AP7353-EVM

Application Note
AP7353 Application Information and Demo Board User Guide

Description

The AP7353 is a low dropout regulator with high output voltage accuracy, low RDSON, high PSRR, low output noise and low quiescent current. This regulator is based on a CMOS process.

The AP7353 includes a voltage reference, error amplifier, current limit circuit and an enable input to turn it on and off. With the integrated resistor network, fixed output voltage versions can be delivered.

With its high PSRR, good line regulation and fast load transient response, the AP7353 is well suited for handheld/wearable communication equipment which require stable voltage sources.

The AP7353 is packaged in X1-WLB0707-4 (Type A1) and X2-DFN1010-4 (Type B) which allows for smallest footprint and dense PCB layout.

Features

- Low V_{IN} and Wide V_{IN} Range: 2.0V to 5.5V
- Guarantee Output Current, 250mA
- V_{OUT} Accuracy ±1%
- Ripple Rejection 90dB at 1kHz, I_{OUT} = 10mA
- Ripple Rejection 70dB at 10kHz, I_{OUT} = 250mA
- Low Output Noise, 10μVrms from 10Hz to 100kHz at 10mA
- Quiescent Current as Low as 18μA (Typ.)
- V_{OUT} Fixed 1.8V to 4.5V
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free, Green Device (Note 3)**

Applications

- Smart Phone/PAD
- RF Supply
- Cameras
- Portable Video
- Portable Media Player
- Wireless Adapter
- Wireless Communication

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

Typical Applications Circuit

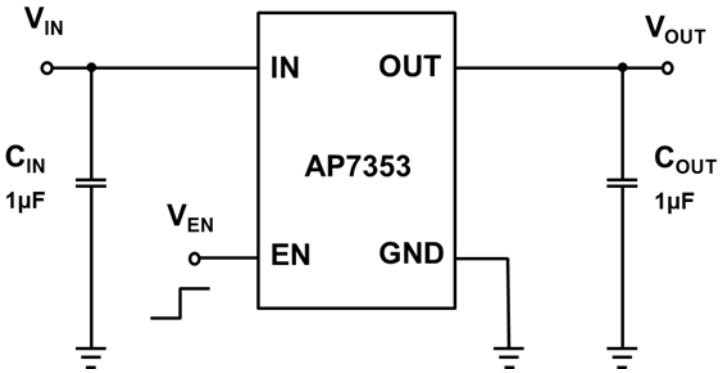


Figure1. AP7353-EVM

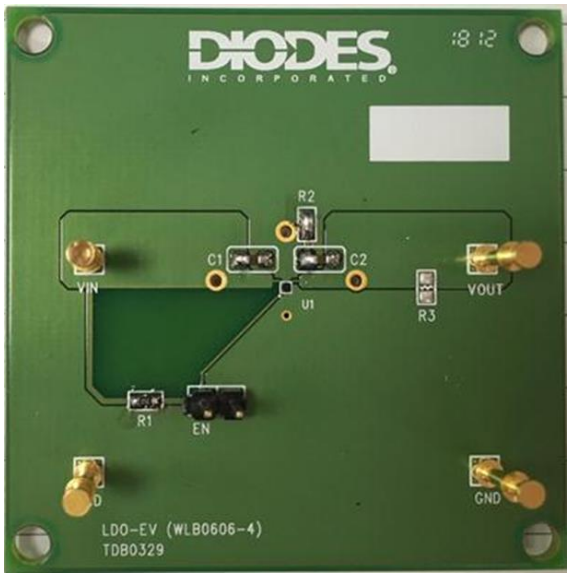
Absolute Maximum Ratings

Symbol	Parameter	Ratings	Unit
ESD HBM	Human Body Mode ESD Protection	>2	kV
ESD CDM	Charge Device Model	±500	V
V_{IN}	Input Voltage	6.0	V
V_{EN}	Input Voltage EN	6.0	V
V_{OUT}	Output Voltage	-0.3 to 6.0	V
I_{OUT}	Output Current	250	mA
P_D	Power Dissipation (Note 5)	800	mW
T_A	Operating Ambient Temperature	-40 to +85	°C
T_J	Operating Junction Temperature	+125	°C
T_{STG}	Storage Temperature	-55 to +150	°C

Recommended Operating Conditions

Symbol	Parameter	Min	Max	Unit
V_{IN}	Input Voltage	2.0	5.5	V
I_{OUT}	Output Current	0	250	mA
T_A	Operating Ambient Temperature	-40	+85	°C

Evaluation Board



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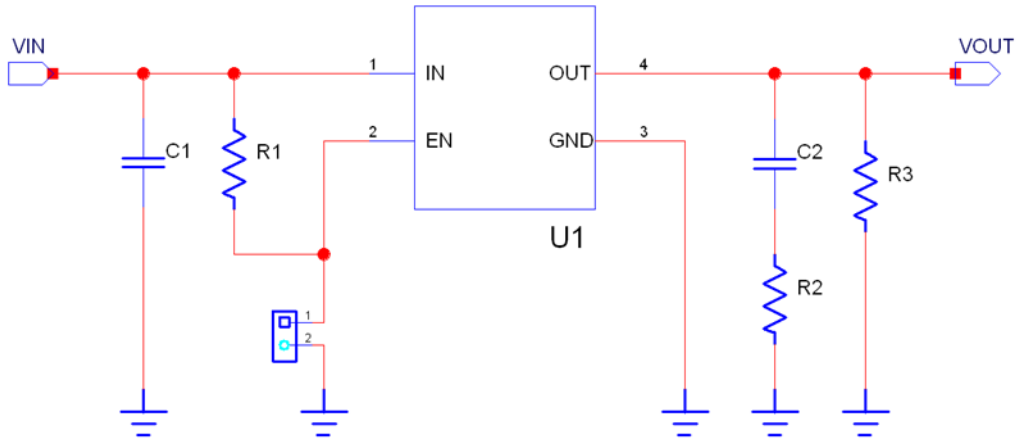
Quick Start Guide

The AP7353-EVM has a simple layout. To evaluate the performance of the AP7353, follow the procedure below:

1. Connect a power supply to the input terminals VIN and GND. Set VIN to VOUT+1V.
2. Connect the positive terminal of the electronic load to VOUT and negative terminal to GND.
3. For WLB package, connect EN pin to VIN through10KΩ resistor to enable IC. Place a jumper to disable IC.
4. The evaluation board power up with output voltage.
5. Check for the proper output voltage (±1%) at the output terminals VOUT and GND. Measurement can also be done with a multimeter with the positive and negative leads between VOUT and GND.
6. Set the load to 250mA through the electronic load. Check for the stable operation of the VOUT signal on the oscilloscope.

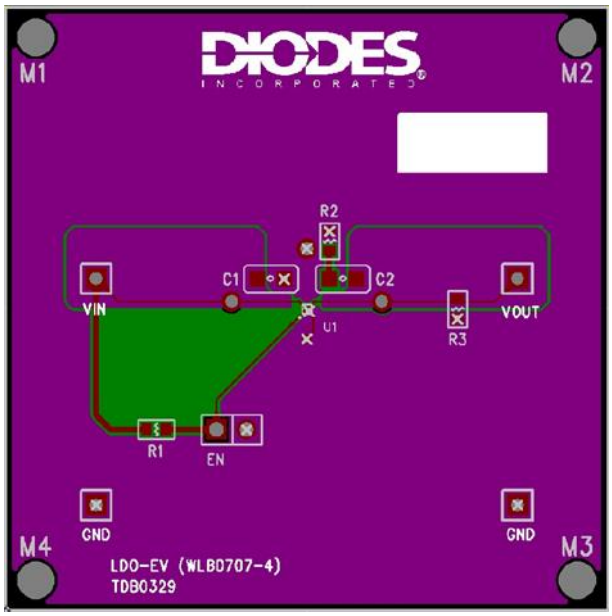
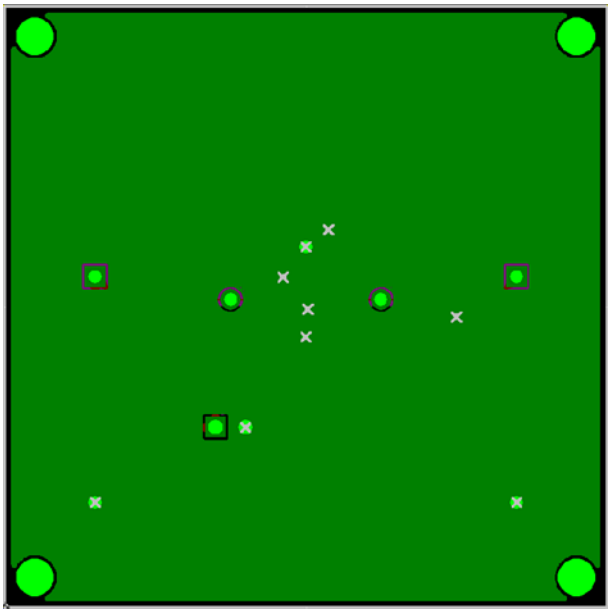
Evaluation Board Schematic

X1-WLB0707-4



PCB Layout

For WLB0707-4 Package

Top Side	Bottom Side
	
X1-WLB0707-4	**X1-WLB0707-4**

Bill of Materials

X1-WLB0707-4

Component Location	Quantity	Specification	Source	Part No.	Size
R1	1	10KΩ	YAGEO		0402
R2	0	short			
R3	0	open			
C1	1	Cap MLCC 1µF/10V/X7R	TAIYO YUDEN	LMK107B7105KA	C0603
C2	1	Cap MLCC 1µF/10V/X7R	TAIYO YUDEN	LMK107B7105KA	C0603
J1	1	0.1"*2 Header 1 and Jumper	-	-	5mm X 2.5mm
VIN,VOUT,GND	4	Header_1	-	-	2.2mm X 1.35mm
U1	1	AP7353, 250mA, LDO	Diodes Inc.	AP7353	WLB0707-4
PCB	1	LDO-EV (WLB0707-4)	Diodes Inc.	TDB0329	2000milX 2000mil

Vendors of peripheral components

Suggested Capacitors：

Vendor	Capacitance	Type	Series
TAIYO YUDEN	Cap MLCC 1μF/10V/X7R	SMD	LMK107B7105KA

Suggested Resistor：

Vendor	Type	Series
YAGEO	SMD	RC0402FR-SK

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