

Application Note

AP7370 Application Information and Demo Board User Guide

Description

The AP7370 series is a positive voltage regulator IC.

The AP7370 has features of wide input voltage range, high accuracy, low dropout voltage, current limit, reverse current protection, and ultra-low quiescent current which make it ideal for use in various USB and portable devices and instrument application.

The IC consists of a voltage reference, an error amplifier, a resistor network for setting output voltage, a current limit circuit for current protection, and a chip enable circuit.

The AP7370 is available in 1.2V, 1.5V, 1.8V, 2.8V, 3.0V, 3.3V, 3.6V and 5.0V fixed output voltage versions.

Features

- Wide Input Voltage Range: Up to 18V
- Low Dropout Voltage: $V_{DROP} = 500\text{mV} @ I_{OUT} = 100\text{mA}$
- Low Ground Current
- High Output Voltage Accuracy
- Compatible with Low ESR Ceramic Capacitor

- Excellent Line/Load Regulation
- Thermal Shutdown Function
- Short Current Protection
- Reverse Current Protection
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)

Applications

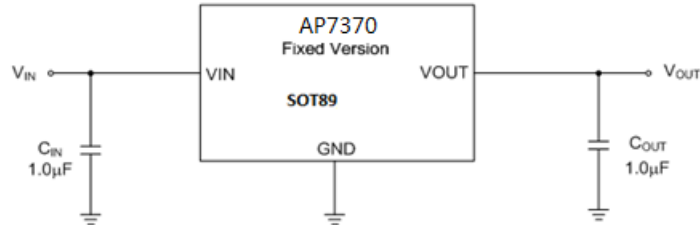
- Battery-Powered Equipment
- Laptop, Palmtops, Notebook Computers
- Portable Information Appliances
- Metering
- Weighing Scales

Notes: 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds

Application Note

AP7370 Application Information and Demo Board User Guide

Typical Applications Circuit



Absolute Maximum Ratings

Symbol	Parameter	Ratings	Unit
V_{IN}	Supply Input Voltage	20	V
I_{OUT}	Output Current	500	mA
T_{LEAD}	Lead Temperature (Soldering, 10sec)	+260	°C
T_J	Operating Junction Temperature	+150	°C
θ_{JA}	Thermal Resistance (Junction to Ambient)	126	°C/W
θ_{JC}	Thermal Resistance (Junction to Case)	26	°C/W
T_{STG}	Storage Temperature Range	-65 to +150	°C
—	ESD (Charge Device Model)	1500	V
—	ESD (Human Body Model)	6000	V

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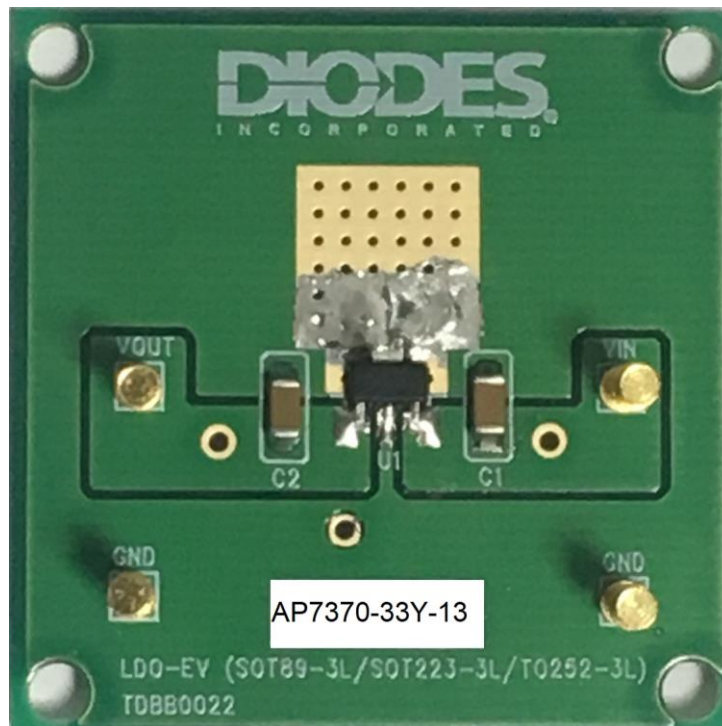
Application Note

AP7370 Application Information and Demo Board User Guide

Recommended Operating Conditions

Symbol	Parameter	Min	Max	Unit
V_{IN}	Supply Input Voltage	3.2	18	V
T_J	Operating Junction Temperature	-40	+125	°C

Evaluation Board



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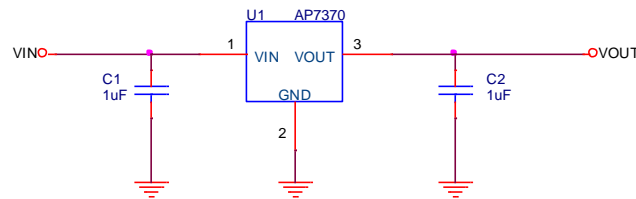
AP7370 Application Information and Demo Board User Guide

Quick Start Guide

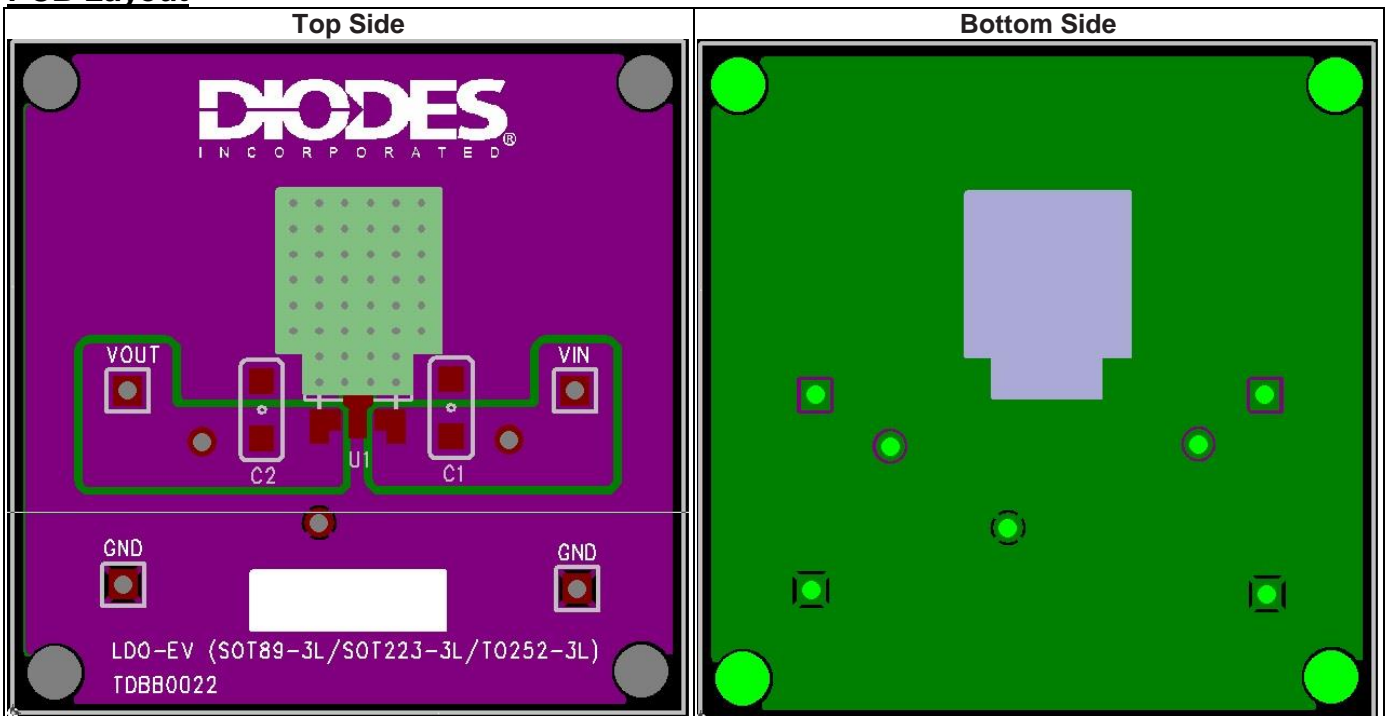
The AP7370-EVM has a simple layout and allows access to the appropriate signals through test points. To evaluate the performance of the AP7370, follow the procedure below:

1. Connect a power supply to the input terminals VIN and GND. Set VIN to 5.3V.
2. Connect the positive terminal of the multimeter to VOUT and negative terminal to GND.
3. The evaluation board should now power up with a 3.3V output voltage.
4. Check for the proper output voltage at the output terminals VOUT and GND.

Evaluation Board Schematic



PCB Layout



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Application Note

AP7370 Application Information and Demo Board User Guide

Bill of Materials

Component Location	Qty	Specification	Mark	Maker Part No.	Size
C1	1	Cap MLCC 1uF/100V/X7R	WALSIN	1206B105K101	1206
C2	1	Cap MLCC 1uF/100V/X7R	WALSIN	1206B105K101	1206
VIN VOUT GND	4	Test pin			2.2mm X 1.35mm
U1	1	LDO	Diodes Inc	AP7370-33Y-13	SOT89
PCB	1	LDO-EV (SOT89-3)	Diodes Inc.	TDBB0022	40mmX40mm

Vendors of peripheral components

Suggested Capacitors :

Vendor	Capacitance	Type	Series
WALSIN	Cap MLCC 1uF/100V/X7R	SMD	1206B105K101

Application Note

AP7370 Application Information and Demo Board User Guide

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