

Integrated Dual MOSFET Bridge Rectifier

Brief Description

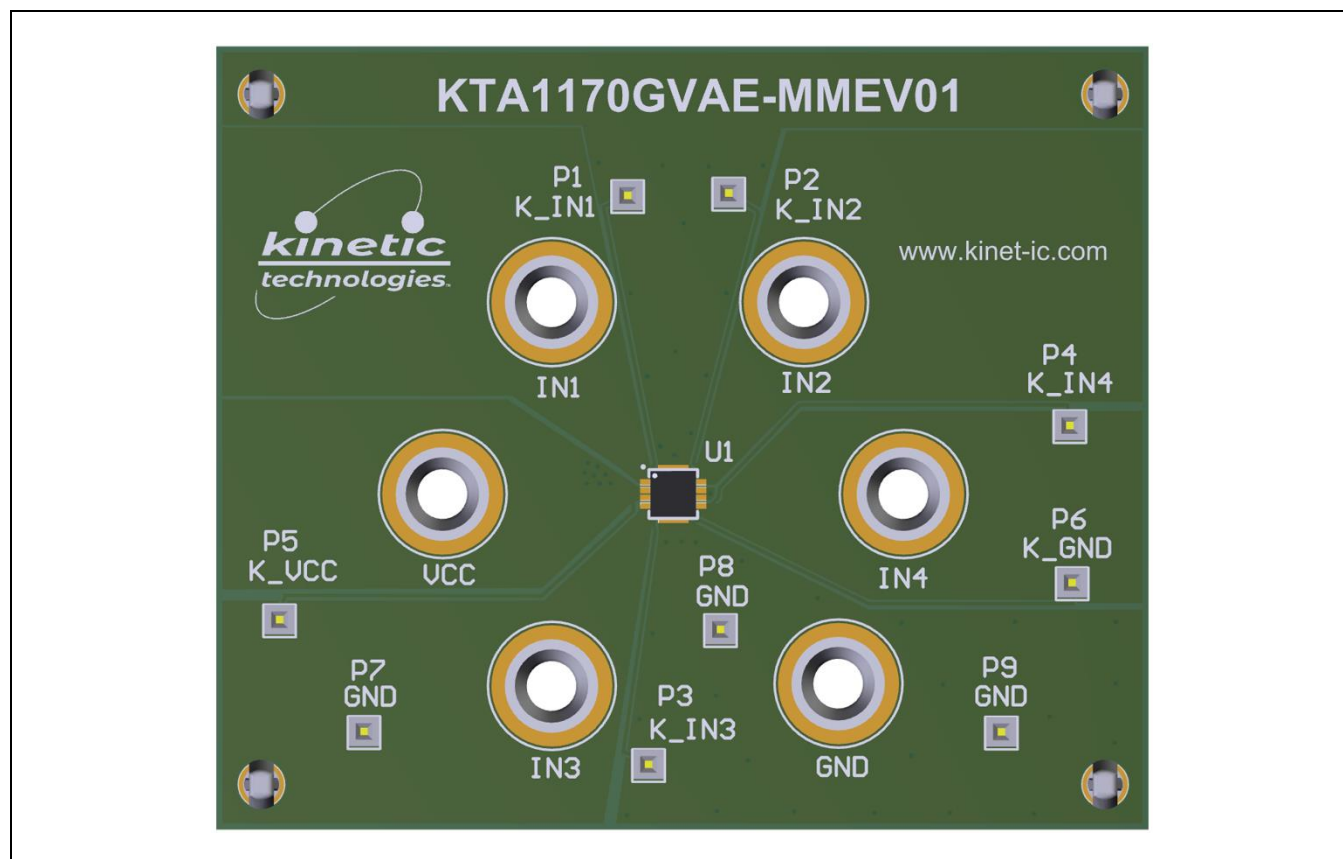
The KTA1170 Evaluation (EVAL) Kit is used to demonstrate and evaluate the KTA1170 single-chip, highly integrated solution for voltage rectification on Power over Ethernet (PoE) Powered Devices.

The kit includes a fully assembled and tested PCB with the KTA1170 IC installed, and a printed copy of the Quick Start Guide (also contained within this document).

Ordering Information

Part Number	Description	IC Package
KTA1170GVAE-MMEV01	KTA1170 EVAL Kit	WDFN44-8

3D CAD Image



EVAL Kit Physical Contents

Item #	Description	Quantity
1	KTA1170 EVAL fully assembled PCB	1
2	Anti-static bag	1
3	Quick Start Guide, printed 1 page (A4 or US Letter)	1
4	EVAL Kit box	1

QR Links for Documents

IC Datasheet	EVAL Kit Landing Page
 https://www.kinet-ic.com/kta1170	 https://www.kinet-ic.com/kta1170gvae-mmev01/

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 IN1/IN2/IN3/IN4 inputs – 60V up to 1A capable, as needed for the intended application.
2. Digital Multimeters – one or more, used to measure input/output voltages and currents.

Optional Equipment

1. Oscilloscope – for dynamic testing of input and output load voltages (and input or load currents with a current probe, if available).
2. Load – Electronic Load, power resistors, or an actual system load.

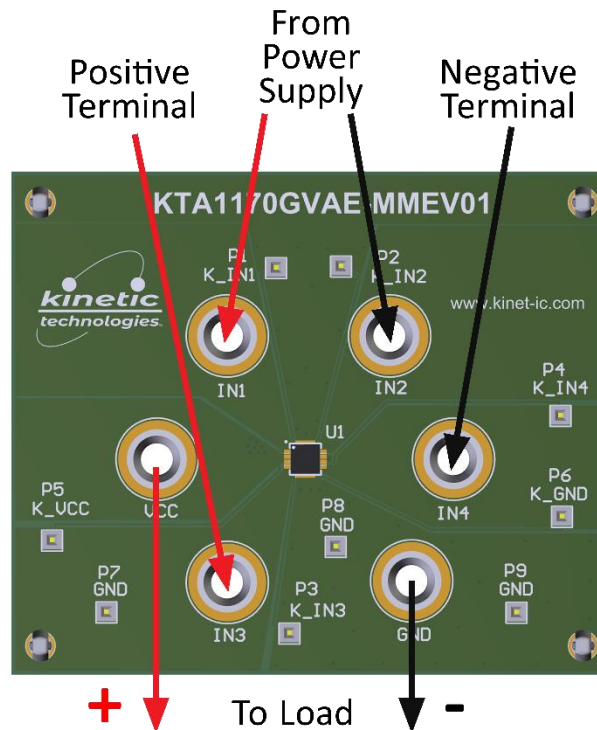
Recommended Operating Conditions

Symbol	Description	Value	Units
IN1, IN2, IN3, IN4, VCC	Input/Output pin Withstand Voltage	2.7 to 75	V
	Input Power Supply Operating Voltage	37 to 57	V
I _{OUT}	Output Load Current	0 to 2*	A

Note: * For a single bridge rectifier, the recommended input current is up to 1A Max. For both bridge rectifiers combined, the total output current is up to 2A Max.

Typical Test Setup

Use the following test setup for the Quick Start Procedure.

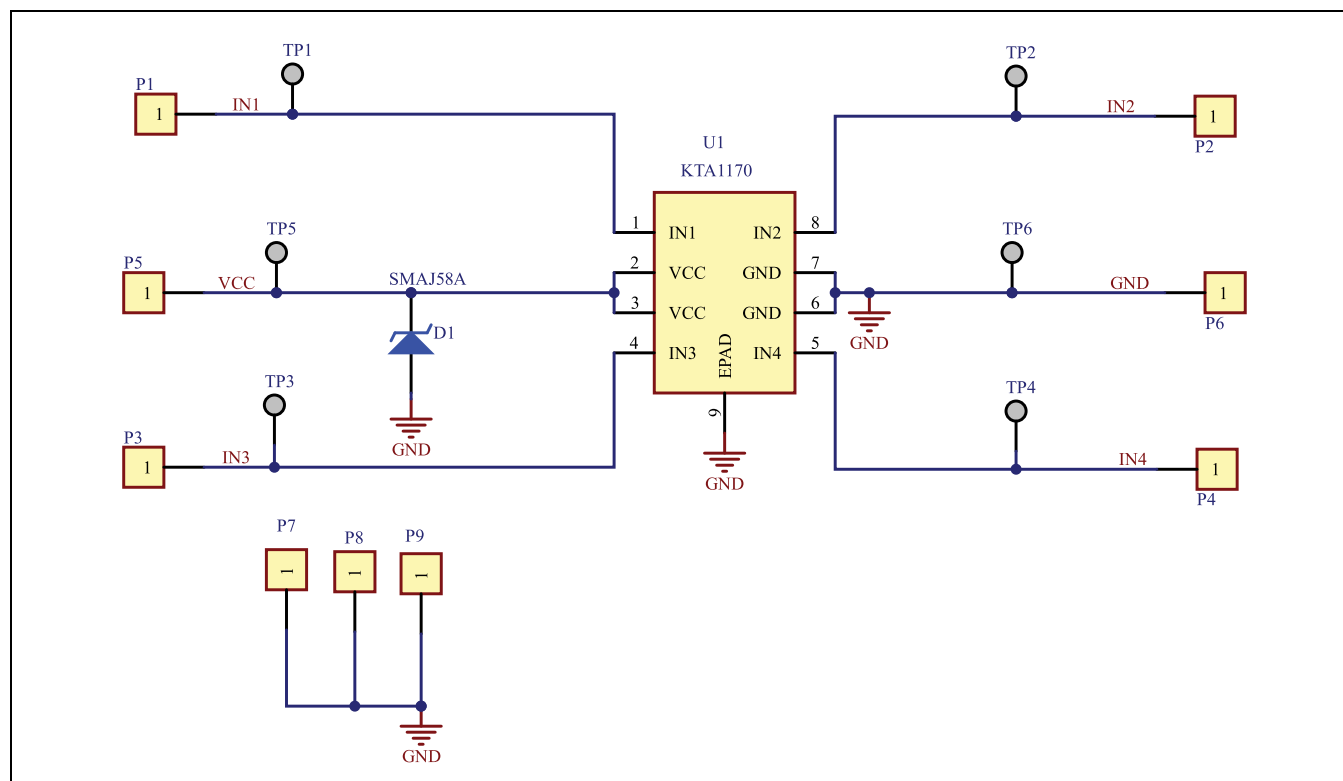


Quick Start Procedures

KTA1170 includes two MOSFET bridges. First, the bridge with inputs IN1-IN2 is checked. Then the procedure is repeated for the other bridge IN3-IN4.

1. Connect one pair of Banana-to-Banana power cables to the banana connectors at IN1 and IN2 (either polarity is fine).
2. Before connecting the EVAL Kit to the VIN1-VIN2 input bench supply, turn on the supply and adjust the voltage as close to 0V as possible. Then turn off or disable the supply output. While off, connect the banana ends of the Banana-to-Banana power cables to the input bench supply.
3. Turn on the bench supply and very slowly ramp the output voltage to an appropriate level, such as 48V. 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 supply voltage quickly to prevent damage. Then inspect the setup for any wiring errors.
4. With valid VIN voltage of 48V, use a digital multimeter to check the output voltage between the K_VCC and K_GND terminals on the evaluation board. It should be nearly the same as the input voltage.
5. Use a digital multimeter to check the no-load supply current to IN1. Consult the KTA1170 datasheet for the expected current range at the IN1 voltage condition in use. For conditions of VIN1-VIN2 = 48V, and no-load, the input supply current should be around 55μA.
6. Repeat steps 1 to 5 for the other diode bridge with inputs IN3-IN4.

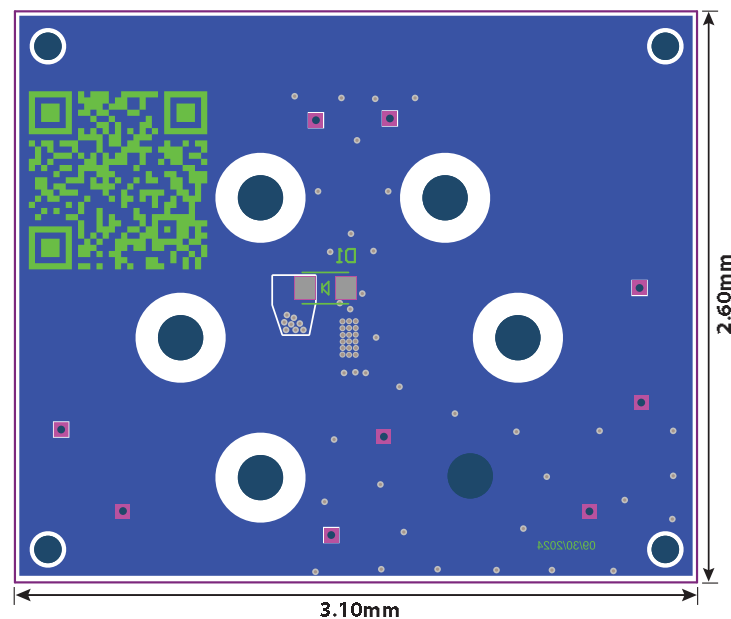
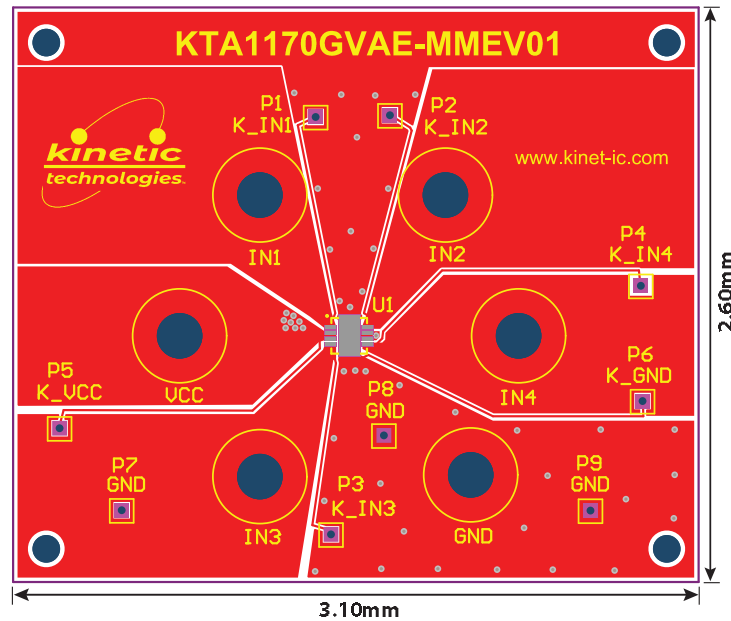
Electrical Schematic



Bill of Materials (BOM)

Designator	Description	Quantity	Case/ Package	Footprint	Manufacturer	Manufacturer Part Number
D1	TVS DIODE 58VWM 93.6VC DO-214	1		SMAJ58A	Littelfuse Inc.	SMAJ58A
H1, H2, H3, H4	BRD SPT SNAP LOCK REST MNT 4MM	4		Board Standoffs- Footprint-1	Essentra Components	PSD-4M-19
P1, P2, P3, P4, P5, P6, P7, P8, P9	CONN HDR .100" 1POS	9		PREC001SAAN- RC-FOOTPRINT- 1	Samtec	PHT-101-01-L-S
TP1, TP2, TP3, TP4, TP5, TP6	Banana Jack Connector Standard Banana Solder	6		KSTN-575-4	Keystone Electronics	575-4
U1	Integrated Dual MOSFET Bridge Rectifier for Power over Ethernet	1	WDFN-8	KTA1170	Kinetic Technologies	KTA1170GVAE-TB

Printed Circuit Board (PCB)



Additional Test Procedures

1. Testing with Load:
 - a. Use a second Banana-to-Banana power cable pair to apply loads between VCC to GND.
 - b. Use multimeters and an oscilloscope to make DC measurements as desired.

Important Notices

Legal notice

Copyright © Kinetic Technologies. Other names, brands and trademarks are the property of others.

Kinetic Technologies assumes no responsibility or liability for information contained in this document. Kinetic Technologies reserves the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or services without notice. The information contained herein is believed to be accurate and reliable at the time of printing.

Reference design policy

This document is provided as a design reference and Kinetic Technologies assumes no responsibility or liability for the information contained in this document. Kinetic Technologies reserves the right to make corrections, modifications, enhancements, improvements, and other changes to this reference design documentation without notice.

Reference designs are created using Kinetic Technologies' published specifications as well as the published specifications of other device manufacturers. This information may not be current at the time the reference design is built. Kinetic Technologies and/or its licensors do not warrant the accuracy or completeness of the specifications or any information contained therein.

Kinetic Technologies does not warrant that the designs are production worthy. Customer should completely validate and test the design implementation to confirm the system functionality for the end use application.

Kinetic Technologies provides its customers with limited product warranties, according to the standard Kinetic Technologies terms and conditions.

For the most current product information visit us at www.kinet-ic.com

Life support policy

LIFE SUPPORT: KINETIC TECHNOLOGIES' PRODUCTS ARE NOT DESIGNED, INTENDED, OR AUTHORIZED FOR USE AS COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS. NO WARRANTY, EXPRESS OR IMPLIED, IS MADE FOR THIS USE. AUTHORIZATION FOR SUCH USE SHALL NOT BE GIVEN BY KINETIC TECHNOLOGIES, AND THE PRODUCTS SHALL NOT BE USED IN SUCH DEVICES OR SYSTEMS, EXCEPT UPON THE WRITTEN APPROVAL OF THE PRESIDENT OF KINETIC TECHNOLOGIES FOLLOWING A DETERMINATION BY KINETIC TECHNOLOGIES THAT SUCH USE IS FEASIBLE. SUCH APPROVAL MAY BE WITHHELD FOR ANY OR NO REASON.

"Life support devices or systems" are devices or systems which (1) are intended for surgical implant into the human body, (2) support or sustain human life, or (3) monitor critical bodily functions including, but not limited to, cardiac, respirator, and neurological functions, and whose failure to perform can be reasonably expected to result in a significant bodily injury to the user. A "critical component" is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

SUBSTANCE COMPLIANCE

Kinetic Technologies IC products are compliant with RoHS, formally known as Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. However, this evaluation kit does not fall within the scope of the EU directives regarding electromagnetic compatibility, restricted substances (RoHS), recycling (WEEE), FCC, CE or UL, and may not meet the requirements of these or related directives. To the best of our knowledge the information is true and correct as of the date of the original publication of the information. Kinetic Technologies bears no responsibility to update such statement.