



VIDEO PATTERN GENERATOR MODEL 23294

Chroma 23294 Video Pattern Generator provides various international standard signals with built-in 3 HDMI and 2 SCART ports that can satisfy the output tests for multiple ports to shorten the test time and improve productivity.

Chroma 23294 adopts a brand new structure design with a high performance CPU to carry high speed / high density FPGA as the graphic engine. It has highly efficient system control and supports the up-to-date high definition multimedia digital video interface HDMI V1.4 standard to supply the following features:

3D signal standard format output:

It is fully compatible 8 different format of HDMI 1.4 3D standard, included Frame Packing, Field alternative, Line alternative, Side-by-Side(Full), L+depth, L+depth+graphics+graphics-depth, Top-and-Bottom, Side-by-Side(Half).

The ARC (Audio Return Channel) function is able to test the external audio source and the Ethernet (HDMI Ethernet Channel) function is able to provide dual data transmission test, higher speed bandwidth & Color Deep. It supports 24, 30, 36 byte (RGB or YCbCr) and the color standards of new generation such as xvYCC, sYCC601, Adobe RGB and Adobe YCC601 to realize the true natural color of 4Kx2K and high definition image with broader color range.

CEC (Consumer Electronics Control) Function: The CEC test parameters can be set via the proprietary software VPG MASTER which also supports the test modes of TX (send)/RX (receive)/MONITOR (monitor) & FEATURE (user's).

Chroma 23294 has analog/digital/TV control signals as well.

For the analog RGB output, its pixel frequency is up to 250MHz that complies with the RS-343A signal standard and support Y,Pb,Pr / Y,Cb,Cr / Y,R-Y& B-Y. As to the digital signal, it is TMDS pixel frequency up to 330MHz with dual channel DVI output that can support DVI Dual HDCP tests to satisfy the application for testing higher bandwidth display.

In TV output specification, the image and chromaticity signals of 23294 comply with NTSC, PAL and SECAM regulations. The output signals include CVBS composite signals, BNC & Y/C (Luminance/ Chrominance) image/chromaticity separate signals and S-Video/SCART output connector. It can also support special TV test functions such as Closed Caption, V-chip and Teletext.

To supply multiple test applications, Chroma is able to play the picture file format up to 4Kx2K resolution. Moreover, 3 HDMI and 2 SCART ports are built in to satisfy the requirement for multiport independent output and reduce the test time substantially.

Chroma 23294 has many special test patterns such as xvYCC, HDCP&E-EDID, 8/10/12bit deep color, CEC, Lipsync and China high definition patterns for easy test assessment to save the time and increase productivity efficiently. In addition, the equipped application VPG Master with easy-to-use interface and complete test functions that is capable of editing various kinds of test procedures and parameters makes Chroma 23294 suitable for the R&D, production test and quality assurance of all video and related industries.

Video Pattern Generator

MODEL 23294

Key Features:

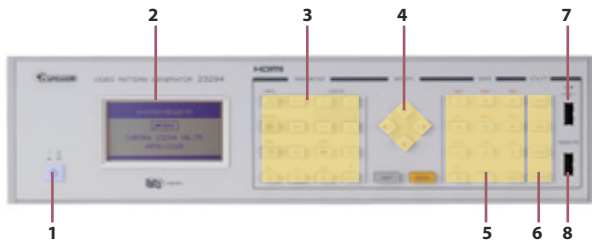
- Multiport independent output test application
 - 3 HDMI port output
 - 2 SCART port (Input/Output x1/Outputx1)
- Analog frequency 250MHz
- Digital (DVI) frequency 330MHz(dual channel)
- DVI Dual HDCP test application support
- HDMI 1.4 standard
 - 3D standard format output
 - ARC audio return function
 - HEC network test function
 - Color space sYCC601 / Adobe RGB / Adobe YCC601
 - CEC / Deep Color / Lip-Sync / xvYCC
- 4Kx2K graphic display capability
- CEC analysis & multi-directional monitor
- Real 30bit deep color output
- DVI & HDMI with HDCP output
- Support HDCP V1.0 (DVI) / V1.2(HDMI)
- Y, Pb, Pr / Y, Cb, Cr / Y,R-Y, B-Y Output
- S-Video / CVBS / SCART / RGB / Color component / D terminal
- NTSC / PAL / SECAM TV signals
- Support Close Caption / V-Chip / Teletext
- EDID read / write / compare
- HDMI supports fiber/coaxial audio input (S/PDIF)
- ARC supports fiber/coaxial audio output (S/PDIF)
- Built-in low distortion audio output (2ch / 8ch)
- Easy to use audio shortcuts
- Support graphic dynamic movement (Scrolling) function
- Built in China high definition standard test patterns / 3D test images
- HDMI / DVI plug and play function
- ESD protective circuit
- Front USB control interface
- User Key (maximum 32 combinations of serial actions)



Chroma

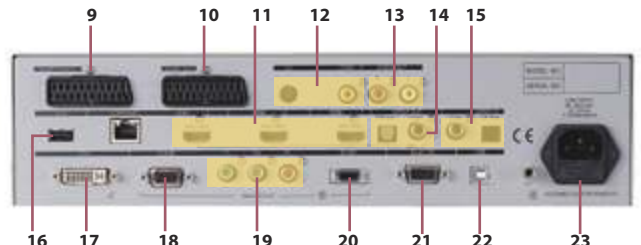
PANEL DESCRIPTIONS

Front View



1. Power Switch
2. 160x80 LCD Display
3. Function Group
4. Cursor
5. Data Group
6. Utility
7. USB Port
8. Remote for Chroma Optional

Rear View



9. SCART Input / Output
10. SCART Output
11. HDMIx3 Output
12. Y/C, RCA Output
13. Analog Audio Output : R/L
14. Digital Audio Output : Optical & Coaxial
15. Digital Audio Input : Optical & Coaxial
16. Host USB Port
17. DVI-I Output
18. D-SUB Analog Output
19. YPbPr Output
20. D-Terminal (D1-D5) Output
21. Smart I/O Control
22. Device USB Port
23. AC Line Input

SPECIFICATIONS

ANALOG OUTPUT

Display Size	4096 x 2160
Pixel Rate Range	0.5~250MHz
Video Level	R,G,B (75 ohms) 0~1.0V programmable
Sync on Green/Level	0~0.5V On/Off programmable
White Level	0~1.2V programmable
Black Level	7.5 IRE / 0 IRE selectable

HORIZONTAL TIMING

Total Pixels	32~8192 pixels / 1 pixels resolution
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VERTICAL TIMING

Total Pixels	4~4096 lines (non-interlace) 2160 lines (interlace) / 1 line programmable
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COMPOSITE SYNC

	H+V, H EXOR V, Equalization & Serration Pulse
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SEPARATE SYNC

	D-SUB : Hs(Xs), Vs
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VIDEO FORMAT

Video Output	R \ G \ B / RS-343A / RS-170 / VESA(VSIS) Y \ R-Y \ B-Y Y \ Cb \ Cr / ITU 601 Y \ Pb \ Pr / ITU 709 / RP177 \ SMPTE 240M DDC II B (D-SUB)
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DVI (TMDS) OUTPUT

Pixel Rate Range	25 < 1 link ≤ 165MHz/165 < 2 link ≤ 330MHz
EDID	Read / Write / Compare / Edit
HDCP	Support HDCP V.1.0 (with Dual Mode)
Compliant	DVI 1.0 specification
Video Signal Type	RGB
Sampling Mode	4:4:4

HDMI VIDEO OUTPUT

Version	HDMI V1.4a (3D Format / ARC / HEC / CEC / Lip Sync)
Pixel Rate Range	25 ~ 165 MHz (TMDS rate 225MHz)
Support HDMI Timing	85 Timing(CEA-861E)
Pixel Repetition	4
Video Signal Type	RGB or YCbCr
Sampling Mode	RGB 4:4:4 / YCbCr 4:4:4 or 4:2:2
Bits per Component	Deep Color 8 / 10 / 12 @RGB & YCbCr
Color Space	RGB / ITU-R BT.601 / ITU-R BT.709 / xvYCC (IEC61966-2-4) / sYCC601 / Adobe RGB / Adobe YCC601
HDCP	HDCP V.1.2
EDID	Read / Write / Compare / Edit

HDMI AUDIO OUTPUT

Sample Rate	32, 44.1, 48, 88.2, 96, 176.4, 192KHz
Number of Channel	8 Channel (FL/FR/LR/RR/FC/LFE/RLC/RR)
Bits per Sample	16 / 24 bit
Waveform	Sine wave
Amplitude	-90.3 to 0.0 dBFS / -138.4 to 0.0 dBFS
Frequency Range	10Hz to 20KHz
Frequency Resolution	10Hz / Step
External Audio Input	Optical and Coaxial (S/PDIF)
Special Control Mode	Tone / Sweep / Mute / Repeat / Play Time

TV OUTPUT

Output Mode	NTSC		PAL				SECAM		MHz
Subcarrier Frequency	443	M, J	BDGHI	M	60	N	Nc	4.41/4.25	
	4.43	3.58	4.43	3.57	4.43	4.43	3.58	4.25	
Video Output	± 50								
	Composite (BNC), S-Video								
	Burst On/Off (NTSC, PAL)								
	Contrast programmable								
	Brightness programmable								
Closed Caption (NTSC)	Saturation programmable								
	Hue programmable								
	C1, C2, C3, C4 / T1, T2, T3, T4								
	MPAA Rating : G, PG, PG-13, R, NC-17, X								
V-Chip (NTSC)	FCC Rating : TV-Y, TV-Y7, TV-G, TV-PG, TV-14, TV-MA								
	Canada English Rating : C, C8+, G, PG, 14+, 18+								
	Canada French Rating : G, 8ans+, 13 ans+, 16 ans+, 18 ans+								
Teletext (PAL)	Teletext System B Level 1, 1.5								

SDTV / HDTV FORMAT

Timing	Progressive Mode Frame Rate (Hz)		Interlace Mode Frame Rate (Hz)		Standard
1920 x 1080	60P	60	60I	30	SMPTE 274
	59.94P	60/1.001	59.94I	30/1.001	SMPTE 274
	50P	50	50I	25	SMPTE 274
	30P	30			SMPTE 274
	29.97P	30/1.001			SMPTE 274
	25P	25			SMPTE 274
	24P	24			SMPTE 274
	23.98P	24/1.001			SMPTE 274
1920 x 1035			60I	30	SMPTE 240
			59.94I	30/1.001	SMPTE 240
1280 x 720	60P	60			SMPTE 296
	59.94P	60/1.001			SMPTE 296
	50P	50			SMPTE 296

3D VIDEO FORMAT OUTPUT

3D Scanning Mode	Frame packing
	Field alternative
	Line alternative
	Side-by-Side (Full)
	L + depth
	L + depth + graphics + graphics-depth
	Top & Bottom
	Side-by-Side (Half)

DATA STORAGE DEVICE

Default	2000 timings + 2000 patterns
Internal Memory	3000 timings + 3000 patterns + 1000 programs
External Memory	USB Host interface

OTHERS

AC Input	100-240V, 50-60Hz, 5A maximum
Operation/Storage Temp.	+5~+40 deg.C / -20~+60 deg.C
Humidity	20~90 %

DIMENSION & WEIGHT

23294 (HxWxD)	88x350x350 mm / 4.5 kg 3.46x13.78x13.78 inch / 9.9 lbs
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* All specifications are subject to change without notice.

* All other brand and logo are trademarks or registered trademarks of their respective holders.

ORDERING INFORMATION

22294 : Video Pattern Generator
A222906 : IR Controller

A240001 : Remote Controller
A240100 : USB Disk 1GB

Developed and Manufactured by :

CHROMA ATE INC.
致茂電子股份有限公司

HEADQUARTERS
66 Hwaya 1st Rd., Kueishan
Hwaya Technology Park,
Taoyuan County 33383,
Taiwan
Tel: +886-3-327-9999
Fax: +886-3-327-8898
http://www.chromaate.com
E-mail: info@chromaate.com

CHINA
CHROMA ELECTRONICS
(SHENZHEN) CO., LTD.
8F, No.4, Nanyou Tian An
Industrial Estate, Shenzhen,
China PC: 518052
Tel: +86-755-2664-4598
Fax: +86-755-2641-9620

JAPAN
CHROMA JAPAN CORP.
472 Nippa-cho, Kouhoku-ku,
Yokohama-shi, Kanagawa,
223-0057 Japan
Tel: +81-45-542-1118
Fax: +81-45-542-1080
http://www.chroma.co.jp
E-mail: info@chromaate.com

U.S.A.
CHROMA SYSTEMS
SOLUTIONS, INC.
19772 Pauling, Foothill Ranch,
CA 92610
Tel: +1-949-600-6400
Fax: +1-949-600-6401
http://www.chromausa.com
E-mail: sales@chromausa.com

EUROPE
CHROMA ATE EUROPE B.V.
Morsestraat 32, 6716 AH Ede,
The Netherlands
Tel: +31-318-648282
Fax: +31-318-648288
http://www.chroma.eu.com
E-mail: sales@chroma.eu.com

Worldwide Distribution and
Service Network