

3.0MHz High Efficiency Low IQ Synchronous Boost

Brief Description

This Manual describes the detailed operation of the KTC2110 evaluation board. KTC2110 is a high efficiency and Low IQ Synchronous boost regulator extending battery life.

The KTC2110 Evaluation (EVAL) board is used to demonstrate the KTC2110 regulator detailed functionality, performance, and the PCB layout. The kit includes a fully assembled and tested KTC2110 EVAL board, and a printed copy of the Quick Start Guide (also contained within this document).

Ordering Information

Part Number	Description	IC Package
KTC2110ECAA-MMEV02	KTC2110ECAA-TR EVAL Kit	WLCSP-9

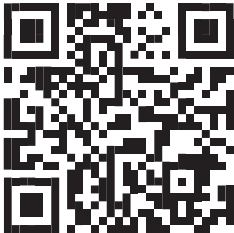

3D CAD Image



EVAL Kit Physical Contents

Item #	Description	Included
1	KTC2110 EVAL fully assembled PCB in Anti-static bag	1
2	Hard copy for the Quick Start Guide, 1 page (A4 or US Letter)	1
3	EVAL Kit box	1

QR Links for Documents

IC Landing Page	EVAL Kit Landing Page
 https://www.kinet-ic.com/ktc2110/	 https://www.kinet-ic.com/ktc2110ecaa-mmeev02/

Note: The full EVAL Kit Manual is available for download on the EVAL Kit Landing Page.

User-Supplied Equipment

Required Equipment

1. Bench Power Supply for VIN – 6V and 3A as needed for the intended application.
2. Digital Multimeter – used to measure input/output voltages and currents.
3. Load – either power resistors, an E-Load, or an actual system load.

Optional Equipment

1. Oscilloscope and Voltage Probes – for dynamic testing, measurements, and observe input/output voltages and currents waveforms.
2. Additional Digital Multimeters

Recommended Operating Conditions

Symbol	Description	Value	Units
VIN	Input Withstand Voltage	-0.3 to 6	V
	Input Operating Voltage	2.5 to 5.5	V
I _{OUT}	Output Load Current	0 to 1	A

Jumper Descriptions

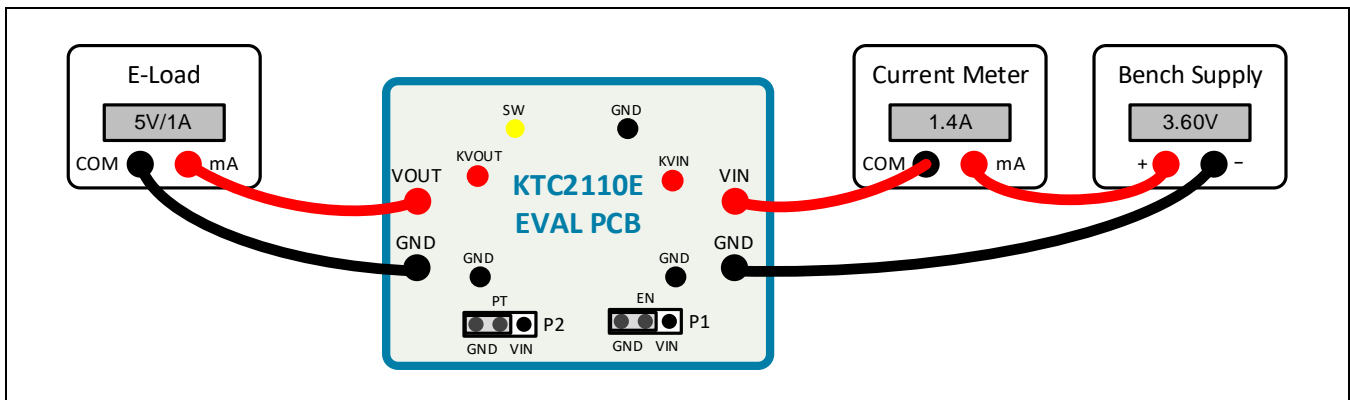
Designator	Name	Description	Default
P1	EN	Jumper for EN input signal. With PT = GND (P2), connecting EN to VIN turns on the output in boost mode, and connecting EN to GND turns off the output (shutdown mode).	Connected to VIN
P2	PT	Jumper for PT input signal. With EN = GND (P1), connecting PT to VIN turns on Pass Through mode.	Connected to GND

Quick Start Procedures

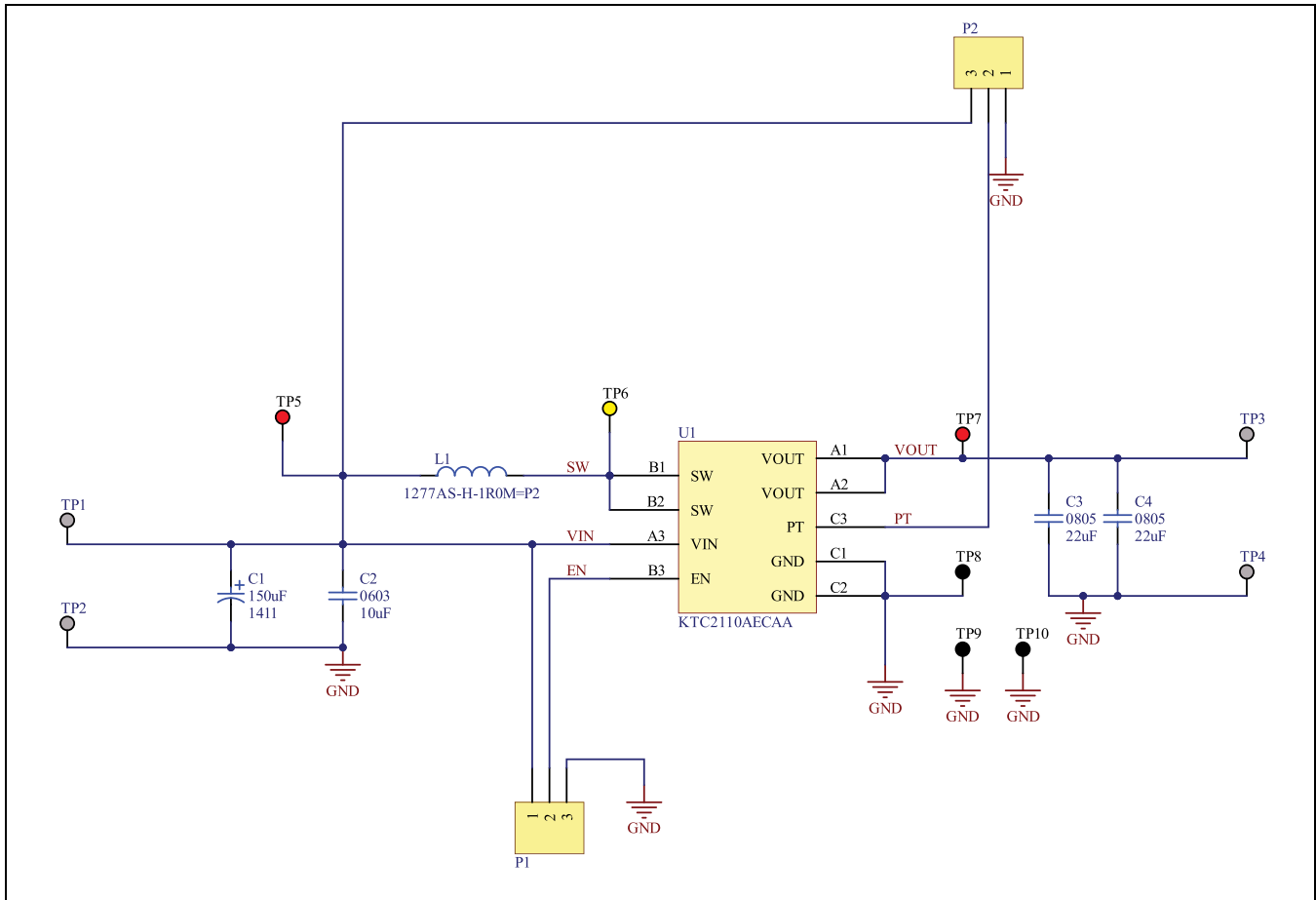
1. Check the Jumpers for default setting.
2. Connect one pair of power cables to the connector of EVAL Kit at VIN and GND.
3. Before connecting the EVAL Kit to the VIN bench supply, turn on the supply and adjust the voltage as close to 0V as possible. Then turn off the supply. While off, connect the power cables ends to the VIN bench supply.
4. Turn on the VIN bench supply and very slowly ramp its voltage to an appropriate voltage, such as 3.6V. While ramping VIN slowly, use the bench supply's output current indication (or a digital multimeter) to monitor the VIN current. If the current becomes high, reduce the VIN voltage quickly to prevent damage. Then inspect the setup for any wiring errors.
5. To hardware shutdown the regulator, simply use a jumper at P1 to connect EN to GND.
6. Connect a voltage meter to the output K_VOUT and GND test pins, it should measure the voltage of the boost regulator, which is specified in the datasheet.
7. To select Pass Through mode, set jumper P1 with EN = GND, and set jumper P2 with PT = VIN.
8. Measure VOUT voltage, it should be close to VIN voltage.

Typical Test Setup Diagram

As an example, use the following test setup to measure input/output in the Quick Start Procedures.



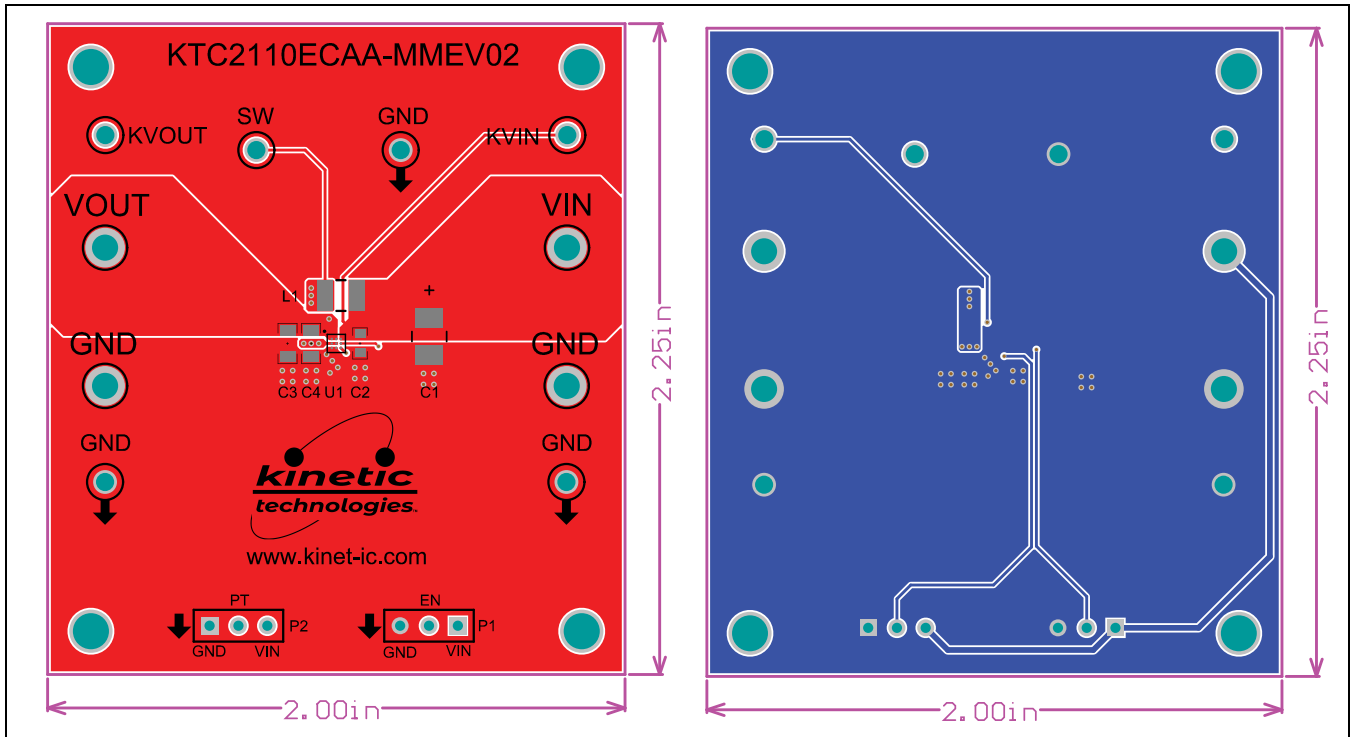
Electrical Schematic



Bill of Materials (BOM)

Item #	Quantity	Designator	Description	Value	Package	Manufacturer	Manufacturer Part Number
1	1	C1	CAP TANT POLY 150µF 6.3V 1411	150µF	1411	Kemet	T520B157M006ATE035
2	1	C2	CAP CER 10UF 10V X5R 0603	10µF	0603	Samsung	CL10A106MP8NNNC
3	2	C3, C4	CAP CER 22UF 10V X5R 0805	22µF	0805	Samsung	CL21A226MPQNNNE
4	4	H1, H2, H3, H4	BRD SPT SNAP LOCK REST MNT 4MM			Essentra Components	PSD-4M-19
5	1	L1	1µH Shielded Drum Core, Wirewound Inductor 3.1 A 45mΩ Max 1210 (3225 Metric)	1µH	1210	Murata Electronics	1277AS-H-1R0M=P2
6	2	P1, P2	CONN HEADER VERT 3POS 2.54MM		TH	Sullins Connector Solutions	PREC003SAAN-RC
7	4	TP1, TP2, TP3, TP4	TERM TURRET SINGLE L=5.56MM TIN		TH	Keystone	1502-2
8	2	TP5, TP7	PC TEST POINT MULTIPURPOSE RED		TH	Keystone	5010
9	1	TP6	PC TEST POINT MULTIPURPOSE YELLOW		TH	Keystone	5014
10	3	TP8, TP9, TP10	PC TEST POINT MULTIPURPOSE BLACK		TH	Keystone	5011
11	1	U1	3.0MHz High Efficiency Low IQ Synchronous Boost		WLCSP33-9	Kinetic Technologies	KTC2110AECAL-D-TR

Printed Circuit Board (PCB)



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