DESCRIPTION

The A7801B is a low noise, constant frequency (1MHz) switched capacitor voltage doubler.

The A7801B provides regulated output voltage from a 2.1V to 5.0V input with up to 230mA of output current. Low external parts count (one flying capacitor and two small bypass capacitors at V_{IN} and V_{OUT}) make the A7801B ideally suited for small, battery-powered applications.

A7801B is a new charge-pump architecture maintains constant switching frequency to zero load and reduces both output and input ripple.

The A7801B 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.

The A7801B is available in SOT-26 package.

ORDERING INFORMATION

Package Type	Part Number	
SOT-26 SPQ: 3,000pcs/Reel	E6	A7801BE6R-XX
		A7801BE6VR-XX
Note	XX: Output Voltage 33=3.3V, 50=5.0V...etc. V: Halogen Free Package R: Tape & Reel	
AiT provides all RoHS products		

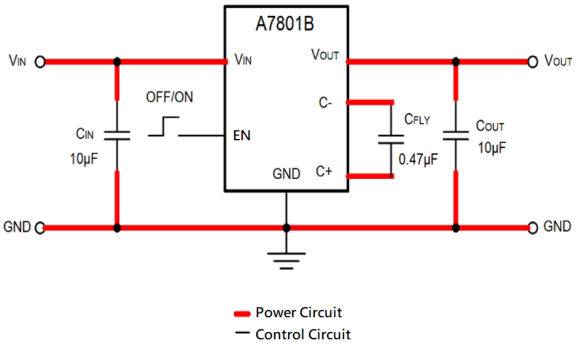
FEATURES

- Low Noise Constant Frequency (1MHz)
- Output Current: Up to 300mA
- Output Accuracy: ±2.5%
- V_{IN} Range: 2.1V to 5.0V
- Automatic Soft-Start Reduces Inrush Current
- No external Inductor
- Shutdown Current <1uA

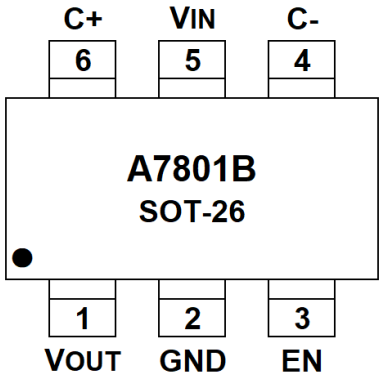
APPLICATION

- USB OTG
- Digital Camera
- LED Driver
- Smart Card Readers

TYPICAL APPLICATION



PIN DESCIPTION



SOT-26, E6

Top View

Pin #	Symbol	Function
1	V_{OUT}	Regulated Output Voltage.
2	GND	Ground Pin.
3	EN	Chip Enable Pin.
4	C-	Flying Capacitor Negative Terminal.
5	V_{IN}	Input Supply Voltage.
6	C+	Flying Capacitor Positive Terminal.

ABSOLUTE MAXIMUM RATINGS

V_{IN}, Supply Voltage Range	-0.3V ~ +6.0V
V_{EN}, EN Voltage	-0.3V ~ +6.0V
V_{OUT}, Output Voltage	-0.3V ~ +5.5V
I_{LOAD}, Output Current	300mA
Operating Temperature Range	-20°C~+85°C
P_D, Power Dissipation	300mW
Lead Temperature (Soldering 10 sec.)	300°C
Storage Temperature Range	-65°C~+160°C

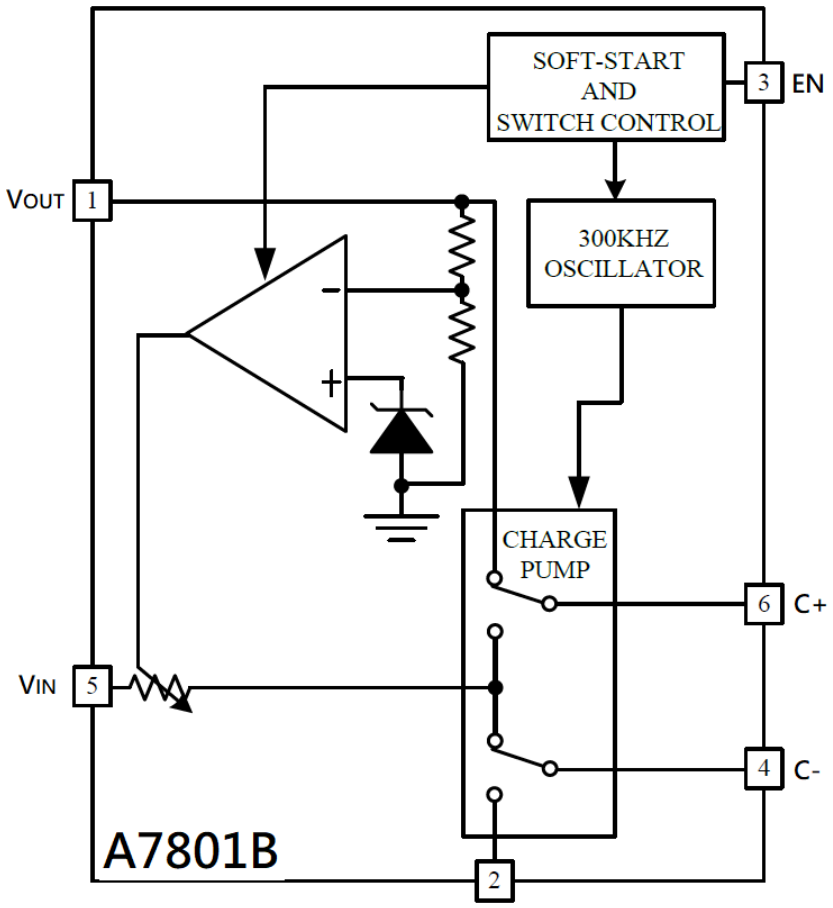
Stress beyond above listed “Absolute Maximum Ratings” may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum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

ELECTRICAL CHARACTERISTICS

V_{OUT}=3.3V,T_A=25℃, unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Voltage	V_{OUT}	I_{LOAD}<40mA, V_{IN}>3V	3.23	3.30	3.37	V
Output Voltage Accuracy	ΔV_{OUT}	-	-2.5	-	2.5	%
Line Regulation	V_{LINE}	2.2V<V_{IN}<3.3V, I_{LOAD}=50mA	-	10	-	mV
Load Regulation	V_{LOAD}	I_{LOAD}=10-100mA, V_{IN}=2.8V	-	20	-	mV
Switching Frequency	F_{OSC}	-	-	1	-	MHz
Quiescent Current	I_Q	V_{IN}=2.8V , V_{OUT}=3.3V	-	180	-	μA
Output Ripple	V_R	I_{LOAD}=100mA, V_{IN}=2.8V	-	50	-	mV
Shutdown Current	I_{SHDN}	V_{EN}=0V , I_{LOAD}=0mA	-	-	1	μA
Short Circuit Current	I_{SC}	V_{OUT}=0V	-	300	-	mA

BLOCK DIAGRAM



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Quiescent Current vs. Input Voltage

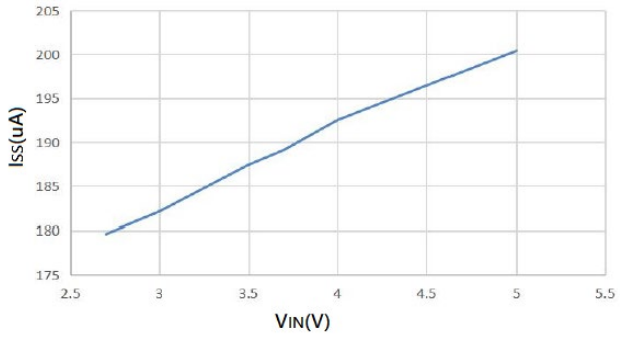


Fig 2. Input Voltage vs. Chip Enable

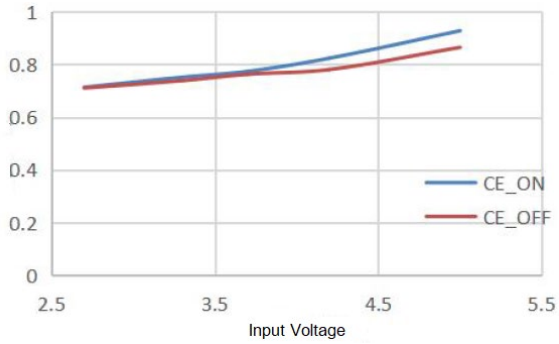


Fig 3. Output Voltage vs. Input Voltage

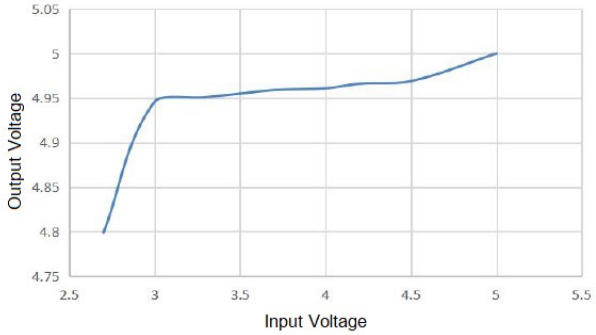


Fig 4. Output Current vs. Output Voltage

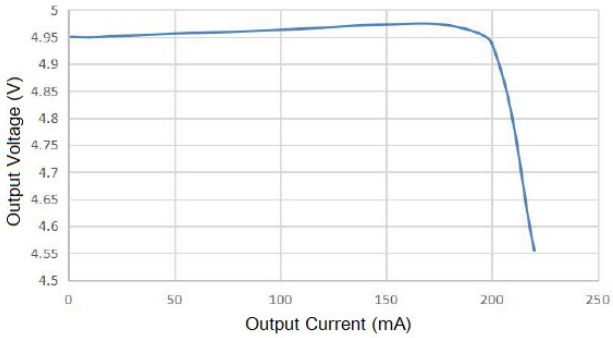


Fig 5. Output Voltage vs. Temperature

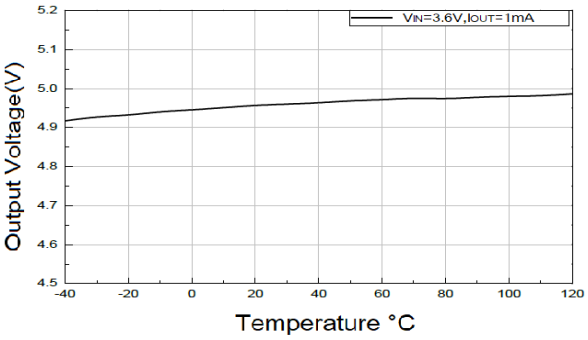
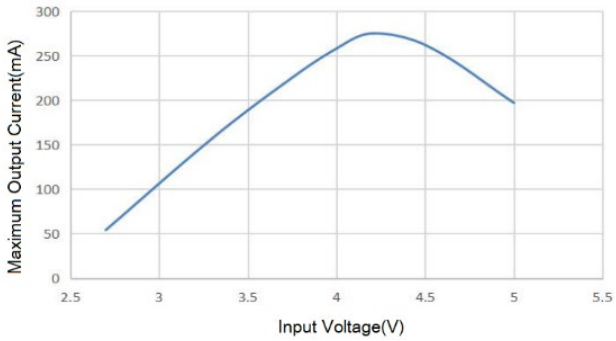
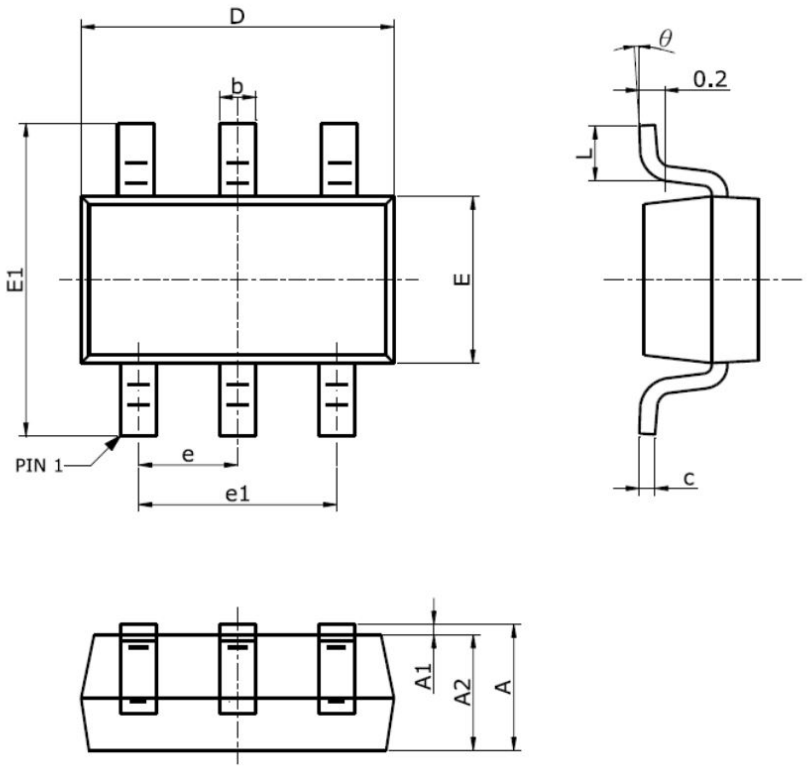


Fig 6. Maximum Output Current vs. Input Voltage



PACKAGE INFORMATION

Dimension in SOT-26 (Unit: mm)



Symbol	MILLIMETERS	
	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
θ	0°	8°

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