



# MAQ5280 Evaluation Board

25mA, 120V, Low I<sub>Q</sub>, High PSRR LDO

Automotive

## General Description

The MAQ5280 is a high performance, linear 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 automotive and telecom, the MAQ5280 offers 2% initial accuracy, extremely high power supply rejection ratio (PSRR > 80dB) and low ground current (typically 31μA). The MAQ5280 can also be put into a zero-off-mode current state, drawing minuscule amount of current when disabled.

The MAQ5280 has a very wide input voltage range, with DC rated from -24V to +120V. This wide input range covers the automotive load dump range and the MAQ5280 is optimized for line transient response, making it ideal for harsh environment applications.

## Requirements

The MAQ5280 evaluation board requires an input power source that is able to deliver greater than 0.1A at +120VDC.

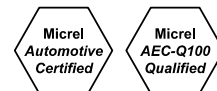
## Precautions

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

The MAQ5280 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<sub>IN</sub>.** Apply desired input voltage to the V<sub>IN</sub> (J1) and ground (J2) terminals of the evaluation board, paying careful attention to polarity and supply voltage (4.5V ≤ V<sub>IN</sub> ≤ 120V). An ammeter may be placed between the input supply and the V<sub>IN</sub> terminal to the evaluation board. Ensure that the supply voltage is monitored at the V<sub>IN</sub> terminal. The ammeter and/or power lead resistance can reduce the voltage supplied to the input.



2. **Enabling the MAQ5280.** The MAQ5280 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 0.02μA (typical).

## Output Voltage

The output voltage on the MAQ5280 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.

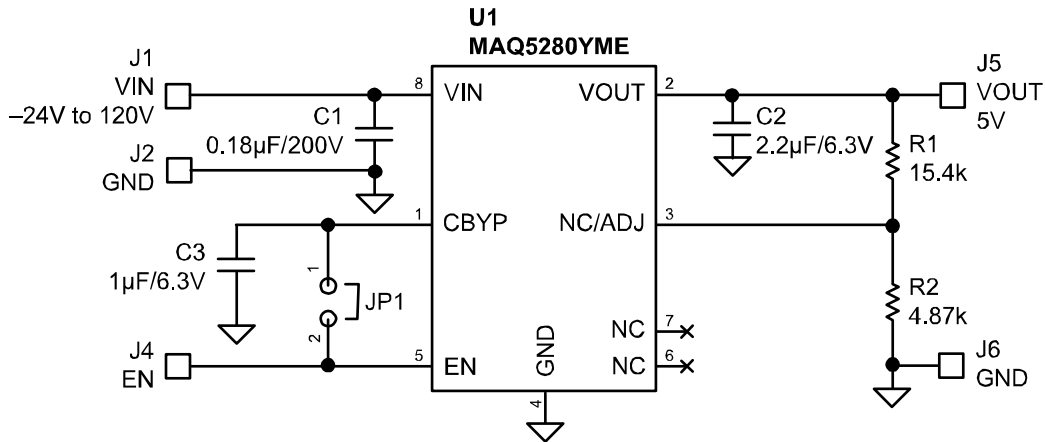
$$R1 = R2 \cdot \left( \frac{V_{OUT}}{V_{REF}} - 1 \right)$$

Ensure the output voltage selected does not exceed 5V.

## Ordering Information

Part Number	Description
MAQ5280YME EV	Evaluation board for the MAQ5280QYME device

## Evaluation Board Schematic



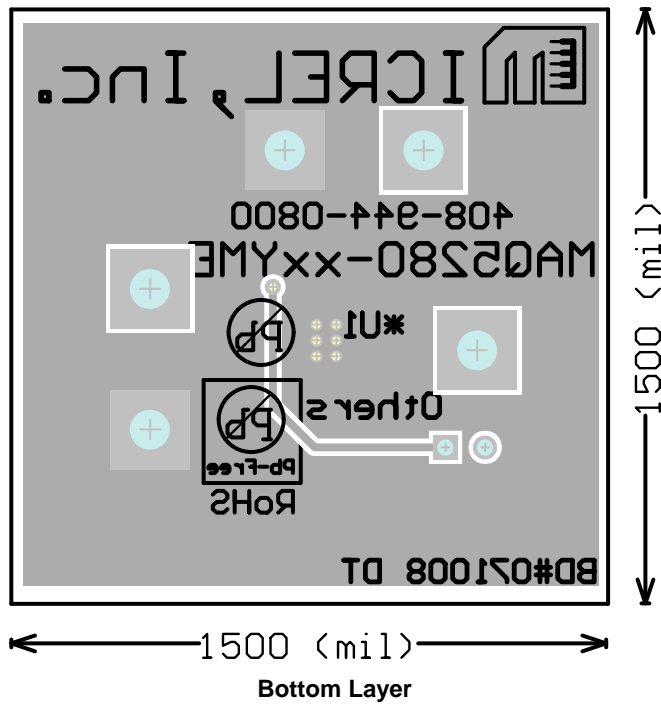
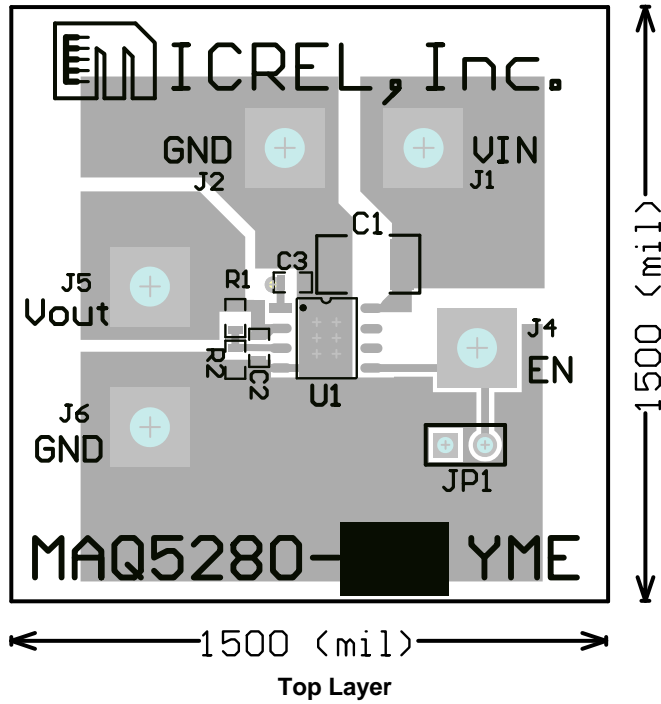
## Bill of Materials

Item	Part Number	Manufacturer	Description	Qty.
C1	NMC-P1210X7R184K200TRPLPF	NIC <sup>(1)</sup>	0.18µF, 200V, 1210, X7R Ceramic Capacitor	1
	C1812C184K2RAC	Kemet <sup>(2)</sup>		
	VJ1812Y184KXC	Vishay <sup>(3)</sup>		
C2	C1608X5R1A225K	TDK <sup>(4)</sup>	2.2µF, 6.3V, 0603, X5R Ceramic Capacitor	1
	0603C225MAT	AVX <sup>(5)</sup>		
	GRM188R60J225KE19D	Murata <sup>(6)</sup>		
C3	C1608X5R0J105K	TDK <sup>(4)</sup>	0.1µF, 6.3V, 0603, X5R Ceramic Capacitor	1
	VJ0603G105KXYPW1BC	Vishay <sup>(3)</sup>		
	GRM188R60J105KA01D	Murata <sup>(6)</sup>		
R1	CRCW060315R4FKEYE3	Vishay Dale <sup>(4)</sup>	15.4k, 0603, 1%, 1/16W Resistor	1
R2	CRCW06034R87FKEYE3	Vishay Dale <sup>(4)</sup>	4.87k, 0603, 1%, 1/16W Resistor	1
U1	MAQ5280YME	Micrel, Inc. <sup>(7)</sup>	25mA, 120V, Low I <sub>q</sub> , High PSRR LDO	1

### Notes:

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

### PCB Layout Recommendations



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