



**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 ALPHA Semiconductor AS2880 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 AS2880 features low dropout of a maximum 1.5 volts.

The AS2880 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 AS2880 is offered in a 3-pin TO-220 package compatible with older 3-terminal regulators. When using ALPHA Semiconductor design, processing and testing techniques make AS2880 superior over similar products on the market. For a 5A low dropout regulator refer to the AS2850 datasheet.

**ORDERING INFORMATION**

TO-220
3-PIN
AS2880AU

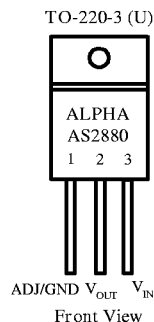
X = Output Voltage (i.e. 3.3 for 3.3V, 5.0 for 5.0V etc.)

Y = Output Tolerance, A for 1%

Blank for 2%

Consult factory for other fixed voltages.

**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  
     AS2880 Control Section.....0C° to +125°C  
     AS2880 Power Transistor.....0C° to +150°C

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

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

Parameter	Conditions	AS2880A			AS2880		Units
		Typ	Min	Max	Min	Max	
<b>3.3V Version</b>							
Output Voltage (Note 2)	AS2880-3.3V, $0 \leq I_{OUT} \leq 1.5\text{A}$ , $4.75\text{V} \leq V_{IN} \leq 7\text{V}$	3.3	3.270	3.330	3.230	3.370	V
		3.3	3.240	3.360	3.201	3.399	
<b>5.0V Version</b>							
Output Voltage (Note 2)	AS2880-3.3V, $0 \leq I_{OUT} \leq 1.5\text{A}$ , $6.5\text{V} \leq V_{IN} \leq 7\text{V}$	5.0	4.950	5.050	4.900	5.100	
		5.0	4.900	5.100	4.650	5.150	
<b>All Voltage Options</b>							
Reference Voltage	$10\text{mA} \leq I_{OUT} \leq I_{FULLLOAD}$ $3.3\text{V} \leq (V_{IN} - V_{OUT}) \leq V_{IN\text{MAX}} - V_{OUT\text{MAX}}$	1.250	1.238	1.262	1.238	1.262	V
		1.250	1.225	1.270	1.225	1.270	
Mid Load Current	$(V_{IN} - V_{OUT}) = V_{IN\text{MAX}} - V_{OUT\text{MAX}}$	5		10		10	mA
Line Regulation	$1.5\text{V} \leq V_{IN} - V_{OUT} \leq V_{IN\text{MAX}} - V_{OUT\text{MAX}}$ $I_{LOAD} = 10\text{mA}$	0.015		0.2		0.2	%
		0.05		0.5		0.5	
Load Regulation	$10\text{mA} \leq I_{OUT} \leq I_{FULLLOAD}$ $(V_{IN} - V_{OUT}) = 3\text{V}$	0.1		0.3		0.3	%
		0.2		0.4		0.4	
Dropout Voltage	$I_{OUT} = I_{FULLLOAD}$ , $\Delta V_{REF} = 1\%$	1.1		1.2		1.2	V
Current Limit	$V_{IN} - V_{OUT} = 5\text{V}$	9.5	8.0		8.0		A
Long Term Stability	$T_A = 125^\circ\text{C}$ , 1000Hrs.	0.3		1		1	%
Adjust Pin Current	$T_A = 25^\circ\text{C}$	55		90		90	$\mu\text{A}$
Adjust Pin Current Change		0.2		5		5	$\mu\text{A}$
Thermal Regulation	30ms pulse	0.003		0.01		0.01	%/W
Temperature Stability		0.5					%
Ripple Rejection Ratio	$V_{IN} - V_{OUT} = 3\text{V}$ $I_{OUT} = 3\text{A}$ , $C_{OUT} = 25\mu\text{F}$ , $C_{ADJ} = 25\mu\text{F}$ , $f = 120\text{Hz}$	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	$^\circ\text{C}/\text{W}$
	Junction to Tab Junction to Ambient			0.65		0.65	

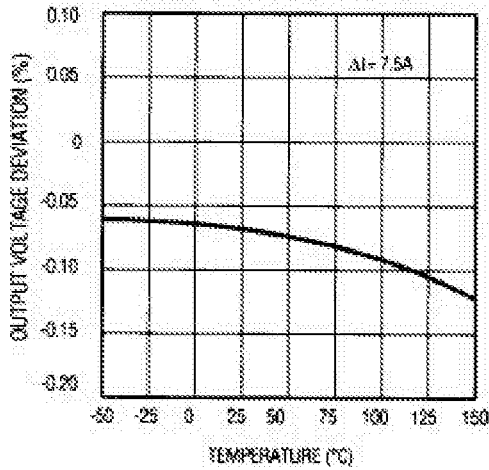
The Bold specifications apply to the full operating temperature range.

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

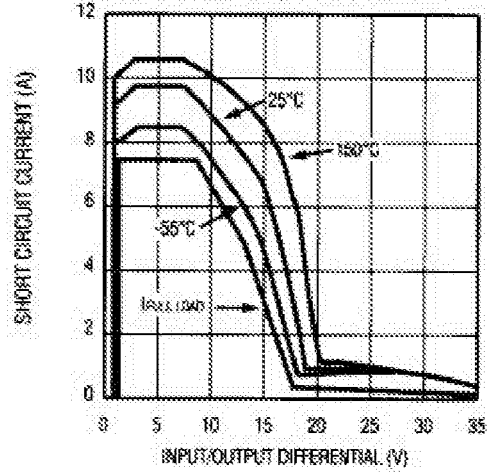
Note 2: A 10 $\mu\text{F}$  output capacitor is required on AS2880

TYPICAL CHARACTERISTICS

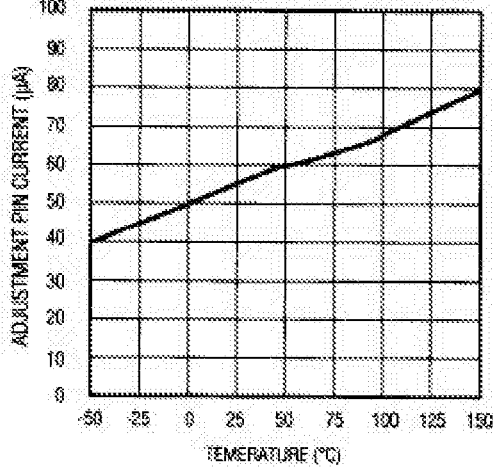
**LOAD REGULATION**



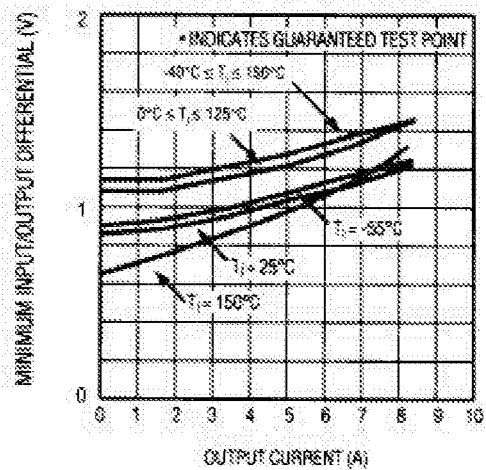
**SHORT CIRCUIT CURRENT**



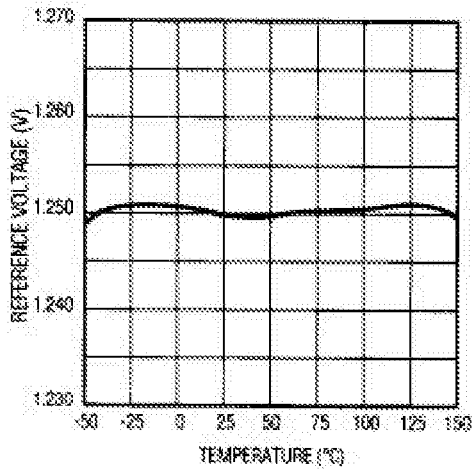
**ADJUSTMENT PIN CURRENT**



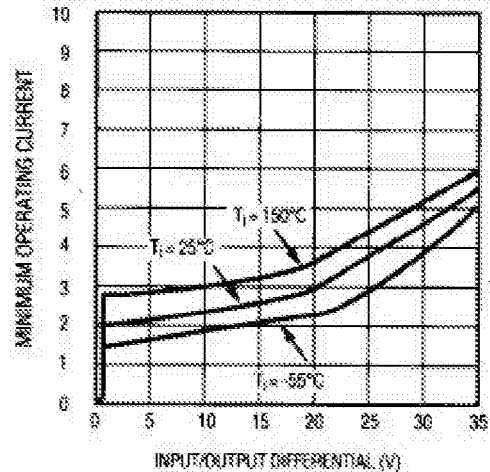
**DROPOUT VOLTAGE**



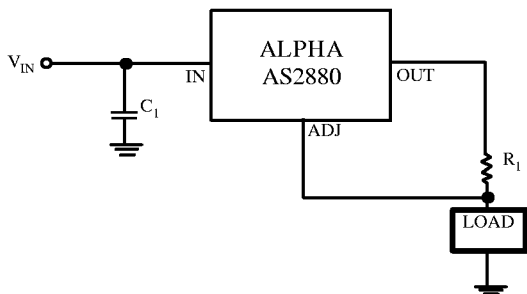
**TEMPERATURE STABILITY**



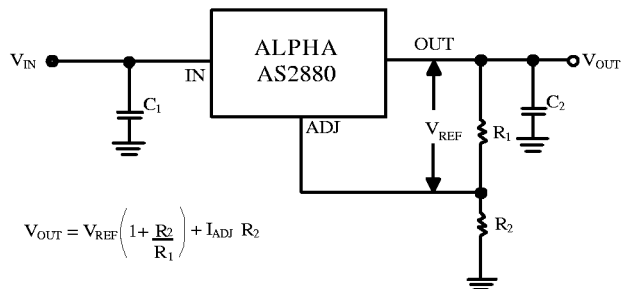
**MINIMUM OPERATING CURRENT**



## TYPICAL APPLICATIONS

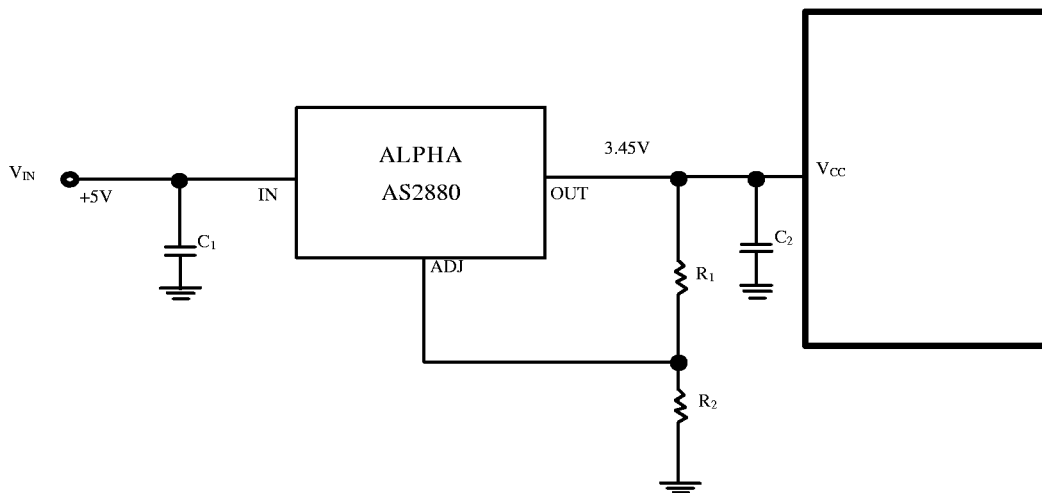


8A Current Output Regulator



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

Typical Adjustable Regulator



Powering Intel Pentium™ with AS2880

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