| Model | Sensitivity (mV/A) | Peak current (A) | Noise maximum (mVp-p) | Droop (%/ms) | LF (-3dB) bandwidth (Hz) | Peak di/dt (kA/μs) | HF (-3dB) bandwidth (MHz) |
|--------|--------------------|------------------|-----------------------|--------------|--------------------------|--------------------|---------------------------|
| CWT015 | 200 | 30 | 20 | 80 | 116 | 2.0 | 30 |
| CWT03 | 100 | 60 | 20 | 65 | 67 | 4.0 | 30 |
| CWT06 | 50 | 120 | 15 | 35 | 34 | 8.0 | 30 |
| CWT1 | 20 | 300 | 15 | 9.0 | 9.2 | 20 | 30 |
| CWT3 | 10 | 600 | 10 | 6.0 | 6.2 | 40 | 30 |
| CWT6 | 5.0 | 1200 | 10 | 3.0 | 3.2 | 70 | 30 |
| CWT15 | 2.0 | 3000 | 5.0 | 2.0 | 2.0 | 70 | 30 |
| CWT30 | 1.0 | 6000 | 5.0 | 2.0 | 2.0 | 70 | 30 |

Output

±6V peak corresponding to 'Peak Current' into $\geq 100k\Omega$ (e.g. DC 1M Ω oscilloscope)
±2V peak, Sensitivity is half the nominal value into 50 Ω

Accuracy

Variation with conductor position in the coil typically $\pm 2\%$ of reading (for a 2mm² conductor)
Linearity (with current magnitude) 0.05% of reading

Calibration

Calibrated to $\pm 0.2\%$ reading with conductor central in the coil loop

DC offset

±3mV maximum at 25°C

Temperature

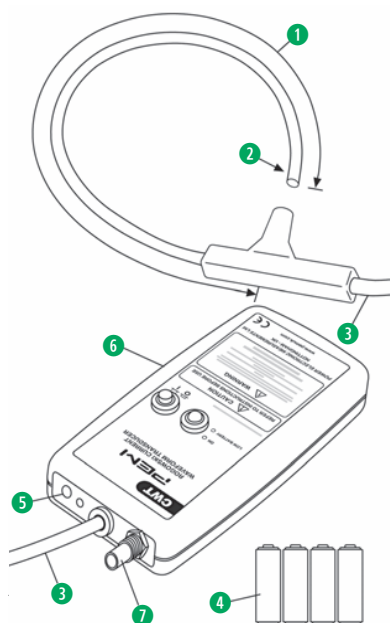
Coil and cable -40°C to +125°C. Integrator 0°C to 40°C

di/dt ratings

These are 'Absolute maximum di/dt ratings' and values must not be exceeded:
Absolute max. peak di/dt: 70kA/μs
Absolute max. rms di/dt: 1.0kA/μs (1.2kA/μs for models CWT1 and above)

Coil voltage

1.2kVpeak. Safe peak working voltage to earth. Rating established by a 3kVrms, 50Hz, 60sec flash test



Key features

- Coil length (circumference) 80mm - longer coils available on request.
- Coil cross-section (thickness) 1.7mm (max).
- Cable length 1m (connecting cable coil to integrator) - longer cables available on request.
- Battery options
B-Standard: 4 x AA 1.5V alkaline batteries. Lifetime typically 25 hours.
R-Rechargeable: 4 x AA 1.2V NiMH batteries. Lifetime typically 10 hours.
External adaptor recharges batteries and powers unit.
- Socket for external power adaptor (adaptor available from PEM as an option)
- Electronics enclosure. Dimensions H=183mm, W=93mm, D=32mm.
- Output BNC socket. Supplied with 0.5m BNC:BNC cable.

More detailed technical notes for this product are available at www.pemuk.com



Generating the part code

E.g. CWT

| Range | | Model | | Power option | | Cable length (m) | | Coil length (mm) |
|-------|---|-------|---|--------------|---|------------------|---|------------------|
| UM | / | 015 | / | R | / | 1 | / | 80 |

CWT Ultra-mini, peak current 30A, rechargeable battery, 1m cable, 80mm coil.

If you have any queries regarding the CWT or require specifications outside our standard ranges please contact us.

