

ACT801 Product Brief, 22-Oct-12

Active Direct Drive[™] LED Driver

FEATURES

- Highest Efficiency Solution Up to 8W
- High Power Factor (> 0.90)
- Low Total Harmonic Distortion
- Low Component Count
- Low EMI
- Low Crest Factor
- No Flicker
- Low Strobe Light Motion Effect
- No Electrolytic Capacitor
- No Magnetic Components
- Over Temperature Protection
- Over Current Protection
- Brightness Stability over AC Line Voltage Variation
- Space-Saving, Thermally-Enhanced SOP-16 EP (Exposed Pad) Package
- ACT801 for 100-120VAC Application

APPLICATIONS

- Solid State Lighting (SSL)
- LED Light Bulbs
- Replacement of Lamps for 100-120VAC

GENERAL DESCRIPTION

The ACT801 are LED driver ICs based on Active-Semi's Patented Active Direct Drive[™] Technology and Patent-Pending Active Valley Fill[™] that adaptively drives a string of variable-weighted LED segments up to 8W directly from an AC line voltage with very few total components. By adaptively modulating the variable-segment-weighted LED string voltage to match the varying AC line voltage, the Active Direct Drive[™] Technology results in the ACT801 having highest efficiency, high power factor (> 0.90), and low total harmonic distortion. The high efficiency and high performance make the ACT801 ideal for advanced energy saving solid state lighting applications and eases thermal design.

With very few external components, the ACT801 ensures high reliability and long life time for LEDbased luminaire designs. In addition, the IC protects the LEDs from over current, and over temperature conditions. The ACT801 are optimized to operate at 100-120VAC and non-dimmable application up to 8W.

The ACT801 also incorporate Active-Semi's Patent-Pending Active Valley Fill[™] Technology for maintaining smooth light output for the full AC cycle, enabling the LEDs to operate without noticeable flicker or strobe light motion effects. These devices drive the LED string without high frequency switching.

The ACT801 are available in the SOP-16EP package.

TYPICAL APPLICATION DIAGRAM





ORDERING INFORMATION^{®®}

PART NUMBER TEMPERATURE RANGE		PACKAGE	PINS	PACKING METHOD
ACT801YK-T	-40°C to 125°C	SOP-16EP	16	TAPE & REEL

①: All Active-Semi components are RoHS Compliant and with Pb-free plating unless specified differently. The term Pb-free means semiconductor products that are in compliance with current RoHS (Restriction of Hazardous Substances) standards.

②: Standard product options are identified in this table. Contact factory for custom options.

PIN CONFIGURATION





PIN DESCRIPTIONS

PIN	NAME	DESCRIPTION		
1	VIN	Voltage Input. Connect to the positive output of the full bridge rectifier.		
2	N/C	Not Connected.		
3	N/C	Not Connected.		
4	VN	Negative Supply Voltage. Connect to the negative output of the full bridge rectifier.		
5	N/C	Not Connected.		
6	N/C	Not Connected.		
7	ISET	Current Setting. Connect a resistor between ISET and VSS to determine the LED current.		
8	MODE	MODE Selection.		
9	IREG	Current Regulation Output. Connect to the bottom of LED string.		
10	SWA	LED Switch A.		
11	SWB	LED Switch B.		
12	SWC	LED Switch C.		
13	SWD	LED Switch D.		
14	TOP	LED String Top. Connect to the top of LED string.		
15	N/C	Not Connected.		
16	VP	Positive Supply Voltage. Connect a ceramic capacitor with appropriate voltage rating between VP pin and VSS pin.		
EP	VSS	Ground. Exposed Pad shown as dashed block. The exposed ground pad must be electrically connected to Ground.		



SOP-16 EP (EXPOSED PADDLE) PACKAGE OUTLINE AND DIMENSIONS



SYMBOL	DIMENSION IN MILLIMETERS		DIMENSION IN INCHES	
	MIN	MAX	MIN	MAX
A	1.350	1.700	0.053	0.067
A1	0.020	0.120	0.001	0.005
A2	1.350	1.550	0.053	0.061
b	0.380	0.470	0.015	0.019
С	0.200	0.250	0.008	0.010
D	9.860	10.06	0.388	0.396
D1	3.300	4.000	0.130	0.157
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
E2	1.780	2.500	0.070	0.098
е	1.270 TYP		0.050 TYP	
L	0.450	0.800	0.018	0.031
θ	0°	8°	0°	8°

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