SOC / ANALOG TEST SYSTEM
MODEL 3650

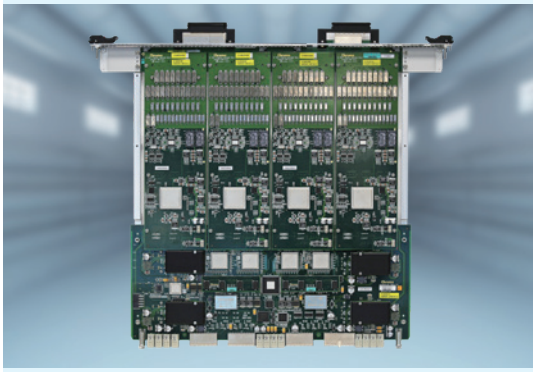
Semiconductor manufacturing is a fast moving industry; more and more devices are highly integrated with various functions. Capital equipment must be built to outlive several device generations and applications. With varieties of available options, such as AD / DA converter test, ALPG for memory test, high voltage PE, multiple scan chain test, VI45, PVI100 & MPVI analog test options, ASO & HDADDA mixed-signal test options, Chroma 3650 can provide a wide coverage for customer to test different kind of devices with flexible configurations.

Chroma 3650 is an SoC tester with high throughput and high parallel test capabilities to provide the most cost-effective solution for fabless, IDM and testing houses. With the full functions of test, high accuracy, powerful software tools and excellent reliability, 3650 has the versatile test capabilities for high-performance microcontroller, analog IC, consumer SoC devices, and wafer sort applications.

MODEL 3650

KEY FEATURES

- 50 / 100 MHz clock rate; 100 / 200 Mbps (MUX) data rate
- Up to 640 digital I/O pins (testhead 2)
- 32 MW vector memory
- 32 MW pattern instruction memory
- Per-pin timing / PPMU / frequency measurement
- Scan features to 2G depth per scan chain
- ALPG option for memory test
- Up to 40 high-voltage pins
- Up to 8-32 16-bit ADDA channels option
- 32 high-performance DPS channels
- Edge placement accuracy ±300ps
- 32-CH HDADDA mixed-signal option
- 8-CH AWG and digitizer ASO mixed-signal audio band test option
- 40A pulse at 60V for MPVI analog option
- 32-CH / board for VI45 analog option
- 8-CH / board for PVI100 analog option
- MRX option for 3rd party PXI instruments
- Microsoft Windows® 7 / Windows® 10
- C++ and GUI programming interface
- CRISP, full suite of intuitive software tools
- Test program and pattern converters for other platforms
- Accept DIB and probe card of other testers directly
- Support STDF data output
- Air-cooled, small footprint tester-in-a-test-head design

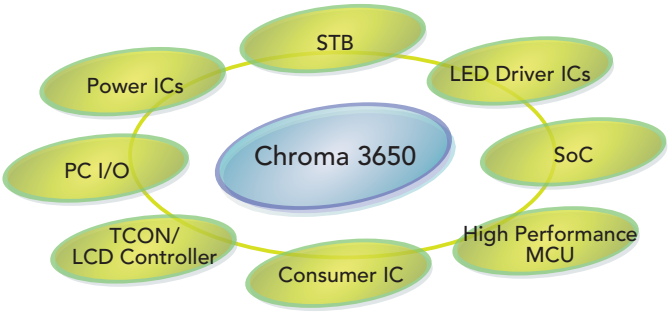


Chroma

High Performance in a Low-cost Production System

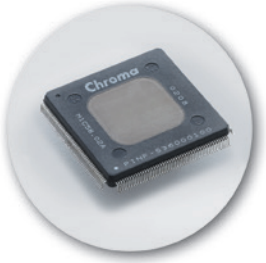
The 3650 achieves lower test cost not only by reducing the cost of tester system but also by testing more devices faster and the high parallel test capability. With the Chroma PINF IC and the sophisticated calibration system, 3650 has the excellent overall timing accuracy within ±550ps. The pattern generator of 3650 has up to 32M pattern instruction memory. By having the same depth as the vector memory, Chroma 3650 allows to add pattern instruction for each vector.

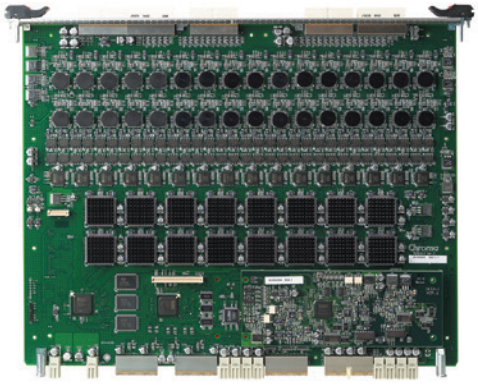
Moreover, the powerful sequential pattern generator provides the variety of pattern commands to meet the demands of complex test vectors. The true test-per-pin architecture and the flexible site mapping with no slot boundaries are designed for multi-site test with high throughput. Up to 640 digital pins, 32 device power supplies, per-pin PMU and the analog test capability, 3650 delivers a combination of high test performance and throughput with cost-effective test solution.



High Parallel Test Capability

The powerful, versatile parallel pin electronics resources of 3650 can simultaneously perform identical parametric tests on multiple pins. The 3650 integrates 64 digital pins onto one single LPC board. In each LPC board, it contains 16 high performance Chroma PINF ICs which supports 4 channels timing generator. The integration of local controller circuitry manages resources setup and result readout, and therefore cuts the overhead time of the system controller. With the any-pin-to-any-site mapping design, 3650 provides up to 32 sites high throughput parallel testing capabilities to enlarge the mass production performance with more flexible and easy layout.



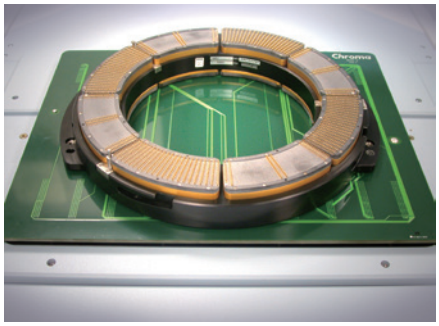


64-Channel Digital Pin Card

Flexibility

The semiconductor industry is a fast moving one, and capital equipment must be built to outlive several device generations and applications. With varieties of available options, such as AD / DA converter test, ALPG for memory test, high voltage PE, multiple scan chain test, VI45 & PVI100 & MPVI analog options, Chroma 3650 makes sure that it will serve you for years to come.

Moreover, Chroma 3650 platform architecture allows development of focused instruments by third-party suppliers that can be easily added for specific applications. It can stretch the boundaries of test by covering a broader range of devices than ever before possible in a low-cost production test system.



CP Docking Solution for other Tester Platform

Small Footprint

With the air-cooled and small footprint tester-in-a-test-head design, 3650 delivers high throughput in a highly integrated package for minimum floor space. A mainframe cabinet contains the power distribution units and the space for third-party instruments. With an optional manipulator, 3650 can be used in both package and wafer test.

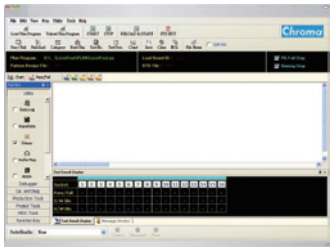
Powerful Suite of Software Tools – CRISP

The 3650 features the powerful suite of software tools using Chroma Integrated Software Platform, CRISP. Not only provides the rapid test development function, CRISP covers all needs for test debugging, production and data analysis. The CRISP integrates the software functions of test development, test execution control, data analysis and tester management together. Based on the Microsoft Windows operation system and C++ programming language, CRISP provides the powerful, easy-to-use, intuitive, and fast-runtime GUI tools for users. In the Project IDE tool, test developer can easily shift between standard template, user-defined template and C++ code-based editor to create their test program quickly and automatically scale to multi-site for parallel test. Besides, CRISP also provides the test program and test pattern converters to facilitate the test conversion from other tester platforms to 3650.

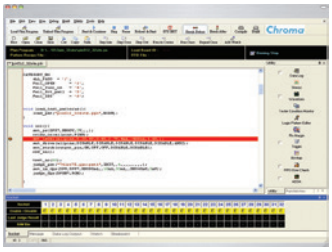
For the test program execution controller, user can select the System Control tool or Plan Debugger tool for normal mode or debugging mode. In the Plan Debugger tool, user can control the execution of test program by setting break point, step, step-into, step-over, resume execution, variable-watch and variable-modify, etc. For the test debugging and data analyzing purposes, 3650 provides abundant software utility tools. Datalog, Waveform and Scope tools are designed to support the measured data and digital waveform display. To find the parametric margin, SHMOO and Pin Margin tools can easily accomplish debug by auto-mode or manual-mode execution. Besides, the Wafer Map, Summary, Histogram and STDF tools are very helpful and powerful for collecting the test results and analyzing the parametric characterization.

As for the Test Condition Monitor and Pattern Editor tools, they provide the superior functions for run-time debugging to change the test conditions or pattern data without breaking the test or modifying the source files. Besides, CRISP also prepares the ADDA tool and Bit Map tool for the analog and ALPG option. Using the ADDA tool, user can not only see the AD / DA test result by graphic tool, user can also create the ADC pattern easily.The full suite of powerful GUI tools will definitely meet the various purposes for test debugging and test report.

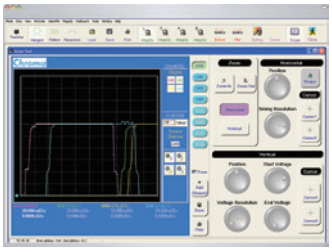
The OCI tool is the solution of CRISP for mass production.Easy-and-correct operation is the most important request for production run. Programmer can customize the setup of OCI tool by the Production Setup tool to meet the production environment requirement in advance. Then, what an operator has to do is just to select the planned process to start the mass production.



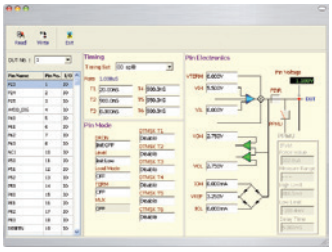
System Control



Test Program Debugger



Scope Tool



Channel Debugger

Peripheral

The 3650 provides multiple drivers for communications with handler and prober by GPIB and TTL interface. The supported handlers or probers include SEIKO-EPSON, SHIBASOKU, MULTITEST, ASECO, DAYMARC, TEL, TSK and OPUS II, and so forth. In addition to provide the convenient converter tools for test platform migration, 3650 provides the adaptor board solution for existed tester platform to save the cost of users. Through the adaptor board solution, Chroma 3650 can accept the DIB and probe card of other testers directly to save the cost for making the new load boards and probe cards.

Application Support

Chroma offers the application support solutions to its new and established customers to accurately meet user needs. On request Chroma can provide customized support designed around your specific needs. Whether you need ramp up production, want to capitalize on emerging market opportunities, enhance productivity, lower testing costs with innovative strategies, Chroma worldwide customer support staff is committed to generate timely and efficient solution for you.

SPECIFICATIONS

Model	3650
Clock Rate	50 / 100MHz, 100 / 200 Mbps (MUX mode)
Pattern Memory Size	32M
Overall Timing Accuracy	±550ps (Window), ±450ps (Edge)
Software / Programming Language / OS	CRISP / C++ / Windows 7 / Windows 10
Pin Electronics Board	LPC
IO Channels	64-pin / board x 10 boards / system
Vector Depth	32M per pin
Drive VIL / VIH	-2V ~ +6V / -1.9V ~ +7V
Maximum Driver Current	50mA (static) / 100mA (dynamic)
Comparator VOL / VOH	-2V ~ +7V
Compare Modes	Edge, Window
EPA (Drive / IO / Compare)	±300ps / ±300ps / ±300ps
Dynamic Load Current	±35mA
Timing Sets	32 sets per pin
Timing Edges	6 (2 drive, 2 drive & IO, 2 compare)
Rate / Edge Resolution	125 / 62.5ps
Waveform Sets	32 sets per pin
Waveform Format	4096 timing-waveform combination changes on-the-fly
Utility Pin Relay Control	64 (8 / board), 128 bit relay board option available
PPMU / Frequency Measurement Unit (OSC)	per pin
DUT Power Supply	DPS
Channels	16-CH / board, 2 boards / system
Voltage Range	±8V, ±16V
Max. Output Current	0.4A / 1A per CH
Current Gang Channels	8
Precision Measurement Unit	PMU
Channels	2-CH / board, 8 boards / system
Voltage Range	±2.5V, ±8V, ±16V
Current Range	±800nA ~ ±250mA
Options	
VI45	
Channels	32-CH / board
Voltage / Current Range	±45V / ±100mA
Current Ganged Channels	x2 ~ x8, 800mA max. per board
TMU	per channel
PVI100	
Channels	4-CH / board
Voltage / Current Range	±100V / ±2A , ±50V / ±4A
Current Ganged Channels	x2 ~ x8, 32A max. per board
TMU	per channel
MPVI	
Channels	2-CH / board
Voltage / Current Range	±60V / ±5A, pulse mode ±40A
Current Ganged Channels	x2, 80A max. per board
HVVI	
Channels	4-CH / board
Voltage / Current Range	±750V / ±35mA
Current Ganged Channels	x2 ~ x4, 140mA max. per board
Voltage Stacked Channels	x1 ~ x4, 3000V max. per board
ADDA, HDADDA	
Channels	1-CH ADDA / LPC, 32-CH HDADDA / board
AWG / Digitizer	per channel
Resolution / Max. Conversion Rate	ADDA : 16-bit / 500KHz ; HDADDA : 16-bit / 500KHz
Voltage Range	±2.5V / ±4.5V / ±9V
Algorithm Pattern Generator (ALPG)	X = 16, Y = 16 / D = 16
Scan	1 / 2 / 4 / 8 / 16 / 32 scan chains / LPC max. 1024M / 2048M scan depth
System and Dimension	
Power Consumption	Max. 5.5kW / forced air cooling
Test Head Dimension (L x W x H)	800 x 744 x 756 mm
Mainframe Dimension (L x W x H)	680 x 352 x 730 mm

* Specifications are subject to change without notice.
Please visit our website for the most up to date specifications.

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