TELEDYNE TEST TOOLS
Everywhereyoulook™

T3RC Current Probes Data Sheet

Rogowski Current Probes

Broad Measurement Range

Current: 6000 Amps

Bandwidth LF: < 1Hz

Bandwidth HF: 30 MHz





Tools for Improved Debugging

• 5 Models to choose from.	✓ More choice for better application coverage.
• Models with Frequency coverage from <1 Hz to 30 MHz.	✓ Excellent accuracy regardless of the waveform frequency and shape.
• Models with Maximum current measurements from 300 Amps to 6000 Amps.	✓ Coverage for a wide range of applications.
• 4 different physical coil sizes.	✓ Probe everything from the leg of a TO220 device to a high power bus bar.
• Near zero insertion impedance.	✓ Minimum effect on the circuit under test.
• Simple to use with flexible probe coils.	✓ Easy to insert into difficult to reach parts of the circuit.
• Use with batteries or plug in power adaptor (supplied).	✓ Use plug in power adaptor when on the bench or batteries when out in the field.

Key Characteristics

T3RC0300-UM	300 Amps	Bandwidth: <10 Hz to 30 MHz
T3RC0600-HF	600 Amps	Bandwidth : 12 Hz to 30 MHz
T3RC3000-HF	3000 Amps	Bandwidth: 3 Hz to 23 MHz
T3RC3000-LF	3000 Amps	Bandwidth: <0.2 Hz to 6.5 MHz
T3RC6000-LF	6000 Amps	Bandwidth: <0.1 Hz to 6.5 MHz

PRODUCT OVERVIEW

Teledyne Test Tools Rogowski Current probes offer a broad range of products covering a wide frequency span and current measurement ranges for maximum application coverage whilst being easy to use in difficult to reach parts of the circuit.

The flexibility of the probe sense coil means that measurements can often be made without modification to the circuit under test, giving more accurate results, whilst remaining isolated, with very low insertion load of only a few pH.

The inclusion of both battery power and wall plug operation means that the Teledyne Test Tools Rogowski Current Probes are as happy working out in the field as they are working on the bench.

The T3RC0300-UM features our smallest cross section sense coil at only 1.7mm. This ideally lends itself to embedded power applications where it's necessary to probe around the leg of power components such as inductors, capacitors or small switching devices as small as a TO220 MOSFET.

The T3RC0600-HF and T3RC3000-HF are general purpose Rogowski probes covering applications up to 600 Amps and 3000 Amps respectively. With extended high frequency coverage, 5 kV peak insulation and wide operating temperature range from -40C to +125C, makes them ideally suited to both general purpose as well as wide temperature environments.

The T3RC3000-LF and T3RC6000-LF Rogowski probes offer an extended low frequency performance down to less than 1 Hz. The low frequency performance means that the maximum droop on low frequency pulses is typically 0.1% / ms or less, whilst offering our highest level of peak insulation of 10 kV and wide operating temperature range of -20C to +100C.

Main Features

- 5 different probes covering a wide range of applications.
- Maximum current measurement coverage up to 6000 Amps.
- Maximum voltage insulation up to 10 kV peak.
- Connect to a wall plug or use with batteries.
- Low loading of the circuit under test.
- Wide coil operating temperature from -40 C to +125 C on UM and HF probes. -20 C to +100 C for LF probes.
- Use without modification to the DUT.

Oscilloscope Compatibility

The Teledyne Test Tools Rogowski probes are compatible with all of the Teledyne Test Tools Oscilloscopes as well as the Teledyne LeCroy Oscilloscopes.

The Teledyne Test Tools Rogowski probes have a simple connection requirement of a BNC input with 1 MOhm impedance. These probes will therefore work with the majority of oscilloscopes in the market.

The probes can be made even more useful by using your Oscilloscope's Attenuation function to re-scale the Channel vertical range.

Application Fields

- Component level design and development such as semiconductor switching waveforms in MOSFET or IGBT, also capacitor and inductor devices.
- System level development such as motor drives in hybrid and fully electric transportation systems (automotive, rail, sea, etc)
- Power converter design and development for wind farms and other renewable energy.
- Research and Development.
- Long term system monitoring and maintenance.



SPECIFICATIONS

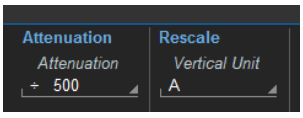
Physical Specifications

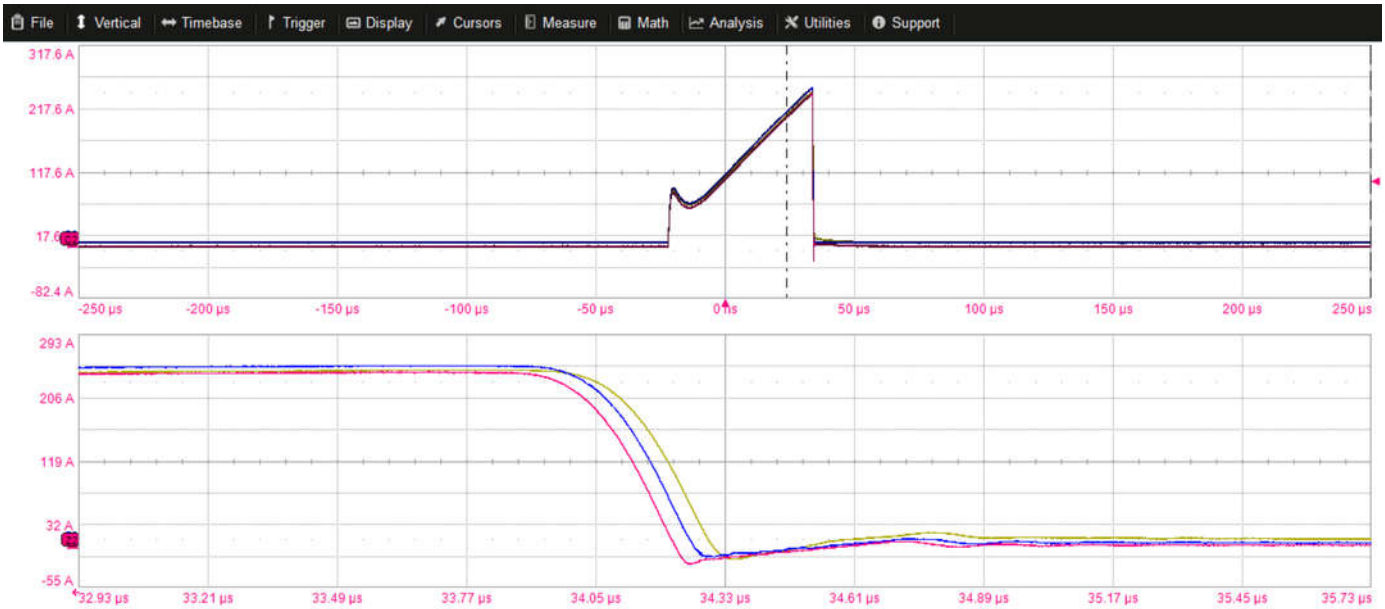
Model	Coil Circumference	Cable Length (coil to electronics)	Peak Coil Insulation Voltage	Coil Thickness
T3RC0300-UM	80 mm	1 m	1.2 kV	1.7 mm
T3RC0600-HF	100 mm	1 m	5 kV	4.5 mm
T3RC3000-HF	200 mm	4 m	5 kV	4.5 mm
T3RC3000-LF	300 mm	4 m	10 kV	8.5 mm
T3RC6000-LF	300 mm	4 m	10 kV	8.5 mm

Electrical Specifications

Model	Sensitivity	Peak Current	Max Noise	Droop (%/ms)	LF (-3dB) Bandwidth	HF (-3dB) Bandwidth	Peak di/dt	Division Ratio
T3RC0300-UM	20 mV/A	300 A	2.5 mV rms	9	9.2 Hz	30 MHz	20 kA/us	50
T3RC0600-HF	10 mV/A	600 A	1.7 mV rms	11	12 Hz	30 MHz	40 kA/us	100
T3RC3000-HF	2 mV/A	3000 A	1.4 mV rms	2.8	3 Hz	23 MHz	80 kA/us	500
T3RC3000-LF	2 mV/A	3000 A	2.5 mV rms	0.1	0.11 Hz	6.5 MHz	11 kA/us	500
T3RC6000-LF	1 mV/A	6000 A	2.5 mV rms	0.05	0.055 Hz	6.5 MHz	11 kA/us	1000

Notes: The Division Ratio value above, can be used in your Oscilloscope's input channel settings to adjust the Oscilloscope's vertical scaling to accurately reflect the values of the measurement being made. The setting is sometimes referred to as 'Attenuation'. Some Oscilloscopes allow the vertical scale units to be changed. This should be set to A to reflect an Amps measurement.





Comparison of three Teledyne Test Tools Rogowski probes. The probes have been offset to enable comparison.

SPECIFICATIONS

Electrical Specifications

Model	T3RC0300-UM	T3RC0600-HF T3RC3000-HF	T3RC3000-LF T3RC6000-LF
Maximum di/dt ratings: peak rms	70kA/us 1.2kA/us	100kA/us 1.2kA/us	11kA/us 0.8kA/us
Calibration	Calibrated to ± 0.2% reading with conductor central in the coil loop		
Accuracy: Variation with conductor position in the coil	± 2%	± 2%	± 1%
Accuracy: Linearity of current magnitude	0.05% or Reading	0.05% of Reading	0.05% of Reading
Temperature: Coil and Cable	-40C to +125C	-40C to +125C	-20C to +100C
Temperature: Integrator	0C to +40C	0C to +40C	0C to +40C
Probe Coil Size	 80mm	 T3RC0600-HF: 100mm T3RC3000-HF: 200mm	 300mm

Ordering Information

Ordering Information

Model Number	Measurement Current	Bandwidth
T3RC0300-UM	Up to 300 Amps	9.2 Hz to 30 MHz
T3RC0600-HF	Up to 600 Amps	12 Hz to 30 MHz
T3RC3000-HF	Up to 3000 Amps	3 Hz to 23 MHz
T3RC3000-LF	Up to 3000 Amps	0.11 Hz to 6.5 MHz
T3RC6000-LF	Up to 6000 Amps	0.055 Hz to 6.5 MHz

All probes come complete with a set of batteries, a power line adapter, a BNC cable and a storage box.

The probe and it's parts are covered by a 1 year return to Teledyne LeCroy warranty.

ABOUT TELEDYNE TEST TOOLS

TELEDYNE TEST TOOLS
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Company Profile

Teledyne LeCroy is a leading provider of oscilloscopes, protocol analyzers and related test and measurement solutions that enable companies across a wide range of industries to design and test electronic devices of all types. Since our founding in 1964, we have focused on creating products that improve productivity by helping engineers resolve design issues faster and more effectively. Oscilloscopes are tools used by designers and engineers to measure and analyze complex electronic signals in order to develop high-performance systems and to validate electronic designs in order to improve time to market.

The Teledyne Test Tools brand extends the Teledyne LeCroy product portfolio with a comprehensive range of test equipment solutions. This new range of products delivers a broad range of quality test solutions that enable engineers to rapidly validate product and design and reduce time-to-market. Designers, engineers and educators rely on Teledyne Test Tools solutions to meet their most challenging needs for testing, education and electronics validation.

Location and Facilities

Headquartered in Chestnut Ridge, New York, Teledyne Test Tools and Teledyne LeCroy has sales, service and development subsidiaries in the US and throughout Europe and Asia. Teledyne Test Tools and Teledyne LeCroy products are employed across a wide variety of industries, including semiconductor, computer, consumer electronics, education, military/aerospace, automotive/industrial, and telecommunications.

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T3 stands for Teledyne Test Tools.

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