



MIC5280 Evaluation Board

25mA, 120V, Low I_Q , High PSRR LDO

General Description

The MIC5280 is a high performance low dropout regulator, offering a very low noise output with a very wide input voltage operating range, from 4.5V to 120V DC input voltage.

Ideal for high input voltage applications such as industrial and telecom, the MIC5280 offers 2% initial accuracy, extremely high power supply rejection ratio (PSRR > 80dB) and low ground current (typically 30 μ A). The MIC5280 can also be put into a zero-off-mode current state, drawing minuscule amount of current when disabled.

The MIC5280 has a very wide input voltage range, with DC rated from -24V to +120V. This wide input range of the MIC5280 makes it ideal for harsh environment applications.

Requirements

The MIC5280 evaluation board requires an input power source that is able to deliver greater than 0.1A at +120VDC.

Precautions

The evaluation board does not have reverse polarity protection. Applying a negative voltage lower than -24V to the V_{IN} (J1) terminal may damage the device.

The MIC5280 evaluation board is tailored for a 4.5V to 120V input voltage range. The input voltage range should not exceed 120VDC on the input.

Getting Started

1. **Connect an external supply to the V_{IN} .** Apply desired input voltage to the V_{IN} (J1) and ground (J2) terminals of the evaluation board, paying careful attention to polarity and supply voltage ($4.5V \leq V_{IN} \leq 120V$). An ammeter may be placed between the input supply and the V_{IN} terminal to the evaluation board. Ensure that the supply voltage is monitored at the V_{IN} terminal. The ammeter and/or power lead resistance can reduce the voltage supplied to the input.

2. **Enabling the MIC5280.** The MIC5280 has an enable pin EN for enable/disable functionality.

EN: A logic high will turn on the linear regulator and a logic low will shut down the linear regulator reducing the quiescent current to less than 1 μ A (typical).

Output Voltage

The output voltage on the MIC5280 evaluation board is adjustable. The output voltage is controlled by the feedback resistors (R1 and R2) and can be calculated as follows:

$$V_{OUT} = V_{REF} \cdot \left(\frac{R1}{R2} + 1 \right)$$

$$V_{REF} = 1.219V$$

The evaluation board is initially adjusted to 5V, but can easily be modified by removing R1 and replacing it with the value that yields the desired output voltage.

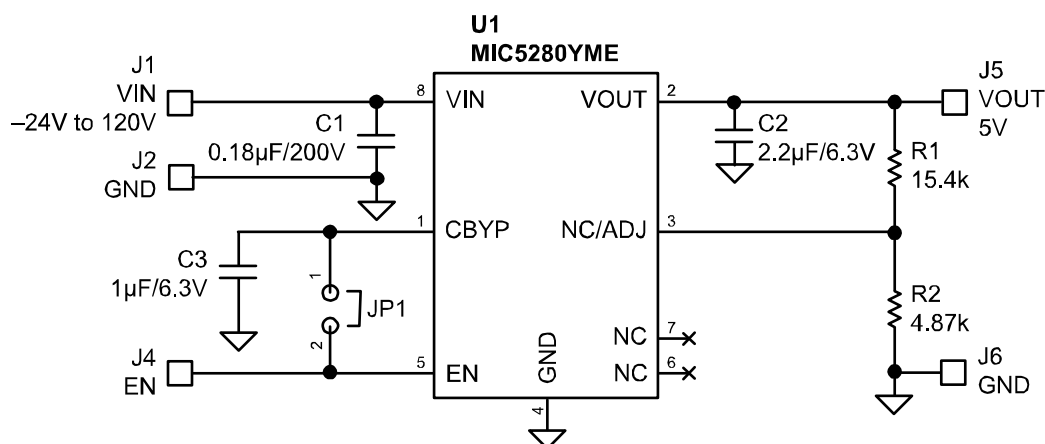
$$R1 = R2 \cdot \left(\frac{V_{OUT}}{V_{REF}} - 1 \right)$$

Ensure the output voltage selected does not exceed 5V.

Ordering Information

Part Number	Description
MIC5280YME EV	Evaluation board for the MIC5280YME device

Evaluation Board Schematic



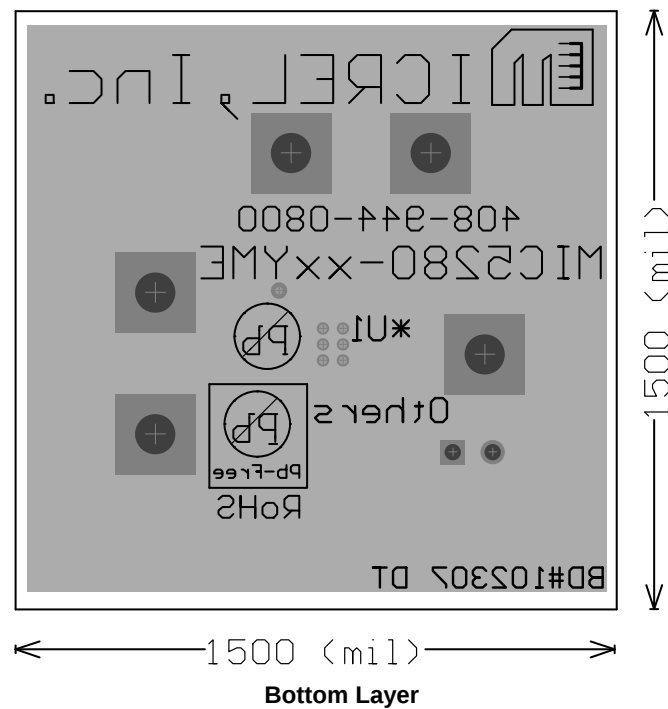
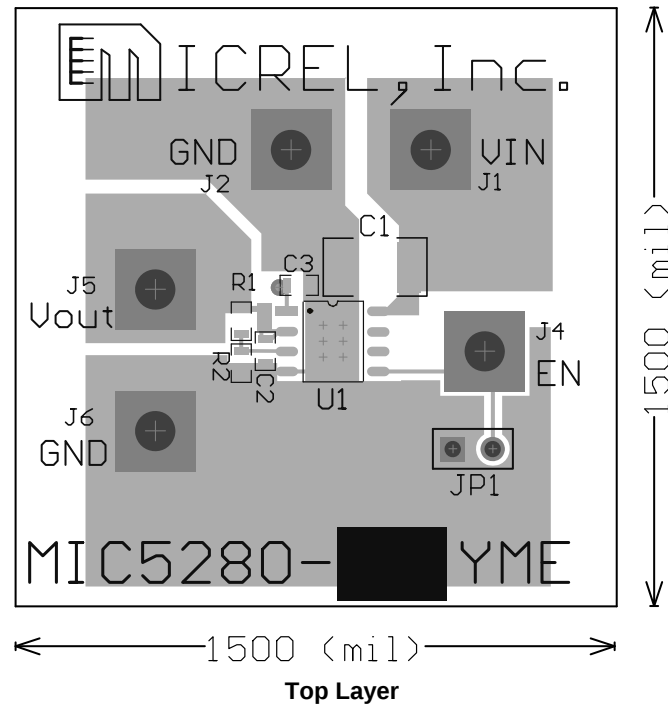
Bill of Materials

Item	Part Number	Manufacturer	Description	Qty.
C1	NMC-P1210X7R184K200TRPLPF	NIC ⁽¹⁾	0.18μF, 200V, 1210, X7R Ceramic Capacitor	1
	C1812C184K2RAC	Kemet ⁽²⁾	0.18μF, 200V, 1812, X7R Ceramic Capacitor	
	VJ1812Y184KXC	Vishay ⁽³⁾		
C2	C1608X5R1A225K	TDK ⁽⁴⁾	2.2μF, 6.3V, 0603, X5R Ceramic Capacitor	1
	0603C225MAT	AVX ⁽⁵⁾		
	GRM188R60J225KE19D	Murata ⁽⁶⁾		
C3	C1608X5R0J105K	TDK ⁽⁴⁾	0.1μF, 6.3V, 0603, X5R Ceramic Capacitor	1
	VJ0603G105KXYPW1BC	Vishay ⁽³⁾		
	GRM188R60J105KA01D	Murata ⁽⁶⁾		
R1	CRCW060315R4FKEYE3	Vishay Dale ⁽⁴⁾	15.4k, 0603, 1%, 1/16W Resistor	1
R2	CRCW06034R87FKEYE3	Vishay Dale ⁽⁴⁾	4.87k, 0603, 1%, 1/16W Resistor	1
U1	MIC5280YME	Micrel, Inc. ⁽⁷⁾	25mA, 120V, Low I _Q , High PSRR LDO	1

Notes:

1. NIC: www.niccomp.com
2. Kemet: www.kemet.com
3. Vishay: www.vishay.com
4. TDK: www.tdk.com
5. AVX: www.avx.com
6. Murata: www.murata.com
7. Micrel, Inc.: www.micrel.com

PCB Layout Recommendations



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