



General Description

The MIC4100, MIC4101, MIC4103 and MIC4104 are a family of high-frequency, 100V MOSFET drivers. Each part contains a high-side and low-side driver and will drive many switching power supply topologies. Refer to the MIC4100/1 and MIC4103/4 specifications for detailed information.

This evaluation board provides a platform for evaluating any of the drivers. The evaluation board schematic is shown in Figure 1. A 1 μ F, 100V ceramic capacitor is connected between the "HV Supply Input" and "Ground" terminals and provides high frequency decoupling on the board. 0.1 μ F capacitors are used for decoupling the VDD and HB pins of the driver. 100V, N-Channel, SO-8 FETs are included with the board.

Specifications

Control IC (refer to board for part ID):

MIC4100/1 or MIC4103/4

Power Supply Topology:

Drives an on-board MOSFET Bridge

Recommended "HV Supply" Terminal Voltage:

8V to 100V

Maximum Recommended "VDD" Terminal Voltage:

16V

Maximum "High Side FET Source" Terminal Voltage:

100V

Maximum HI/LI/LS Terminal Voltage:

V_{DD}

Precautions

The evaluation board does not have input reverse polarity protection. Applying a negative voltage at the "HV Supply" or "V_{DD}" terminals (with respect to the GND terminal) may permanently damage the components on the board. The voltage on the HI and LI terminals should not exceed the "V_{DD}" terminal voltage.

Requirements

At a minimum, the evaluation board requires an 8V to 16V supply to power the MIC410x driver. Another supply (up to 100V) may be used to power the MOSFETs at the "HV Supply" terminal. A pulse generator or the output of a PWM control IC may be connected to the HI and/or LI terminals. The board can be used with any of the 4 driver IC's.

MIC4100/3: The HI and LI inputs have a CMOS-compatible threshold. The high-side and low-side drivers are independently controlled by the HI and LI inputs. The inputs may be connected to separate PWM sources or can be connected together.

MIC4101/4: Same as the MIC4100/3 but the inputs have a TTL-compatible threshold.

Getting Started

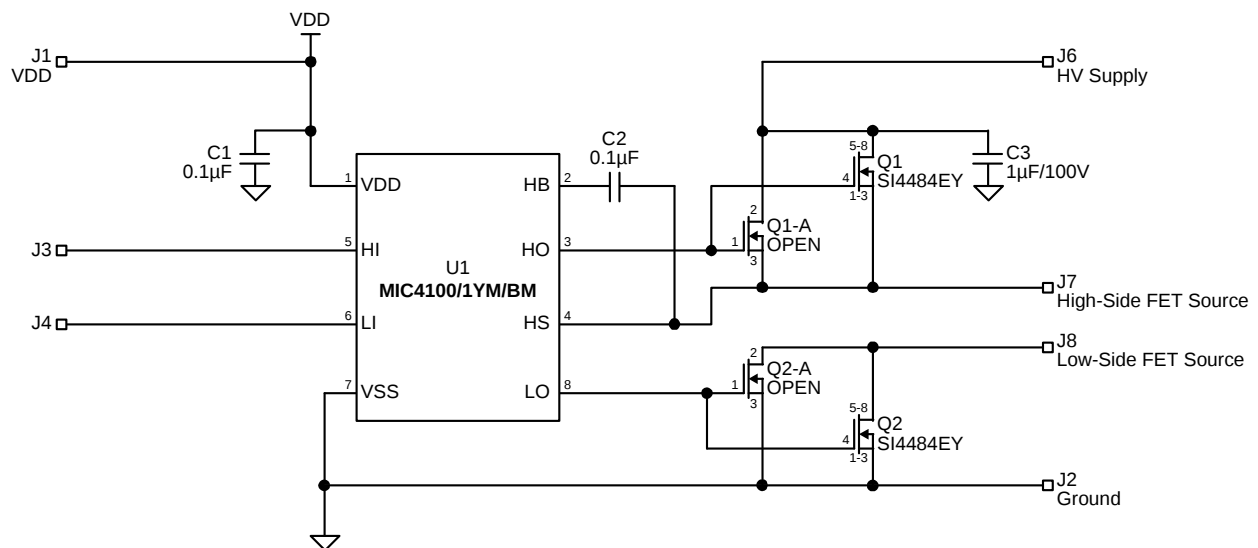
The simplest way to observe driver operation is to connect the "High Side FET Source" terminal to ground (or any voltage potential under 100V) and apply a PWM signal to the "HI" and/or "LI" input terminals. DC and AC parameters can be measured in this configuration. The included SO-8 MOSFETs can be removed or replaced with different FETs. D2PAK locations are provided on the back of the board.

The source terminal of the high-side FET and drain terminal of the low-side FET, are floating and accessible through the board terminals. This allows the board to be used with different power topologies such as the synchronous buck, half-bridge, full-bridge or two transistor forward converter.

Ordering Information

Part Number	Description	Package
MIC4100YM	CMOS Input, 3Ω Pull-down	8-Pin SOIC
MIC4101YM	TTL Input, 3Ω Pull-down	8-Pin SOIC
MIC4103YM	CMOS Input, 1.25Ω Pull-down	8-Pin SOIC
MIC4104YM	TTL Input, 1.25Ω Pull-down	8-Pin SOIC
MIC4100YM EV	Evaluation Board	EVB Kit
MIC4101YM EV	Evaluation Board	EVB Kit

Evaluation Board Schematic



Bill of Materials

Item	Part Number	Manufacturer	Description	Qty
C1, C2	VJ0603Y104KXXAT	Vishay ⁽¹⁾	0.1μF/25V, X7R, Size 0603, Ceramic Capacitor	2
C3	C4532X7R2A105M	TDK ⁽²⁾	0.1μF/100V, X7R, Ceramic Capacitor	1
	C3225X7R2A105M	TDK ⁽²⁾		
	GRM55DR72A105KA01B	Murata ⁽³⁾		
Q1, Q2	Si4484EY	Vishay Siliconix ⁽¹⁾	100V N-Channel MOSFET	2
Q1A, Q2A		Vishay Siliconix ⁽¹⁾	OPEN location for D2PAK FETs	2
R3	CRCW06033K83FKEA	Vishay Dale ⁽⁴⁾	3.83k, 1%, Size 0603, Resistor	1
R4	CRCW06032K49FKEA	Vishay Dale ⁽⁴⁾	2.49k, 1%, Size 0603, Resistor	1
U1	MIC4100YM	Micrel ⁽⁴⁾	Buck Controller	1
	MIC4101YM			
	MIC4103YM*			
	MIC4104YM*			

Notes:

1. Vishay: www.vishay.com

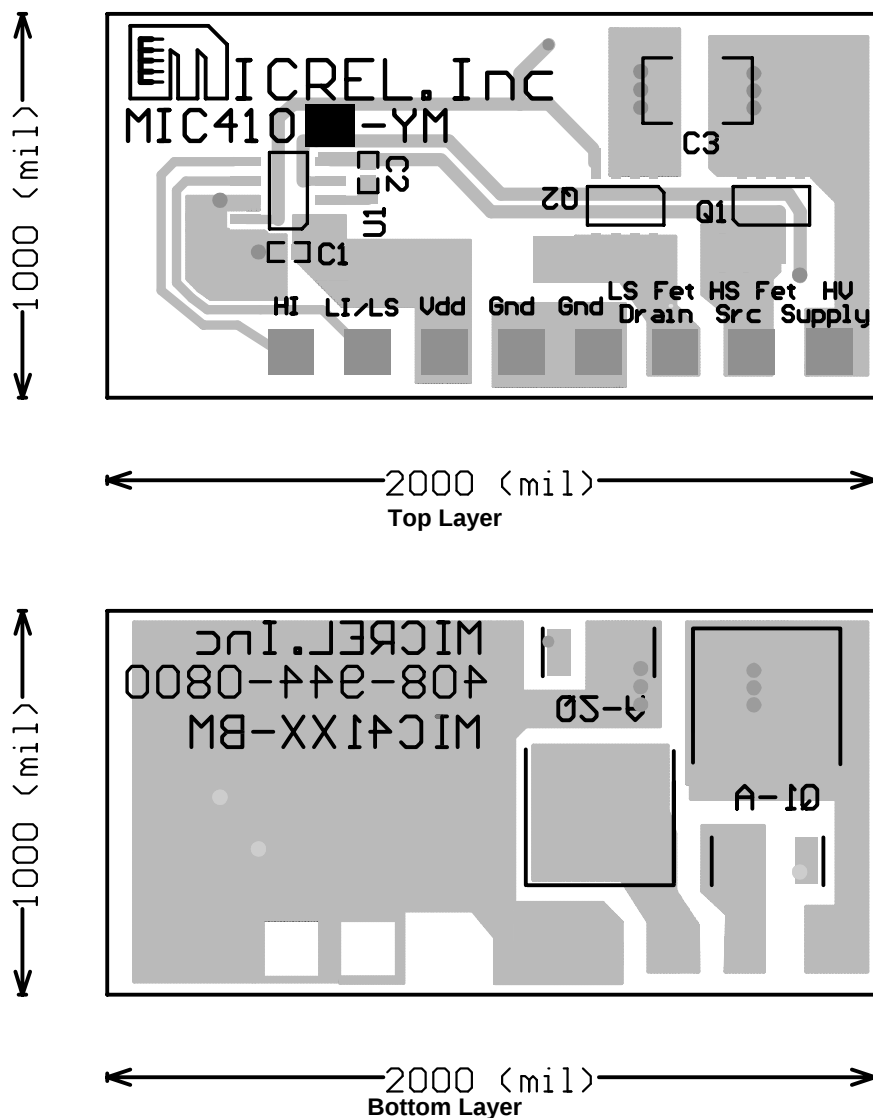
2. TDK: www.tdk.com

3. Murata: www.murata.com

4. Micrel: www.micrel.com

* User has to order IC separately

PCB Layout Recommendations



MICREL, INC. 2180 FORTUNE DRIVE SAN JOSE, CA 95131 USA
 TEL +1 (408) 944-0800 FAX +1 (408) 474-1000 WEB <http://www.micrel.com>

The information furnished by Micrel in this data sheet is believed to be accurate and reliable. However, no responsibility is assumed by Micrel for its use. Micrel reserves the right to change circuitry and specifications at any time without notification to the customer.

Micrel Products are not designed or authorized for use as components in life support appliances, devices or systems where malfunction of a product can reasonably be expected to result in personal injury. Life support devices or systems are devices or systems that (a) are intended for surgical implant into the body or (b) support or sustain life, and whose failure to perform can be reasonably expected to result in a significant injury to the user. A Purchaser's use or sale of Micrel Products for use in life support appliances, devices or systems is a Purchaser's own risk and Purchaser agrees to fully indemnify Micrel for any damages resulting from such use or sale.

© 2007 Micrel, Incorporated.