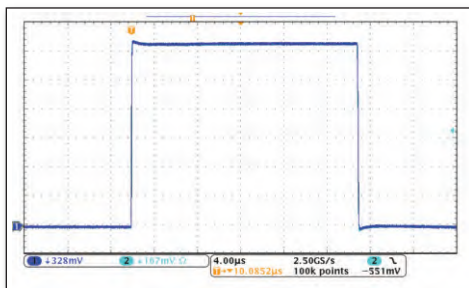


# CWT Ultra-mini



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, 21µs**

**Ch1-CWT (300A)**

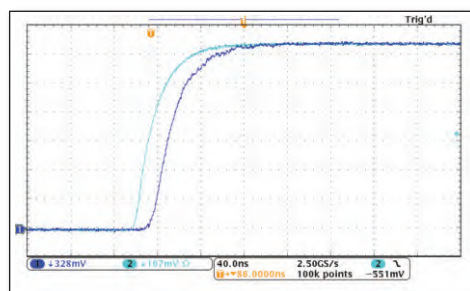
**Ch2-Co-ax shunt 2GHz**

Timebase 4µs/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/µs
- 1.7mm (max) cross section, flexible, clip-around coil
- ±6V into 1MΩ, and 50Ω drive capability
- Loads the circuit under test by only a few pF
- Positional accuracy typically ±2%

**PENI**

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| 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  $1M\Omega$  oscilloscope)  
 $\pm 2V$  peak, Sensitivity is half the nominal value into  $50\Omega$

## Accuracy

Variation with conductor position in the coil typically  $\pm 2\%$  of reading (for a  $2mm^2$  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

$\pm 3mV$  maximum at  $25^\circ C$

## Temperature

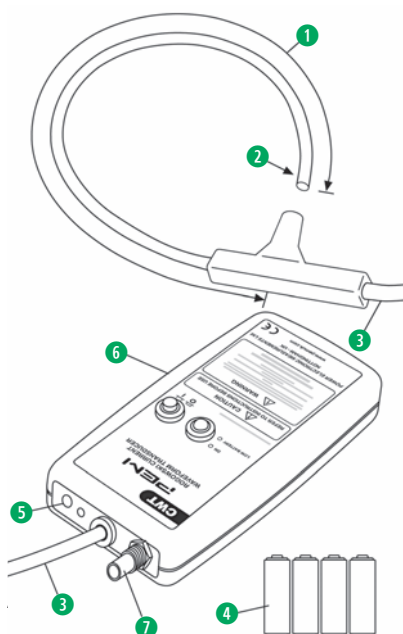
Coil and cable  $-40^\circ C$  to  $+125^\circ C$ . Integrator  $0^\circ C$  to  $40^\circ C$

## di/dt ratings

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

## Coil voltage

$1.2kV_{peak}$ . Safe peak working voltage to earth. Rating established by a  $3kV_{rms}$ , 50Hz, 60sec flash test



## Key features

- 1 Coil length (circumference) 80mm - longer coils available on request.
- 2 Coil cross-section (thickness) 1.7mm (max).
- 3 Cable length 1m (connecting cable coil to integrator) - longer cables available on request.
- 4 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.
- 5 Socket for external power adaptor (adaptor available from PEM as an option)
- 6 Electronics enclosure. Dimensions H=183mm, W=93mm, D=32mm.
- 7 Output BNC socket. Supplied with 0.5m BNC:BNC cable.

More detailed technical notes for this product are available at [www.utestek.com](http://www.utestek.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.

[www.utestek.com](http://www.utestek.com)

May 2018

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