



500 mA Low Dropout Voltage Regulator
(Advanced Information) - Production 2Q '97

FEATURES

- Output Accuracy 5V, 500mA Output
- Very Low Quiescent Current
- Low Dropout Voltage
- Extremely Tight Load and Line Regulation
- Very Low Temperature Coefficient
- Current & Thermal Limiting
- Logic-Controlled Electronic Shutdown
- Input Can Withstand -20V Reverse Battery & +60 Positive Transient
- Output Programmable from 1.24V to 29V
- Error Flag Warns of Output Dropout
- Equivalent Improved Replacement for LM2937 Sockets

APPLICATIONS

- Battery Powered Systems
- Cordless Telephones
- Radio Control Systems
- Portable / Laptop / Notebook Computers
- Portable Consumer Equipment
- Portable Instrumentation
- Bar Code Scanners
- SMPS Post-Regulator
- Voltage Reference
- Automotive Electronics

PRODUCT DESCRIPTION

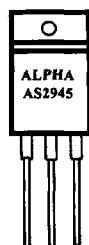
The ALPHA Semiconductor AS2945 is a low power voltage regulator. This device is an excellent choice for use in battery-powered applications such as cordless telephones, radio control systems, and portable computers. The AS2945 features very low quiescent current (90 μ A Typ) and very low dropout voltage. This includes a tight initial tolerance of $\pm 1\%$ max. and $\pm 2\%$ max., and very low output temperature coefficient, making the AS2945 useful as a Low-Power Voltage Reference. The key AS2945 features include protection against reversed battery, fold-back current limiting, and automotive load dump protection (60V positive transient).

The error flag output feature is used as power-on reset for warning of a low output voltage, due to falling voltage input of batteries. Another feature is the logic-compatible shutdown input which enables the regulator to be switched On and Off. The AS2945 is offered in a 3-pin TO-220 package compatible with other 5V regulators, and SO-8 (same pin out as LP2951) package.

The regulator output voltage (of the 8-pin) may be pin-strapped for a 5V or programmed from 1.24V to 29V with an external pair of resistors. Use of ALPHA Semiconductors design, processing and testing techniques make our AS2945 superior over similar products. Look for AS2951 for 150mA and AS2954 for 250mA applications.

ORDERING INFORMATION

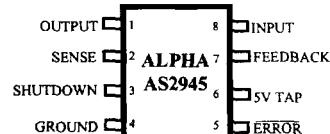
TO-220 3 PIN	PLASTIC DIP 8-PIN	PLASTIC SOIC 8-PIN	Oper. Temp. Range
AS2945AU	AS2945AP	AS2945AS	IND.
AS2945BU	AS2945BP	AS2945BS	IND.



V_{IN} GND V_{OUT}
TO-220
Front View

Pin Connections

8-Pin Surface Mount



Top View

ABSOLUTE MAXIMUM RATINGS

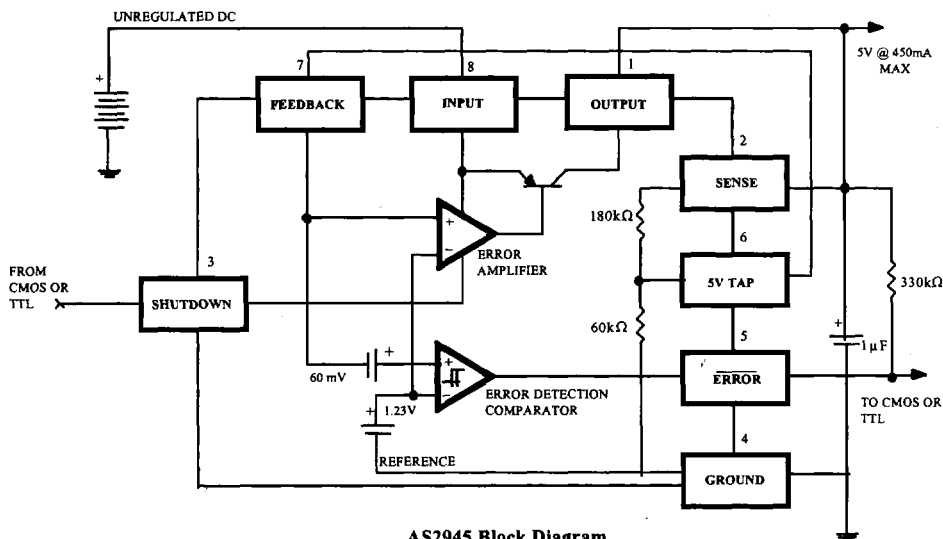
Power Dissipation	Internally Limited
Lead Temp. (Soldering, 5 Seconds)	260°C
Storage Temperature Range	-65°C to +150°C
Operating Junction Temperature Range	
AS2945	-40°C to +125°C

Input Supply Voltage	-20V to +60V
Feedback Input Voltage	-1.5 to +30V
Shutdown Input Voltage	-0.3 to +30V
Error Comparator Output	-0.3 to +30V
ESD Rating is to be determined	

ELECTRICAL CHARACTERISTICS at $V_S = \pm 15V$, $T_a = 25^\circ C$, unless otherwise specified. **Boldface** apply over the full operating temperature range.

Parameter	Conditions	AS2945A/B			Unit
		Min.	Typ.	Max	
Output Voltage Accuracy	$1mA \leq I_L \leq 500mA$	-1 -2		1 2	%
Output Voltage Temperature Coefficient	(Note 1)		20	100	ppm/ $^\circ C$
Line Regulation (Note 3)	$V_{in} = V_{out} + 1V$ to 29 V		0.03	0.01 0.40	%
Load Regulation (Note 3)	$I_L = 1mA$ to 250mA		0.04	0.16 0.30	%
Dropout Voltage (Note 5)	$I_L = 1mA$ $I_L = 500mA$		60 450		mV
Current Limit	$V_{out} = 0$		640		mA
Output Noise, 10Hz to 100kHz $I_L = 100mA$	$C_L = 10\mu F$ $C_L = 100\mu F$		400 260		μV_{rms}

AS2945 BLOCK DIAGRAM



AS2945 Block Diagram