

IEEE 802.3bt Class 6 PoE 12V / 51W Flyback Regulator

EVAL Kit Physical Contents

Item #	Description	Quantity
1	KTA1142 (flyback topology) Evaluation board fully assembled PCB	1
2	Anti-static bag	1
3	KTA1142 (flyback topology) 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/cta1142/	 https://www.kinet-ic.com/cta1142euat-zt-mcev02/
KTA1170 Integrated Dual MOSFET Bridge Rectifier In order to realize a better power conversion efficiency (up to 1.2%), lower BOM count and PCB footprint, it is highly recommended to use Kinetic's KTA1170 integrated dual bridge rectifier instead of the discrete Schottky diodes.	
https://www.kinet-ic.com/cta1170/	https://www.kinet-ic.com/cta1170gvae-mmev01/

User-Supplied Equipment

Required Equipment

- IEEE 802.3bt compliant Type3 or Type4 Power Sourcing Equipment (PSE), PoE power injector or a PoE powered network switch that can source 48V at 60W or greater.
 - Alternatively, A bench DC Power Supply may be substituted for a PoE power injector, but this will bypass the KTA1142 IEEE 802.3bt control functionality. Such a supply should provide 38V-57V up to 2A as needed for the intended application.
- CAT-5, CAT-5e or CAT-6 RJ-45 M/M ethernet cable, 1m length or shorter.
- Digital Multimeters, two required – used to measure input/output voltages or current.
- Load, any of the following may be used:
 - Electronic load capable of sinking 4.25A at 12V (51W)
 - Power Resistor: 2.8Ω / 51W or greater value is required
 - Actual system load that does not exceed 51W at 12V

Quick Start Procedures

The output voltage of this board is set to 12V by the KTA1142 DC-DC controller. There are two methods to power KTA1142 12V/51W flyback regulator evaluation board:

Method 1: Connect to a IEEE802.3 compliant PSE

1. Connect a voltmeter between the VIN voltage monitoring test point (TP10) and the AGND test point (TP11) to monitor the input supply voltage.
2. Connect a voltmeter to the PVOOUT voltage monitoring test point (TP14) and SGND (TP15) output ground test point to monitor the regulated output voltage.
3. Connect the RJ-45 ethernet cable from the PSE to the evaluation board ethernet input Jack RJ1. The board will automatically start up and 12V should be present on the PVOOUT terminal. Disconnect the PSE after correct 12V output operation has been verified.
4. Connect the electronic load, load resistor or application system circuit to the eval board output PVOOUT (J11) and SGND (J15) output terminals.
5. Connect the RJ-45 ethernet cable from the PSE to the evaluation board ethernet input Jack RJ1. The board will automatically start up. 12V flyback regulator operation can now be observed on the output under load conditions.

Method 2: Connect a DC Power Supply directly to VIN and AGND, bypassing the PoE input jack and rectifier diodes. Connecting a DC power supply to the VIN/AGND input terminals also bypasses the KTA1142 PD functions, however the KTA1142 DC-DC controller and hot swap switch are enabled and will provide a regulated output voltage.

1. Before connecting the EVAL Kit to the bench DC power supply, turn on the supply and adjust the voltage to 48V with a current limit of 2A. When the correct voltage and current limit are set, disable the power supply output.
2. With the DC power supply disabled, connect the DC power supply positive test lead to the VIN terminal (J5) and negative test lead to the input AGND terminal (J8).
3. Connect a voltmeter to the VIN test point (TP10) and AGND test point (TP11) to monitor the input supply voltage.
4. Connect a voltmeter to the PVOOUT test point (TP14) and SGND test point (TP15) to monitor the regulated output voltage.
5. Enable the VIN bench DC power supply and verify 12 Volts is present at the PVOOUT and SGND output test points. After the correct output voltage has been verified, disable the input supply.
6. Connect the electronic load, load resistor or application system circuit to the PVOOUT (J9) and SGND (J15) output test points.
7. Enable the input DC power supply to observe the 12V flyback regulator operation under load conditions.