



SPX1584

8A Low Dropout Voltage Regulator Adjustable & Fixed 3.3V

FEATURES

- Adjustable Output Down to 1.2V or Fixed 3.3V
- 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™ μ 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

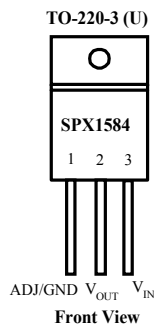
PRODUCT DESCRIPTION

The SPX1584 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 SPX1584 features low dropout of a maximum 1.5 volts.

The SPX1584 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 SPX1584 is offered in a 3-pin TO-220 package compatible with older 3-terminal regulators. For a 5A low dropout regulator refer to the SPX1585 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
 SPX1584 Control Section.....0C° to +125°C
 SPX1584 Power Transistor.....0C° to +150°C

Input Supply Voltage +10V
 Input to Output Voltage Differential 8.8V

ELECTRICAL CHARACTERISTICS (Note 1) at I_{OUT} = 10mA, T_A = 25°C, unless otherwise specified.

Parameter	Conditions	SPX1584A			SPX1584		Units
		Typ	Min	Max	Min	Max	
3.3V Version							
Output Voltage (Note 2)	SPX1584-3.3V, 0 ≤ I _{OUT} ≤ 1.5A, 4.75V ≤ V _{IN} ≤ 7V	3.3 3.3	3.270 3.240	3.330 3.360	3.230 3.201	3.370 3.399	V
All Voltage Options							
Reference Voltage	10mA ≤ I _{OUT} ≤ I _{FULLLOAD} 3.3V ≤ (V _{IN} - V _{OUT}) ≤ V _{IN MAX} - V _{OUT MAX}	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 _{IN} - V _{OUT}) = V _{IN MAX} - V _{OUT MAX}	5		10		10	mA
Line Regulation	1.5V ≤ V _{IN} - V _{OUT} ≤ V _{IN MAX} - V _{OUT MAX} I _{LOAD} = 10mA	0.015 0.05		0.2 0.5		0.2 0.5	%
Load Regulation	10mA ≤ I _{OUT} ≤ I _{FULLLOAD} (V _{IN} - V _{OUT}) = 3V	0.1 0.2		0.3 0.4		0.3 0.4	%
Dropout Voltage	I _{OUT} = I _{FULLLOAD} , ΔV _{REF} = 1%	1.1		1.2		1.2	V
Current Limit	V _{IN} - V _{OUT} = 5V	9.5	8.0		8.0		A
Long Term Stability	T _A = 125°C, 1000Hrs.	0.3		1		1	%
Adjust Pin Current	T _A = 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 _{IN} - V _{OUT} = 3V I _{OUT} = 3A, C _{OUT} = 25μF, C _{ADJ} = 25μF, f = 120Hz	75	60		60		dB
Output Noise, RMS	10Hz to 10kHz	0.003					% V _O
Thermal Resistance Junction-to-Case	TO-220			2.7		2.7	°C/W
	Junction to Tab			0.65		0.65	
	Junction to Ambient						

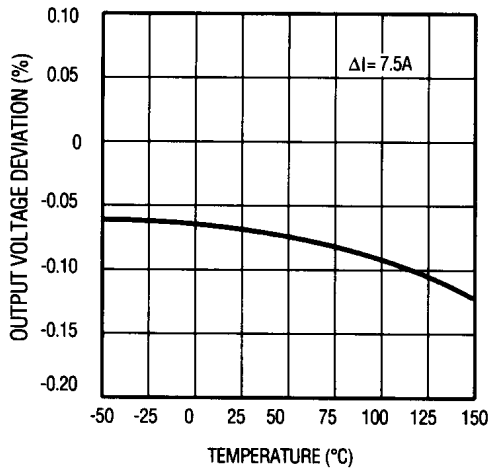
The Bold specifications apply to the full operating temperature range.

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

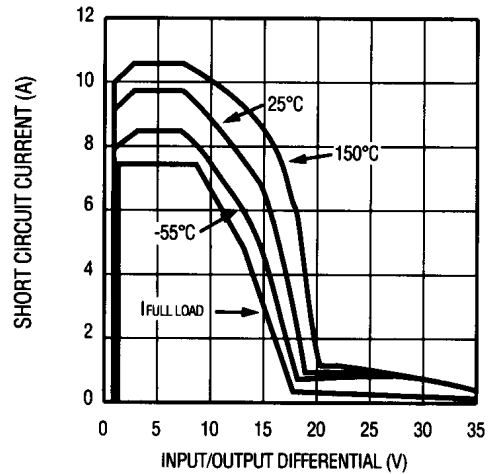
Note 2: A 10μF output capacitor is required on SPX1584

TYPICAL CHARACTERISTICS

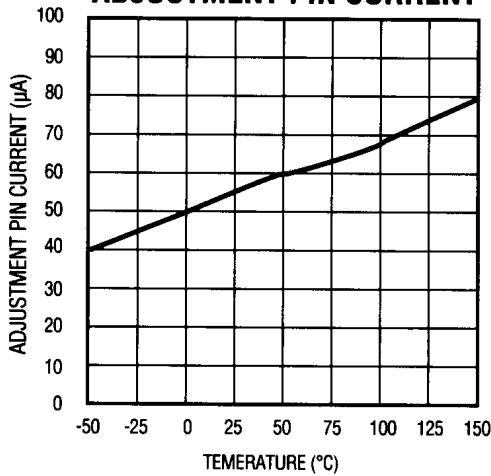
LOAD REGULATION



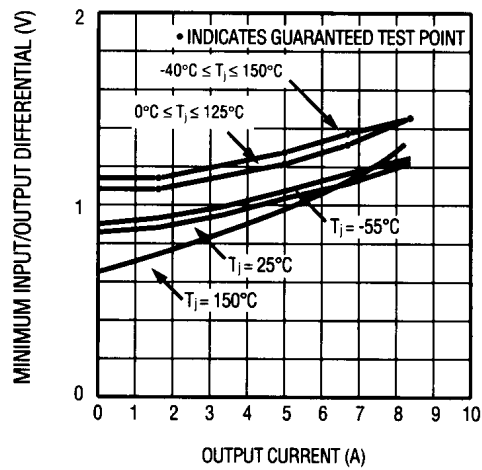
SHORT CIRCUIT CURRENT



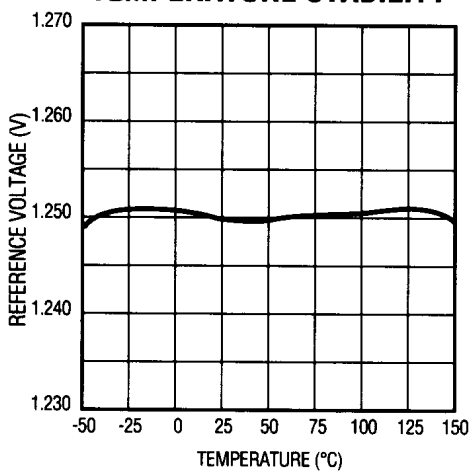
ADJUSTMENT PIN CURRENT



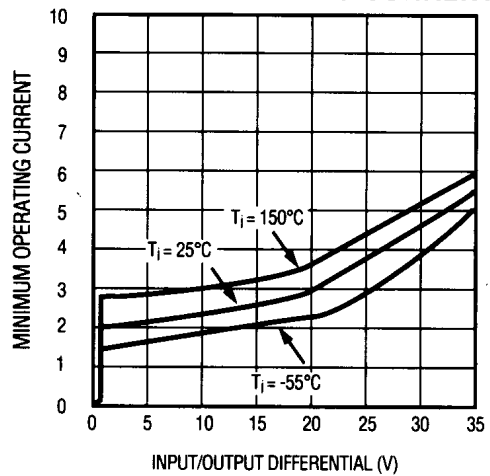
DROPOUT VOLTAGE



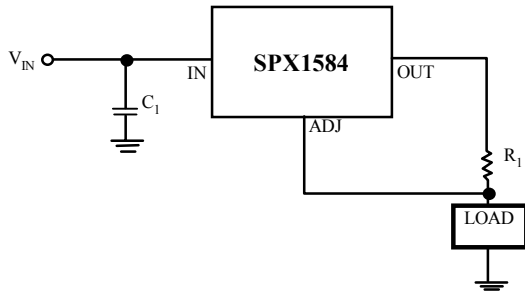
TEMPERATURE STABILITY



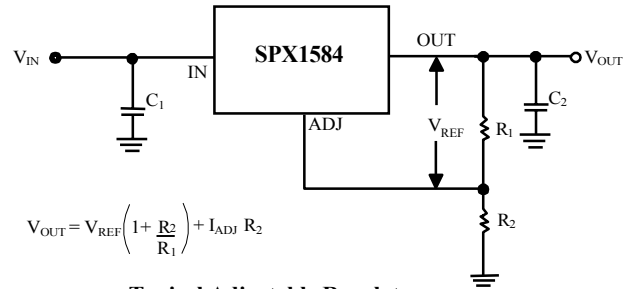
MINIMUM OPERATING CURRENT



TYPICAL APPLICATIONS

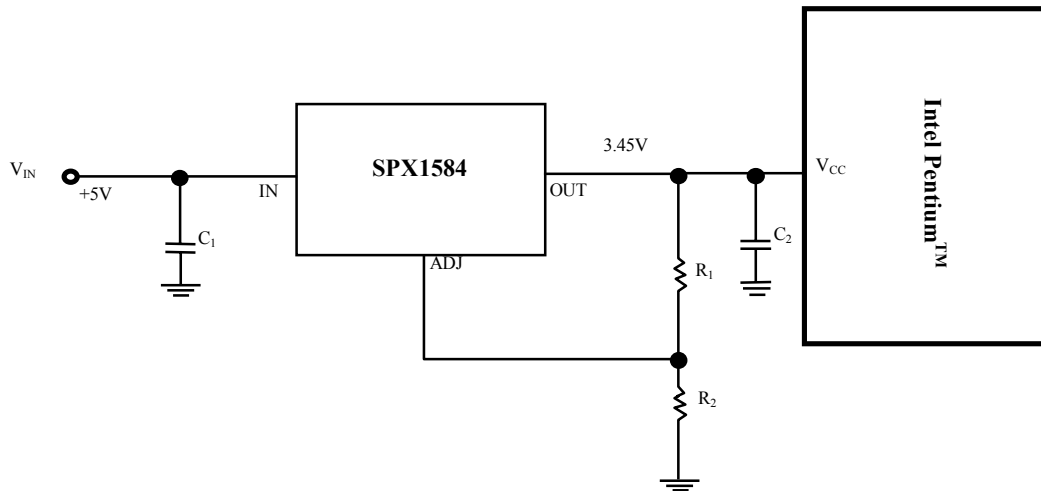


8A Current Output Regulator



$$V_{OUT} = V_{REF} \left(1 + \frac{R_2}{R_1} \right) + I_{ADJ} R_2$$

Typical Adjustable Regulator



Powering Intel Pentium™ with SPX1584

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

ORDERING INFORMATION

Ordering No.	Precision	Output Voltage	Packages
SPX1584U	2%	Adj	3 Lead TO-220
SPX1584U-3.3	2%	3.3V	3 Lead TO-220
SPX1584AU	1%	Adj	3 Lead TO-220
SPX1584AU-3.3	1%	3.3V	3 Lead TO-220



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