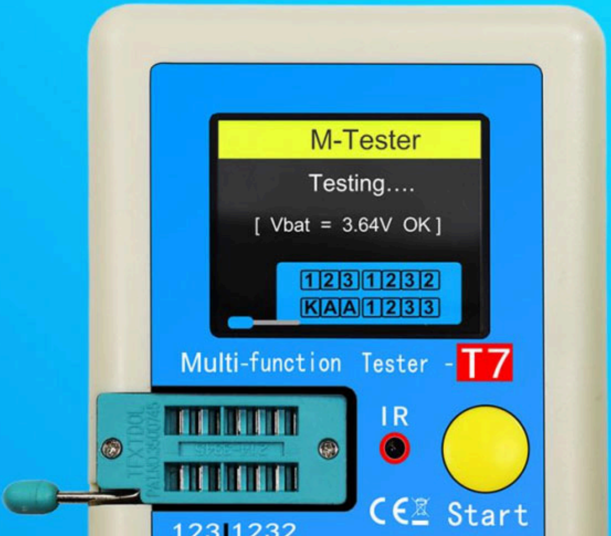
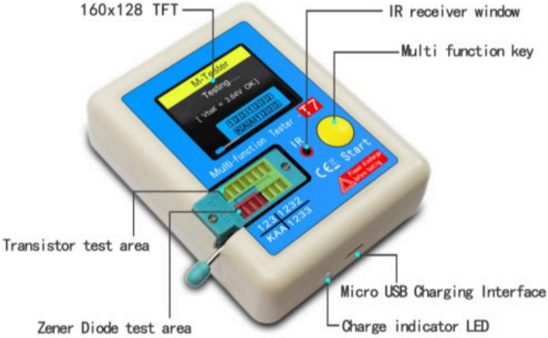
LCR-T7

Multi-function Tester



Features



Performance parameters

Component Type	Range	Parameter Description
BJT	-	hFE(DC Current Gain),Ube(Base-Emitter Voltage),Ic(Collector Current), Iceo(Collector Cut-off Current(IB=0)), Ices(Collector short Current), Uf(Forward Voltage of protecting diode)
diode	forward voltage <4.50V	Forward voltage drop, junction capacitance, reverse leakage current Ir
double diode		forward voltage
Zener diode	0.01-4.50V (Transistor Test Area)	Forward voltage drop, reverse breakdown voltage
	0.01-20V (Zener diode test area)	reverse breakdown voltage

MOSFET	JFET	Cg(Gate Capacitance), Id(Drain Current)at Vgs(Gate to Source Threshold Voltag),UfForw Voltage of protecting diode)
	IGBT	Drain current Id under Vgs, protection diode forward voltage drop Uf
	MOSFET	Turn-on voltage Vt, gate capacitance Cg, drain resistance Rds, protection diode forward voltage drop Uf
Thyristor	Gate trigger current <6mA	gate turn-on voltage
Triac		
capacitor	25pF-100mF	Capacitance Value, Equivalent Series Resistance ESR, Vloss
Resistor	0.01-50MΩ	resistance
Inductor	0.01mH-20H	Inductance, DC Resistance
Battery	0.1-4.5V	Voltage value, battery polarity

Attention

Transistor test area (capacitors, resistors, diodes, triodes, MOS, SCRs, IGBTs)

KAA test area (Test higher than 5V Zener diode test area)

(Note: capacitors please do not put here to test) The output voltage of KAA area is 20V, if the capacitor is accidentally put here, when you take it out, you must discharge the capacitor first! Only after discharging can you put it into the transistor test area! (If you put the capacitor into the KAA area by mistake and put it into the transistor test area immediately, the instrument will be damaged immediately, lightly, the test area pins will be damaged, and the battery will be displayed when you turn on the machine to test any element, heavily, the machine will shut down immediately, and then it will not start even if you press TESTagain)

The instrument is simple to use: If the test capacitor, note that you must first discharge the capacitor (discharge is a short circuit capacitor two feet) Put the components into the transistor test area (not divided into feet, will automatically identify), press the test key screen automatically display the measured component parameters and feet

The instrument is equipped with three lines, in the test capacitor as far as possible directly into the test area, the test is more accurate

Can not be put into the test area of the meta device can be used to test the line, the use of two lines on the insertion of two lines, the useless line (please do not plug up) will affect the test results

Note: The instrument is active output, please do not use the test line to test the charged circuit board, easy to damage the instrument, the main performance is not to turn on

Warning: **Components on energized circuit boards cannot be tested and will damage the instrument.**

Warning: **Capacitors need to be discharged and then measured! Otherwise the instrument will definitely be damaged**

Transistor tester

Automatic detection of NPN and PNP bipolar
transistors.N-channel and P-chmnnel
MOSFETs,JFETs diodes(including double Diodes)
N.and P-IGBTS, resisiors, Inductors, capacitors, thyristors,triac
and battery (0 .1-4.50V)
Automatie detection of zener diode (0.01-20v)
Self test with automatic calibration

IR decoder

Support Hitachi IR coding
- IR waveform display

Other

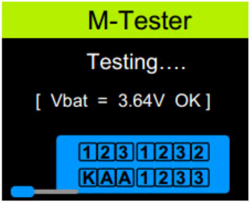
Measurement results using TFT graphic display(160x128)
Auto Power Off(Timeout Settable)
Built-in rechargeable Li-ion Battery
Li-ion Battery voltage detection - 160x128 TFT display

Warning: Built-in Li-ion Battery, it is strictly prohibited the tester immersed in water, or near a heat source!

Warning: For your personal safety, please strictly comply with the use of Li-ion Battery specifications and precautions!

Power on

In the power off state, short press the multifunction key, the tester is turned on and automatically measured.



M-Tester

Testing….

[Vbat = 3.64V OK]

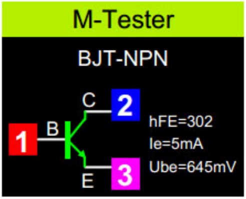
Power on & measurement interface

Detect transistor

In the power off state or the test is completed, put the test element into the transistor test area of test seat, and press the locking handle, short press the multifunction key, the tester automatically measure, graphical display of measurement results when testing is complete.

Warning: Always be sure to DISCHARGE capacitors before connecting them to the tester! The tester may be damaged before you have switched it on!

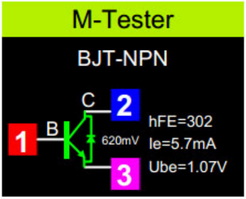
Warning: We do not recommend using the tester to measure the battery! The battery voltage must be less than 4.5V, otherwise the tester may be damaged!



M-Tester

BJT-NPN

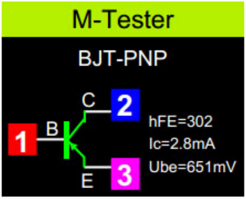
hFE=302
Ie=5mA
Ube=645mV



M-Tester

BJT-NPN

hFE=302
Ie=5.7mA
Ube=1.07V

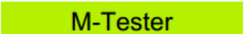


M-Tester

BJT-PNP

hFE=302
Ic=2.8mA
Ube=651mV

M-Tester



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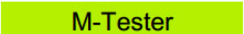

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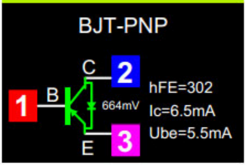
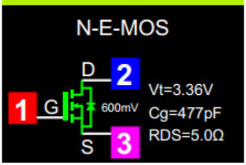
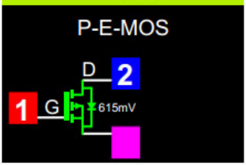
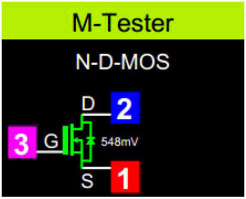

BJT-PNP

hFE=302
Ic=6.5mA
Ube=5.5mA

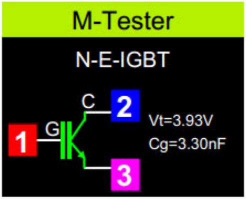

N-E-MOS

Vt=3.36V
Cg=477pF
RDS=5.0Ω


P-E-MOS

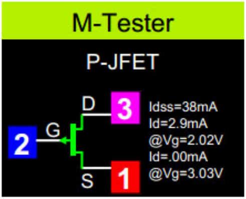

M-Tester

N-D-MOS


M-Tester

N-E-IGBT

Vt=3.93V
Cg=3.30nF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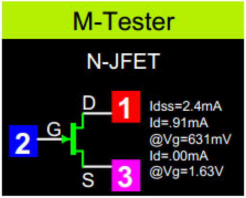
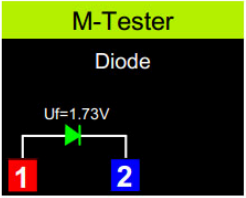
P-JFET

Idss=38mA
Id=2.9mA
@Vg=2.02V
Id=.00mA
@Vg=3.03V


M-Tester

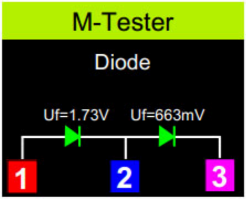
N-JFET

Idss=2.4mA
Id=.91mA
@Vg=631mV
Id=.00mA
@Vg=1.63V


M-Tester

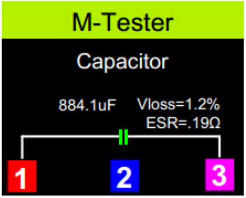
Diode

Uf=1.73V


M-Tester

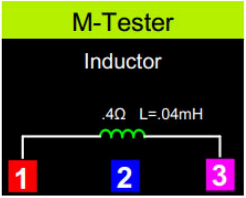
Diode

Uf=1.73V Uf=663mV


M-Tester

Capacitor

884.1uF Vloss=1.2%
ESR=.19Ω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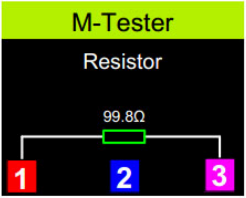
Inductor

.4Ω L=.04mH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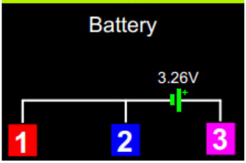
Resistor

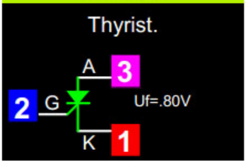
99.8Ω

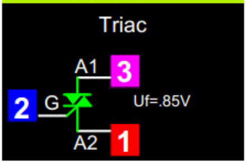
M-Tester

M-Tester

M-Tester

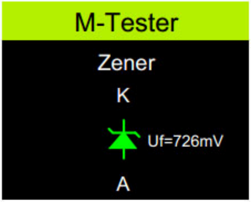






Detect Zener Diode

When the device is turned off or the test is completed, put the Zener diode into the Zener diode test area, press the locking handle, and briefly press the multi-function button.

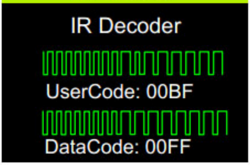


Note: Do not put components in the Transistor test area, otherwise the Zener diode cannot be tested!

IR decoder

After the component test is completed, point the infrared remote control at the "IR" test hole of the tester, press the remote control button, the tester will display the user code and data code after successful decoding, and display the corresponding infrared waveform.

If the decoding fails or the decoding fails, the user code and data code cannot be displayed. At this time, if you are in the tester interface, you cannot enter the infrared decoding interface. If you are in the infrared decoding interface, the last successful decoding information will still be displayed.


IR Decoder

UserCode: 00BF

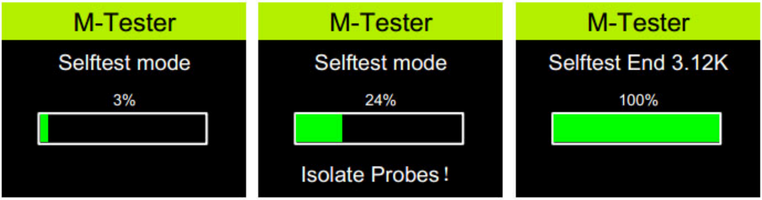
DataCode: 00FF

Note: This decoder only supports infrared encoding in Hitachi format. Other formats of infrared encoding are not supported

Automatic calibration

Short-circuit three test sockets, short press the multi-function button, and the tester will automatically calibrate.

During the calibration process, there is no need to perform other operations except to disconnect the short wire according to the prompts.


M-Tester

Selftest mode

3%

M-Tester

Selftest mode

24%

Isolate Probes !

M-Tester

Selftest End 3.12K

100%

Calibrating → Isolate Probes ! → Selftest End

Shutdown

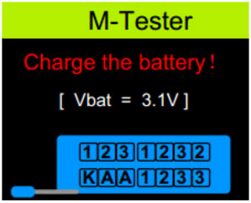
Automatic shutdown after timeout

When the component test is completed or the infrared decoding is completed, and the automatic shutdown time is reached, the tester will automatically shut down (overtime 30 seconds)

Standby power consumption is 0 UA after shutdown.

Battery voltage measurement

Before each component measurement, the built-in lithium battery voltage will be detected and displayed. When the battery voltage is less than 3.1V, it will be forced to shut down. Please charge it at this time.



M-Tester

Charge the battery!

[Vbat = 3.1V]

Battery charging circuit

The charging interface is a standard Micro USB interface, please use an external 5V power supply or USB power supply for charging.

Note: When the charging indicator is red, it means charging, and green means charging is complete.

FAQ

The charging interface is a standard Micro USB interface, please use an external 5V power supply or USB power supply for charging.

Question	Cause	Solution
can not power on	Lithium battery is low	Please charge until the light turns green
Inaccurate measurements		Please re-calibrate

Known errors and unsolved problems

1. The current amplication factor of germanium transistors can be measured too high because of the high residual current. In this case the basis emitter voltage will be very low.

2. Capacity value in reverse direction for Power Schottky Diodes such as MBR3045PT can not be measured, if only one diode is connected. The reason is a too big residual current of this diode. Sometimes the measurement is possible by cooling down the device (with cooling spray for example).

3. The diode function of a triac gate can not be examined.

4. The Source and Drain pins can not be detected correctly with JFET's. The reason is the symmetrical structure of this semiconductors. You can notice this problem with the elect, that the display shows the same layout with the same parameters, if the Source and Drain pinsare swapped.

5. The output current of the tester is 6MA/voltage <5V. High-power IGBTs, thyristors, and Darlington tubes that require higher current/higher voltage drive may not be measured. Air core coils and power inductors cannot directly measure inductance. It is recommended to try series connection. Appropriate color ring inductance test, capacitors below 20PF, it is recommended to test a 20PF capacitor