



Features

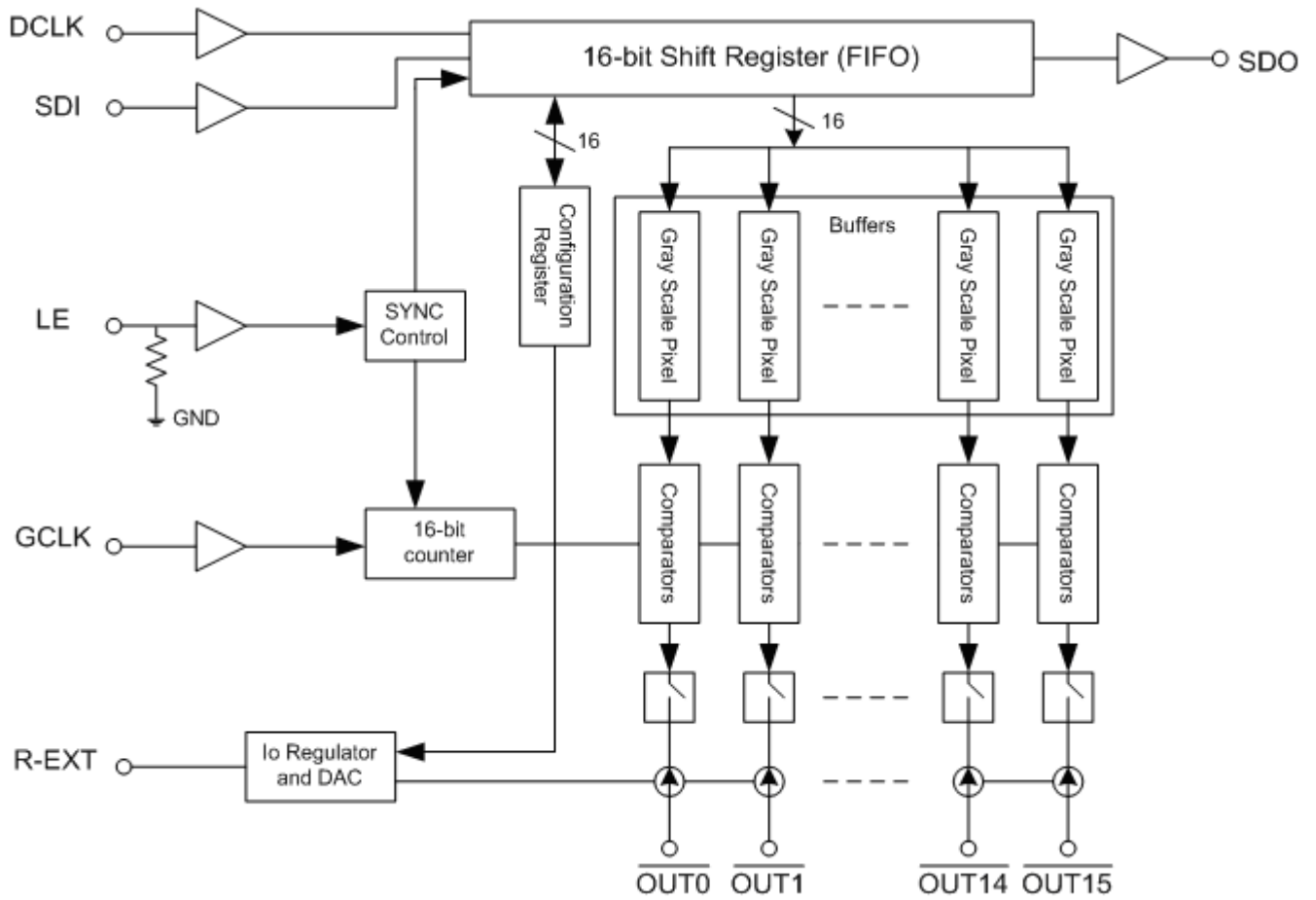
- 16 constant-current output channels
- 16-bit gray scale control
- 6-bit linear programmable output current gain
- Constant output current invariant to load voltage change:
3~45mA@V_{DD}=5V
3~30mA@V_{DD}=3.3V
- Excellent channel output current accuracy:
between channels: $\lt; \pm 1.5\%(\text{typ.})$, and between ICs: $\lt; \pm 3\%(\text{typ.})$
- Output current adjusted with an external resistor
- Staggered delay of output, preventing from current surge
- Maximum data clock frequency: 30MHz
- Maximum gray scale clock frequency: 33MHz
- Schmitt trigger input
- 3V~5.5V Supply Voltage

General Description

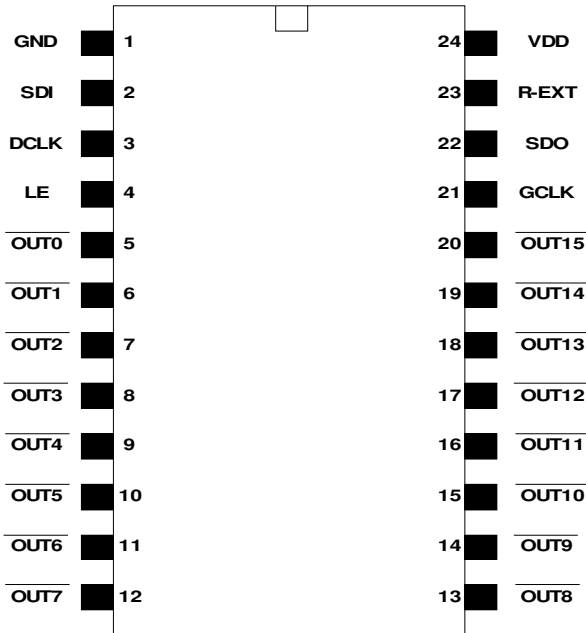
IT1502 is for LED display applications with an internal 16-bit color depth Pulse Width Modulation (PWM) control and provides a 16-bit shift register which converts serial input data into each pixel gray scale of output port. At IT1502 output port, sixteen regulated current ports are designed to provide uniform and constant sinking current for driving LEDs with different V_f variations. The output current can be preset through an external resistor and can be programmed to 64 gain stages for LED brightness adjustment.

With the PWM technology, IT1502 converts the “on” time into several “random on” periods. This feature increases the visual refresh rate equally. When building a 16-bit color depth video, this PWM reduces the flickers and improves the fidelity. IT1502 drives the corresponding LEDs to the brightness specified by image data. IT1502 offloads the signal timing generation of the host controller which just needs to feed data into drivers. With IT1502, all output channels can be built with 16-bit color depth (65536 gray scales). Each LED’s brightness can be calibrated from minimum to maximum brightness with compensated gamma correction or LED deviation information inside the 16-bit image data.

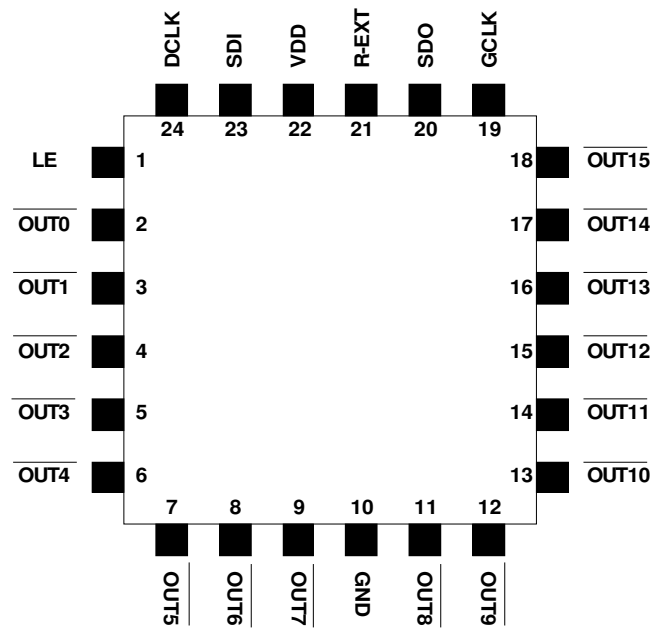
Block Diagram



Pin Configurations



IT1502SP



IT1502QF

Terminal Description

Pin Name	Description
GND	Ground terminal for control logic and current sink
SDI	Serial-data input to the shift register
DCLK	Clock input terminal used to shift data on rising edge and carries command information when LE is asserted
LE	Data strobe terminal and controlling command with DCLK
OUT0~OUT15	Constant current output terminals
GCLK	Gray scale clock terminal clock input for gray scale. The gray scale display is counted by gray scale clock comparing with input data
SDO	Serial-data output to the receiver-end SDI of next driver IC
R-EXT	Input terminal used to connect an external resistor for setting up output current for all output channels
VDD	3.3V/5V supply voltage terminal