

## iW7038

16-Channel Internal Current Sink LED Backlighting Driver for HDR LCD TV/Monitor/Notebook Displays

The **iW7038** is a 16-channel, internal current sink, high precision, LED backlighting driver for high dynamic range (HDR) LCD TVs, monitors and notebook displays.

It combines adaptive DC/DC or AC/DC feedback control together with Dialog's patented **BroadLED™** digital adaptive switch mode technology to enable the best system efficiency and thermal performance.

The iW7038 also offers Dialog's **AnyMode™** comprehensive dimming control, which includes head/tail/center mode PWM alignments to reduce motion blur. Additionally, it supports 13-bit PWM dimming and 11-bit analog dimming to improve contrast ratio in HDR applications.

Full protections are included, including built-in LED open/short detection and protection during both start-up and normal operation.

### Features

- 16 channel LED driver
- Internal current sink MOSFETs
- External current sense resistors
- Single power supply, 12V (9V to 16V range) 50V max. output voltage
- 200mA x 100% duty x 16ch output current capability, support 2 channel grouping
- 13-bit max PWM dimming
  - range from 0% to 99.9%
  - 1μs min. PWM output pulse
  - Programmable output slew rate for EMI control (0.35μs/0.70μs/1μs)
- Enhanced pure digital **BroadLED™** mode
- 11-bit global or 9-bit independent analog dimming
- LED current and PWM duty update both
- 46Hz to 32kHz VSYNC input, 46Hz to 32KHz PWM output
- Adaptive external DC/DC or AC/DC feedback control to optimize system power efficiency
- PWM-generator clock
  - HSYNC (up to 22MHz)
  - PLL (20MHz)
  - Internal OSC (10MHz)
- 16MHz Max SPI with Daisy chain
- Optional Key registers write protection with password, and optional data packet CRC/checksum for noisy SPI interface  
Programmable LED open/short detection threshold and protection
- High temperature shutdown and auto recovery
- Fault interrupt output (open drain, need external pull up)
- HBM +/- 2kV JESD22-A114 -20 at all pins
- -20 to +85°C operating ambient temperature range
- 145°C max. operating junction temperature
- Package: 7mm x 7mm QFN48 with EP, 0.5mm pin pitchsynchronized to VSYNC

### Applications

- HDR LCD TV
- HDR LCD Monitor
- HDR NB display
- Automobile Display

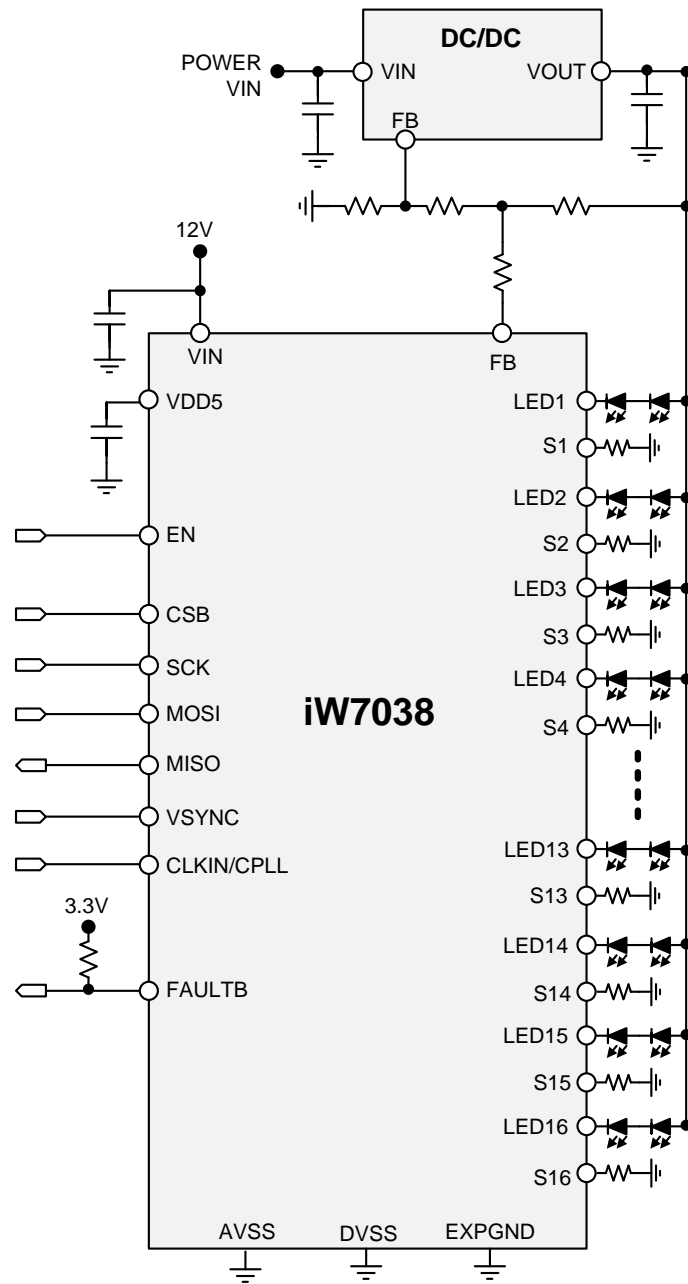


Figure 1. System Diagram