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## Evaluation Board for **AWT6722**, Low Quiescent Current, Low Input Voltage Boost Converter

### FEATURES

- Input voltage: 0.75V to 5V
- Output voltage: 3.3V
- Up to 95% Efficiency at Typical Operating Conditions
- 550mA Switching Current Limit
- Low IQ, 5.5 $\mu$ A No-load Input Current
- Ultra-Low 0.1 $\mu$ A Shutdown Current
- Feedback Voltage 500mV
- Protections
  - Input Under Voltage Lockout
  - Output Overvoltage Protection
  - Over-Temperature Protection

### GENERAL DESCRIPTION

The AWT6722 evaluation board is a complete solution that allows users to evaluate the operation and performance of the AWT6722 boost converter. The AWT6722 is an adjustable output voltage device that can be programmed between 1.8V and 5V. The output voltage of this Evaluation Board is set to 3.3V. The ambient temperature operating range is  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ .

The AWT6722 operates from an input voltage range of 0.75V to 5V with a very low operating quiescent current. This capability provides a power-supply solution for products powered by either a single-cell, two-cell, or three-cell alkaline, NiCd or NiMH, or one-cell Li-Ion or Li-polymer battery.

Full details on the AWT6722 boost converter are provided in the AWT6722 Data Sheet.

### EVALUATION BOARD



Figure 1. Evaluation Board

# TABLE OF CONTENTS

Features.....	1	Modifying The Board .....	6
General Description .....	1	Schematic.....	7
Evaluation Board .....	1	PCB Layout.....	8
Table of Contents.....	2	Bill Of Materials.....	9
Electrical Specifications .....	3	Notes .....	10
Using the evaluation board.....	4	Quiescent Current .....	10
Bench Setup.....	4	No-load Input Current.....	10
Test procedure and Result .....	4	Revision History .....	11

## ELECTRICAL SPECIFICATIONS

**Table 1. AWT6722 EVB Electrical Specifications**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>INPUT CHARACTERISTICS</b>						
Input Voltage	$V_{IN}$	Operating	0.75	1.2	3.3	V
No-load Input Current	I	Operating		5.5		$\mu$ A
Quiescent Current (VIN)	$I_Q$	$V_{EN}=V_{IN}=1.2V, V_{OUT} = 3.3V, \text{Non-switching}$		2.95	5	$\mu$ A
Quiescent Current (VOUT)				0.2	1.5	$\mu$ A
<b>OUTPUT CHARACTERISTICS</b>						
Output Voltage	$V_{OUT}$			3.3		V
Maximum Output Current	$I_{OUT}$	$V_{IN}=1.2V, V_{OUT}$ is ready		80		mA
		$V_{IN}=2.4V, V_{OUT}$ is ready		200		mA
<b>SYSTEM CHARACTERISTICS</b>						
Load Efficiency	EFE	$V_{IN}=1.2V, I_{OUT}=20mA$		85.2		%
	EFE	$V_{IN}=2.4V, I_{OUT}=20mA$		93.6		%
Operating temperature			-40		85	$^{\circ}$ C
Junction temperature	$T_J$		-40		125	$^{\circ}$ C

## USING THE EVALUATION BOARD

### BENCH SETUP

The AWT6722 evaluation board is supplied fully assembled and tested. Before applying power to the evaluation board, follow the procedures in this section.

#### ***Jumper J5 (Enable)***

Use one of the following methods to enable or to disable the boost converter:

- To enable the boost converter, short the middle pin of J2, EN, to the ON.
- To disable the boost converter, short the middle pin of J2, EN, to the OFF.

#### ***Input Power Source***

Connect the positive terminal of the power source to J1 (VIN), and negative terminal of the power source to J2 (GND) of the evaluation board.

#### ***Output Load***

Before connecting the load, ensure that the board is turned off. Connect an electronic load or resistor to set the load current. Connect the positive terminal of the load to J3 (VOUT) of the evaluation board and connect the negative terminal of the load to J4 (GND).

#### ***Input and Output Voltmeter***

To measure the input voltage, connect the positive terminal of the voltmeter to TP1 (VIN\_SENSE) and the negative terminal to TP6 (GND\_SENSE).

Likewise, to measure the output voltage, connect the positive terminal of the voltmeter to TP3 (VOUT\_SENSE) and the negative terminal to TP5 (GND\_SENSE). (See Figure 2)



Figure 2. Bench Setup

### Powering Up

When the power source and load are connected to the evaluation board, it can be powered for operation.

Follow the procedures to turn on the board:

1. Make sure that the power source voltage is  $>0.75V$  and  $<3.3V$ .
2. Make sure that the EN is high and monitor the output voltage.
3. Turn on the load, check that it is drawing the proper load current, and verify that the output voltage maintains its regulation.

## TEST PROCEDURE AND RESULT

### Start up

1. Follow the BENCH SETUP.
2. Set DC Electronic load to 0A.
3. Set  $V_{IN}=1.2V$  on DC Power Supply and Observe the switching waveform with an oscilloscope.
4. Set DC Electronic load to 50mA.
5. Turn on the DC Power Supply

The measured start up waveform at 50mA condition is shown in Figure 3.



## MODIFYING THE BOARD

To modify the AWT6722 evaluation board configuration, replace the appropriate passive components on the board.

### *Changing the Output Voltages*

The Output Voltage setpoints can be changed by replacing the R3 and R5 resistor with the resistor values shown in the Table 2.

**Table 2. Recommended Resistor Values for Common Output Voltages**

$V_{OUT}(V)$	$R_3(k\Omega)$	$R_5(k\Omega)$
2.2	3400	1000
3.3	5600	1000
5	9000	1000

The recommended value for R5 is in the range of 1M $\Omega$  for low  $I_Q$  performance. Use the following equation to calculate resistor value of resistor R1,

$$R3 = \frac{(V_{OUT} - V_{FB}) \times R5}{V_{FB}}$$

where:

R5=1M $\Omega$ .

# SCHEMATIC

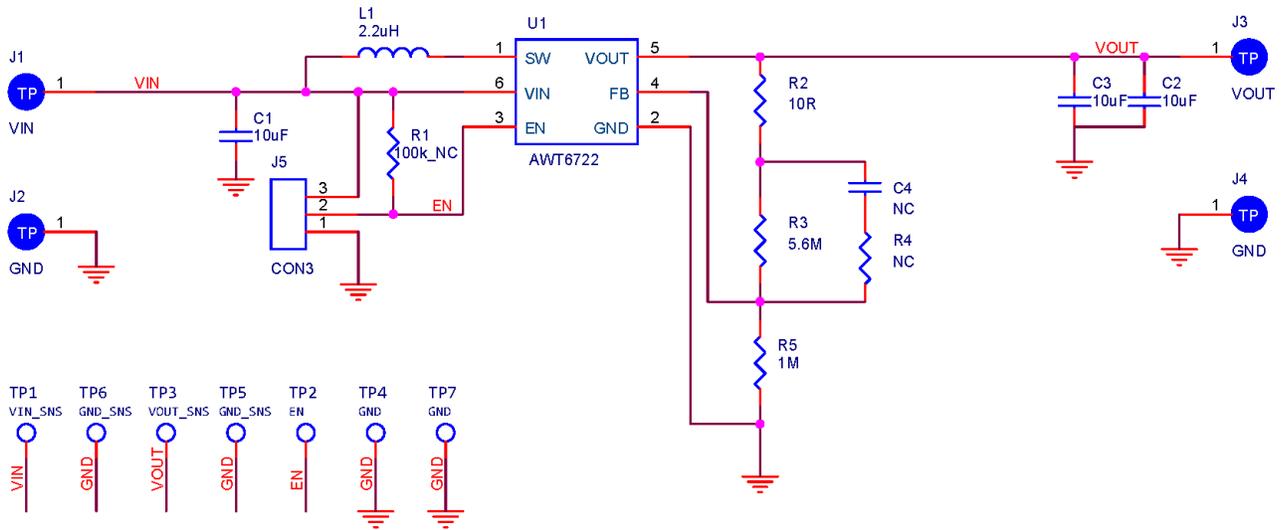


Figure 6. Schematic

# PCB LAYOUT

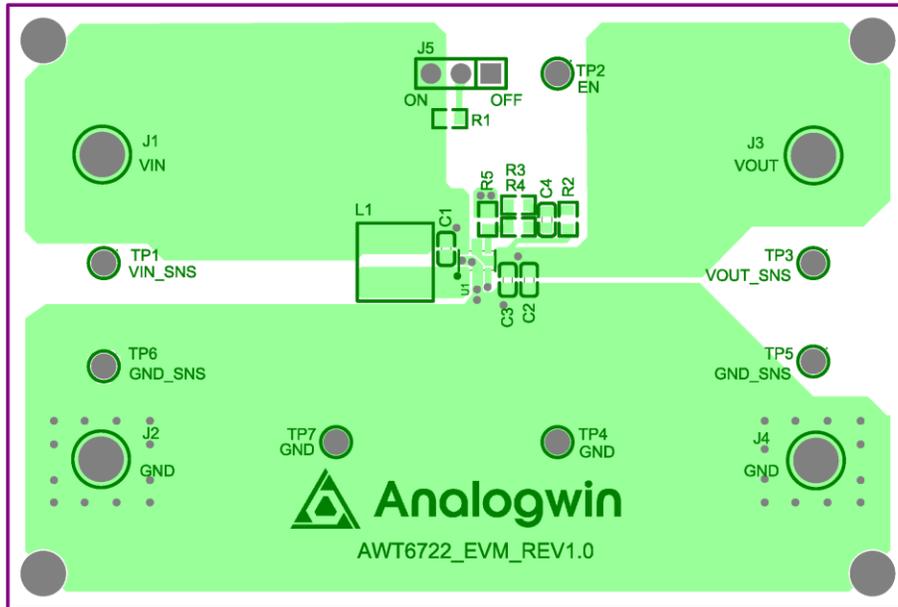


Figure 7. EVM TOP Layer

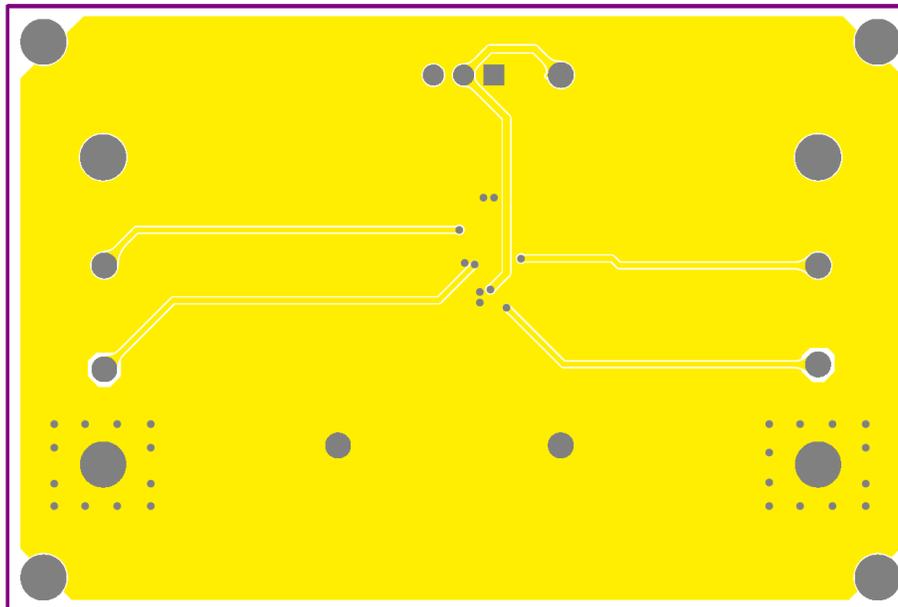


Figure 8. EVM BOTTOM Layer

## BILL OF MATERIALS

**Table 3.**

Ref Designator	Qty	Description	Part Number
C1, C2, C3	3	CAP, 10uF $\pm$ 10% 10V, X5R, 0603	CGA0603X5R106K100JT
C4	1	NC	-
L1	1	Inductor, 2.2uH $\pm$ 20% DCR 13.2m $\Omega$ , 9.2A	XAL5030-222MEC
R1	1	NC, RES, 100k $\Omega$ $\pm$ 1%, 100mW, 0603	0603WAF1003T5E
R2	1	RES, 10 $\Omega$ $\pm$ 1%, 100mW, 0603	0603WAF100JT5E
R3	1	RES, 5.6M $\Omega$ $\pm$ 1%, 100mW, 0603	0603WAF5604T5E
R4	1	NC	-
R5	1	RES, 1M $\Omega$ $\pm$ 1%, 100mW, 0603	0603WAF1004T5E
J1, J2, J3, J4	4	Terminal, Turret, TH, Double, 1502-2	Keystone, 1502-2
J5	1	Jumper 2.54 mm pitch, 2-way, SIP3	PZ254V-11-03P
TP1, TP2, TP3	3	Test point, RED	RH-5010
TP4, TP5, TP6, TP7	4	Test point, BLACK	RH-5011

## NOTES

### QUIESCENT CURRENT

Quiescent Current is defined as the current drawn by the AWT6722 from both  $V_{IN}$  and  $V_{OUT}$  in non-switching but enabled condition. "Non-switching" means that the power switches in the AWT6722 are closed. "Enabled" means that the AWT6722 is turned on via its EN pin and is not in a UVLO or other shutdown condition.

### NO-LOAD INPUT CURRENT

No-load input current is defined as the current drawn by the AWT6722 in switching condition to keep the output regulated. Connecting either an electronic load or a voltmeter to the output will affect the measurement of this current.

## REVISION HISTORY

Version	Date	Descriptions
Rev. 1.0	11/2025	Initial version
Rev. 1.1	12/2025	Updated the Table 1. AWT6722 EVB Electrical Specifications. Added the Measuring No-load Input Current in section Test Procedure and Result. Updated the Measuring Quiescent Current in section Test Procedure and Result. Added section Notes.