



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 ($4.5V \leq V_{IN} \leq 20.0V$). 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.

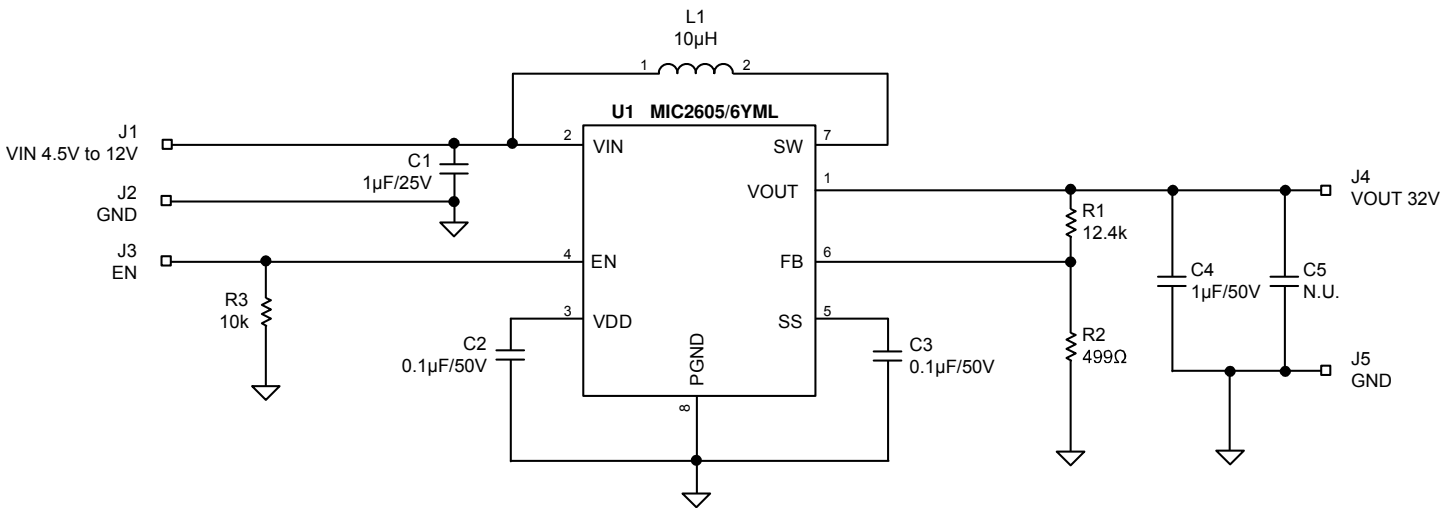
$$R1 = R2 \cdot \left(\frac{V_{OUT}}{1.25V} - 1 \right)$$

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



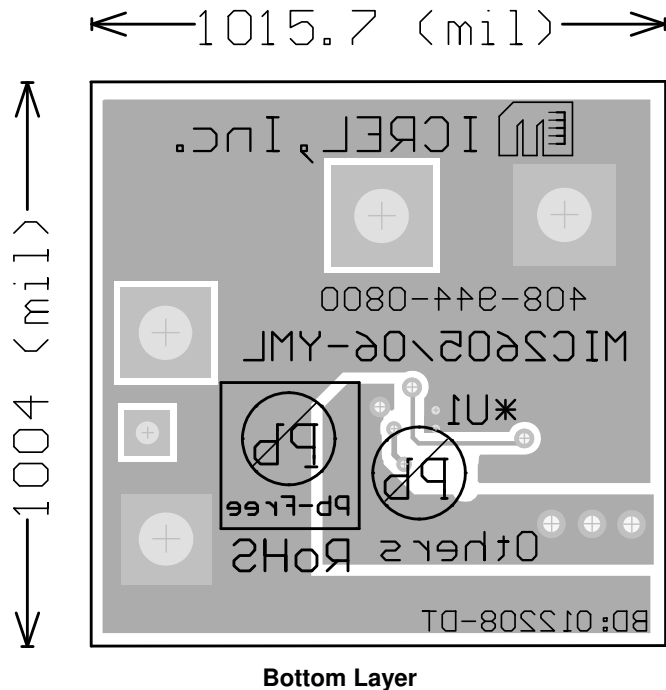
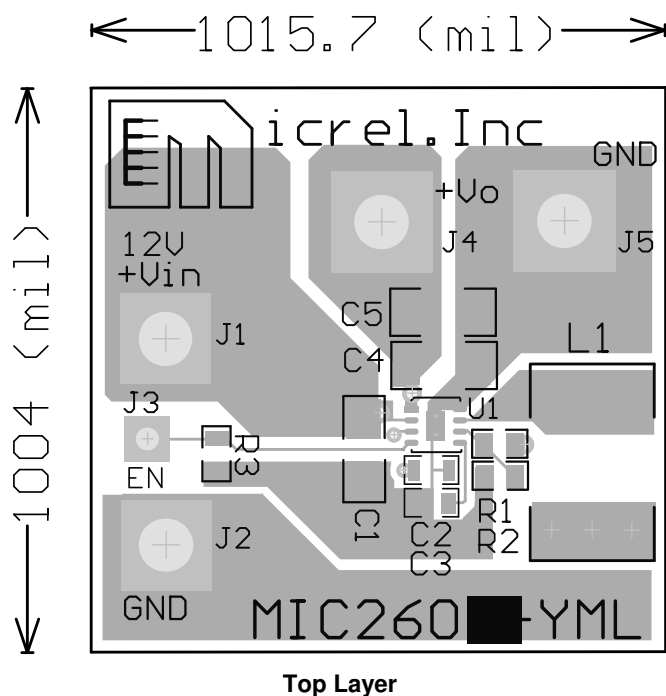
Bill of Materials

| 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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