

## MODEL 3650-S2

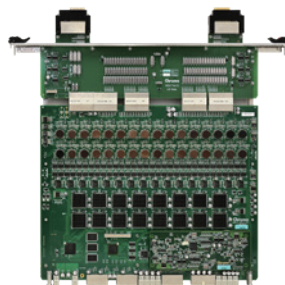
### KEY FEATURES

- 12 Universal slots for digital, analog and mixed-signal applications
- Up to 768 digital I/O and analog pins
- 50 / 100 MHz clock rate;
- 100 / 200 Mbps (MUX) data rate
- Edge placement accuracy  $\pm 300\text{ps}$
- 32 MW vector memory
- 32 MW pattern instruction memory
- Per-pin PPMU / frequency measurement
- Scan features to 2G depth per scan chain
- ALPG option for memory test
- Up to 48 high-voltage I/O pins
- Various floating ground VI resources
- 64-CH / board for HDDPS2 DPS option
- Max. 3000V (stacked) for HVVI analog option
- 8-CH AWG and 8-CH 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
- Significantly increases LB components area
- Larger power supply for the tester
- 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
- Accepts DIB and probe card of other testers by adding conversion kit
- Supports STDF data output
- Air-cooled, small footprint

## SOC/ANALOG TEST SYSTEM MODEL 3650-S2

Semiconductor manufacturing is a fast-moving industry. While devices become increasingly integrated and multifunctional, capital equipment must be built to endure through several device generations and applications. With a variety of available options such as AD/DA converter test, ALPG for memory test, high voltage PE, multiple scan chain tests, and analog test, Chroma 3650-S2 provides wide coverage for different kinds of devices with flexible configurations. The system is especially suitable for testing power management chips and ICs. With its diverse offering of floating ground VI boards, HDDPS2, HVVI, PVI100, and MPVI, the 3650-S2 can cover high-precision, high-voltage, and high-current testing requirements.

The 3650-S2 tester's high throughput and high parallel test capabilities provide the most cost-effective solution for fabless, IDM, and testing houses. With a complete range of test functions, high accuracy, powerful software tools, and excellent reliability, Chroma 3650-S2 is the test solution for all your high-performance, microcontrollers, analog IC, consumer SoC devices, and wafer sort applications.



LPC64 option board

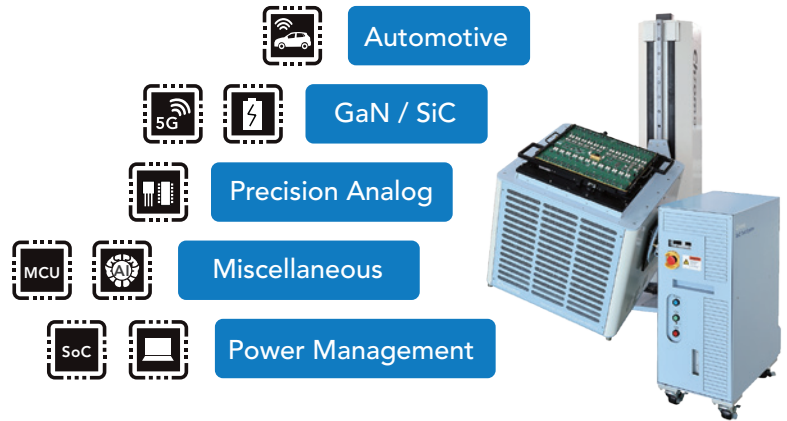


**Chroma**

## High Performance in a Low-cost Production System

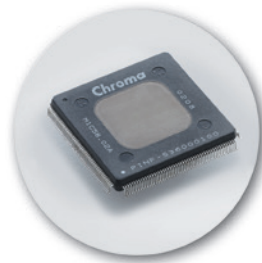
Chroma 3650-S2 is specifically designed for high-throughput and high-parallel testing to provide the most cost-effective solution for fables, IDM, and testing houses. With its complete test coverage, high accuracy, powerful software tools and excellent reliability, the 3650-S2 is ideal for testing power management devices, analog devices, compound semiconductors, and MCU devices.

The 3650-S2 provides a variety of VI function boards, HDDPS2, HVVI, VI45, PVI100, and MPVI, including high density, a wide range of voltage and current supply, and high-precision measurement, up to 768 digital I/O pins, VI pin, and analog test capabilities, offering premium test performance and throughput in a cost-effective test solution.



## High Parallel Test Capability

The powerful and versatile parallel pin electronics of Chroma 3650-S2 can simultaneously perform identical parametric tests on multiple pins. The 3650-S2 integrates 64 digital pins onto one single LPC board. Each LPC board contains 16 high-performance Chroma PINF ICs which support 4 channels timing generator.



The integrated local controller circuitry manages resource allocation and result readout, thereby cutting the overhead of the system controller. Chroma 3650-S2's any-pin-to-any-site mapping design provides up to 32 sites with high throughput parallel testing capabilities to boost mass production with a flexible and intuitive layout.

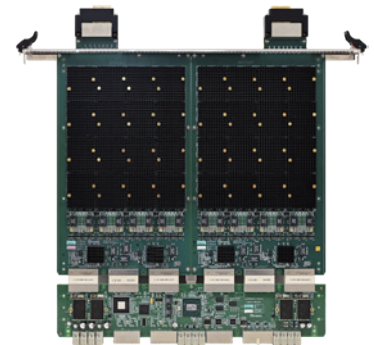
## Flexibility

The semiconductor industry is evolving at a rapid pace, and capital equipment must be built to outlive several device generations and applications to justify the cost of ownership. With a variety of options, such as AD / DA converter test, ALPG for memory test, high voltage PE, multiple scan chain test, as well as analog options, Chroma 3650-S2 ensures that it will continue to serve you for many years to come.

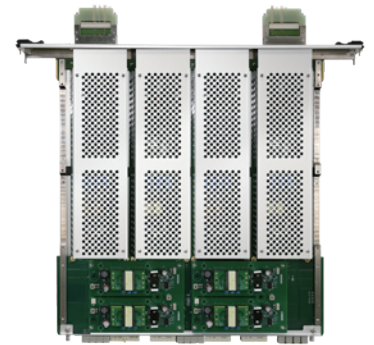
Chroma 3650-S2 platform architecture allows easy integration of dedicated instruments developed by third-party suppliers for specific applications. The system stretches the boundaries of test by covering a broader range of devices than ever before possible as a low-cost production test system.

## Small Footprint

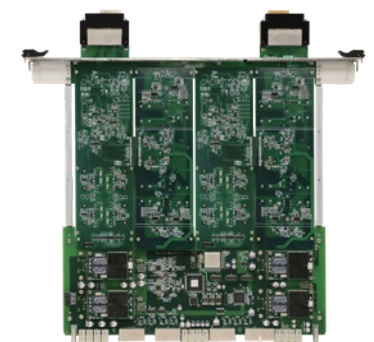
With its air-cooled and compact tester-in-a-test-head design, Chroma 3650-S2 delivers high throughput in a densely integrated package using minimum floor space. With an optional manipulator, 3650-S2 can be used for both package and wafer test.



64-Channel High-Density HDDPS2 Card



3000V High-Voltage HVVI Card (stacked)



80A pulsed High-Current MPVI Card (ganged)

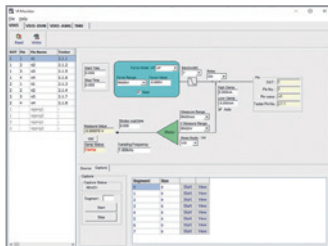
## Powerful Suite of Software Tools – CRISP

Chroma 3650-S2 features a powerful suite of software tools using Chroma Integrated Software Platform (CRISP). In addition to its easy-to-use test development function, CRISP covers all needs for test debugging, production, and data analysis. CRISP also integrates all software functions for test program development, test execution control, data analysis, and tester management into one package. Based on the Microsoft Windows operation system and C++ programming language, CRISP provides users with powerful, fast, and intuitive GUI tools. In the Project IDE tool, test developers can easily shift between the standard template, user-defined templates and the C++ code-based editor to create their test program quickly and automatically scale up to multi-site for parallel testing. What's more, CRISP also provides test program and test pattern converters to facilitate test conversion from other test platforms to the 3650-S2 format.

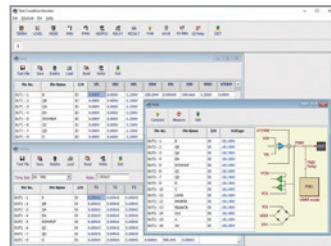
The test program execution controller is equipped with two switchable tools, the System Control tool and the Plan Debugger tool, which enable users to operate more efficiently in either normal or debugging mode. In the Plan Debugger tool, users can control the execution of the test program by setting breakpoint, step, step-into, step-over, resume execution, variable-watch, and variable-modify. For test debugging and data analyzing purposes, CRISP provides an abundance of software utility tools. Datalog, Waveform and Scope tools are designed to support clear display of the measured data and digital waveforms. To find the parametric margin, SHMOO and Pin Margin tools can easily accomplish debugging through auto-mode or manual-mode execution. The Wafer Map, Summary, Histogram and STDF tools are very helpful for effectively collecting the test results and analyzing the parametric characterization.

The Test Condition Monitor and Pattern Editor tools provide superior functions for run-time debugging and allow users to change the test conditions or pattern data without interrupting the test or modifying the source files. CRISP also comes with an ADDA tool and Bit Map tool for the analog and ALPG options. With the ADDA tool, users can not only view the AD / DA test results using the graphic tool, but they can also easily create their own ADC patterns. This comprehensive set of powerful GUI tools will unquestionably serve all your needs regarding test debugging and test report generation.

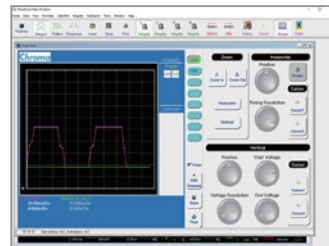
The OCI tool is CRISP's solution for mass production. It enables easy-and-correct operation, which is the most important requirement for the production run. Programmers can adjust the OCI tool by using the Production Setup menu to satisfy the requirements of the production environment in advance. All the operator has left to do is just to select the planned process and start mass production.



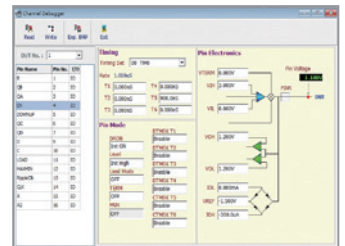
VIM Tool



TCM Tool



Scope Tool



Channel Debugger

## Peripheral

Chroma 3650-S2 provides multiple drivers for communications with the handler and prober through the GPIB and TTL interface. The supported handlers and probers include CHROMA, SEIKO-EPSON, HONTECH, SHIBASOKU, MULTITEST, ASECO, DAYMARC, TEL, TSK and OPUS. Additionally, 3650-S2 offers an adaptor board solution for existing test platforms to facilitate test platform migration and reduce user costs. This adaptor board enables the 3650-S2 to directly accept the DIB and probe cards of other testers, saving the cost of manufacturing new load boards and probe cards.

## Application Support

Chroma offers application support to both new and established customers. Upon request, Chroma can provide customized support designed around your specific needs. Whether you need to ramp up production, want to capitalize on emerging market opportunities, enhance productivity, or lower testing costs with innovative strategies, Chroma's worldwide customer support team is committed to generate timely and effective solutions for you.



## SPECIFICATIONS

Model	3650-S2
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 12 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	96 (8 / board), 128 bit relay board option available
PPMU / Frequency Measurement Unit (OSC)	per pin
DUT Power Supply	HDDPS2
Channels	64-CH / board, max. 12 boards / system
Voltage Range	± 6V, -6V ~ 12V, -1V ~ +24V
Max. Output Current	1A, 500mA, 125mA per CH
Current Gang Channels	64
Precision Measurement Unit	PMU
Channels	2-CH / board, max. 12 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
ASO	
Channels	8-CH AWG and 8-CH Digitizer / board
AWG Resolution	HF: 20bits / 500Ksps, HR: 24bits / 192Ksps
Digitizer Resolution	24bits / 2.5Msps
Voltage Range	± 2.5V / ± 8V
Algorithm Pattern Generator (ALPG)	X = 16, Y = 16 / D = 16
Scan	1 / 2 / 4 / 8 / 16 / 32 scan chains / LPC max. 2048M scan depth
System and Dimension	
Power Consumption	Max. 15kW / forced air cooling
Test Head Dimension (L x W x H)	755 x 744 x 795 mm
Mainframe Dimension (L x W x H)	718 x 360 x 923 mm

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

Get more product & global distributor information in Chroma ATE APP

## ORDERING INFORMATION

3650-S2 (3650 Series-2): SoC/Analog Test System



iOS



Android

Search Keyword

3650-S2

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