

IS31FL3733A

12x16 DOTS MATRIX LED DRIVER WITH INDIVIDUAL AUTO BREATH FUNCTION

Advance Information
July 2018

GENERAL DESCRIPTION

The IS31FL3733A is a general purpose 12x16 LEDs matrix driver with 1/12 cycle rate. The device can be programmed via an I2C compatible interface. Each LED can be dimmed individually with 8-bit PWM data which allowing 256 steps of linear dimming.

IS31FL3733A features 3 Auto Breathing Modes which are noted as ABM-1, ABM-2 and ABM-3. For each Auto Breathing Mode, there are 4 timing characters which include current rising / holding / falling / off time and 3 loop characters which include Loop-Beginning / Loop-Ending / Loop-Times. Every LED can be configured to be any Auto Breathing Mode or No-Breathing Mode individually.

Additionally each LED open and short state can be detected, IS31FL3733A store the open or short information in Open-Short Registers. The Open-Short Registers allowing MCU to read out via I2C compatible interface. Inform MCU whether there are LEDs open or short and the locations of open or short LEDs.

The IS31FL3733A operates from 2.7V to 5.5V and features a very low shutdown and operational current.

IS31FL3733A is available in QFN-48 (6mmx6mm) and eTQFP-48 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
- 16 current source outputs for row control
- 12 switch current inputs for column scan control
- Up to 192 LEDs (12x16) in dot matrix
- Programmable 12x16 (64 RGBs) matrix size with de-ghost function
- 1MHz I2C-compatible interface
- Selectable 3 Auto Breath Modes for each dot
- Auto Breath Loop Features interrupt pin inform MCU Auto Breath Loop completed
- Auto Breath offers 128 steps gamma current, interrupt and state look up registers
- 7.4kHz/25kHz PWM frequency option
- 256 steps Global Current Setting
- Individual on/off control
- Individual 256 PWM control steps
- Individual Auto Breath Mode select
- Individual open and short error detect function
- Cascade for synchronization of chips
- QFN-48 (6mmx6mm) and eTQFP-48 packages

APPLICATIONS

- Mobile phones and other hand-held devices for LED display
- Gaming device (Keyboard, Mouse etc.)
- LED in white goods application

TYPICAL APPLICATION CIRCUIT

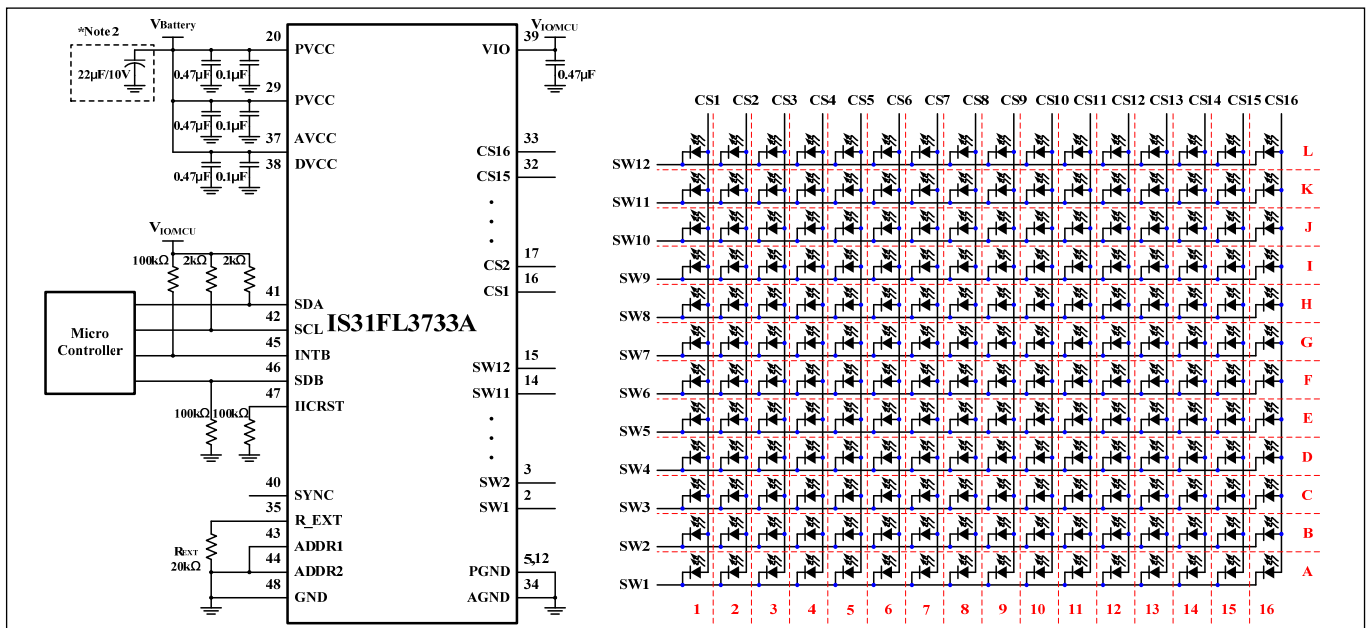


Figure 1 Typical Application Circuit (12x16)

IS31FL3733A

TYPICAL APPLICATION CIRCUIT (CONTINUED)

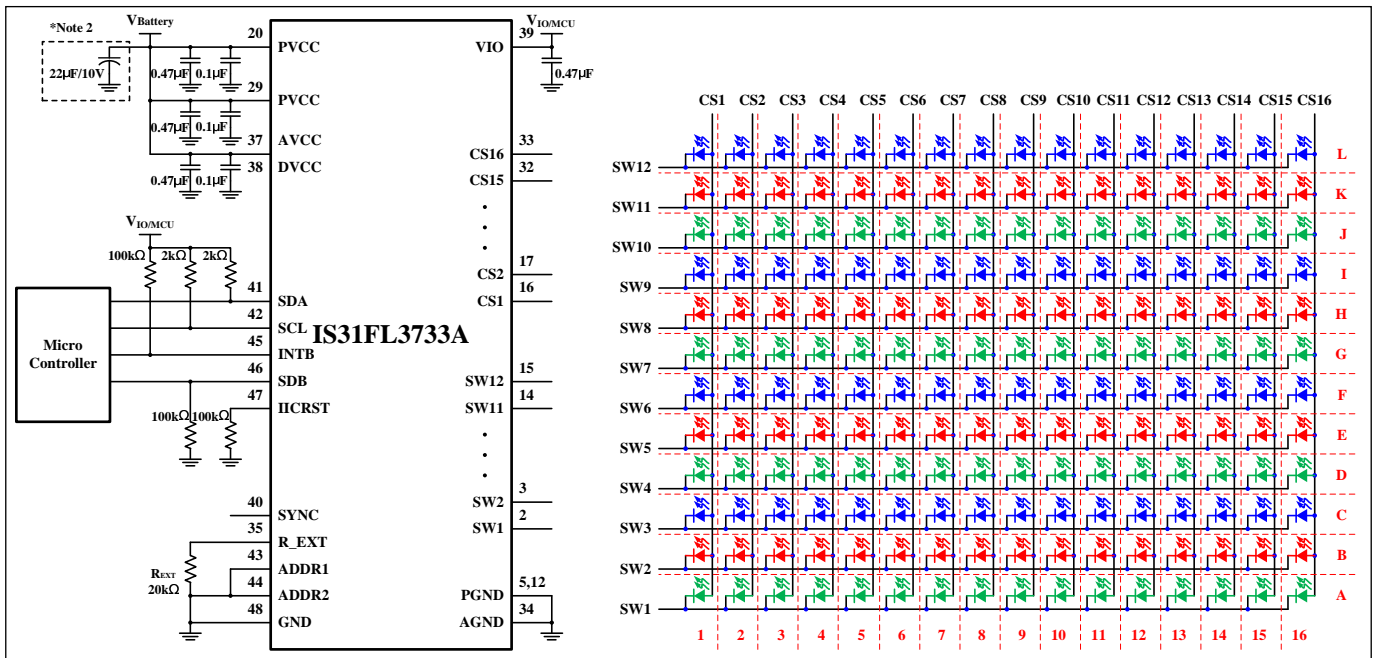


Figure 2 Typical Application Circuit (RGB)

Note 1: For the mobile applications the IC should be placed far away from the mobile antenna in order to prevent the EMI.

Note 2: Electrolytic/Tantalum Capacitor maybe considered for high current application to avoid audible noise interference.

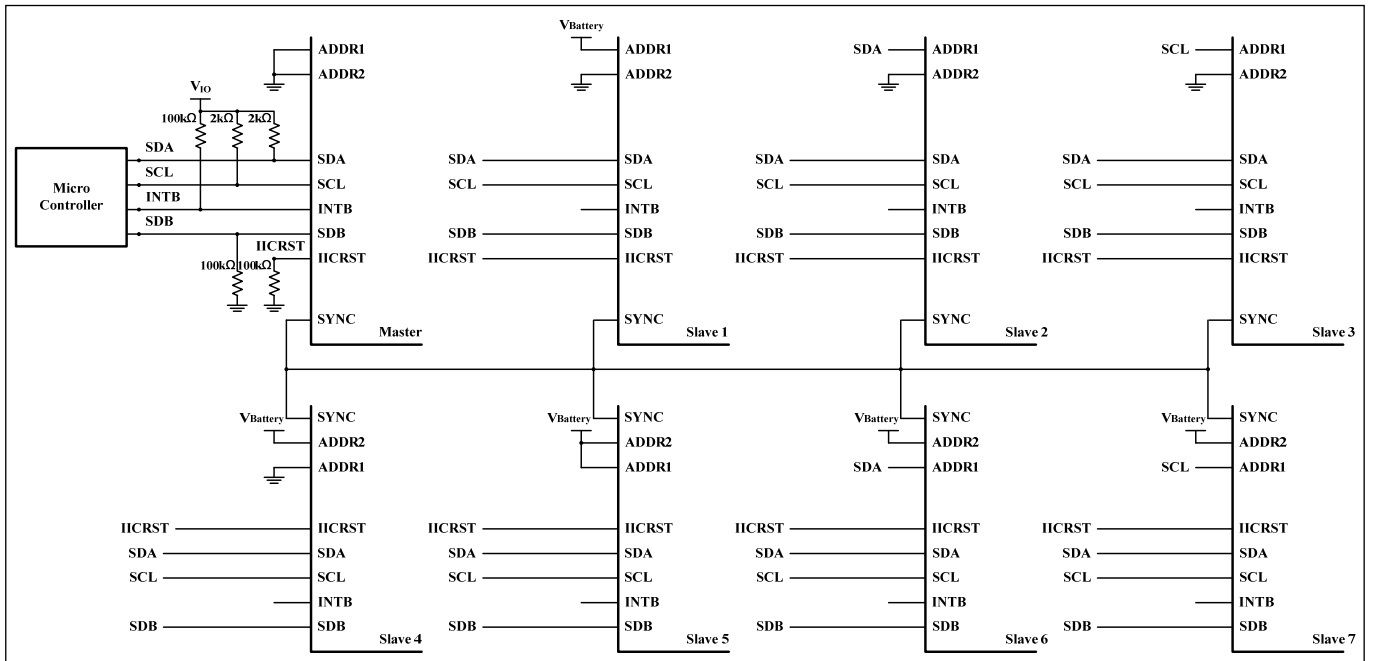


Figure 3 Typical Application Circuit (Eight Parts Synchronization-Work)

Note 3: One system should contain only one master, all slave parts should be configured as slave mode before the master is configured as master mode. Work as master mode or slave mode specified by Configuration Register (Function register, address 00h). Master part output master clock, and all the other parts which work as slave input this master clock.

Note 4: The V_{IO} should be 1.8V ≤ V_{IO} ≤ V_{CC}. And it is recommended to be equal to V_{OH} of the micro controller. For example, if V_{OH}=1.8V, set V_{IO}=1.8V, if V_{OH}=3.3V, set V_{IO}=3.3V.