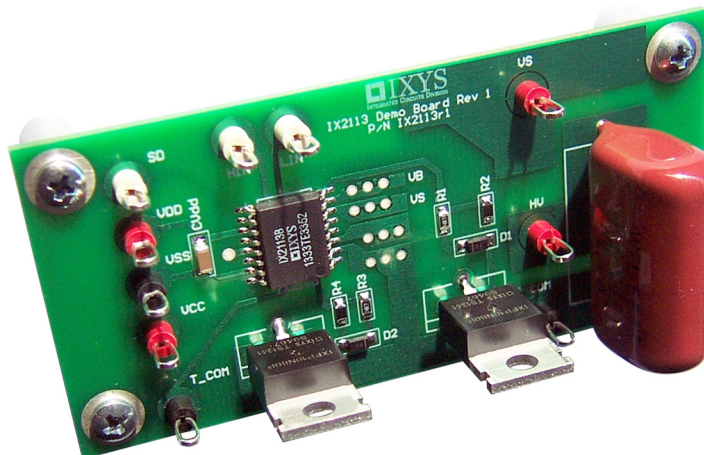


1. Introduction



IXYS Integrated Circuits Division's IX2113 Evaluation Board contains all the necessary circuitry to demonstrate the features of a high voltage gate driver configured as a half-bridge driver. The IX2113 has independent high-side and low-side referenced output channels, both of which are capable of sourcing and sinking 2A peak current. The floating high-side channel can drive MOSFETs or IGBTs up to 600V from the common reference. In addition, when a fault or an over-current condition is detected, the shutdown (SD) pin can be used to terminate gate drive to the high-side or the low-side switch.

1.1 Features:

- Floating Channel for Bootstrap Operation up to 600V
- Outputs Capable of Sourcing and Sinking 2A Peak Current
- Gate Drive Supply Range: from 10V to 20V
- 3.3V Logic Compatibility Enables Seamless Interfacing with Microcontrollers
- Independent Under-voltage Lockout (UVLO) for High-side and Low-side Outputs
- Input Pins HIN, SD, LIN Include Schmitt Trigger for Better Noise Immunity
- High dV/dt Capability: 50V/ns
- Negative Voltage Transient Protection: -5V

Figure 1. Evaluation Board, Top View

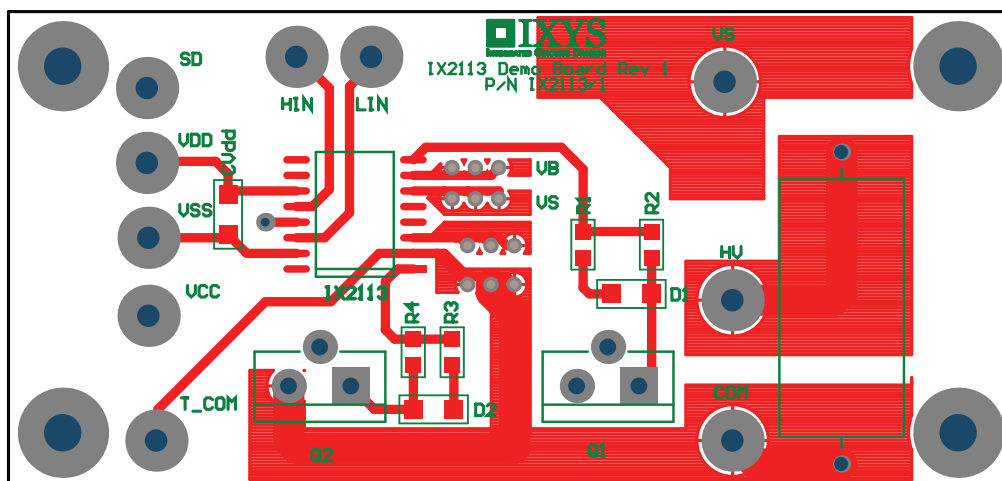
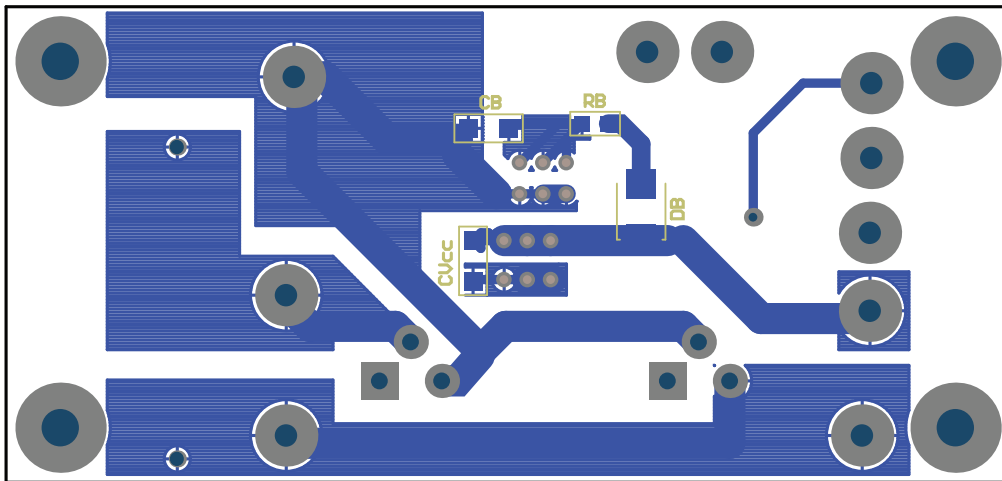


Figure 2. Evaluation Board, Bottom View



1.2 Evaluation Board Pin Descriptions

Pin Name	Description
HV	High Voltage Bus
V _S	High Side Floating Supply Return
V _{DD}	Logic Supply Voltage
V _{SS}	Logic Ground
V _{CC}	Low Side Fixed Supply Voltage
SD	Logic Input for Shutdown
HIN	Logic Input for High Side Gate Driver Output (HO)
LIN	Logic Input for Low Side Gate Driver Output (LO)
COM	Low Side Return
T_COM	Test Point Low Side Return

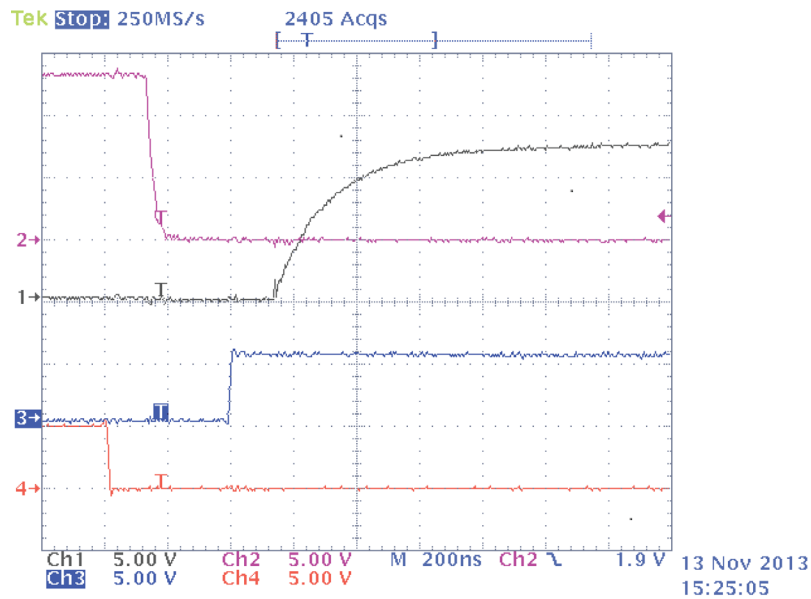
1.3 Evaluation Board Bill of Materials

Ref. Des.	Qty.	Description	Manufacturer	Mfr. P/N
U1	1	High and Low Side Gate Driver	IXYS IC Division	IX2113B
Q1, Q2	2	Polar HV MOSFET 800V 10A TO-220	IXYS	IXFP10N80P
R2, R4	2	RES 47 Ohm 1/8W 5% 0805 SMD	YAGEO	RC0805JR-0747RL
R1, R3, R _B	3	RES 4.7 Ohm 1/8W 5% 0805 SMD	YAGEO	RC0805JR-074R7L
D1, D2	2	DIODE Fast Recovery 30V 1A Mini2	PANASONIC	DB2230400L
D _B	1	DIODE Super Fast 600V 1A	Diodes Inc.	MURS160-13-F
CV _{CC} , CV _{DD} , C _B	3	CAP CER 0.33μF X7R 1206	TDK	C3216X7R1H334K160AA
CVBUS	1	CAP FILM 0.56μF 630VDC Radial	Panasonic	P12270

3. Operating Waveforms

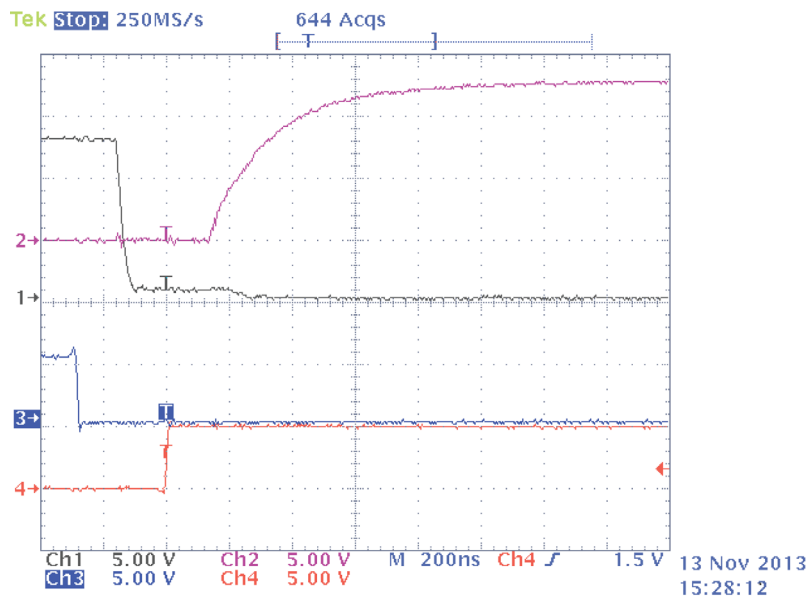
Waveforms 1: CH1: Q1 gate, CH2: Q2 gate, CH3: LIN Signal, CH4: HIN Signal

This scope capture shows the rising edge of the high-side MOSFET, Q1, and the falling edge of the low-side MOSFET, Q2. LIN and HIN waveforms have 400nS dead time.



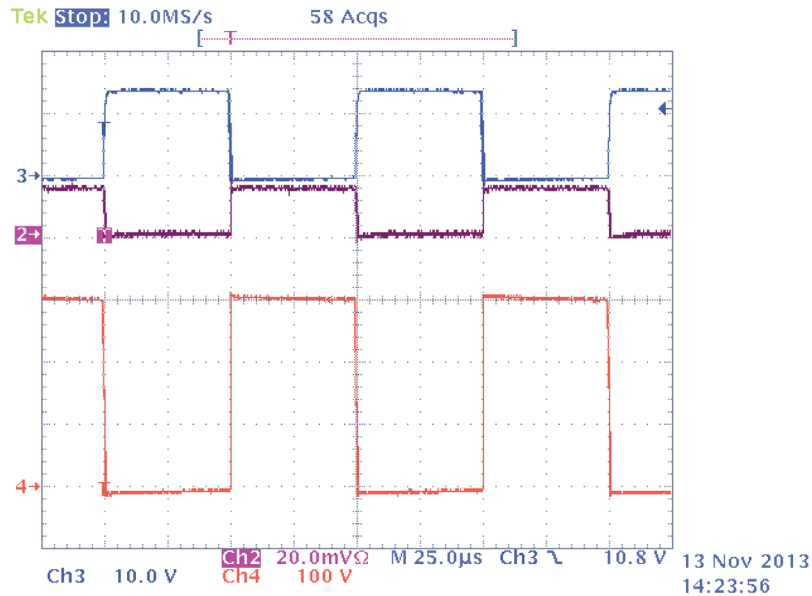
Waveforms 2: CH1: Q1 gate, CH2: Q2 gate, CH3: LIN Signal CH4: HIN Signal

This scope capture shows the falling edge of the high-side MOSFET, Q1, and the rising edge of the low-side MOSFET, Q2. LIN and HIN waveforms have 280nS dead time.



Waveforms 3: CH2: Load Current, CH3: Low Side MOSFET signal, CH4: VS High Side Floating Supply Return.

Scope capture demonstrating approximately 9W of power. A 10kΩ load resistor is attached from V_S to COM.



For additional information please visit www.ixysic.com

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1/13/2014