



## DESCRIPTION

The A7801A is a low noise, constant frequency (300kHz) switched capacitor voltage doubler. It produce a regulated output voltage from a 2.5V to 5.0V input with up to 300mA of output current. Low external parts count (one flying capacitor and two small bypass capacitors at  $V_{IN}$  and  $V_{OUT}$ ) make the A7801A ideally suited for small, battery-powered applications.

A new charge-pump architecture maintains constant switching frequency to zero load and reduces both output and input ripple. The A7801A have thermal shutdown capability and can survive a continuous short circuit from  $V_{OUT}$  to GND. Built-in soft-start circuitry prevents excessive inrush current during start-up.

High switching frequency enables the use of small ceramic capacitors. A low current shutdown feature disconnects the load from  $V_{IN}$  and reduces quiescent current to  $<1\mu A$ .

The A7801A is available in SOT-26 package.

## ORDERING INFORMATION

Package Type	Part Number	
SOT-26	E6	A7801AE6R
SPQ: 3,000pcs/Reel		A7801AE6VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

## FEATURES

- Fixed 5V  $\pm$  2.5% Output
- $V_{IN}$  Range: 2.5V to 5.0V
- Output Current: Up to 300mA
- Constant Frequency Operation at All Loads
- Low Noise Constant Frequency (300kHz) Operation
- Automatic Soft-Start Reduces Inrush Current
- Shutdown Current  $<1\mu A$
- Short-Circuit Protection
- No Inductors
- Available in SOT-26 package

## APPLICATION

- White LED Backlighting
- Li-Ion Battery Backup Supplies
- Local 3V to 5V Conversion
- Smart Card Readers
- PCMCIA Local 5V Supplies

## TYPICAL APPLICATION

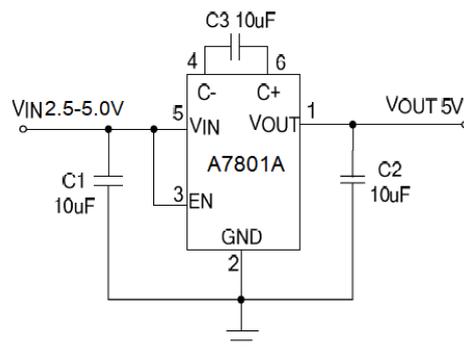
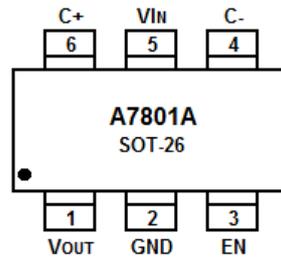


Figure 1. Basic Application Circuit with A7801A



## PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	V <sub>OUT</sub>	Regulated Output Voltage. V <sub>OUT</sub> should be bypassed with a low ESR ceramic capacitor providing at least 2.2uF of capacitance as close to the pin as possible for best performance.
2	GND	Ground Pin.
3	EN	Active Low Shutdown Input. This pin must not be allowed to float.
4	C-	Flying Capacitor Negative Terminal.
5	V <sub>IN</sub>	Input Supply Voltage. V <sub>IN</sub> should be bypassed with a low ESR ceramic capacitor providing at least 2.2uF of capacitance as close to the pin as possible for best performance.
6	C+	Flying Capacitor Positive Terminal.



## ABSOLUTE MAXIMUM RATINGS

$V_{IN}$		-0.3V~+6V
$V_{OUT}$		-0.3V~5.5V
$V_{EN}$		-0.3V~+6V
$I_{OUT}$ <sup>NOTE1</sup>		350mA
$P_D$ , Power Dissipation	SOT-26	300mW
Operating Temperature Range <sup>NOTE2</sup>		-20°C~85°C
Lead Temperature (Soldering 10 sec.)		300°C
Storage Temperature Range		-65°C~125°C

Stress beyond above listed "Absolute Maximum Ratings" may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

NOTE 1: Based on long term current density limitations.

NOTE 2: The A7801A are guaranteed to meet performance specifications from 0°C to 70°C Specifications over the -20°C to 85 operating temperature range are assured by design, characterization and correlation with statistical process controls.

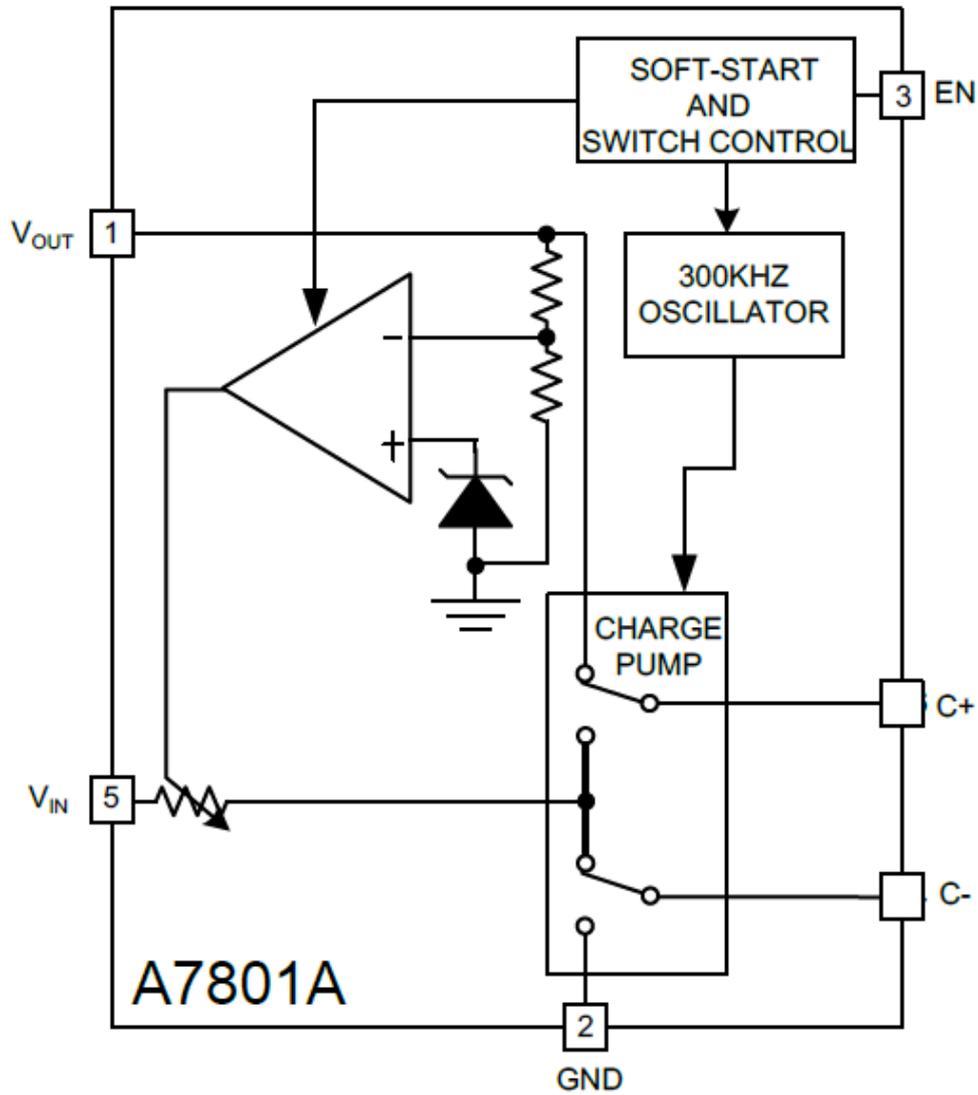
## ELECTRICAL CHARACTERISTICS

EN=  $V_{IN}$ ,  $C_{IN}=C_{OUT}=10\mu F$ ,  $T_A = 25^\circ C$ , Test Circuit of Figure 1, unless otherwise noted.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	$V_{IN}$		2.5	-	5.0	V
Output Voltage Range	$V_{OUT}$	$V_{IN} > 3.0V$ , $I_{OUT} < 40mA$	4.875	5.0	5.125	V
Shutdown Current	$I_{SHDN}$	EN=0V, $I_{LOAD}=0mA$	-	-	1	$\mu A$
Line Regulation	$V_{LINE}$	$3.1 < V_{IN} < 4.5$ , $I_{LOAD} = 50mA$	-	10	-	mV
Output Current Limit	$I_{LIMIT}$		-	300	-	mA
Output Ripple	$V_R$	$V_{IN} = 3.6V$ , $I_{OUT} = 100mA$	-	50	-	mVP-P
Efficiency	$\eta$	$V_{IN} = 3.6V$ , $I_{OUT} = 50mA$	-	68	-	%
Switching Frequency	$f_{OSC}$		-	300	-	kHz



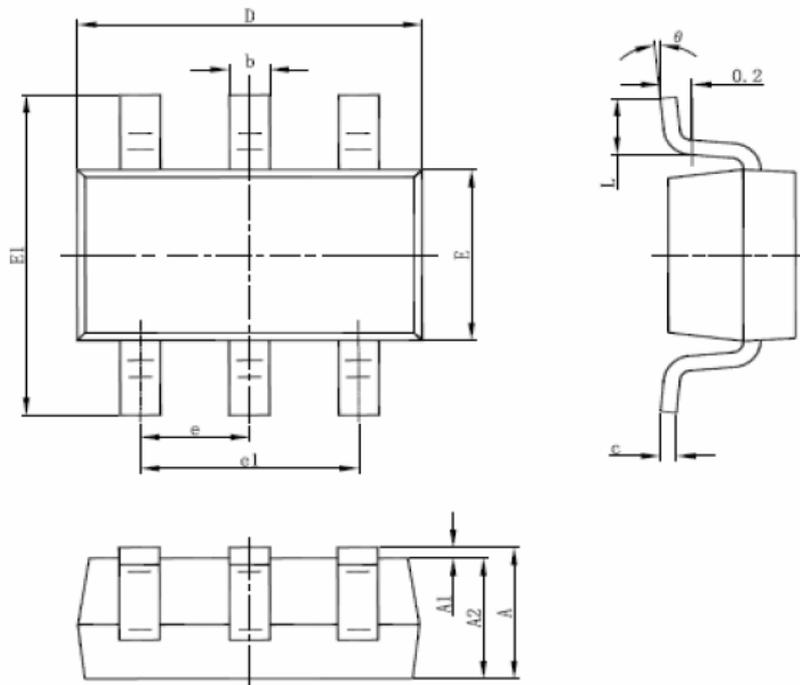
**BLOCK DIAGRAM**





## PACKAGE INFORMATION

Dimension in SOT-26 (Unit: mm)



Symbol	Min	Max
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
b	0.300	0.500
c	0.100	0.200
D	2.820	3.020
E	1.500	1.700
E1	2.650	2.950
e	0.950 BSC	
e1	1.800	2.000
L	0.300	0.600
$\theta$	0°	8°



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