



## NXP universal LED driver UBA3070

# Driving LED strings made simple

Light-up your LCD TV or monitor with the NXP universal LED driver UBA3070. This versatile, high-voltage LED control IC is specifically designed for applications where large numbers of LEDs have to be driven accurately and efficiently. So it's the perfect choice for LCD backlighting systems.

### Key features

- ▶ Switch-mode buck converter capable of driving LED strings up to 600 V
- ▶ Direct PWM dimming
- ▶ Fast transient response through cycle-by-cycle current control
  - Prevents LED current over- and undershoots
- ▶ Zero-current switching for turn-on of switch
- ▶ Zero-voltage or valley switching for turn-on of switch
- ▶ Over-current and over-temperature protection, under-voltage lockout and leading edge blanking
- ▶ Available in DIP8 and SO8 packages

### Key benefits

- ▶ Low system cost
- ▶ Reduced component count
- ▶ Power-efficient boundary conduction mode of operation
  - No reverse recovery losses in freewheel diode
  - Requires smaller, lower-valued inductor
- ▶ No LED binning on forward voltage required
- ▶ Allows use of a single, loosely controlled input voltage for multiple LED strings

### Key applications

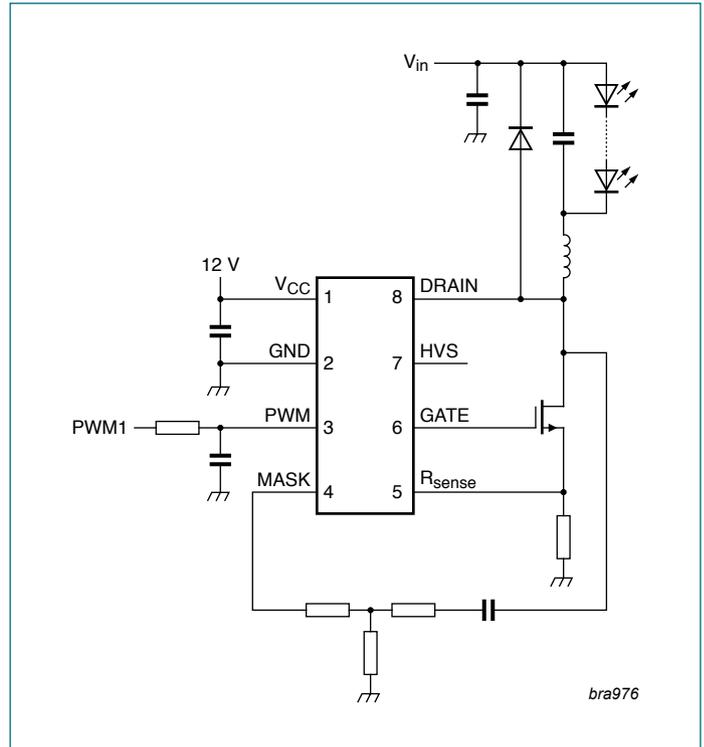
- ▶ High-voltage backlighting in LCD TVs and monitors



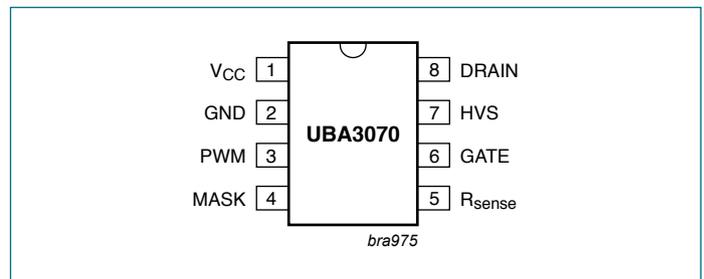
The UBA3070 is an integrated switch-mode buck converter for controlling the current through LED strings. Ideal as the driver stage for LCD backlighting applications, it enables optimal performance for series-connected LED strings in 0D, 1D and 2D segmented backlight units (BLUs).

As the UBA3070 drives an external power device, it can be used for all kinds of BLU designs from high- to low-power LEDs, and high- to low-voltage LED strings. Consequently, it can be used with all LCD screen sizes and all LED types. And by combining the UBA3070 with appropriate power devices, you can minimize the number of driver stages needed by optimizing the number of LEDs connected in series.

Each driver stage consists of a buck converter operating in boundary conduction mode. Its peak level can be set through the external sense resistor. As the zero-level is fixed, the converter acts as a current source with an average current through the LED of half the peak value through the inductor. The ripple current through the LEDs can be chosen via the external capacitor connected in parallel to the LEDs.



Basic application diagram



Pin configuration (SO8 and DIP8)