Enpirion® Power Evaluation Board
EY1602S-ADJ 40V, Low Quiescent Current 50mA Linear Regulator Evaluation Board User Guide

Description

This is the EY1602SI User Guide. The EY1602SI features a high voltage, low quiescent current, temperature shutdown and current limit protection. EY1602SI has a Low Dropout Voltage of 120mV at 50mA. It features an EN pin that can be used to put the device into a low-quiescent current Shutdown mode with 18µA. The evaluation board is optimized for engineering ease of testing through programming options, clip leads, test points and other supporting external components.
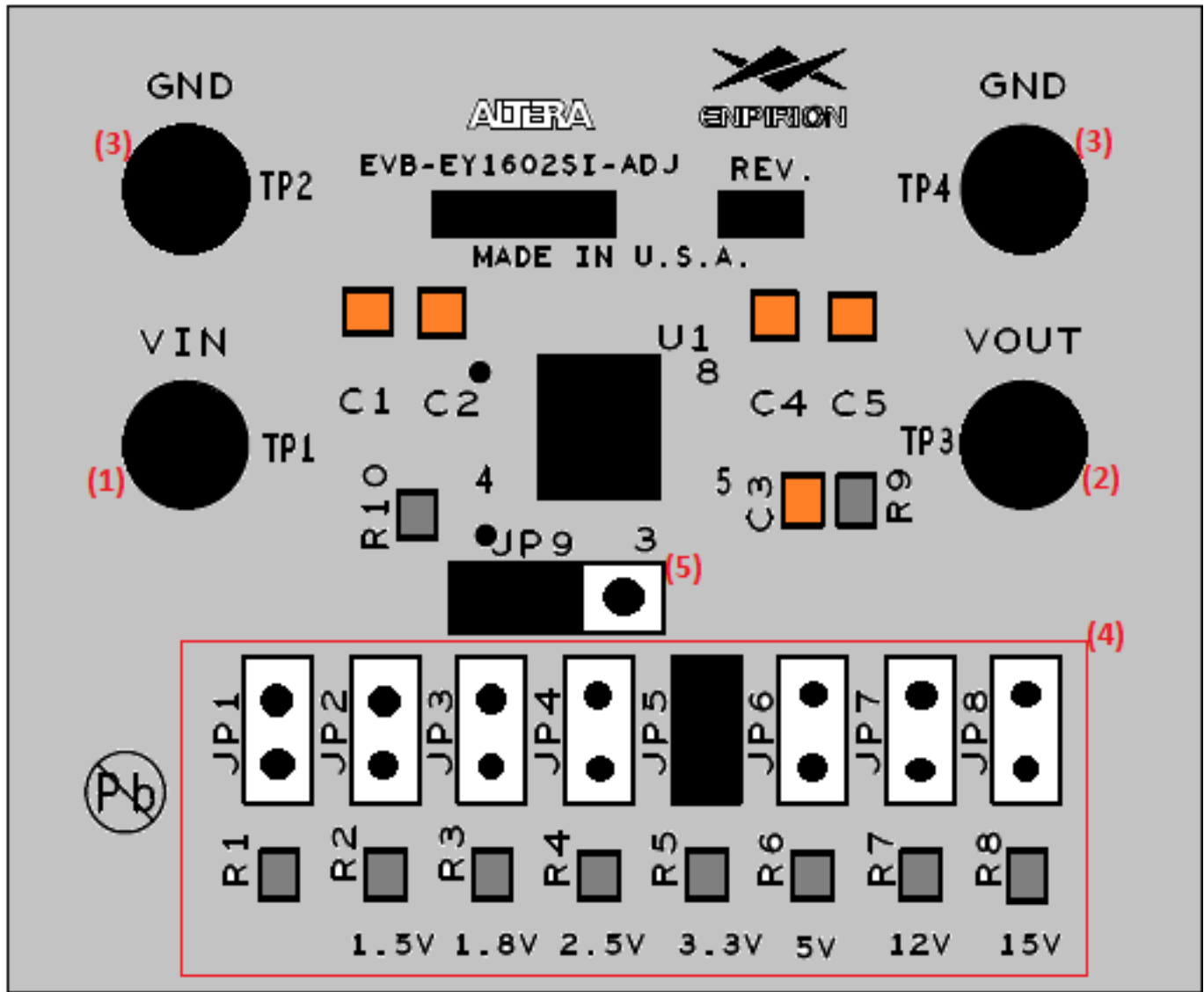
Evaluation Board Over View

Figure 1. EY1602SI Evaluation Board Illustration (Follow instructions on page 2)

Instructions

The numbers in the instructions below correspond to the numbers in Figure 1. By following the number sequence below, the device can be turned on safely.

1) **VIN (TP1)** - Connect 6V to 40V supply on TP1. Do not turn on until everything is connected correctly. Please note that hot plugging is not recommended.

2) **VOUT (TP3)** - Connect the load to TP3. This device can deliver a wide range of output voltage from 2.5V to 12V. Vout can be programed by the voltage selector as will be shown in this document.

3) **Ground (TP2 and TP4)** - Connect the input ground to TP2 and the output ground to TP4.

4) **Output Voltage Settings (JP1- JP8)** - As shown, output voltage is set to 3.3V by placing the jumper on JP5. The jumper may be switched to change the output voltage. From left to right R1 to R8, (Floating, 1.5V, 1.8V, 2.5V, 3.3V, 5V, 12V, 15V). Vout follow the next equation.

$$VOUT = 1.223 \cdot \left[\frac{R_9}{R_X} + 1 \right]$$

Where $R_x = R_{1, 2, 3....8}$

5) **EN (JP9)** - The EY1602SI features an enable pin (EN). When it is pulled low, the IC goes into shutdown mode. In this condition, the device draws less than 2µA. Figure 2 shows the conditions of the enable jumper. The device is enabled in Figure 1a which connects the EN pin to VIN through the resistor divider R10, and disabled in Figure 1b which connects EN pin to ground.
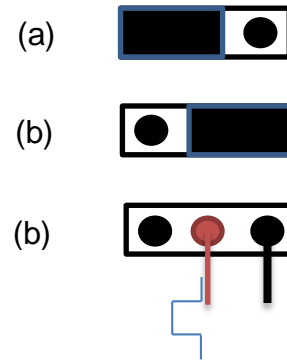
(a)

(b)

(b)

Figure 2. EY1602SI Enable jumper conditions As shown in Figure 2c remove the jumper to apply an external signal to right two pins of JP9 to toggle the enable on (>1.48V) and off (<0.93V).

Bill of Materials

Designator	Qty	Description
C1, C2, C4, C5	4	CAP,SMD,1206,10uF,50V,10%,X5R,ROHS
C3	1	CAP,SMD,0603,47pF,50V,5%,C0G,NP0,ROHS
JP1, JP2, JP3, JP4, JP5, JP6, JP7, JP8	8	CONN-HEADER,1X2,RETENTIVE,2.54mm,0.230X0.120,ROHS
JP9	1	CONN-HEADER,1x3,BREAKAWY 1X36,2.54mm,ROHS
R1	1	RES,SMD,0603,DNP-PLACE HOLDER,ROHS
R2	1	RC0603FR-0760K4L
R3	1	CR0603-10W-3012FT
R4	1	CR0603-10W-1402FT
R5	1	ERJ-3EKF8661V
R6	1	CR0603-10W-4751FT
R7	1	RES,SMD,0603, 1.65K, 1/10W, 1%, TF,ROHS
R8	1	RES,SMD,0603, 1.3K, 1/10W,1%,TF,ROHS
R9	1	RES,SMD,0603,15K,1/10W,1%,TF,ROHS
R10	1	RES, SMD, 0603, 10K, 1/10W, 1%, TF,ROHS
TP1, TP2, TP3, TP4	4	CONN-TURRET,TERMINAL POST,TH,ROHS
U1	1	IC-40V LDO ADJ. LINEAR REGULATOR,8P,EPSOIC,ROHS

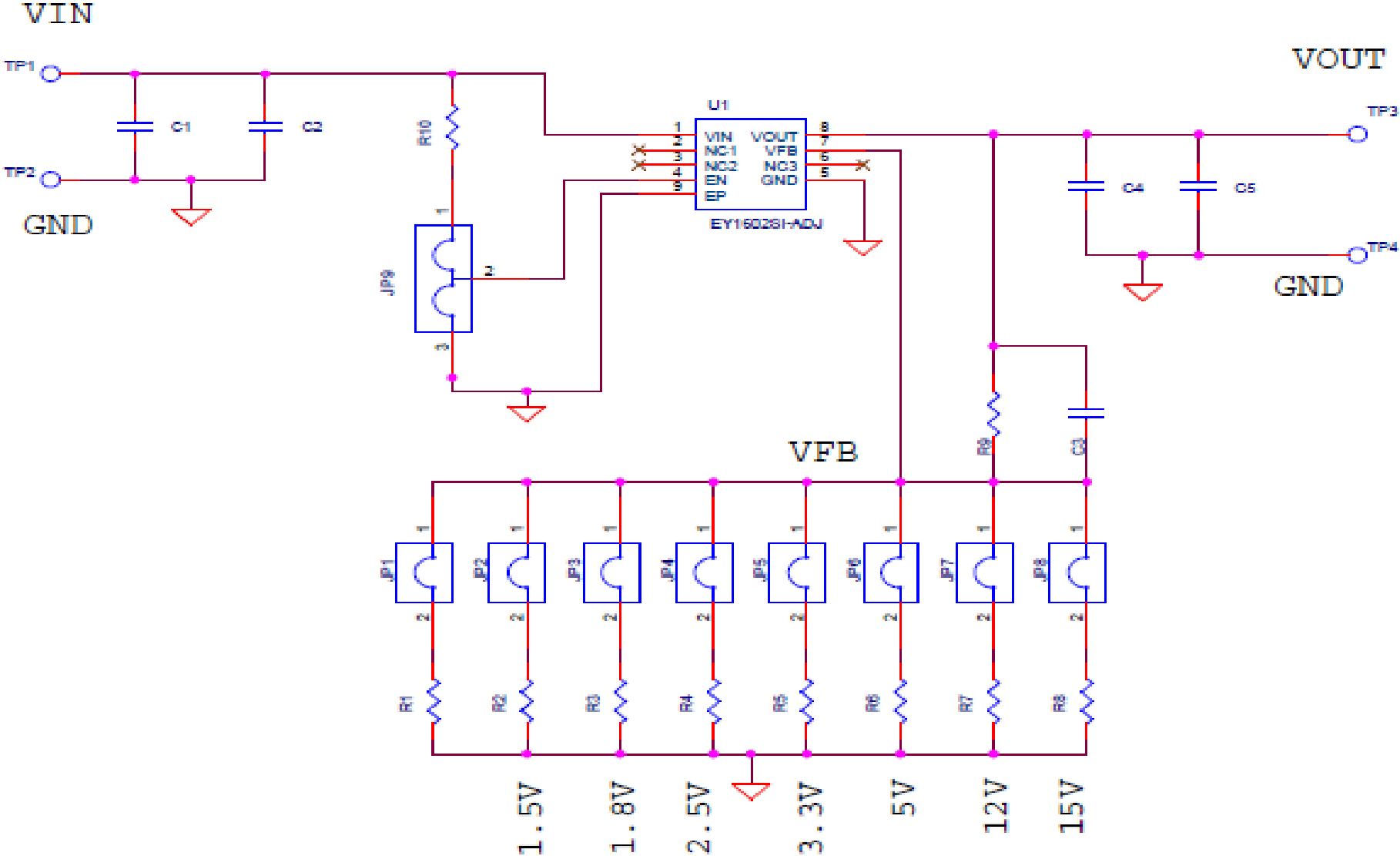## Evaluation Board Schematic

Figure 3. EY1602SI Evaluation Board schematic

Test Recommendations

To guarantee measurement accuracy, the following precautions should be observed:

1. Make all input and output voltage measurements at the board using the test points provided (TP1 to TP3). This will eliminate voltage drop across the line and load cables that can produce false readings.
2. Measure input and output current with series ammeters or accurate shunt resistors. This is especially important when measuring efficiency.
3. Use a low-loop-inductance scope probe tip similar to the one shown below to measure switching signals and input / output ripple to avoid noise coupling into the probe ground lead. Input ripple, output ripple, and load transient deviation are best measured near the respective input / output capacitors. For more accurate ripple measurement, please see Enpirion App Note regarding this subject.
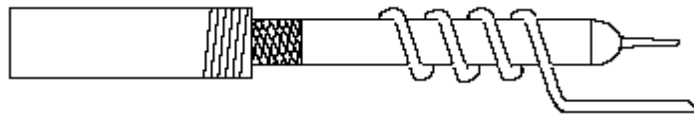
4. This product has built-in over current protection. If protection against an overload condition is required, an appropriate external solution needs to be used. Please refer to the Enpirion application note for further details on this subject.
5. Do not let the enable pin floating as it may be affected by external noise.

Contact Information

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