Programmable Video Pattern Generator Model No. 22291/23291

RS-232 · CE · VESA · HDMI · ANALOG · DVI · HDCP · TV NTSC/PAL SECAM · TV Close Caption

TV Teletext · V-Chip · 4:3 SDTV · 16:9 HDTV

Programmable Video Pattern Generator

Model 22291/ 23291

Analog   250 MHz
DVI (TMDS) 165 MHz
HDMI V1.2a 150 MHz
TV/ HDTV

KEY FEATURES

- Analog pixel rate 250MHz
- DVI pixel rate 165MHz
- HDMI V1.2a pixel rate 150 MHz
- DVI-I & HDMI with HDCP output
- TV NTSC/PAL/SECAM signal support
- Bi-level SDTV format support
- Tri-level HDTV format support
- Y, Pb, Pr/ Y, Cb, Cr/ Y, R-Y, B-Y output
- S-Video Y/C separation output
- CVBS composite signal
- Closed Caption function (NTSC)
- V-Chip function (NTSC)
- Teletext function (PAL)
- Optical/Coaxial audio input (SPDIF)
- Low distortion analog audio wave output
- One-pixel resolution
- E-EDID Read / Write / Compare
- HDMI / DVI Plug & Play function
- Gamma correction
- Supporting Dynamic Pattern
- ESD circuit protection built-in
- PC Programming & Control
- Storing data with memory cards

Chroma 22291/23291 Video Pattern Generators combine the signals of analog (250MHz) and DVI (165MHz) / HDMI V1.2a (150MHz) to provide the VESA standard video signal source for LCD Monitor/ multi-media Monitor, it also integrates the TV (NTSC / PAL / SECAM) / SDTV / HDTV signal to fit in the multi-media display applications for the newly risen LCD TV, PDP TV, projector industries.

HDMI (High Definition Multimedia Interface) is the first industry-supported, uncompressed, all-digital audio / video interface. HDMI provides an interface between any audio/video source, such as a set-top box, DVD player, A/V receiver, amplifier and an audio and/or video monitor, such as a digital television (DTV). Chroma 22291/23291 supports standard, enhanced, or high-definition video, plus multi-channel digital audio on a single cable. It transmits HDTV standards and supports digital audio, with bandwidth to spare to accommodate future enhancements and requirements.

The video signal type of HDMI output is RGB/YCbCr and the sampling modes are 4:4:4 / 4:2:2. The audio output of HDMI V1.2a has 8 channels with built-in low distortion sine wave that can be input by Optical and Coaxial cable. The audio sample rate is 32.0 / 44.1 / 48 / 88.2 / 96 / 176.4 / 192KHz.

The function of HDCP provided with Chroma 22291/23291 is a specification to protect digital entertainment content across the DVI & HDMI interface. The HDCP specification provides a robust, cost-effective and transparent method for transmitting and receiving digital entertainment content to DVI & HDMI compliant digital displays.

For Analog signal RGB output, its pixel frequency can up to 250MHz and meet the RS-343A standard. It also supports Y, Pb, Pr / Y, Cb, Cr / Y, R-Y, B-Y and sync signals for tri-level output to fulfill the test requirements for HDTV. The digital signal is in TMDS output, the pixel frequency of TMDS is 25~165MHz and test screen resolution supports over UXGA.

As to the TV output spec, the image and chromaticity of 22291/23291 meet the regulations of NTSC and PAL that contain CVBS composite signal with BNC and Y/C (Luminance/Chrominance) image/chromaticity separation signal as well as S-Video output connector.

Chroma 22291/23291 have the functions of Closed Caption and V-chip for TV (NTSC). The ratings of MPAA for movie, USA TV, Canada English, and Canada French are available for selection. Closed Captions are captions that are hidden in the video signal. The V-Chip is a standard for placing program rating information on a television program, so that parents can choose to filter what program their children can watch.

Teletext is the generic name for a system of information broadcast as pages of test alongside the television signal for PAL system, 22291/23291 has 5 sets of default teletext code TEST 1 to TEST 5, and 640 packets available for users to download. Following the rising market of multi-media display the competition and demand for product quality are getting more and more severe as consumers often request and search for higher pixels with less bad dots as well as low cost video display products before purchasing. Under this circumstance, the Chroma 22291/23291 Video Pattern Generators with high resolution test quality and multi-output can meet the multimedia display applications at present, and the features described above make the Video Pattern Generator a indispensable testing tool for the RD engineers and production manufacturers.

Model 23291

ORDERING INFORMATION

22291 : Programmable Video Pattern Generator
Analog 250 MHz/DVI 165 MHz/HDMI 150MHz/TV/HDTV
23291 : Video Pattern Generator
Analog 250 MHz/DVI 165 MHz/HDMI 150MHz/TV/HDTV
A225003 : Remote Keypad
A222702 : Video Signal Box
A222704 : Video Signal Box
A222901 : TMDS ESD Protector
A222902 : HDMI ESD Protector

A225003

A222702

A222704

All specifications are subject to change without notice.

SPECIFICATIONS

ANALOG OUTPUT

Display Size	2048 x 2048 / 4096 x 2048 (Option)
Pixel Rate Range	3.126~250MHz
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
Blank Level	7.5 IRE / 0 IRE selectable

HORIZONTAL TIMING

Total Pixels	128~8192 pixels / 1 pixels resolution

VERTICAL TIMING

Total Pixels	6~4096 lines (non-interlace)
	6~2047 lines (interlace) / 1 line resolution
COMPOSITE SYNC	H OR V, H X OR V, with RS-343A Equalization & Serration Pulse
SEPARATE SYNC	Hs, Vs, Xs

DVI (TMDS) OUTPUT

Pixel Rate Range	25MHz~165MHz
E-EDID	Read / Write / Compare / Edit
HDCP Support	HDCP V.1.0
Compliant	DVI 1.0 specification
Video Signal Type	RGB or YCbCr
Sampling Mode	4:4:4

HDMI VIDEO OUTPUT

Version	HDMI V1.2a
Pixel Rate Range	25MHz~150MHz (1080p)
Support HDMI Timing	59 Timing (CEA-861C)
Pixel Repetition	4
Video Signal Type	RGB or YCbCr
Sampling Mode	4:4:4 / 4:2:2
Bits per Component	8 / 10 / 12
Color Space	RGB / ITU-R BT.601 / ITU-R BT.709
HDCP Support	HDCP V.1.1
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/RRC)
Bits per Sample	16
Waveform	Sine wave
Amplitude	-90.3 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

AUDIO (ANALOG) OUTPUT

Frequency Range	10Hz to 20KHz / 10Hz step
Waveform	Sine wave
Number of Channel	2 Channel (R / L)
Level Range	0V to 2V (at 600 Ohms Load)
Level Resolution	0.05V / Step
T.H.D	0.2%
Special Control Mode	Tone / Sweep / Mute / Repeat / Play Time

TV OUTPUT

Output Mode	NTSC		PAL					SECAM	
Subcarrier Frequency	443 4.43	M,J 3.58	BDGHI 4.43	M 3.57	60 4.43	N 4.43	Nc 3.58	4.41/4.25	MHz
Subcarrier Stability			±50						Hz

	Composite (BNC, RCA), S-Video
	Burst On/Off (NTSC, PAL)
Video Output	Contrast programmable
	Brightness programmable
	Saturation programmable
	Hue programmable
Closed Caption Support (NTSC)	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, 8 ans+, 13 ans+, 16 ans+, 18 ans+
Teletext (PAL)	Teletext System B Level 1 , 1.5

SDTV FORMAT : All SDTV Timing can be programmable

Timing	Progressive Mode Frame Rate (Hz)		Interlace Mode Frame Rate (Hz)		Standard
720 x 483	59.94P	60/1.001			SMPTE 293
			59.94I	59.94/2	ITU 601 SMPTE 170M
720 x 576	50P	50			ITU 1382
			50I	25	ITU 601

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

DATA STORAGE DEVICE

Flash Memory (read only)	500 timings + 200 patterns
NVRAM (R/W)	300 timings + 100 patterns + 100 programs
Memory Card (R/W)	Unlimited data storage

OTHERS

AC Input	100/115/230V, 47~63Hz auto range
Operation/Storage Temp.	+5~+40 deg.C / -20~+60 deg.C
Humidity	20~90 %

DIMENSION

22291 (H x W x D)	132.6 x 425 x 421.6 mm / 5.22 x 16.73 x 16.6 inch
23291 (H x W x D)	89 x 318 x 318.4 mm / 3.5 x 12.52 x 12.54 inch

WEIGHT

22291	9 kg / 19.82 lbs
23291	5 kg / 11.01 lbs

Solar Cell Test Equipment

Semiconductor/IC Test Equipment

LED Test Equipment

LCD/LCM Test Equipment

Video & Color Test Equipment

Optical Inspection Equipment

Power Supply Test Equipment

Passive Component Test Instruments

Electrical Safety Test Instruments

General Purpose Test Instruments

PXI Instruments & Systems