

Two-Channel LED Backlight Driver for LCD TV Applications**General Description**

The AAT2499 is a highly integrated two channel TVLite™ LED driver for backlight arrays in large size LCD TV Panels and is specifically paired for operation with the AAT2469 control IC. Integrated current sink MOSFETs can stand off up to 150V and regulate LED current up to 250mA per string. An internal I-Precise current control on each constant current sink circuit assures current accuracy and matching tolerances are better than $\pm 1.5\%$.

The two LED constant current sinks are externally controlled by a 64-bit shift register that provides 12 bits of grayscale and delay programming resolution.

The LED string supply voltage is regulated by a current sense feedback signal to the host AAT2469 control IC, which in turn provides a current mode feedback to the system LED power source.

The AAT2499 fault system includes open circuit LED, short circuit LED and over temperature detection. All fault conditions are reported via an open drain fault flag and through the serial shift register. Thermal protection circuitry shuts down the device in the event of an over-temperature condition.

The AAT2499 is available in a Pb-free 16 pin SOP-EP package.

Features

- LED string current control up to 250mA/string
- 150V LED string protection
- 2 Programmable LED Current Sinks
 - $\pm 1.5\%$ Accuracy @ 25°C
 - $\pm 1.5\%$ Matching @ 25°C
- High Speed Shift Register I/O
- High Resolution Digital Control for Individual Channels
 - 12-Bit Resolution Grayscale PWM Brightness¹
 - 12-Bit Resolution Channel Phase Delay¹
- Global Current Setting (Dot Correction) By Simple Reference Adjustment
- VSYNC PWM and Delay Synchronization
- Integrated Fault Protection
 - Programmable Fault Blanking
 - Open and Short Circuit LED(s)
 - Current Limit Protection
 - Over-Temperature Protection
- Fault Reporting Via Shift Register Read Bits
- Soft-Start to Minimize Inrush Current
- 16 pin SOP-EP Package with 1.27mm lead pitch

Applications

- Large Size LCD TVs
 - Large Tile Local Dimming Systems
 - Segmented Edge Backlighting
- LCD Panels White LED Backlight.

1. 11-Bit Resolution with PWM Doubling

AAT2499

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Ordering Information

Package	Marking ¹	Part Number (Tape and Reel) ²
SOP-EP-16	XXYW2499	AAT2499IAN-T1

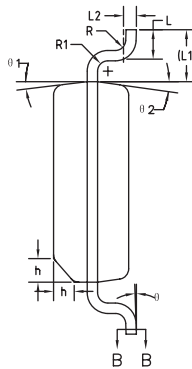
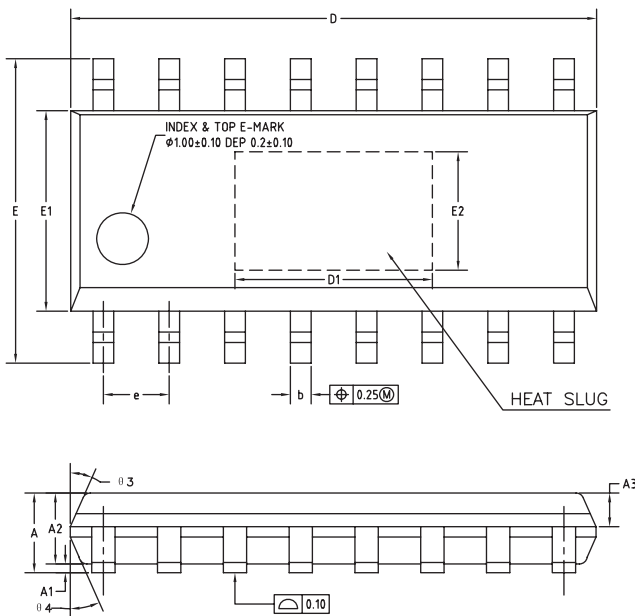


Skyworks Green™ products are compliant with all applicable legislation and are halogen-free.

For additional information, refer to *Skyworks Definition of Green™*, document number SQ04-0074.

Package Information

SOP-EP-16



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	1.35	1.52	1.70
A1	0.02	0.07	0.12
A2	1.35	1.45	1.55
A3	0.55	0.65	0.75
b	0.38	—	0.47
b1	0.37	0.40	0.43
b2	0.371	—	0.44
c	0.20	—	0.25
c1	0.19	0.20	0.21
c2	0.191	—	0.22
D	9.86	9.96	10.06
D1	3.30	3.81	4.00
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
E2	1.78	2.29	2.50
e	1.27BSC		
L	0.45	0.60	0.80
L1	1.04REF		
L2	0.25BSC		
R	0.07	—	—
R1	0.07	—	—
h	0.30	0.40	0.50
θ	0°	—	8°
θ 1	6°	8°	10°
θ 2	6°	8°	10°
θ 3	5°	7°	9°
θ 4	5°	7°	9°

All dimensions in millimeters.

1. XX = assembly code, YW = year 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.

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