MIC5295 Evaluation Board

Low Quiescent Current, 150mA LDO Regulator

General Description

The MIC5295 is a highly accurate 150mA low dropout regulator with wide input voltage range of 2.3V to 24V and ultra-low ground current of 18µA. This combination of high voltage and low ground current makes the MIC5295 ideal for portable electronic applications using 1-cell, 2-cell or 3-cell Li-Ion battery supplies.

Available in fixed and adjustable output voltage versions, the MIC5295 is offered in the TO-252-5 (D-Pak) package.

Requirements

The MIC5295 evaluation board requires an input power supply that is able to deliver at least 350mA at a voltage within the range of 2.3V to 24V. The output load can be either active or passive. MIC5295 is stable with either a ceramic or tantalum output capacitor of only 2.2µF for stability. The evaluation board includes an input capacitor of 10µF to compensate for long inductive test leads.

Precautions

The evaluation board does not have reverse polarity protection. Applying a negative voltage to the V_{IN} terminal may damage the device.

Getting Started

1. **Connect an external supply to V_{IN}**. Apply the desired input voltage to the VIN (J1) and ground terminal (J2) of the evaluation board, paying careful attention to polarity and supply voltage (2.3V ≤ VIN ≤ 24V). An ammeter may be placed between the input supply and the VIN terminal of the evaluation board. Ensure that the supply voltage is monitored at the VIN terminal. The ammeter and power lead resistance can reduce the voltage supplied to the input.

2. **Enable/Disable the MIC5295**. The MIC5295 comes with an active-high enable pin that allows the regulator to be disabled. To disable an output, simply jumper the EN terminal (J3) to the GND terminal (J2). The enable pin (J3) can be pulled as high as Vin (J1). Forcing the enable pin high enables the output voltage. Do not leave this pin floating as the output will be in indeterminate state.

3. **Connect the loads to the V_{OUT} terminal (J4) and ground terminal (J5).** The load can be either a passive (resistor) or active (electronic load). Be sure to monitor the output voltage at the VOUT (J4) terminal.

4. **Adjust Pin.** The MIC5295YD can be adjusted from 1.24V to 20V by using two external resistors. R1 is connected between ADJ (J6) and VOUT (J4). R1 should not exceed 300kΩ. Also R2 is connected from ADJ (J6) to GND (J5) with value of 100kΩ. The resistors set the output voltage based on the following equation:

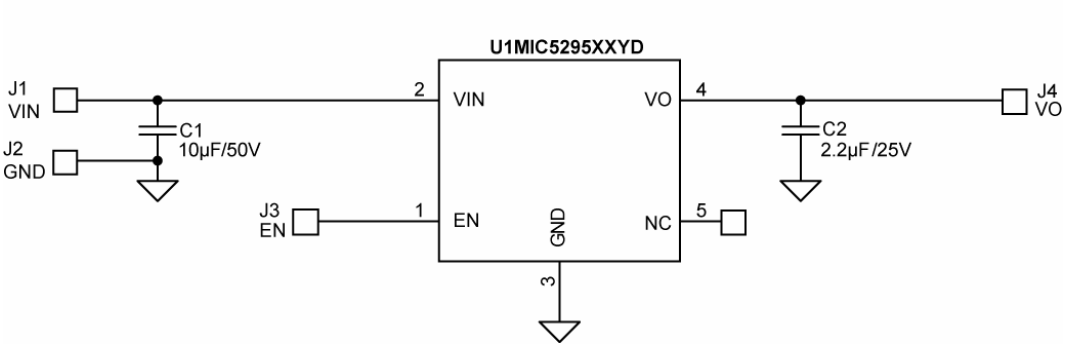
$$R1 = R2 \times \left(\frac{V_{OUT}}{1.24V} - 1 \right)$$

The reference voltage is set to 1.24V as shown in the equation. In this configuration V_{OUT} is set to approximately 5V.

Ordering Information

Part Number	Description
MIC5295-3.0YD EV	150mA LDO Evaluation Board
MIC5295-3.3YD EV	150mA LDO Evaluation Board
MIC5295-5.0YD EV	150mA LDO Evaluation Board
MIC5295YD EV	150mA Adjustable LDO Evaluation Board

Evaluation Board Schematic (Fixed Output)



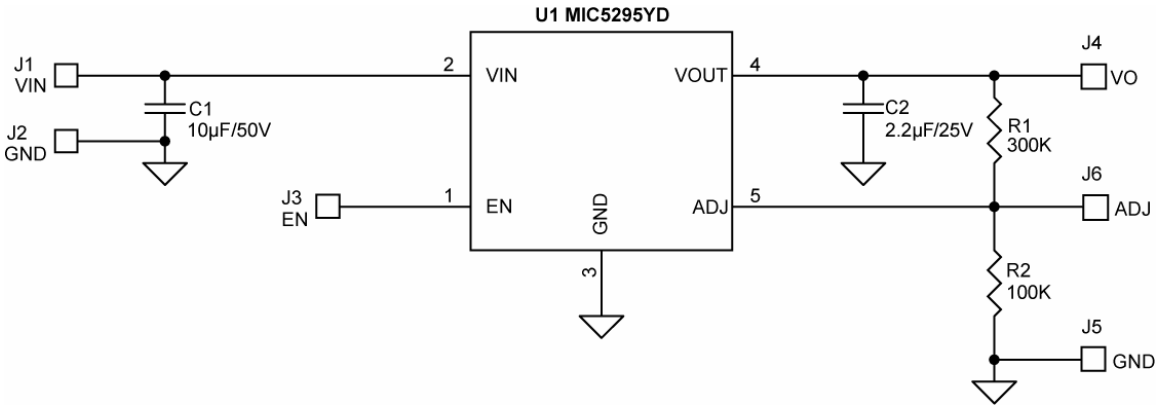
Bill of Materials

Item	Part Number	Manufacturer	Description	Qty.
C1	UMK325BJ106KM-T	Taiyo Yuden[1]	Capacitor, 10µF, 50V, X5R, Size 1210	1
C2	TMK212BJ225KG-T	Taiyo Yuden	Capacitor, 2.2µF, 25V, X5R, Size 0805	1
U1	**MIC5295-XXYD**	**Micrel, Inc.[2]**	**Low Quiescent Current, 150mA LDO Regulator**	**1**

Notes:

1. Tiao Yuden: www.t-yuden.com
2. **Micrel, Inc.: www.micrel.com.**

Evaluation Board Schematic (Adjustable Output)



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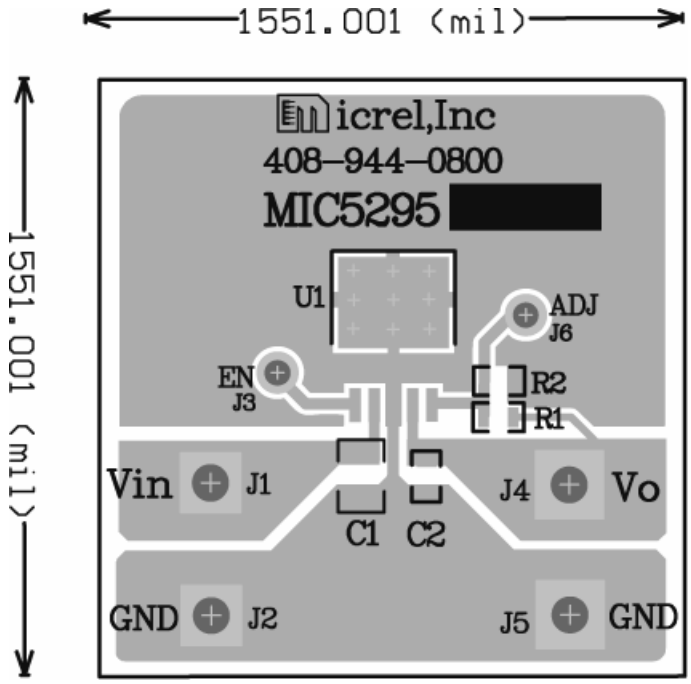
C2	TMK212BJ225KG-T	Taiyo Yuden	Capacitor, 2.2µF, 25V, X5R, Size 0805	1
R1	CRCW06033003FKEYE3	Vishay Dale[2]	Resistor, 300k, 1%. 1/16W, Size 0603	1
R2	CRCW06031003FKEYE2	Vishay Dale	Resistor, 100k, 1%. 1/16W, Size 0603	1
U1	**MIC5295YD**	**Micrel, Inc.[3]**	**Low Quiescent Current,150mA Adjustable LDO Regulator**	**1**

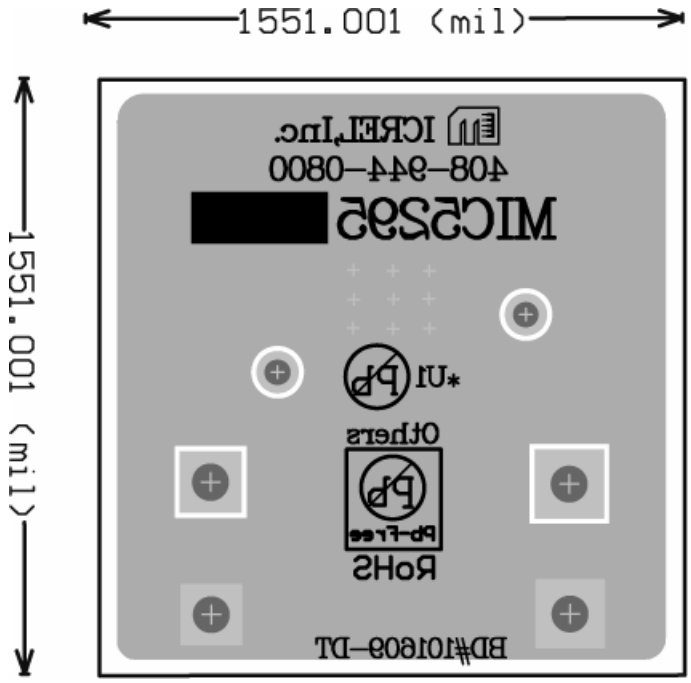
Notes:

1. Murata: www.t-yuden.com
2. Vishay: www.vishay.com.
3. **Micrel, Inc.: www.micrel.com.**

Evaluation Board Layout



Top Layer



Bottom Layer

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