



MIC2605/6 Evaluation Board

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

General Description

The MIC2605/6 is a 1.2MHz/2MHz, PWM DC/DC boost switching regulator available in a 2mm x 2mm MLF[®] package. High power density is achieved with the MIC2605/6 internal 40V/0.5A switch and 1Ω schottky diode, allowing it to power large loads in a tiny footprint.

Requirements

The MIC2605/6 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_{IN} (J1) terminal may damage the device.

The MIC2605/6 evaluation board is tailored for a 4.5V to 20V input voltage range. The input voltage range should not exceed 20VDC on the input.

Getting Started

1. **Connect an external supply to the VIN.** 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 ≤ V_{IN} ≤ 20.0V). 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. **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_{OUT} terminal. The default output voltage is set to 32V. This can be adjusted by changing the feedback resistors.

3. **Enabling the MIC2605/6.** The MIC2605/6 has an 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 MIC2605/6 evaluation board is adjustable. The output voltage is controlled by the feedback resistors (R1 and R2) and can be calculated as follows:

$$V_{OUT} = 1.25V \cdot \left(\frac{R1}{R2} + 1 \right)$$

The evaluation board is initially adjusted to 32V, but can easily be modified by removing R1 and replacing it with the value that yields the desired output voltage.

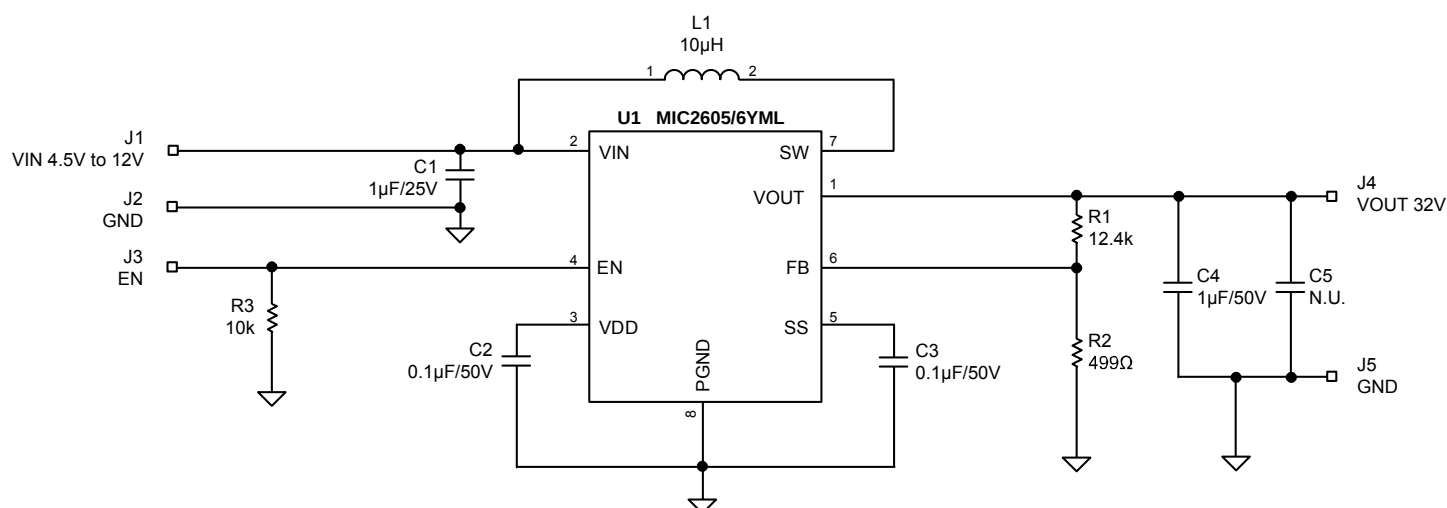
$$R1 = R2 \cdot \left(\frac{V_{OUT}}{1.25V} - 1 \right)$$

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

Ordering Information

Part Number	Description
MIC2605YML EV	Evaluation board for the MIC2605YML device
MIC2606YML EV	Evaluation board for the MIC2606YML device

Evaluation Board Schematic



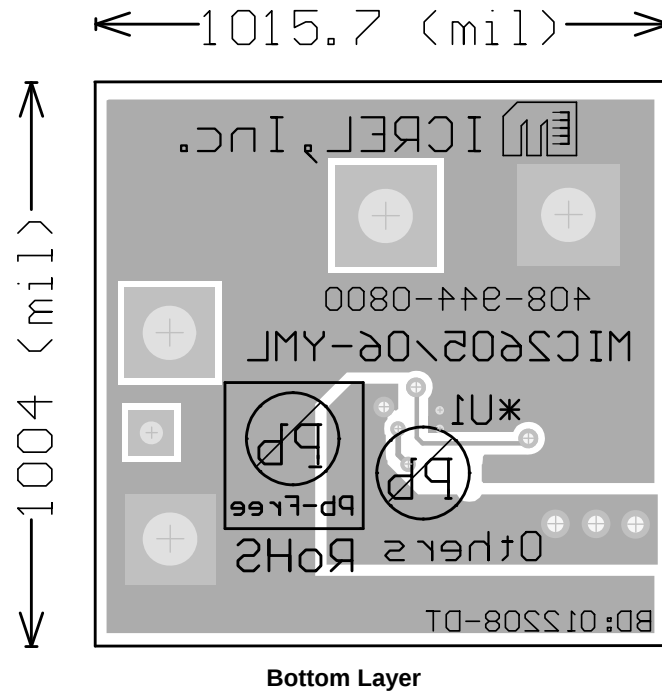
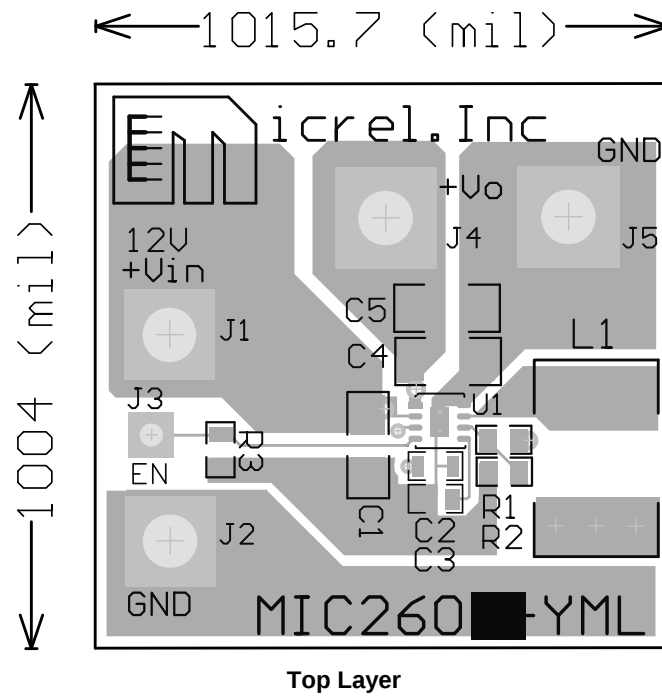
Bill of Materials

Item	Part Number	Manufacture	Description	Qty
C1	C1608X5R1E105K	TDK ⁽¹⁾	Capacitor, 1µF, 25V, X5R, Size 0603	1
	06033D105MAT	AVX ⁽²⁾		
	08055D105MAT	AVX ⁽²⁾		
C2	VJ0603Y104KXAAT	Vishay ⁽³⁾	Capacitor, 0.1µF, 50V, X7R, Size 0603	1
	06035C104MAT	AVX ⁽²⁾		
	GRM188R71C104KA01D	Murata ⁽⁴⁾		
C3	VJ0603Y104KXAAT	Vishay ⁽³⁾	Capacitor, 0.1µF, 50V, X7R, Size 0603	1
	06035C104MAT	AVX ⁽²⁾		
	GRM188R71C104KA01D	Murata ⁽⁴⁾		
C4	08055D105MAT	AVX ⁽²⁾	Capacitor, 1µF, 50V, X5R, Size 0805	1
C5	N.U.	----	----	
L1	LQH43CN100K03	Murata ⁽⁴⁾	10uH, 0.65mA, DCR 240mΩ	1
	VLCF4020T-100MR85	TDK ⁽¹⁾	10uH, 0.85A-1.22A, DCR 120mΩ	
R1	CRCW06031242FKEA	Vishay Dale ⁽³⁾	Resistor, 12.4K, 1%, 1/16W, Size 0603	1
R2	CRCW06034990FKEA	Vishay Dale ⁽³⁾	Resistor, 499Ω, 1%, 1/16W, Size 0603	1
R3	CRCW060310K0FKEA	Vishay Dale ⁽³⁾	Resistor, 10k, 1%, 1/16W, Size 0603	1
U1	MIC2605/6YML	Micrel, Inc. ⁽⁵⁾	0.5A, 1.2MHz / 2MHz Wide Input Range Integrated Switch Boost Regulator	1

Notes:

1. TDK: www.tdk.com
2. AVX: www.avx.com
3. Vishay: www.vishay.com
4. Murata: www.murata.com
5. Micrel, Inc.: www.micrel.com

PCB Layout Recommendations



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