![Chipsmall logo]

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

SKYWORKS

AAT2428

Sixteen-Channel White LED Driver Solution with LED Current and Timing Control

General Description

The AAT2428 is a highly integrated, high efficiency white LED backlight solution for large size LCD panels used in LCD TVs. Integrated precision current sinks provide drive for up to 16 LED channels. The IC has user program-mable options for current sinks to be controlled globally, in banks of 2, or 4 LED groups. A wide range of series LEDs is possible because the current sinks can withstand up to 50V.

A SPI compatible interface operates up to 15MHz, allow-ing fast, independent digital control of each current sink. 16 unique device addresses allow for control of up to 128 LED strings. Full scale LED current is programmed from 40mA to 150mA using an external resistor. LED bright-ness variation is compensated by setting relative current sink magnitudes with an 8-bit resolution dot correction register for each LED current sink. LED dimming and phase delay are programmable with 12-bit resolution though the SPI bus interface. Both the 12-bit resolution grayscale PWM brightness setting and phase delay are generated from an external VSYNC signal and an exter-nal or internally generated GSCLK signal.

The AAT2428 provides fault handling and fault reporting through the SPI interface. Reported fault conditions include over-temperature, open LED detection and short circuit LED detection. The threshold for short circuit LED detection is programmable. All fault conditions are reported on the open drain FAULT output pin.

The LED supply voltage may be regulated using a current sense feedback function that provides both voltage and current mode feedback. This analog feedback signal rep-resents the highest VF string of LEDs. A current sense feedback input signal allows for cascading any number of AAT2428s.

The AAT2428 is available in Pb-free, thermally enhanced 48-pin 7mm x 7mm TQFN package.

Features

- V_{IN} Range: 10.8V – 28V
- 16 Programmable LED Current Sinks
  - ±1.5% Accuracy @ 25°C (101.72mA)
  - ±2.0% Matching @ 25°C (101.72mA)
- SPI Interface
  - Digitally Programmable LED Channels
  - LED Bank Control Options
    - 1 (all 16 channels)
    - 2 (2 x 8 Channels)
    - 4 (4 x 4 Channels)
  - Up to 15MHz Clock Speed
  - Read/Write Registers
- High Resolution Digital Control of LED Banks
  - 12-Bit Resolution Grayscale PWM Brightness
  - 12-Bit Resolution Channel Phase Delay
  - 8-Bit Resolution Current Setting (Dot Correction)
- V_{SYNC} PWM and Delay Synchronization
- V_{SYNC} range of up to 1kHz
- External or Internal Grayscale Clock
- 16 Unique Device Addresses
  - Up to 256 Current Sinks
- Integrated Fault Protection
  - Open Circuit LED(s)
  - Programmable Shorted-LED Threshold
  - Current Limit Protection
  - Over-Temperature Protection
- Soft-Start to Minimize Inrush Current
- 7mm x 7mm 48 pin TQFN Package

Applications

- Large Size LCD TVs, Panels
- Large Tile Direct LED Backlight
- LCD Monitors
- LED Backlighting Applications

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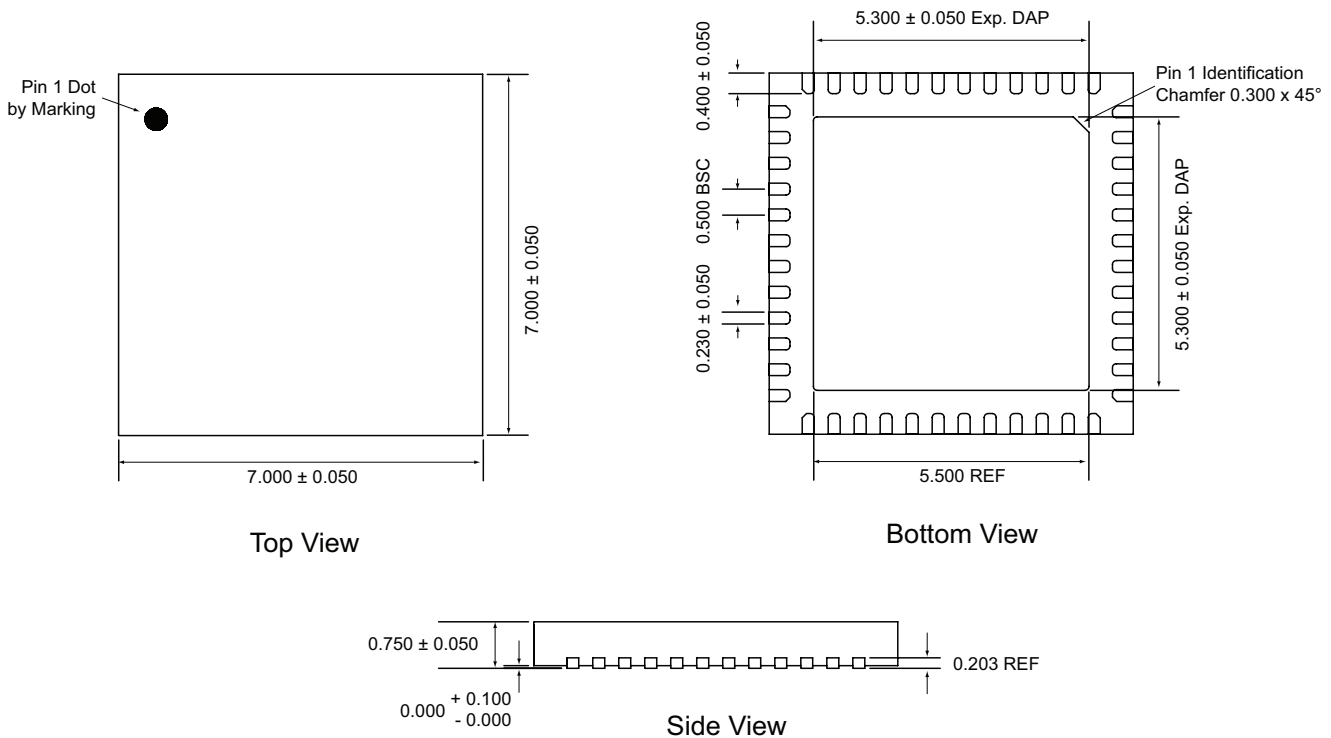
Ordering Information

Package	Marking	Part Number[2] (Tape and Reel)
TQFN77-48	S3XYY	**AAT2428ISZ-T1**

Skyworks Green™ products are compliant with all applicable legislation and are halogen-free. For additional information, refer to *Skyworks Definition of Green™*, document number SQ04-0074.

Package Information

TQFN77-48L[3]

Pin 1 Dot by Marking

7.000 ± 0.050

7.000 ± 0.050

Top View

5.300 ± 0.050 Exp. DAP

0.400 ± 0.050

0.500 BSC

0.230 ± 0.050

Pin 1 Identification Chamfer 0.300 x 45°

5.300 ± 0.050 Exp. DAP

5.500 REF

Bottom View

0.750 ± 0.050

0.000 +0.100 / -0.000

0.203 REF

Side View

All dimensions in millimeters.

1. XYY = Assembly and date code.
2. Sample stock is generally held on part numbers listed in **BOLD**.
3. The leadless package family, which includes QFN, TQFN, DFN, TDFN, and STDFN, has exposed copper (unplated) at the end of the lead terminals due to the manufacturing process. A solder fillet at the exposed copper edge cannot be guaranteed and is not required to ensure a proper bottom solder connection.

Sixteen-Channel White LED Driver Solution with LED Current and Timing Control

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