

## 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

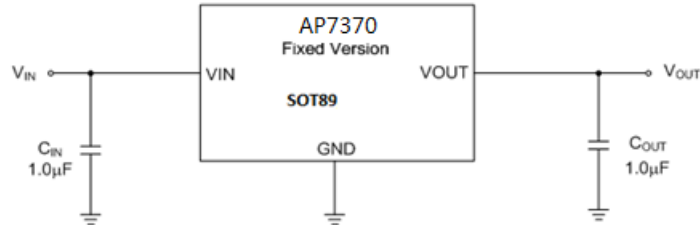
- Battery-Powered Equipment
- Laptop, Palmtops, Notebook Computers
- Portable Information Appliances
- Metering
- Weighing Scales

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](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
$\theta_{JA}$	Thermal Resistance (Junction to Ambient)	126	°C/W
$\theta_{JC}$	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

This application note contains new product information. Diodes, Inc. reserves the right to modify the product specification without notice. No liability is assumed as a result of the use of this product. No rights under any patent accompany the sale of the product.

## 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



This application note contains new product information. Diodes, Inc. reserves the right to modify the product specification without notice. No liability is assumed as a result of the use of this product. No rights under any patent accompany the sale of the product.

## Application Note

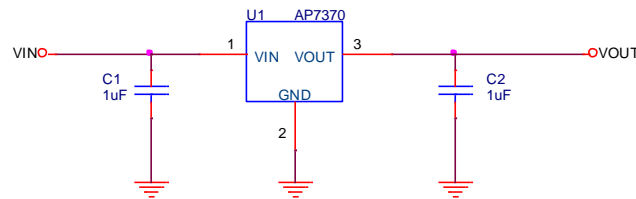
### AP7370 Application Information and Demo Board User Guide

#### Quick Start Guide

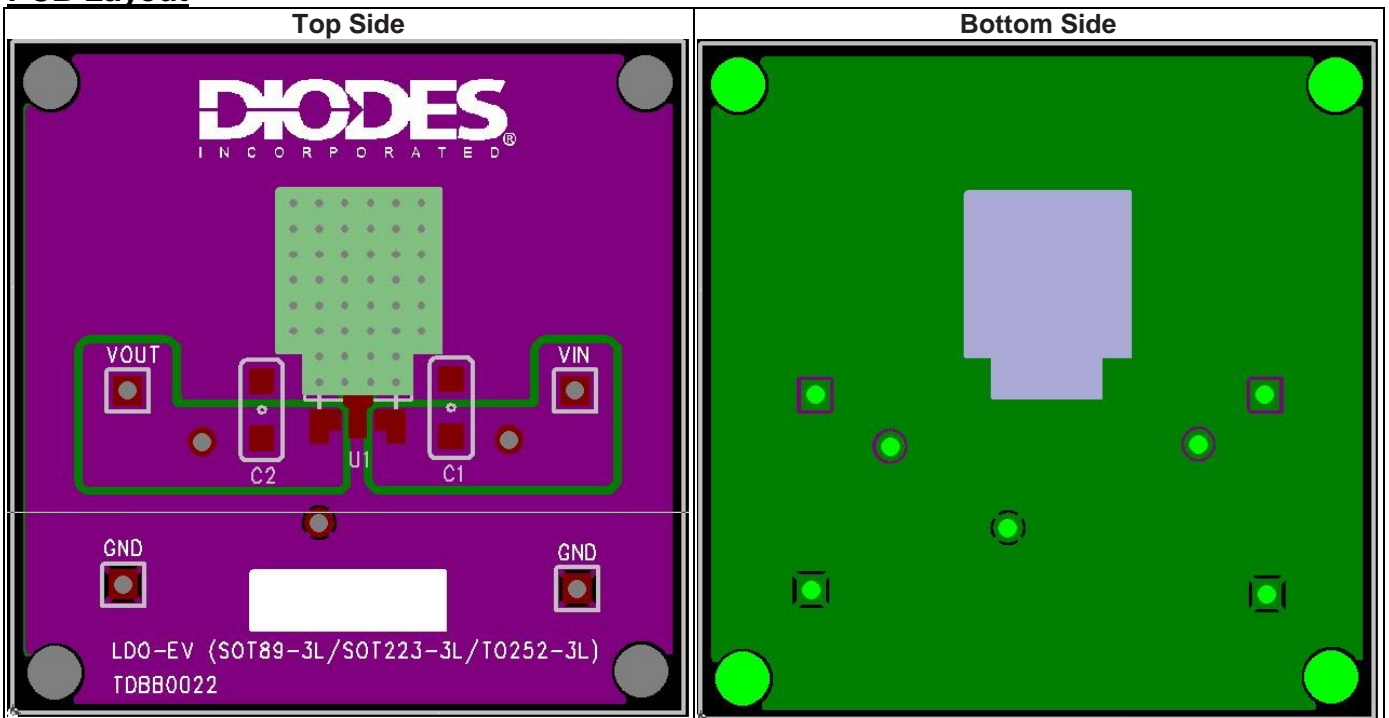
The AP7370-EVM has a simple layout and allows access to the appropriate signals through test points. To evaluate the performance of the AP7370, follow the procedure below:

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



This application note contains new product information. Diodes, Inc. reserves the right to modify the product specification without notice. No liability is assumed as a result of the use of this product. No rights under any patent accompany the sale of the product.

## 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

---

#### IMPORTANT NOTICE

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel.

Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes Incorporated.

#### LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

A. Life support devices or systems are devices or systems which:

1. are intended to implant into the body, or
2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

Copyright © 2020, Diodes Incorporated

[www.diodes.com](http://www.diodes.com)