18×4 DOTS MATRIX LED DRIVER WITH 12MHZ SPI

Advance Information
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GENERAL DESCRIPTION

The IS32FL3746B is a general purpose 18×n (n=1~4) LED Matrix programmed via 12MHz SPI interface. Each LED can be dimmed individually with 8-bit PWM data and 8-bit DC scaling data which allowing 256 steps of linear PWM dimming and 256 steps of DC current adjustable level.

Additionally each LED open state can be detected, IS32FL3746B store the open information in Open-Registers. The Open Registers allowing MCU to read out via SPI, inform MCU whether there are LEDs open or short LEDs.

The IS32FL3746B operates from 2.7V to 5.5V and features a very low shutdown and operational current.

IS32FL3746B is available in WFQFN-32 (5mm×5mm) and eTQFP-32 packages. It operates from 2.7V to 5.5V over the temperature range of -40°C to +125°C.

FEATURES

- Supply voltage range: 2.7V to 5.5V
- 18 current sinks
- Support 18×n (n=1~4) LED matrix configurations
- Accurate Color Rendition
  - 8-bit PWM
  - 8-bit Dot correction
  - 8-bit Global current adjust
- SDB rising edge reset SPI module
- 29kHz PWM frequency
- 12MHz SPI interface
- Individual open and short error detect function
- 180 degree phase delay operation to reduce power noise
- Spread spectrum
- De-Ghost
- WFQFN-32 (5mm×5mm) and eTQFP-32 packages
- AEC-Q100 qualification in progress

APPLICATIONS

- Automotive clusters
- Dashboards
- Automotive interiors

TYPICAL APPLICATION CIRCUIT

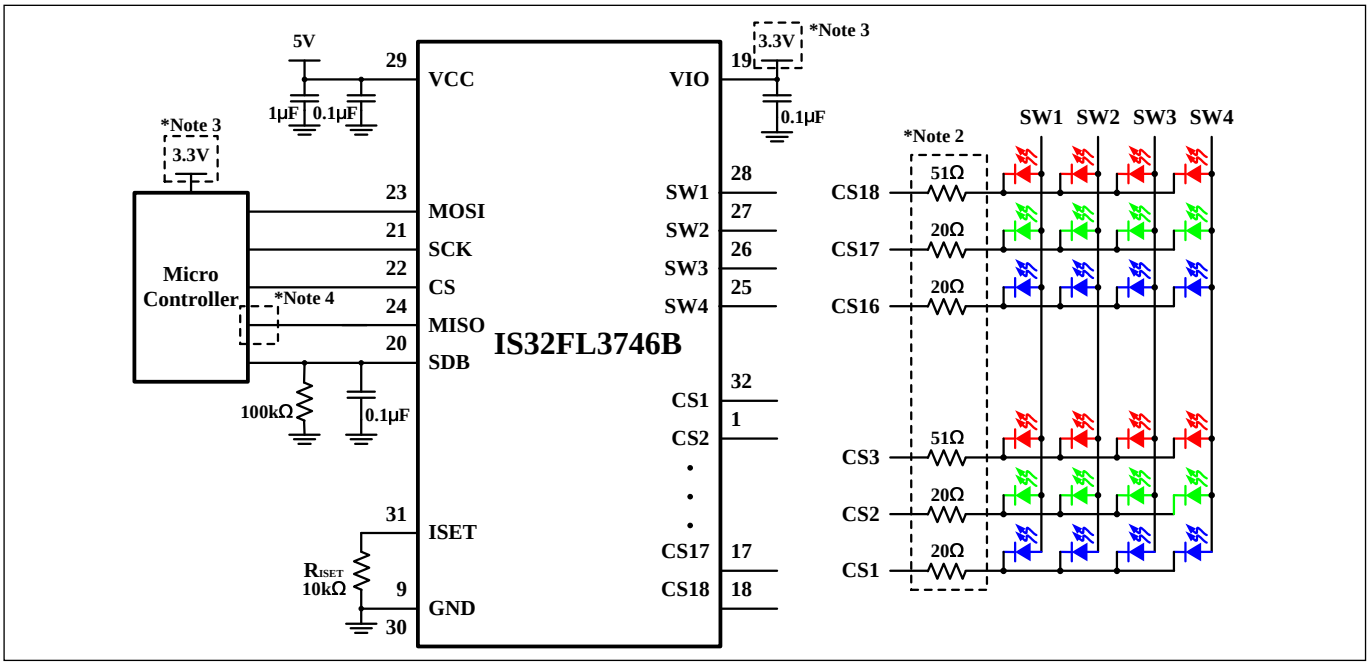

Figure 1 Typical Application Circuit: 24 RGBs

TYPICAL APPLICATION CIRCUIT (CONTINUED)

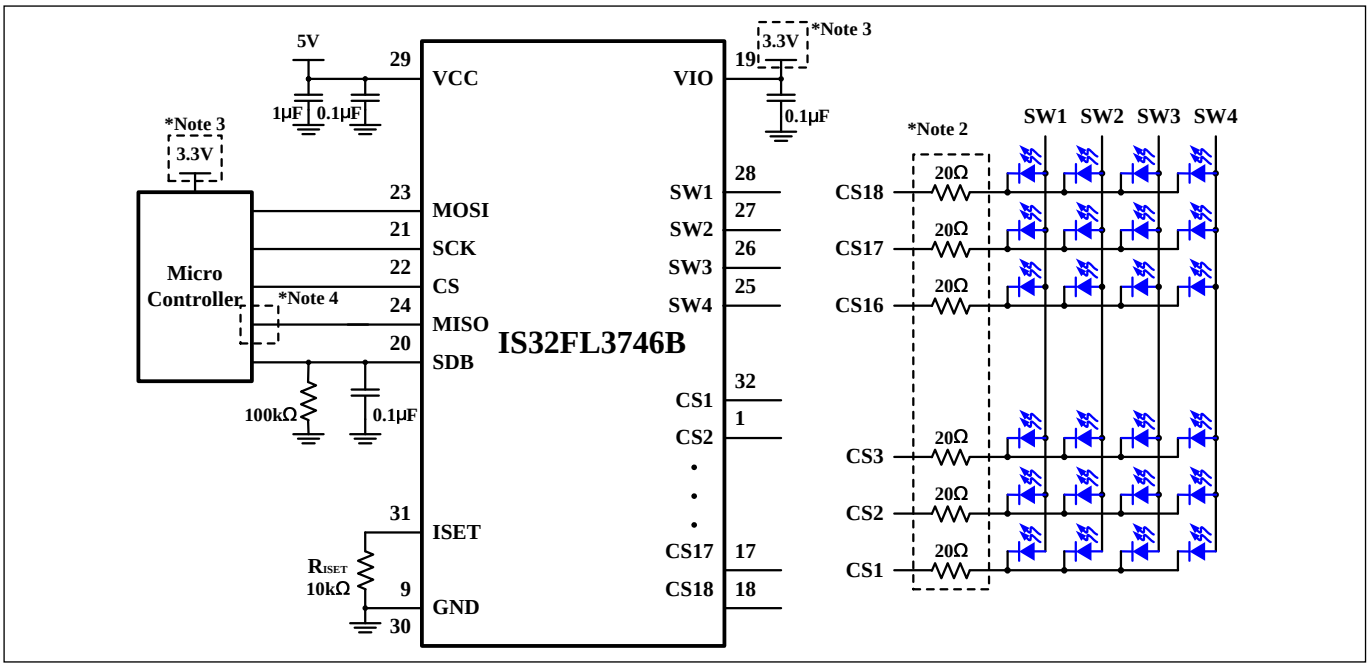

Figure 2 Typical Application Circuit: 72 Mono Color LEDs

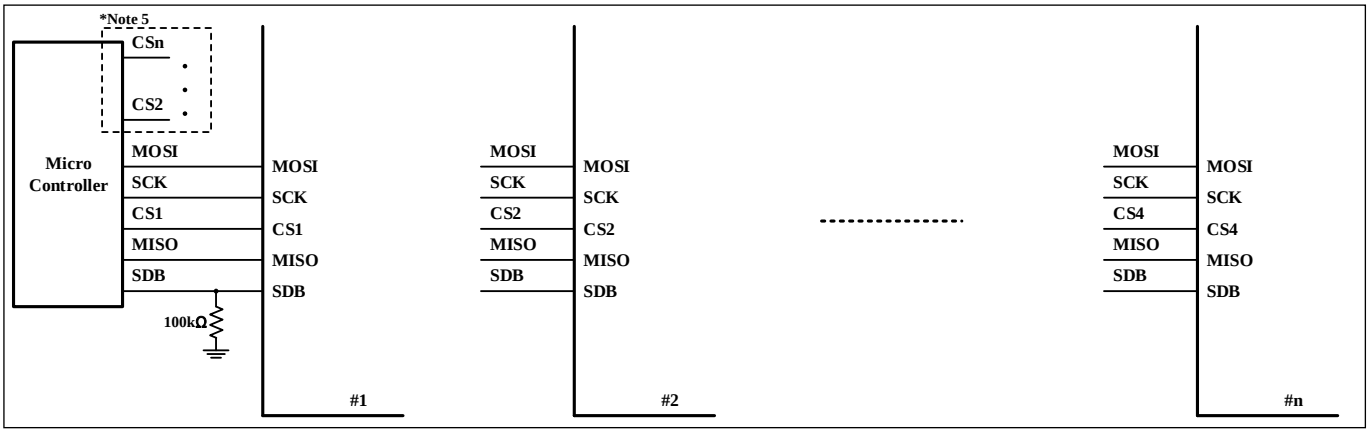

Figure 3 One MCU control multi-IS32FL3746B

Note 1: IC should be placed far away from the antenna in order to prevent the EMI.
Note 2: The 20Ω or 51Ω resistors between LED and IC are only for thermal reduction, for mono red LED, if V_{CC}=3.3V, don't need these resistors.
Note 3: The V_{IH} of SPI bus should be same as VIO pin. VIO pin need to connect to a reference voltage and usually it is same as the VCC of MCU. If VCC of MCU is 1.8V, VIO=1.8V, if VCC of MCU is 5V, VIO=5V.
Note 4: MISO V_{OH}=VIO.
Note 5: Each IS32FL3746B should have independent CS pin.