AP8800 & AP8801 Introduction

Dec 2008

Power Management Business Unit

AP8800 Overview

AP8800 Features:-

LED driving current up to 350mA in buck topology

Max. Vin 28V, compatible with 12V & 24V standard systems

High efficiency up to 92%

High switching frequency up to 0.6MHz minimum

PWM/DC input for dimming control

Built-in soft-start function

Built-in output open-circuit protection

Operating temperature from -25 to 85 deg C.

SOP-8L, MSOP-8L, DFN3030-10 are available in “Green” Molding Compound (No Br, Sb)

Lead Free Finish/RoHS Compliant

AP8800 Block Diagram & Application

Target Application:-

MR16 LED Lighting

HB LED 12/24V Solar Lighting

Commercial Lighting

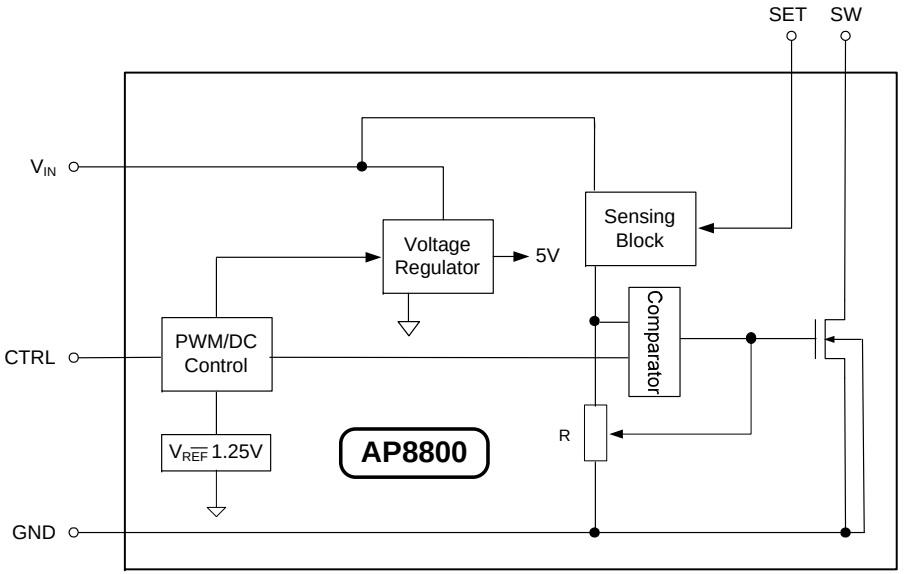
LCD panel backlighting

Light bar in decorative lighting

Other possible matching devices:-

Diodes B140 Schottky diode or

ZLLS1000TA from Diodes Zetex



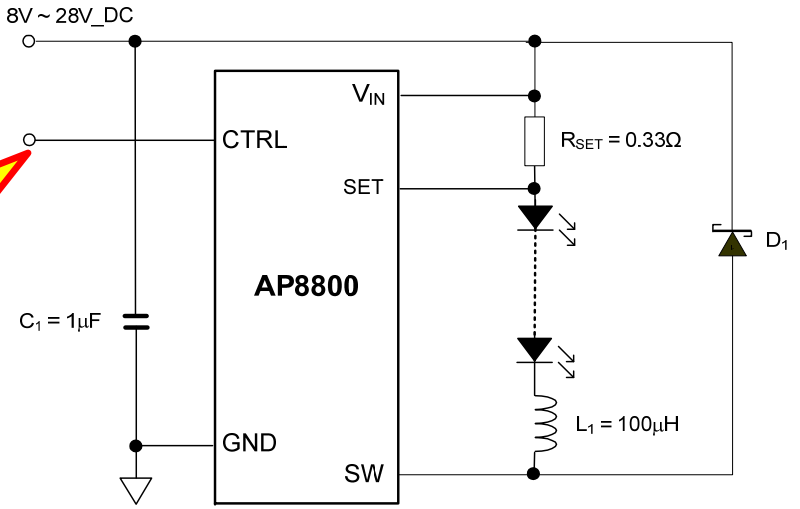


Figure 1: Typical Application Circuit

Multi-function CTRL Pin

1.On/OFF

2.Soft-start

3.PWM dimming

4.DC dimming

Features of AP8801:

- LED driving current up to 1A
- Vin max. 48V, compatible with 12V & 24V standard systems
- High efficiency up to 92%
- High switching frequency up to 500KHz.
- PWM/DC input for dimming control
- Built-in soft-start function
- Built-in output open-circuit protection
- SOP-8L, MSOP-8L, DFN3030-10 are available in “Green” Molding Compound (No Br, Sb)
- Lead Free Finish/RoHS Compliant

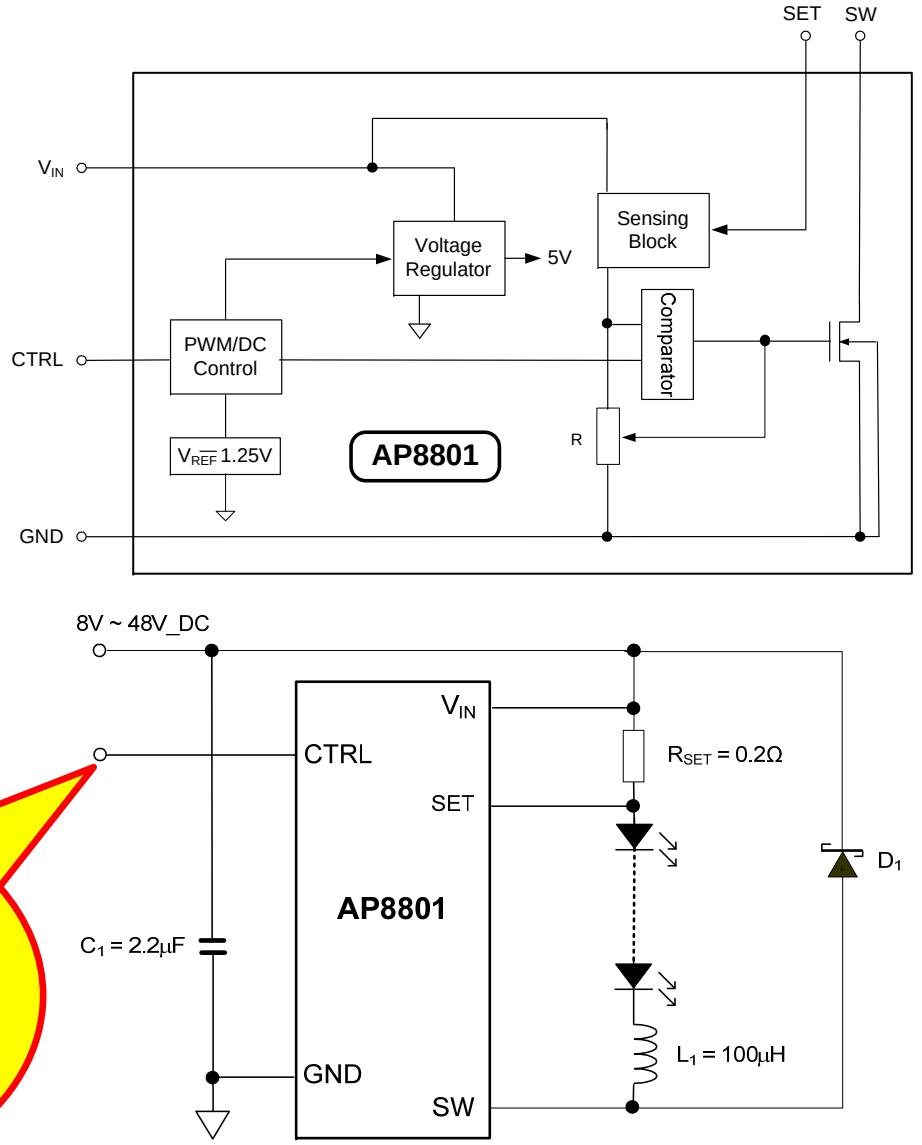
AP8801 block diagram and Application

Target Application:

- Commercial & industrial lighting
- Small LCD panel backlight
- Appliance interior lighting
- Architectural lighting
- HB LED 12/24V solar lighting
- LED Street lighting

Possible diodes for D1:

Schottky diode, e.g. B2100,



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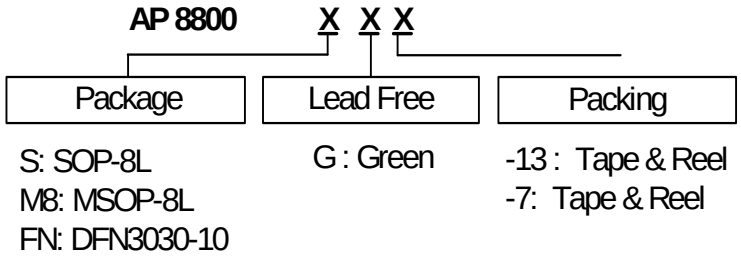
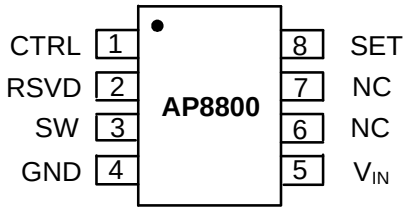
Packages and Ordering (AP8800)



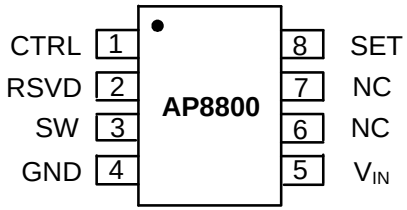
Device	Package Code	Packaging (Note 2)	Tape and Reel	
			Quantity	Part Number Suffix
AP8800SG-13	S	SOP-8L	2500/Tape & Reel	-13
AP8800M8G-13	M8	MSOP-8L	2500/Tape & Reel	-13
AP8800FNG-7	FN	DFN3030-10	3000/Tape & Reel	-7

(Top View)



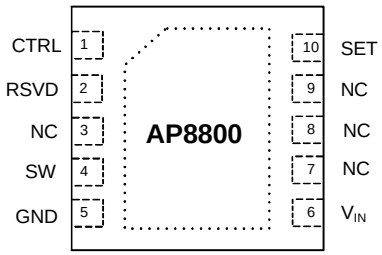
SOP-8L

(Top View)



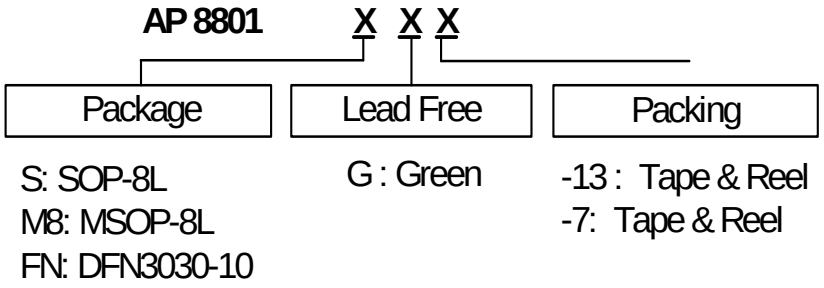
MSOP-8L

(Top View)



DFN3030-10

Package & Ordering (AP8801)



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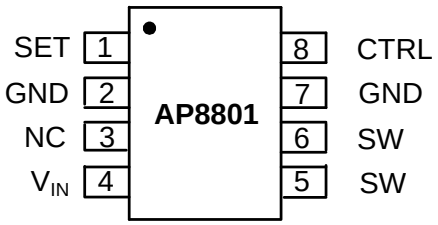
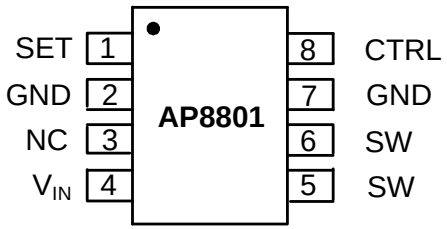
(Top View)



SOP-8L

(Top View)



MSOP-8L

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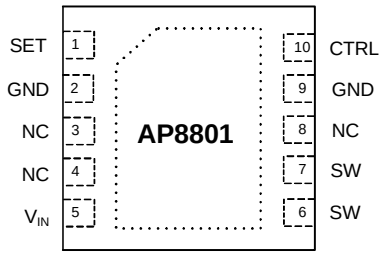


DFN3030-10

Strategies to Win

- Dual brand strategies to gain extra market share at entry level category.
- Push for design-in when price to performance ratio does not match ZXLD1350/52/56/60/66.
- Kit sales to include the cost effective schottky diodes from Diodes.
- Very good price to performance ratio(eg. Higher Vin up to 48V) & more packages choices (MSOP8, SO8 and DFN)
- Target the potential volume applications: eg MR16, general lightings etc..
- Promote aggressively to win high volume projects

AP8800 & AP8801 potential customers

HK/China:

GE Shanghai

Primo Shanghai

Kin Tat SZ

ENW SZ

Civilight SZ

Foxconn (Lighting team)

Tiawan

Primo TW

Foxconn (Lighting team)

AVC (LED division in TW & China)

OSRAM Taiwan (and their end customers)

Korea/Japan

SSC and their end customers

OSRAM/Stanley/Sharp/Citizen and their end customers

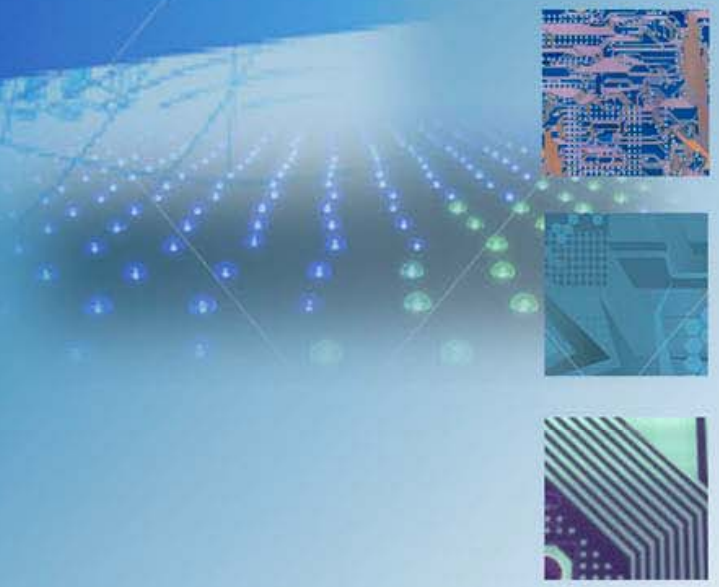
Future Korea and Japan

SWOT Analysis (AP8800/01)

Strength	Opportunities
◆ Up to 48V Vin ◆ 3 package choices ◆ DFN for space constraint design ◆ Operating temperature up to 105degc (AP8801) ◆ Diodes brand name to address entry level segment	◆ Rapid growth of HB LED market ◆ Best fit in low cost LED MR16 solution ◆ Extremely cost effective to address the low end market
Weakness	**Threat**
◆ Relatively relaxed specification on DS ◆ Wider tolerance on some parameters	◆ Customers awareness on the Diodes HB LED drivers ◆ Recent financial crisis slow down the demands ◆ Aggressive price erosion anticipated

Competition

Supplier	Diodes	Diodes	MPS	OnSemi	µBridge (ADDTek)	µBridge	PowerTech	PAM (Power Analog Electronics)	Chong Po	Maxim	Supertex
Part No.	AP8800	AP8801	MP2370	NCP3065	AMC7150	PT4105	PT4115	PAM2862	LCCZ8500 SV	MAX16820	HV9910
Input voltage	8 ~ 28V	8 ~ 48V	4.5 ~ 24V	3 ~ 40V	4 ~ 40V	5 ~ 18V	8-30V	6-24V	7-33V	4.5 ~ 28V	8 ~ 450V
Current sensing voltage	100mV	200mV	150mV	235mV	300mV	200mV	100mV		100mV	200mV	250mV
Continuous output current	0.35A	1A	< 1A	<1.2A	< 1.2A	<0.7A	1.2A	Up to 1.4A (from datasheet)	Up to 1A	>1A (ext. mosfet)	>1A (ext. MOSFET)
Efficiency	92%	92%	< 92%	80 ~ 93%	80%	> 90%	>90%	>90%	Up to 97%	> 90%	>90%
Number of ext components	3	3	5	8	5	7	3	4	4	6	6
Current Accuracy	- 8%	- 8%	-	± 5% ~ 10%	± 9.1%	± 5% ~ 10%	Typical 5%	Typical 4%	8-10%	± 5%	No
Switching frequency	0.5MHz max	0.5MHz max	1.4MHz fixed	250KHz max	0.2MHz max	0.5MHz max	1MHz	Up to 1MHz	Up to 1MHz	2MHz max	0.3MHz max
Dimming	PWM/DC	PWM/DC	-	No	PWM	DC	DC/PWM	DC/PWM	PWM	PWM	PWM
Package	MSOP-8L (4.9x3mm) SOP8 & DFN	MSOP-8L (4.9x3mm) SOP8 & DFN	TSOT26 (2.8x2.9mm)	DFN4040-8 SOP-8L PDIP-8L	TO252 (6.6x9mm)	SO8 (4.9x6mm) + mosfet	SOT89-5 (4.5 x 2.5mm)	SOT23-5 and MSOP8	SOT23-5	DFN (3x3mm) + mosfet	SO8 (4.9x6mm) + mosfet
Operating Temperature	-25 ~ 85°C	-25 ~ 105°C	-40 ~ 85°C	-40 ~ 105°C	-40 ~ 85°C	-40 ~ 85°C	-40 ~ 85°C	-40C ~ 105C	-40 ~ 85°C	-40 ~ 125°C	-40 ~ 85°C
ASP (US$)	competitive	competitive	0.19 ~ 0.27	0.27 ~ 0.35	0.22 ~ 0.25	0.22 ~ 0.28	0.3-0.35	0.45-0.5	0.42-0.45	0.33 ~ 0.35	0.35-0.38
Promotion status	New	New	Active	Just started	Active	Active, old device	Active	Just started (Sept 08)	??	Active	active



Thank You

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