



## MIC2601/2 Evaluation Board

### 1.2MHz/2MHz PWM DC/DC Boost Switching Regulator

## General Description

The MIC2601/2 is a 1.2MHz/2MHz, PWM DC/DC boost switching regulator available in a 2mm x 2mm MLF<sup>®</sup> package. High power density is achieved with the MIC2601/2 internal 40V / 1.2A switch, allowing it to power large loads in a tiny footprint.

The output current that could be drawn from MIC2601/2 is tabulated below:

Inductor	Output	4.5VIN	8VIN	12VIN	20VIN
10µH	18V	150mA	400mA	600mA	—
10µH	38V	65mA	190mA	275mA	450mA
10µH	33V	75mA	200mA	325mA	550mA

## Requirements

The MIC2601/2 evaluation board requires an input power source that is able to deliver greater than 500mA at 4.5V.

## Precautions

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

The MIC2601/2 evaluation board is tailored for a 4.5V to 20V input voltage range. The input voltage range should not exceed 20V on the input.

## Getting Started

1. **Connect an external supply to the VIN.** 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> ≤ 20V). 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. **Connect the load to the VOUT (J4) and ground (J5) terminals.** The load can be either passive (resistor) or active (electronic load). An ammeter can be placed between the load and the V<sub>OUT</sub> terminal. The default output voltage is set to 18V. This can be adjusted by changing the feedback resistors.
3. **Enabling the MIC2601/2.** The MIC2601/2 has a enable pin connected to J3 terminal. A logic high 1.5V or greater will turn on the switching boost regulator and a logic low 0.3V or lower will shut down the switching boost regulator reducing the quiescent current to less than 0.1µA.

## Output Voltage

The output voltage on the MIC2601/2 evaluation board is adjustable. The output voltage is controlled by the feedback resistors (R1 and R2) and can be calculated as follows:

$$V_{OUT} = 1.25V \cdot \left( \frac{R_1}{R_2} + 1 \right)$$

The evaluation board is initially adjusted to 18V, but can easily be modified by removing R1 and replacing it with the value that yields the desired output voltage.

$$R1 = R2 \times \left( \frac{V_{OUT}}{1.25} - 1 \right)$$

Ensure the output voltage selected does not exceed the 40V rating of the output switch.

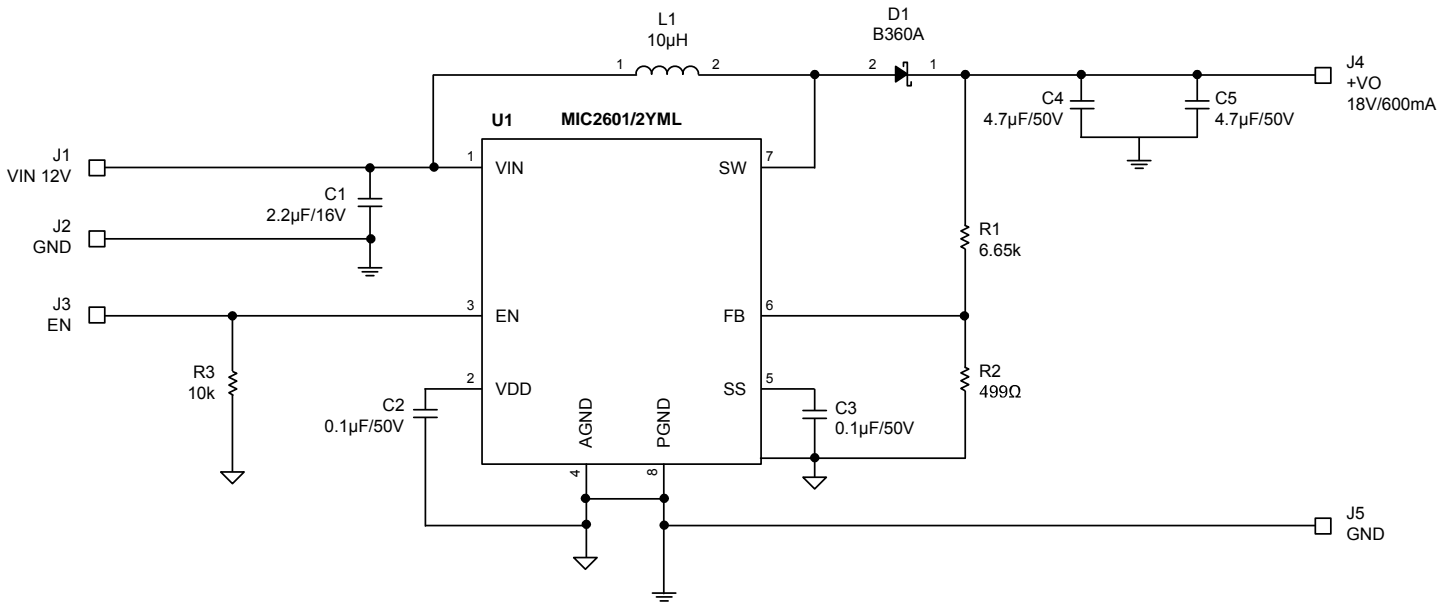
## Ordering Information

Part Number	Description
MIC2601/2YML EV	Evaluation board with the MIC2601YML and MIC2602YML devices

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## Evaluation Board Schematic



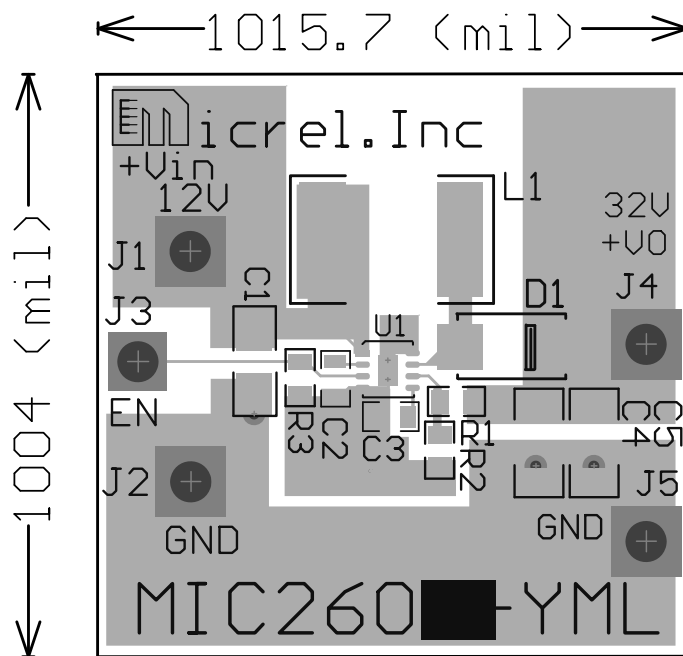
## Bill of Materials

Item	Part Number	Manufacturer	Description	Qty
C1	GRM21BR71C225KA12L	Murata <sup>(1)</sup>	Capacitor, 2.2µF, 16V, X7R, Size 0805	1
	0805YC225MAT	AVX <sup>(2)</sup>		
	C2012 X7R1C225K	TDK <sup>(3)</sup>		
C2	VJ0603Y104KXAAT	Vishay <sup>(4)</sup>	Capacitor, 0.1µF, 50V, X7R, Size 0603	1
	GRM188R71C104KA01D	Murata <sup>(1)</sup>		
C3	VJ0603Y104KXAAT	Vishay <sup>(4)</sup>	Capacitor, 0.1µF, 50V, X7R, Size 0603	1
	GRM188R71C104KA01D	Murata <sup>(1)</sup>		
C4	GRM31CR71H475KA12L	Murata <sup>(1)</sup>	Capacitor, 4.7µF, 50V, X7R, Size 1206	1
	12065D475MAT	AVX <sup>(2)</sup>		
	C3216X7R1H475K	TDK <sup>(3)</sup>		
C5	GRM31CR71H475KA12L	Murata <sup>(1)</sup>	Capacitor, 4.7µF, 50V, X7R, Size 1206	1
	12065D475MAT	AVX <sup>(2)</sup>		
	C3216X7R1H475K	TDK <sup>(3)</sup>		
D1	B360A	Vishay <sup>(2)</sup>	3A, 60V, Schottky Diode	1
L1	LQH55DN100M03	Murata <sup>(1)</sup>	10µH, 1700mA (Isat)	2
R1	CRCW06036K65FKEA	Vishay Dale <sup>(2)</sup>	Resistor, 6.65k, 1%, 1/16W, Size 0603	1
R2	CRCW06034990FKEA	Vishay Dale <sup>(2)</sup>	Resistor, 499Ωk, 1%, 1/16W, Size 0603	1
R3	CRCW06031002FRT1	Vishay Dale <sup>(2)</sup>	Resistor, 10k, 1%, 1/16W, Size 0603	1
U1	MIC2601YML	Micrel <sup>(5)</sup>	1.2A, 1.2MHz Wide Range Integrated Switch Boost Regulator	1
	MIC2602YML		1.2A, 2MHz Wide Range Integrated Switch Boost Regulator	

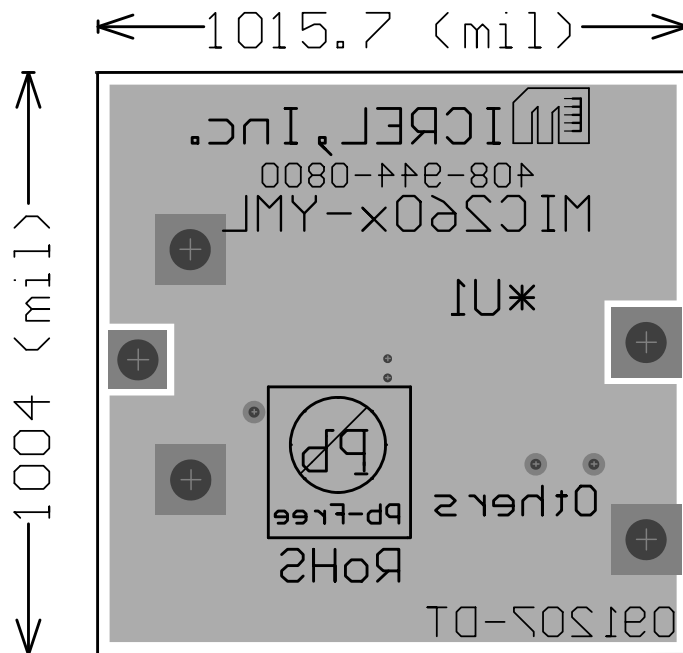
### Notes:

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

### PCB Layout Recommendations



Top Layer



Bottom Layer

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