MY-Semi

MY9221
12-Channel LED Driver With Grayscale Adaptive Pulse Density Modulation Control

General Description

The MY9221, 12-channels (R/G/B x 4) constant current APDM (Adaptive Pulse Density Modulation) LED driver, operates over a 3.3V ~ 5V input voltage range (±10%). The device provides 12 open-drain constant current sinking outputs that are rated to 24V and delivers up to 60mA of high accuracy current to each string of LED. The current at each output is programmable by means of three external current setting resistors. MY9221 features a 10MHz EMI reduction data clock input. MY9221 also offers a 2-wire serial interface to send the grayscale data, control command including 16/14/12/8-bit grayscale selection, grayscale clock frequency division selection, output polarity selection for high power LED driving, output Tr/Tf timing selection, current output waveform selection, and to realize the internal-latch function. MY9221 provides adaptive pulse density modulation method to increase the visual refresh rate up to 1000 Hz @ 16-bit grayscale and reduce the flickers, and it also provides output current bilateral processing for EMI reduction. Moreover MY9221 utilizes clock duty recovery technique and pulse re-timing to help long distance and multiple cascading applications. MY9221 provides typical ±1% channel-to-channel LED current accuracy. Additional features include a ±0.1% regulated output current capability and fast output transient response. MY9221 is available in a 20-pin QFN or 24-pin SSOP/TSSOP package and specified over the -40°C to +85°C ambient temperature range.

Features

- 3.3 ~ 5V Operating supply voltage (±10%)
- R/G/B x4 Output Channels
- 3~60mA@5V Constant current output range
- 3~35mA@3.3V Constant current output range
- Current setting by 3 external resistors
- 24V Rated output channels for long LED strings
- ±1%(typ.) LED Current accuracy between channels
- ±2%(typ.) LED Current accuracy between chips
- 20Mbps(max.) ~ 140 Kbps(min.) data rate for EMI reduction data transfer [patent pending]
- 16 / 14 / 12 / 8 bit grayscale selection
- Built-in internal grayscale clock supports refresh rate >1000Hz@16-bit grayscale, >256KHz@8-bit grayscale
- Internal Grayscale clock frequency selection for High Power LED driving application (min. 33.6KHz)
- Grayscale clock source selection (SSOP & TSSOP only): internal or external
- PWM or APDM control selection [patent pending]
- Clock duty recovery for cascading application
- Schmitt trigger input
- Output Current Tr / Tf programmable
- Output Current Bilateral Processing for EMI reduction
- -40°C to +85°C Ambient temperature range

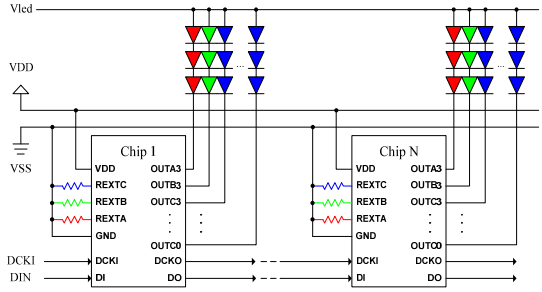
Applications

- Indoor and Outdoor LED Video Displays
- Full Color Mesh Display
- Full Color Dot Matrix Module
- Architectural and Decorative Lighting
- LCD Display Backlighting

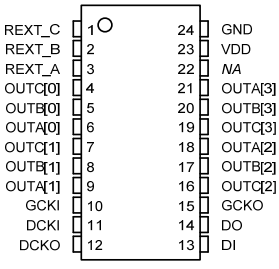
Order information

Part	Package Information	
MY9221SA	SOP24-236mil-1.0mm	2000 pcs/Reel
MY9221SS	SSOP24-150mil-0.635mm	2500 pcs/Reel
MY9221QD	QFN20-4mmx4mm-0.5mm	3000 pcs/Reel
MY9221TE	TSSOP24-173mil-0.65mm (Exposed Pad)	2500 pcs/Reel

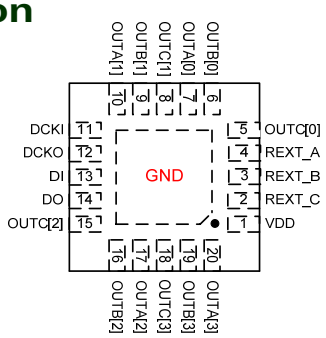
Typical Operating Circuits



Pin Configuration



SA / SS / TE



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For pricing, delivery, and ordering information, please contact MY-Semi Inc. at +886-3-560-1668, or email to INFO@MY-Semi.com.tw or visit MY-Semi's website at www.MY-Semi.com or www.MY-Semi.com.tw