

iW7039

32-Channel Internal Current Sink LED Backlighting Driver

The **iW7039** is a 32-channel, internal current sink, high precision, LED backlighting driver for high dynamic range (HDR) LCD TVs, monitors and notebook displays. The device combines adaptive DC/DC feedback control with Dialog's **BroadLED™** digital adaptive switch mode technology to enable best system efficiency and thermal performance.

The iW7039 integrates the ability to use either analog or digital dimming methods in one device. With a 10-bit/11-bit global or individual channel analog dimming and 12-bit PWM digital dimming, the device improved contrast ratio in HDR displays. The current sinks can drive up to 66mA per channel and have very tightly controlled current accuracy.

A full array or protection circuits are integrated, including built-in LED open/short detection, over temperature protection and protection during both start-up and normal operation.

Features

- 32 channel LED driver, pin map compatible with 16 channel iW7038
 - Internal Current sink
- Support 12V or 5V Single power supply
- 65V max. LED pin rating
- 66mA x 100% duty x 32ch output current, support channel grouping.
- 12-bit PWM dimming.
- 10-bit global and independent analog dimming (I-dimming), optional 66mA/44mA/22mA full range.
- Head mode with optional off time control.
- Optional 350/650/950/1600ns PWM output slew rate.
- Optional 0.5ms to 10ms (0.5ms per step), LED current rising and falling slop control in analog dimming.
- 44Hz to 32KHz V_{SYNC} input, 44Hz to 64KHz PWM output.
- 9-bit adaptive external DC/DC feedback control
- 3 PWM-generator clock options
 - External H_{SYNC} (up to 26MHz)
 - APLL (15MHz to 26.6MHz)
 - DPLL (10MHz), support gaming monitor VRR (Variable Refresh Rate)
- 26.6MHz Max SPI with Daisy chain
- Programmable LED open/short detection threshold and protection
- Programmable over temperature protection
- Optional Key registers write protection with password
- Optional data packet CRC/CHECKSUM for noisy SPI
- Fault interrupt output (open drain, need external pull up)
- -20 to +85°C operating ambient temperature range
- 145°C max. operating junction temperature
- Package: 7mm x 7mm QFN48-EP package

Applications

- TV
- Monitor
- Notebook

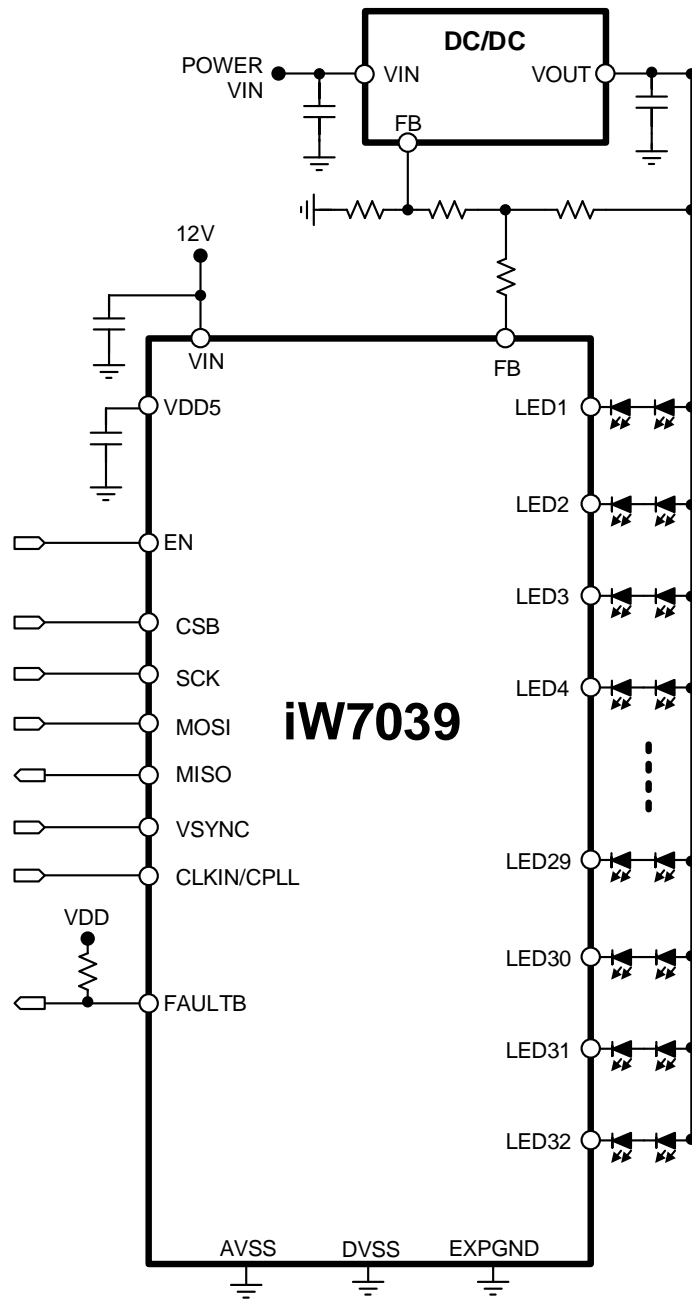


Figure 1. Typical Systems Diagram