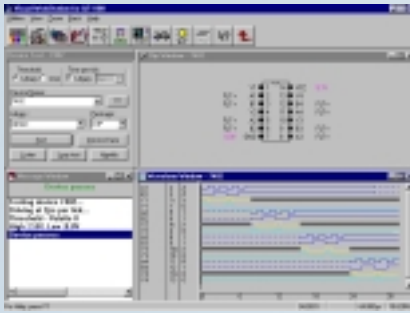


Test-Pro Troubleshooter

QT-1100



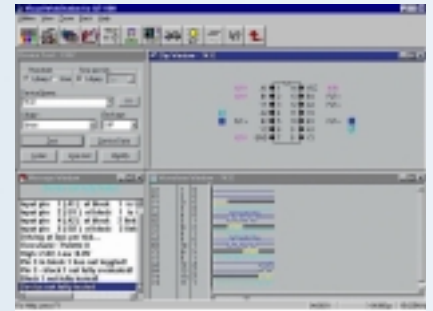
In-Circuit Digital Functional Testing



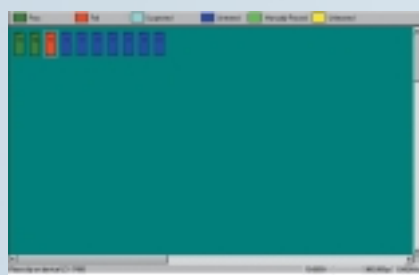
QT1100 can functionally test any device working at 5V in in-circuit as well as out-circuit using library defined test patterns. The Visual WorkStation (VWS) mode allows interactive testing of individual devices, as well as wholeboard test. The Device Under Test (DUT) is tested under actual in-circuit conditions, that are available on the board. **QT1100** uses the back-driving or node-forcing technique to functionally test devices in-circuit. The back-driving current is limited to 220 mA and back-driving time is limited to 65 m.secs. to comply with the International Defence Standards 00-53/1.

Auto compensation with Qmax Simulator

While testing devices in-circuit, **QT1100** employs the auto-compensation technique. When any of the inputs are shorted together or connected to any power pin, the input drive pattern or Test Vector is modified on the fly, depending upon the in-circuit links of the device under test. This is essential in order to avoid the tester driving complementary data to pins shorted together or trying to drive a pattern to a pin connected to the power pin. The expected output is automatically generated by the Qmax Simulator for the modified input Test Vector. This expected output is compared with the actual output sensed at the device pin to declare it as good or faulty.



Board Learn & Board Test Modes



The Board Learn mode is used to test the device's functionality and clip status / link information from a Known Good Board (KGB) and store in a database file for the future use. A faulty board of identical type can be compared with the learnt board using the Board Test Mode. **QT1100** provides the facility to create a visual board layout on the screen. The comparison results are stored in a log file for future reference.

QSM VI – an advanced tool for failure analysis

QSM VI is an effective tool in detecting failures on custom ICs, passive components on a board which cannot be functionally tested in the ICFT mode. QSM VI takes traces by driving a user defined current limited sine wave between any two nodes of the DUT and plotting the voltage vs current trace. For enhanced fault coverage, QSM VI is capable of taking traces with any of the DUT pins kept as the reference pin.

QSM VI helps detect ESD induced failures.



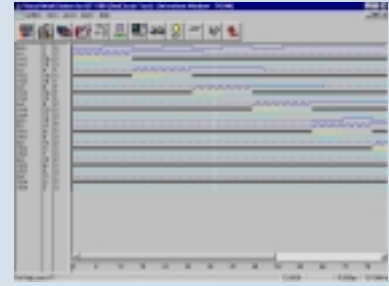
Auto Guarding



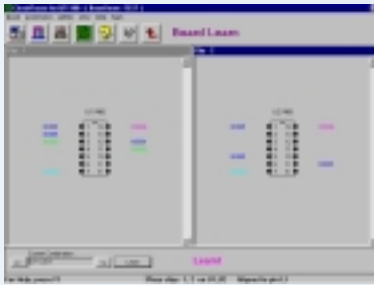
While testing BUS based devices in-circuit, the test result may not be consistent because of the bus contention caused by the other devices connected to the output bus of the DUT. In such conditions, it will be required to isolate the DUT output pins from other devices coming on the same bus. **QT1100** employs the guarding technique to disable such devices. The auto guarding facility is used to automatically identify the devices which are causing bus contention to the DUT, by tracing links between them using the Trace Links option. Information is also displayed about the pins to be guarded and the logic states to guard these pins.

Logic Analyser

QT1100 wave-form window displays the input drive and the output patterns in a logic analyser style display. Using the Listen mode, user has the option of monitoring the activity on all the DUT pins simultaneously. Wave patterns upto 8K ticks can be captured and displayed for each pin. The time base per tick is user selectable in 14 steps from 2 µsecs. to 16 milli secs. per tick.



Circuit Tracing

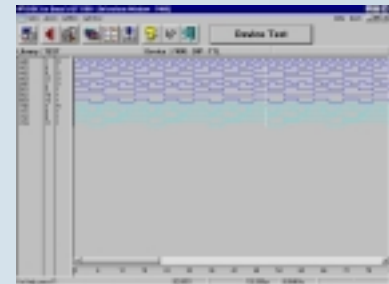


The optional CircuitTracer software is used to learn links between devices on a board. Using two or more clips, links between pins of a device (intra-links) as well as links between pins of different devices (inter-links) are learnt and stored in a board file. This stored information can be used for future comparison, if a faulty board is suspected to have a track open / short failure.

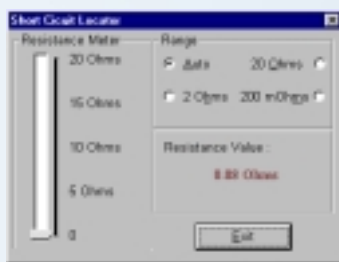
The learnt links can be converted into a NetList format which can be used for reverse engineering applications. Using a CAD package, the user can generate schematic diagram for a board with little or no documentation.

Developing New Device Program

The optional Integrated Device Development Environment (IDDE) software is used to develop new device functional test programs. IDDE has three modes: 1. QDDL uses primitives to develop programs for SSI and MSI devices; 2. WEST uses program syntax and macros to develop programs for complicated LSI and memory devices; 3. Graphical Test Program Generator (GTPG), is used to develop library programs for any device by simply drawing the input and output waveforms, without any need for writing complicated syntax.



Short Locator



QT1100 has an in-built Short Locator to detect faulty components causing power line shorts or bus line shorts, which cannot be detected using conventional multi-meters. Using the 4-wire measurement technique, **QT1100** can home-on to the faulty component causing the illegal short. It offers three ranges of measurement at 200 milliOhms, 2 Ohms and 20 Ohms. The measured resistance value is conveniently displayed as a digital read-out and as a bar graph display.

RCV Measurement & Oscilloscope

The built-in Resistance, Capacitance, Voltage (RCV) Measurement mode is capable of measuring RCV values using Probe and Reference pins. QT1100 is also equipped with two channel oscilloscope with maximum sampling rate of 500 KHz. The trigger options include auto, normal, single, positive and negative trigger.



SPECIFICATIONS

IN-CIRCUIT FUNCTIONAL TEST (ICFT)

Digital Pin Electronics :

Drive/Sense Channels	: 64 channels.
Drive/Sink Capability	: 220 mA per channel, fixed drive levels for zero, tri-state and +5V
Sense Threshold	: Programmable from 0V to 5.12V in steps of 20 m.V per step.
RAM behind each pin	: 8K X 4 RAM.
Test Speed	: Programmable from a max. of 2 μ s to 16 milli secs. per tick in 14 steps.
Guard Channels	: 8 Ch. Programmable to 0V, 5V or tri-state
Library	: Vast library of 10,000+ devices for TTL, CMOS, INTERFACE, LSI, VLSI devices, User expandable and optional Russian devices.
Diagnostic Software	: Qmax QT1100 Workstation Software runs under MS-Windows 95 / 98 / ME.
Test Language	: Qmax QT1100 IDDE software with QDDL, WEST language and GTPG (Options).
DUT Power Supply	: +5V @ 6 Amps Auto switch on/off under program control.
Functions	: Power-on In-circuit functional test, Unknown Device identify, Auto circuit compensation, Automatic pull-up for open collector testing, User expandable test library; Resistance / Capacitance / Voltage measurement, Power-on pin status indication for pin floats, links, voltages and impedance, logic analyser waveform display, Clear Pass/Fail indication for ease of use, Variable test speed, Optional CircuitTracer function and schematic generation with optional Edwin Software, Integrated testing of ICFT, QSM-VI in one operation.

Analog Pin Electronics :

Drive/Sense Channels	: 2 Analog Chs. multiplexed to any of the 64 channels and 2 sets of movable probes and reference pins
Drive/Sense capability	: +/- 10mA max; +/-32V max.
RAM behind channel	: 8K X 8 bits behind each drive and sense channel.
Data rate	: 2 micro seconds per tick to 16 milli sec. per tick in 14 steps.
Drive pattern	: Sine, Ramp, Triangle, Square or user definable.
Function	: Functional test for Op-amps, Comparators, Transistors, SCR, FETs in out-circuit mode.

QSM-VI TRACE

Channels	: 64 channels.
Probes	: 2 probes and 2 reference pins
Voltage range	: +/- 2.5V, +/- 8V, +/- 19V, +/- 32V, current ranges from 0.2 mA to max of 10 mA.
Frequencies	: 40Hz, 312Hz, 2.5KHz.
Drive Pattern	: Sine or as required.
Function	: QSM-VI, Impedance & Voltage measurements.

RCV MEASUREMENT

Resistance	: 10 Ohms to 1MOhms.
Capacitance	: 200 pF to 5000 μ F.
Voltage	: + / - 32 V

OSCILLOSCOPE

No. of channels	: 2 (Single or dual trace).
Amplitude	: 0 to 30 Volts
Time base	: 9.6 milli secs. to 80 μ secs.
Trigger	: Auto, normal, single, positive or negative.
Input Impedence	: 1 K.Ohms to 100 K.Ohms

SHORTS LOCATOR

Ranges	: 3 ranges at 200 milliohms, 2 Ohms, 20 Ohms using 4 wire measurements.
Resolution	: 800 μ -ohms in 200 milliohms range.
Display	: Bar graph, and Digital Read-out.

System Interface	: QT1100 is interfaced to the host computer by USB port version 2.0.
Physical Dimension	: Approx. 470 (W) X 410 (D) X 185 (H).
Weight	: 16.5 Kg.
Power Requirement	: 110V @ 4 Amp max / 220 V @ 2 Amp max.

Qmax reserves the right to change system specifications without prior notice; Qmax is the registered trademark of Qmax Technologies Pte Ltd. QSM is the innovative VI signature method developed by Qmax; All trademarks are acknowledged.



— where standards are set; not matched.

Qmax Test Equipments Pvt. Ltd.,

Elcot Avenue, I.T. Highway, Sholinganallur, Chennai 600 119. India.
Tel : (91)-44-2450 9627 (30 Lines) Fax : (91)-44-2450 9631 E-mail : factory@qmaxtest.com

Qmax Test Technologies Pvt. Ltd.,

239, I.T. Highway, Sholinganallur, Chennai 600 119. India.
Tel : (91)-44-2450 9627 (30 Lines) Fax : (91)-44-2450 9631 E-mail : chennai@qmaxtest.com

Qmax Test Technologies Pvt. Ltd.,

BANGALORE — Tel : (91)-80-220 8034, 220 8035 **Telefax** : (91)-80-220 8036
E-mail : bangalore@qmaxtest.com

DELHI — Tel : (91)-11-2585 0127, 2574 5049 **Telefax** : (91)-11-2571 9870
E-mail : delhi@qmaxtest.com

KOLKATA — Tel : (91)-33-2359 3530, 2358 3958 **Telefax** : (91)-33-2359 3530
E-mail : kolkata@qmaxtest.com

MUMBAI — Tel : (91)-22-2578 0416, 2578 0425 **Telefax** : (91)-22-2578 0425
Email : mumbai@qmaxtest.com

Visit us at www.qmaxtest.com

Manufactured at
ISO Registered Facility



Authorised Distributor / Dealer