Smart Tweezers™

LCR Meter and Component Identifier
In a Pair of Tweezers

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An Efficient and Convenient Way to Test SMD Components

- Built-in high-precision LCR probe
- Convenient one-hand operation
- Ideal for Surface Mount Devices
- Automated component identification
- Automated test range selection
- Manual C, R, L, Z and ESR modes
- Adjustable test signal levels
- Precise tips for small-size devices
- Diode Polarity/Short Testing
- Secondary D, Q and ESR parameters
- Portable and ergonomic design
- Built-in Li-Ion battery

Smart Tweezers™ greatly simplifies testing and troubleshooting process.

Resistance, capacitance and inductancecan be measured with automatic selectionof the test parameters and range.

Smart Tweezers™ is a handheld LCR meter of a new concept. It providesa perfect solution for testing and identification of Surface MountDevices as well as troubleshooting of complex electronic systems.

Its unique mechanical and electronic design combines a pair of precisegold-plated tweezers and a digital LCR meter in compact, lightweight,battery powered instrument. The probe is able to measure resistance,capacitance, inductance with high accuracy and automatic componentidentification

Testing Surface Mount Devices

Surface mount devices are usually tiny and without wire leads, making itmore difficult to test and identify SMD than conventional components. Smart Tweezers™ gives users an easy way to sort and evaluate loosecomponents and to perform on-board measurements and debugging. Precise gold-plated tweezers are able pick and reliably contact even thesmallest SMD components and take measurements from alreadymounted devices. The probe can also be used to test conventional componentswith wire leads too short to insert into the test terminals.

Automated Measurements

Do measurements faster with Smart Tweezers™ using the automatic component identificationfunction eliminating unnecessary trial and error time. Smart Tweezers™ automatically specifies L, C, or R with parallel and series mode and selects aproper measurement range and test frequency for high accuracy measurements. The unit displayscomponent type and more detailed component analysis such as Z and ESR.

Lightweight and Ergonomic

The integrated measurement head allow the operator to use one hand and focus attentionon the tested component and on the job at hand. Sorting, testing and troubleshootingbecome more efficient and cost effective.

4-wire shielded Smart Tweezers™ handles assure low capacitance and resistance offsetduring measurements.

Wide Spectrum of Additional Functions

- Smart Tweezers™ LCR meter allows you to test various component types, including secondary components of Dissipation Factor (D), Quality Factor (Q). This handheld also includes other functions that result in a more detailed component analysis.
- The built-in Equivalent Series Resistance (ESR) mode helps you better understand the inherent resistance - behavior typically found in capacitors across selected frequencies.
- In its DIODE mode Smart Tweezers™ tests diode polarity and indicates if it is short.
- Smart Tweezers™ has a continuity detector. Variable beeper sounds for resistance reading below set thresholds. Additionally, this function helps to locate shorted conductors (e.g. on a PCB).
- In manual modes Smart Tweezers™ measures a specific circuit parameter — L, C, R, Z or ESR. Manual modes also improves component type identification for in-circuit tests.
- Variable test signal output from 0.25 to 1.0Vrms allows to improve test precision in different situation e.g. for in-circuit measurement and loose leaded ceramic capacitors.
- Visible and audible tolerance mode allows to perform component sorting.
- Math null function allows to store a pre-measured offset and improve measurement precision.

Technical Specifications

AC test mode Test frequency:	1 kHz, 10 kHz, 120Hz,100 Hz
Test frequency accuracy:	50 PPM (0.005%)
Test signal level:	0.25/0.5/1.0 +/- 5% Vrms Sine wave
Source impedance:	62.5Ω/1kΩ/16kΩ +/- 1%

Measurement Ranges

Resistance R:	0.05 Ω to 9.9 MΩ
Capacitance C:	0.5 pF to 4999 µF
Inductance L:	0.5 uH to 999 mH
Quality factor Q:	0.001 to 1000
Dissipation factor D:	0.001 to 1000

Physical Specifications

Size	14.0 x 2.5 x 3.0 cm (3.94 x 0.9 x 1.5 in)
Weight	53 grams (0.11 lb)
Operating temperature:	0°C to 50°C
Battery Type:	3.7V LiPO rechargeable 150mAH
Battery Life (continuous)	80 hours, 2 hours charging cycle

Accuracy Specifications

Resistance, impedance.

Range	Resolution	100 Hz	1 kHz	10kHz
1 R	0.001R	0.7% + 50	0.7% + 50	0.7% + 50
10 R	0.01R	0.7% + 8	0.7% + 8	0.7% + 8
100 R	0.01R	0.2% + 3	0.2% + 3	0.2% + 3
1000	0.1R	0.2% + 3	0.2% + 3	0.2% + 3
10 kO	0.001K	0.2% + 3	0.2% + 3	0.2% + 3
100 kO	0.01K	0.5% + 5	0.5% + 5	0.5% + 5
1000 kO	0.1K	0.5% + 5	0.5% + 5	0.5% + 5
10 MO	0.001K	2.0% + 8	2.0% + 8	5.0% + 8

Accuracy for the ranges 1 R ~ 100 R is specified after subtract of the offset resistance.

Capacitance

Range	Resolution	100 Hz	120 Hz	1 kHz	10 kHz
10 mF	0.001 mF	2.0% + 8	2.0% + 8	NA	NA
1000 µF	0.1 µF	0.5% + 5	0.5% + 5	NA	NA
100 µF	0.01 µF	0.3% + 3	0.3% + 3	0.5% + 5	NA
10 µF	0.001 µF	0.2% + 3	0.2% + 3	0.2% + 3	0.5% + 5
1 µF	0.1 nF	0.2% + 3	0.2% + 3	0.2% + 3	0.2% + 3
100 nF	0.01 nF	0.2% + 3	0.2% + 3	0.2% + 3	0.5% + 3
10 nF	0.001 nF	0.5% + 5	0.5% + 5	0.2% + 3	0.5% + 3
1000 pF1	0.1 pF	NA	NA	0.5% + 5	0.5% + 3
100 pF1	0.01 pF	NA	NA	0.5% + 10	0.8% + 20
10 pF1	0.001 pF	NA	NA	NA	1.0% + 50

Accuracy for the ranges of 10 pF~1000 pF iS specified after subtract of the stray capacitances for test leads.

Inductance

Range	Resolution	100 Hz	1 kHz	10 kHz
10 µH	0.001 µH	NA	NA	1.0% + 5
100 µH	0.01µH	NA	1.0% + 5	0.7% + 3
1 mH	0.1 µH	0.7% + 10	0.5% + 3	0.5% + 3
10 mH	0.001 mH	0.5% + 3	0.2% + 3	0.5% + 3
100 mH	0.01 mH	0.5% + 3	0.2% + 3	NA
1 H	0.1 mH	0.2% + 3	NA	NA

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