



## SPX1083

### 8A Low DropOut Voltage Regulator Adjustable & Fixed 3.3V

#### FEATURES

- Adjustable Output Down to 1.2V or Fixed 3.3V & 5V
- Output Current of 8A
- Low Dropout Voltage
- Extremely Tight Load and Line Regulation
- Current & Thermal Limiting
- Standard 3-Terminal Low Cost TO-220
- Similar to Industry Standard LT1083/LT1584

#### APPLICATIONS

- Powering Intel Pentium™  $\mu$ P from +5V Supplies
- Power PC™ Supplies
- SMPS Post-Regulator
- High Efficiency “Green” Computer Systems
- High Efficiency Linear Power Supplies
- Portable Instrumentation
- Constant Current Regulators
- Adjustable Power Supplies
- Battery Charger

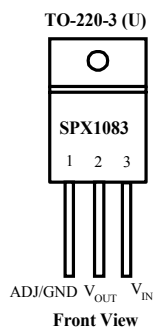
#### PRODUCT DESCRIPTION

The SPX1083 is a low power 8A Adjustable Voltage Regulator that is very easy to use. It requires only 2 external resistors to set the output voltage. This device is an excellent choice when using Powering Intel™ Microprocessor to convert from +5V to 3.3V supplies, and as a post regulator for switching supplies applications. The SPX1083 features low dropout of a maximum 1.5 volts.

The SPX1083 offers full protection against over-current faults, reversed input polarity, reversed load insertion, over temperature operation, and positive and negative transient voltage. On-Chip trimming adjusts the reference voltage to 1%. The  $I_Q$  of this device flows into the load which increases efficiency.

The SPX1083 is offered in a 3-pin TO-220 package compatible with older 3-terminal regulators. For a 5A low dropout regulator refer to the SPX1083 datasheet.

#### PIN CONNECTIONS



## ABSOLUTE MAXIMUM RATINGS

Power Dissipation.....Internally Limited  
 Lead Temp. (Soldering, 10 Seconds) ..... 300°C  
 Storage Temperature Range ..... -65° to +150°C  
 Operating Junction Temperature Range  
     SPX1083 Control Section.....0C° to +125°C  
     SPX1083 Power Transistor.....0C° to +150°C

Input Supply Voltage ..... 30V  
 Input to Output Voltage Differential ..... 30V

## ELECTRICAL CHARACTERISTICS (Note 1) at $I_{OUT} = 10\text{mA}$ , $T_A = 25^\circ\text{C}$ , unless otherwise specified.

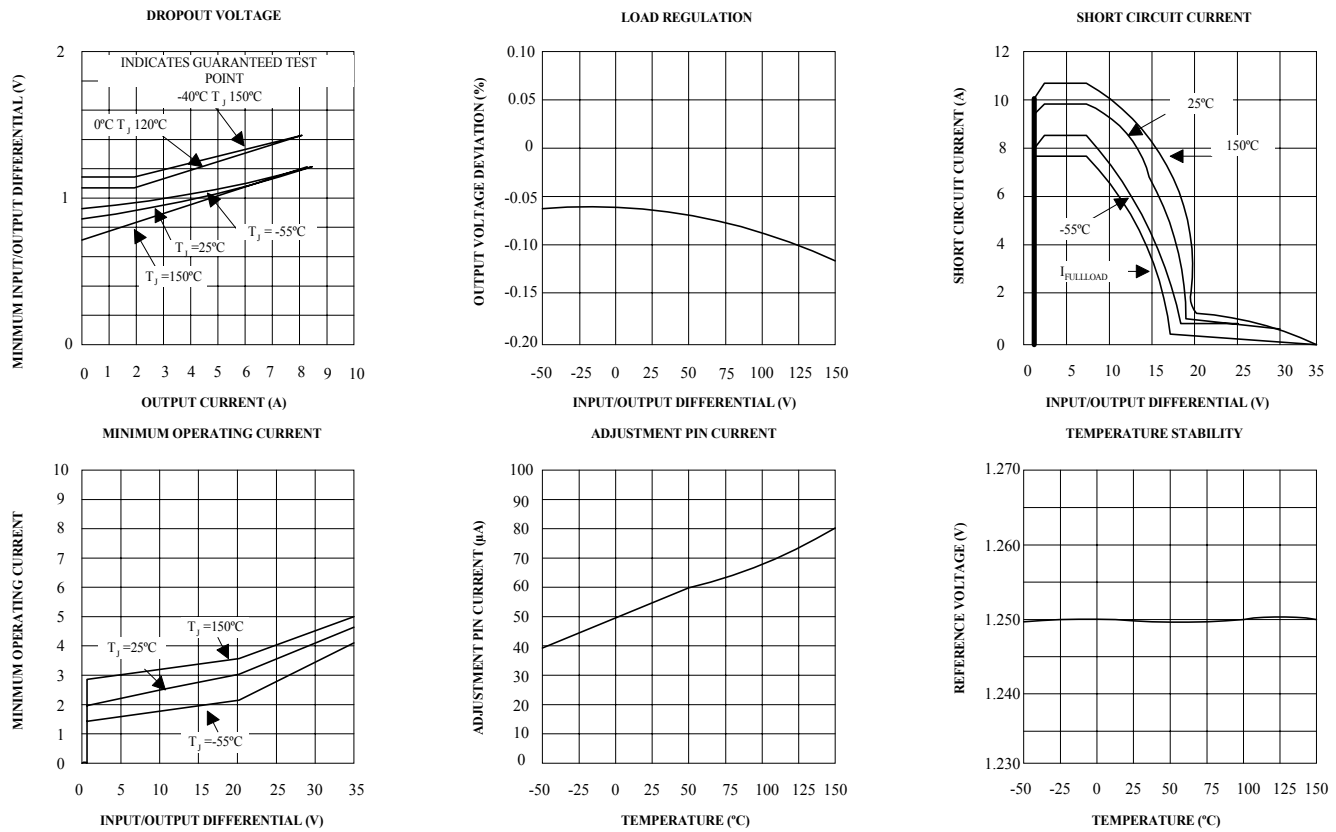
Parameter	Conditions	SPX1083A			SPX1083		Units
		Typ	Min	Max	Min	Max	
3.3V Version							
Output Voltage (Note 2)	SPX1083-3.3V, 0≤I <sub>OUT</sub> ≤8A, 4.75V≤V <sub>IN</sub> ≤25V	3.3 3.3	3.270 3.240	3.330 3.360	3.230 3.201	3.370 3.399	V
5.0V Version							
Output Voltage (Note 2)	SPX1083-3.3V, 0≤I <sub>OUT</sub> ≤8A, 6.5V≤V <sub>IN</sub> ≤25V	5.0 5.0	4.950 4.900	5.050 5.100	4.900 4.650	5.100 5.150	
All Voltage Options							
Reference Voltage	10 mA ≤ I <sub>OUT</sub> ≤ I <sub>FULLLOAD</sub> 3.3V≤(V <sub>IN</sub> - V <sub>OUT</sub> )≤ V <sub>IN MAX</sub> - V <sub>OUT MAX</sub>	1.250 1.250	1.238 1.225	1.262 1.270	1.238 1.225	1.262 1.270	V
Mid Load Current	(V <sub>IN</sub> - V <sub>OUT</sub> ) = V <sub>IN MAX</sub> - V <sub>OUT MAX</sub>	5		10		10	mA
Line Regulation	29V ≤V <sub>IN</sub> - V <sub>OUT</sub> ≤ V <sub>IN MAX</sub> - V <sub>OUT MAX</sub> I <sub>LOAD</sub> = 10mA	0.015 0.05		0.2 0.5		0.2 0.5	%
Load Regulation	10mA ≤ I <sub>OUT</sub> ≤ I <sub>FULLLOAD</sub> (V <sub>IN</sub> - V <sub>OUT</sub> )=3V	0.1 0.2		0.3 0.4		0.3 0.4	%
Dropout Voltage	I <sub>OUT</sub> =I <sub>FULLLOAD</sub> , ΔV <sub>REF</sub> =1%	1.1		1.2		1.2	V
Current Limit	V <sub>IN</sub> - V <sub>OUT</sub> =5V	9.5	8.0		8.0		A
Long Term Stability	T <sub>A</sub> =125°C, 1000Hrs.	0.3		1		1	%
Adjust Pin Current	T <sub>A</sub> =25°C	55		90		90	μA
Adjust Pin Current Change		0.2		5		5	μA
Thermal Regulation	30ms pulse	0.003		0.01		0.01	%/W
Temperature Stability		0.5					%
Ripple Rejection Ratio	V <sub>IN</sub> - V <sub>OUT</sub> =3V I <sub>OUT</sub> =3A, C <sub>OUT</sub> = 25μF, C <sub>ADJ</sub> = 25μF, f= 120Hz	75	60		60		dB
Output Noise, RMS	10Hz to 10kHz	0.003					% V <sub>O</sub>
Thermal Resistance Junction-to-Case	TO-220                      Junction to Tab Junction to Ambient			2.7 0.65		2.7 0.65	°C/W

The Bold specifications apply to the full operating temperature range.

Note 1: Changes in output voltage due to heating effects are covered under the specification for thermal regulation.

Note 2: A 10 $\mu\text{F}$  output capacitor is required on SPX1083

## TYPICAL CHARACTERISTICS



## TYPICAL APPLICATIONS

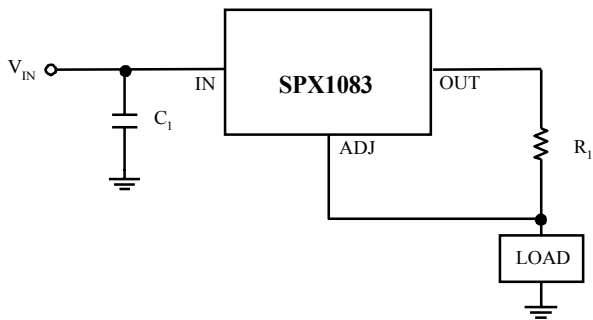


Fig. 4 8A Current output Regulator

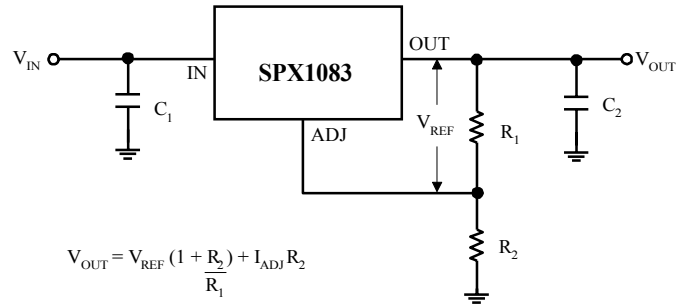
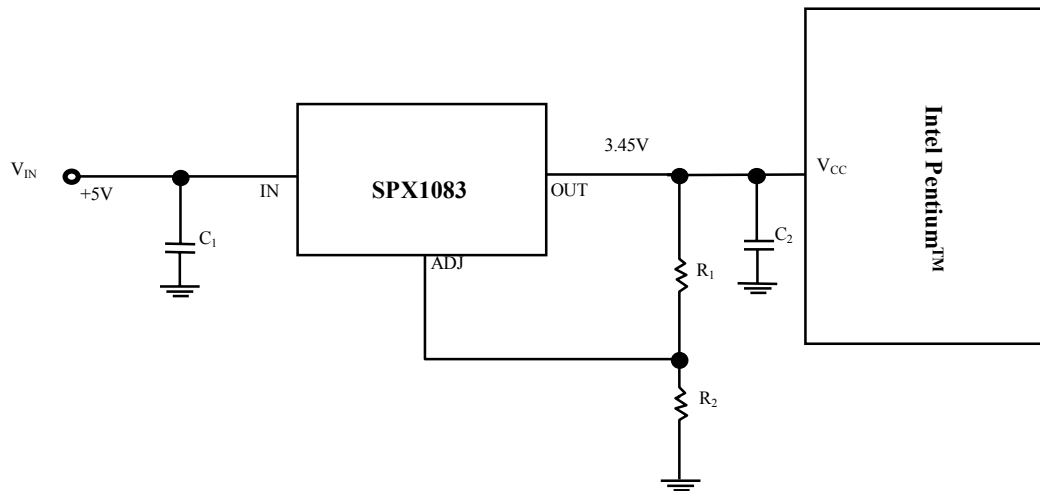


Fig. 5 Typical Adjustable Regulator



Powering Intel Pentium™ with SPX1083

Pentium Processor is a trademark of Intel Corp. Power PC is a trademark of IBM Corp.

## ORDERING INFORMATION

Ordering No.	Precision	Output Voltage	Packages
SPX1083U	2%	Adj	3 Lead TO-220
SPX1083U-3.3	2%	3.3V	3 Lead TO-220
SPX1083U-5.0	2%	5.0V	3 Lead TO-220
SPX1083AU	1%	Adj	3 Lead TO-220
SPX1083AU-3.3	1%	3.3V	3 Lead TO-220
SPX1083AT-5.0	1%	5.0V	3 Lead TO-220



SIGNAL PROCESSING EXCELLENCE

### Sipex Corporation

**Headquarters and Main Offices:**

22 Linnell Circle  
Billerica, MA 01821  
TEL: (978) 667-8700  
FAX: (978) 670-9001  
e-mail: sales@sipex.com

233 South Hillview Drive  
Milpitas, CA 95035  
TEL: (408) 935-7600  
FAX: (408) 934-7500

Sipex Corporation reserves the right to make changes to any products described herein. Sipex does not assume any liability arising out of the application or use of any product or circuit described hereing; neither does it convey any licens