

Analog PWM Generator 5V, 500kHz PWM Output

(ACTIVE) TIPD108

Description & Features

Technical Documents

Support & Training

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Key Document

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TIPD108 Design File (ZIP 889 KB)

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TIPD108 Verified Design Reference Guide (PDF 806 KB)

19 Sep 2013 1,968 views

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Description

This Verified Design utilizes a triangle wave generator and comparator to generate a pulse-width-modulated (PWM) waveform with a duty cycle that is inversely proportional to the input voltage. An op amp and comparator generate a triangular waveform which is passed to one input of a comparator. By passing the input voltage to the other comparator input, a PWM waveform is produced. Negative feedback of the PWM waveform to an error amplifier is utilized to ensure high accuracy and linearity of the output. The OPA2365 op amp, TLV3502 comparator, and REF3325 reference were used to build this design. See more [TI Precision Designs](#)

Features

- Utilizes a triangle wave generator and comparator to generate PWM waveform
 - Single-Supply Solution
 - 2V to 2V input, DC coupled
 - 5V, 500kHz PWM output
 - 0.22% Measured Gain Error
 - 0.108% Measured Offset Error

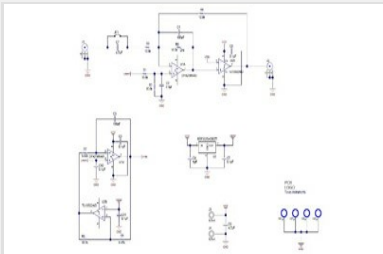
This Verified Design Includes:

- Theory
 - Component Selection
 - TINA-TI Simulation
 - Schematics and PCB Layout
 - Verification and Measured Performance
 - Modification Options

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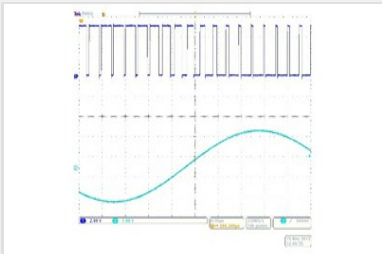
Schematic/Block Diagram

Quickly understand overall system functionality.



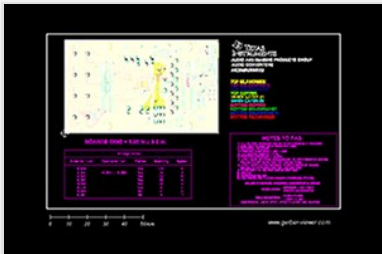
Test Data

Get results faster with test and simulation data that's been verified.



Design Files

Download ready-to-use system files to speed your design process. [Get Viewer.](#)



Bill of Materials (BOM)

Find the complete list of components in this reference design.

Download BOM

TI Devices (3)

Order samples, get tools and find more information on the TI products in this reference design.

Part Number	Name	Product Family	Sample & Buy	Design Kits & Evaluation Modules
OPA2365	2.2V, 50MHz, Low-Noise Single-Supply Rail-to-Rail Operational Amplifiers	Operational Amplifiers (Op Amps)	Sample & Buy	Not Available
REF3325	30ppm/°C Drift, 3.9µA, SOT23-3, SC70-3, UQFN-8 Voltage Reference	Voltage Reference	Sample & Buy	Not Available
TLV3502	4.5ns Rail-to-Rail Comparator	Amplifiers	Sample & Buy	Not Available

CAD/CAE symbols

Part #	Package Pins	CAD File (.bxl)	STEP Model (.stp)
OPA2365		Download	Download
REF3325		Download	Download
		Download	-
		Download	Download
TLV3502		Download	Download
		Download	-

Texas Instruments and Accelerated Designs, Inc. have collaborated together to provide TI customers with schematic symbols and PCB layout footprints for TI products.

Step 1: Download and install the [free download](#).

Step 2: Download the Symbol and Footprint from the CAD.bxl file table.

- [read more](#) -

Technical Documents

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User guides (1)

Title	Abstract	Type	Size (KB)	Date	Views	TI Recommends
		PDF	806	19 Sep 2013	1,968	

Design files (3)

Title	Abstract	Type	Size (KB)	Date	Views
		PDF	61	20 Sep 2013	48
TIPD108 Gerber		ZIP	795	19 Sep 2013	79
		PDF	89	19 Sep 2013	398

Related Tools & Software

Development Tools (1)

Name	Part Number	Tool Type
SPICE-Based Analog Simulation Program	TINA-TI	Circuit Design & Simulation

Software (2)

-  [TIPD108 Design File](#)
(ZIP, 889KB) 481 views, 19 Sep 2013
-  [TIPD108 Simulation](#)
(ZIP, 24KB) 59 views, 19 Sep 2013

Applications

- [AV Receiver](#)

