

## iW7027

16-Channel LED Driver for LCD Panel Backlighting

The **iW7027** is a versatile, 16-channel, high precision LED backlight driver for medium to large size LCD display panels.

The LED current sink MOSFETs are external, allowing maximum flexibility for different current and voltage configurations. Built-in safety features include over-temperature shutdown, open and short LED detection.

High Speed SPI daisy-chain interface simplifies the system design when multiple iW7027s are used to support more than 16 LED strings.

Scan mode provide flexible PWM mode to reduce motion blur.

Internal PLL simplifies the system requirement with only  $V_{\text{SYNC}}$  signal needed.

It uses Dialog's patented 2-pin sensing technology to realize LED short detection.

### Features

- 16ch LED driver with external power MOSFET, with 5V and 9-16V(Typ =12V) input supply voltage range
- Patented BroadLED™ adaptive switch mode technology for high current matching at maximum efficiency
  - Channel Current matching accuracy  $\pm 3\%$
  - Enables use of cheaper, loosely binned LED arrays for lower BOM cost
- Dynamic external Boost or Buck controller interface to optimize system power efficiency
  - Dual interface controls one or two DC-DC converters
  - Programmable LED channel assignment for individual DC-DC converters
- High speed SPI interface and SPI daisy-chain support
- PWM-generator clock
  - Internal OSC
  - External clock (HSYNC)
  - PLL-synthesized clock from external signal
- Industry only Patented Gate Sensing to detect channel short without external component
- Dimming control
  - 12-bit PWM dimming range from 0% to 99.9%
  - Supports direct PWM dimming control
- Supports Scan Mode
- Supports VSYNC frequency from 50Hz to 480Hz.
- Programmable external MOS driver slew rate
- Integrated OTP with 2 times programmable access
  - With ECC for one bit error
  - Two bit OTP error fault generation
- Programmable burn-in mode and direct PWM mode
- Supports different channel delay in all VSYNC range setting for every channel
- Comprehensive protection features
  - LED open fault detection
  - Programmable LED short level fault detection
  - Over-temperature shutdown
  - Over two OTP bits error shutdown
  - Microcontroller interruption interface

### Applications

- LED backlighting for LCD-TV sets and LCD monitors

# 1. Overview

## 1.1 Typical Application

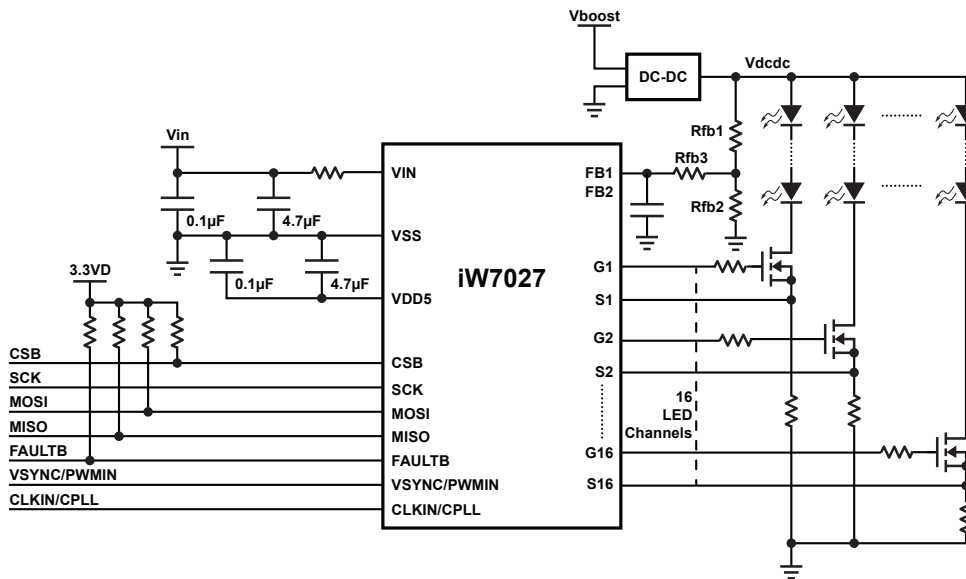


Figure 1. iW7027 Typical Application 1 Boost Diagram

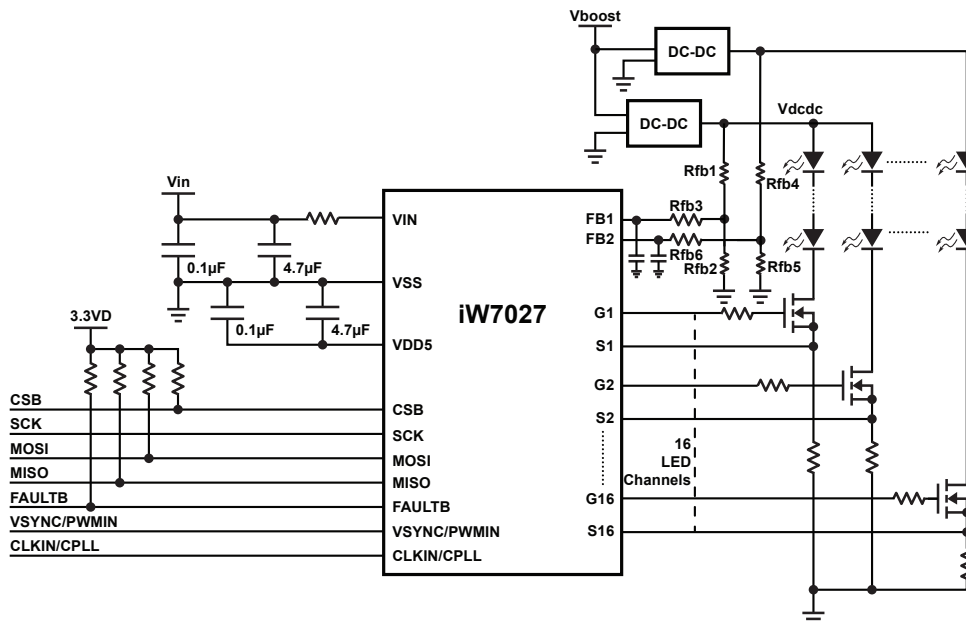


Figure 2. iW7027 Typical Application 2 Boost Diagram