AN-1554 LM2832X 8-Pin MSOP-PowerPAD Demo Board

1 Introduction

The demo board included in this shipment converts 3V to 5.5V input to 1.8V output for 2A load current using the LM2832X 1.6 MHz DC-DC switching converter. This is a 4-layer board using the internal layers as a VIN plane and Ground plane.

A bill of materials below describes the parts used on this demo board. A schematic and layout have also been included below along with measured performance characteristics. The above restrictions for the input voltage are valid only for the demo board as shipped with the demo board schematic below.

Operating Conditions

V_{IN} = 3V to 5.5V

V_O = 1.8V

I_O = 2A

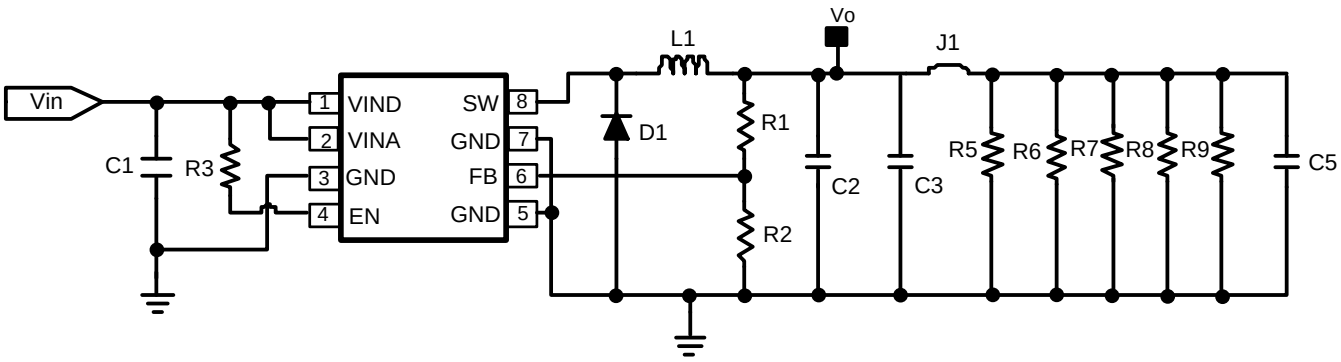
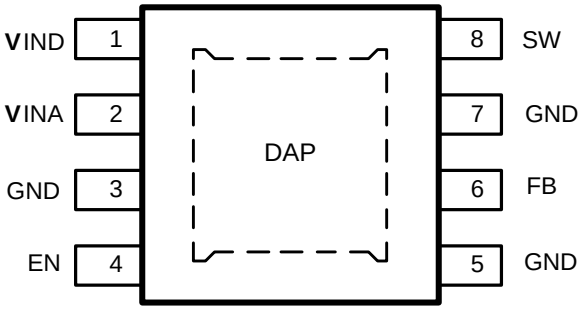


Figure 1. LM2832X 8-Pin MSOP-PowerPAD Demo Board Schematic

2 Pin-Out



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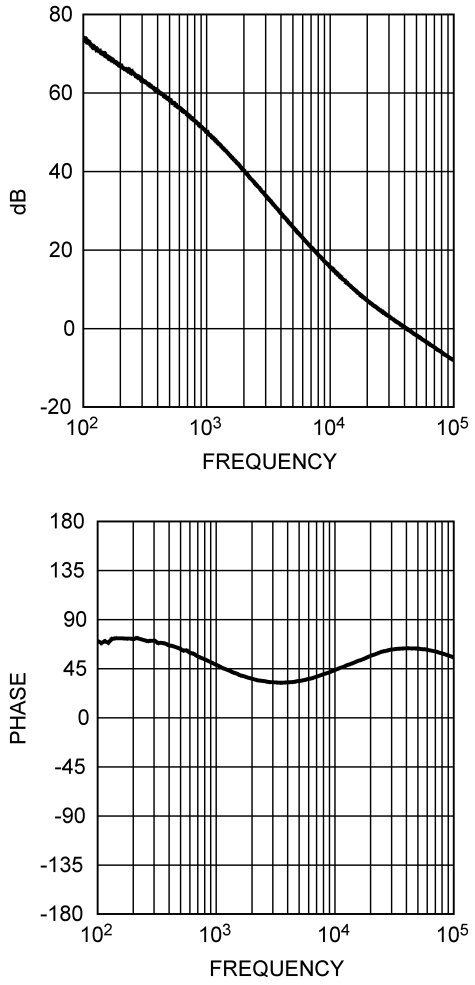
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3 Pin Description 8-Pin MSOP-PowerPAD

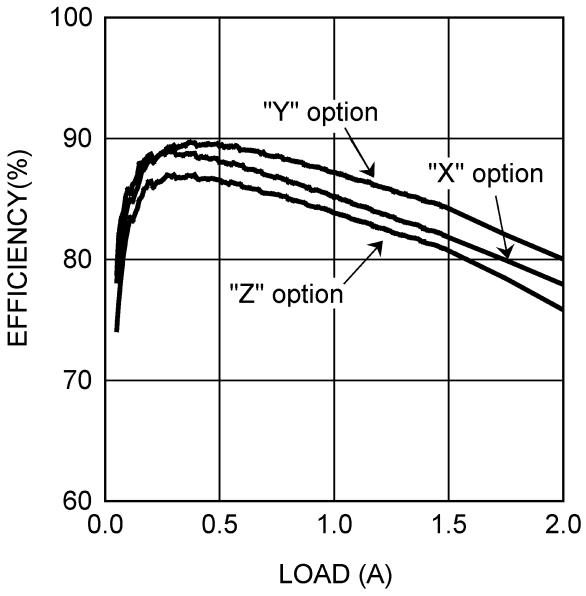
Pin	Name	Function
1	VIND	Power Input supply.
2	VINA	Control circuitry supply voltage. Connect VINA to VIND on PC board.
3, 5, 7	GND	Signal and power ground pin. Place the bottom resistor of the feedback network as close as possible to this pin.
4	EN	Enable control input. Logic high enables operation. Do not allow this pin to float or be greater than VIN + 0.3V.
6	FB	Feedback pin. Connect to external resistor divider to set output voltage.
8	SW	Output switch. Connect to the inductor and catch diode.
DAP	Die Attach Pad	Connect to system ground for low thermal impedance, but it cannot be used as a primary GND connection.

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4 LM2832 Gain/Phase 5V to 1.8V @ 1A



5 LM2832 Efficiency: Vin = 3.3V, Vo = 1.8V



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Table 1. Bill Of Materials LM2832X-Version

Part ID	Part Value	Manufacturer	Part Number
U1	2A Buck Regulator	TI	LM2832
C1, Input Cap	22 µF, 6.3V, X5R	TDK	C3216X5ROJ226M
C2 Output Cap	22 µF, 6.3V, X5R	TDK	C3216X5ROJ226M
C3 Output Cap	22 µF, 6.3V, X5R	TDK	C3216X5ROJ226M
D1, Catch Diode	$0.3V_f$ Schottky 1.5A, $30V_R$	TOSHIBA	CRS08
L1	3.3 µH, 3.5A	CoilCraft	MSS7341-332NL
R1	20.0 kΩ, 1%	Vishay	CRCW08052002F
R2	10.0 kΩ, 1%	Vishay	CRCW08051002F
R3	20.0 kΩ, 1%	Vishay	CRCW08052002F
J1	No Load		
R5 – R9	No Load		

6 Layout

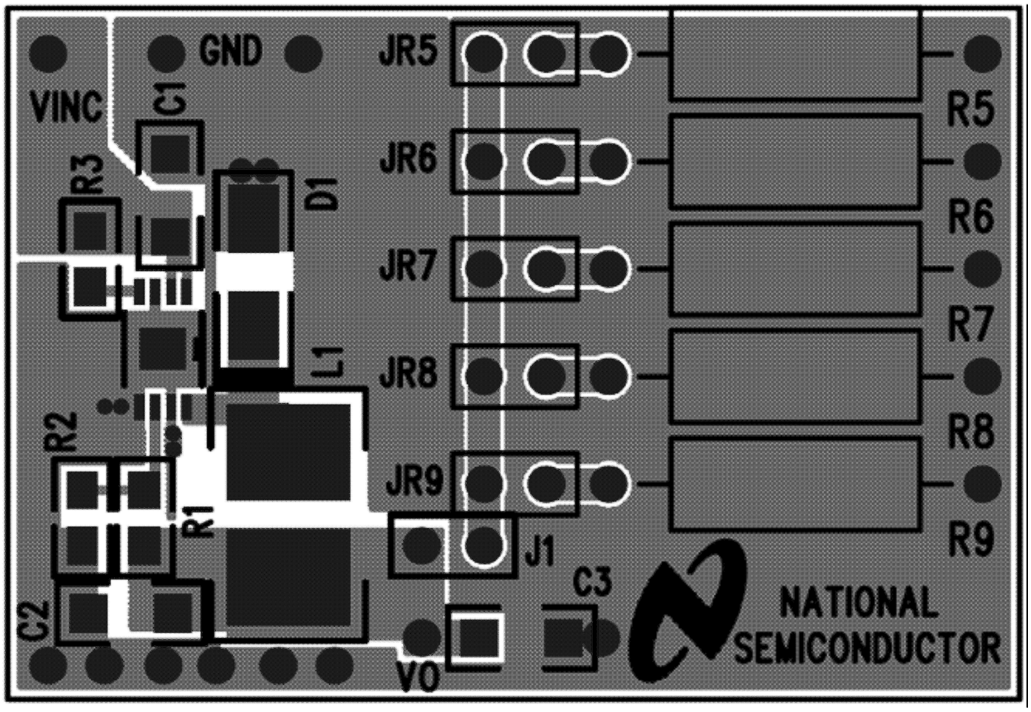


Figure 2. Top Layer

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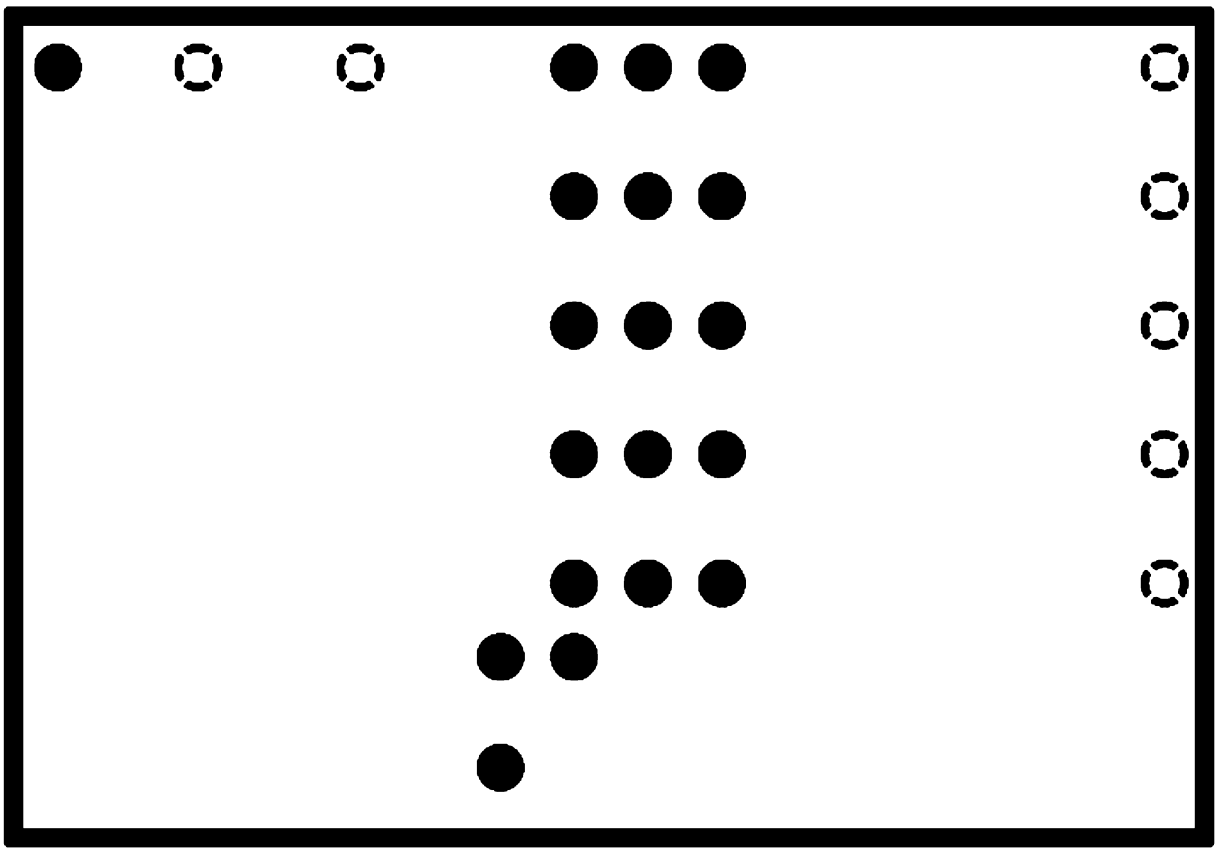


Figure 3. Internal Plane 1 (GND)

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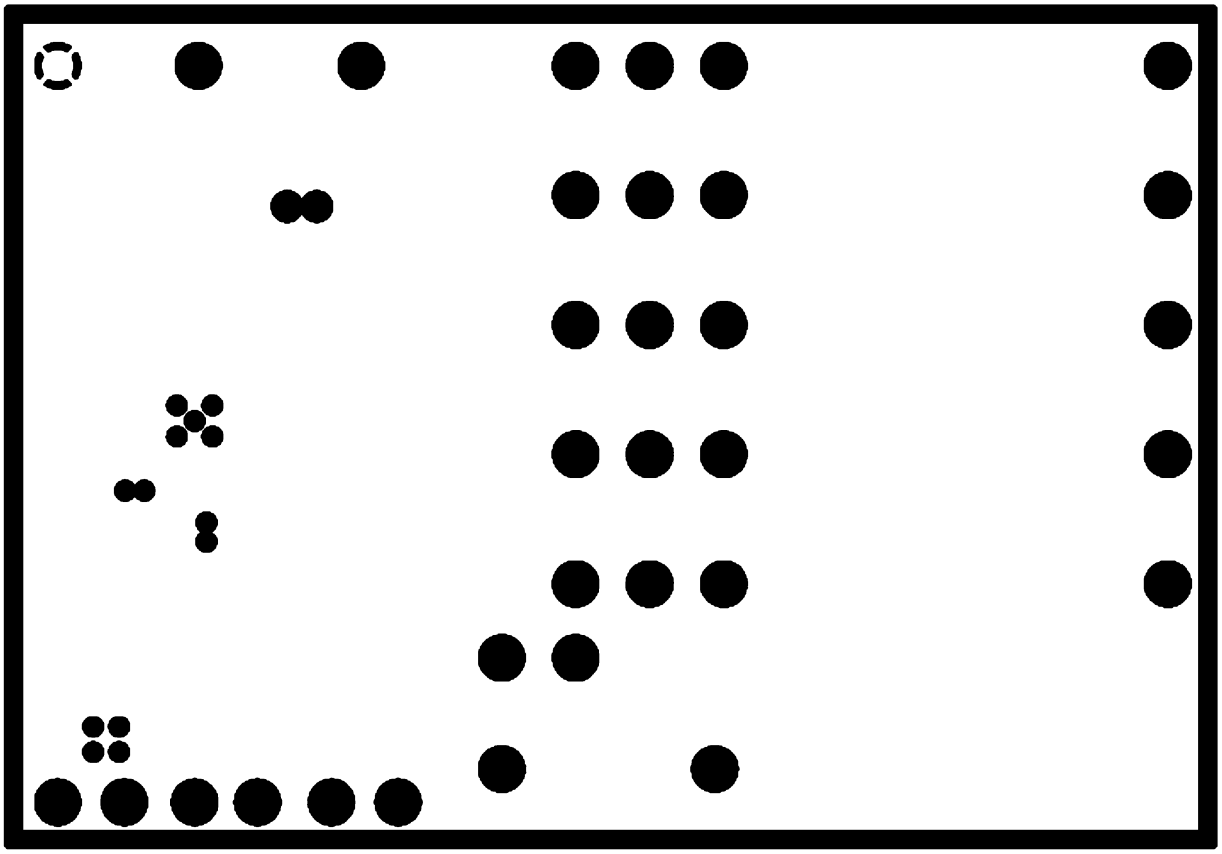


Figure 4. Internal Plane 2 (V_{IN})

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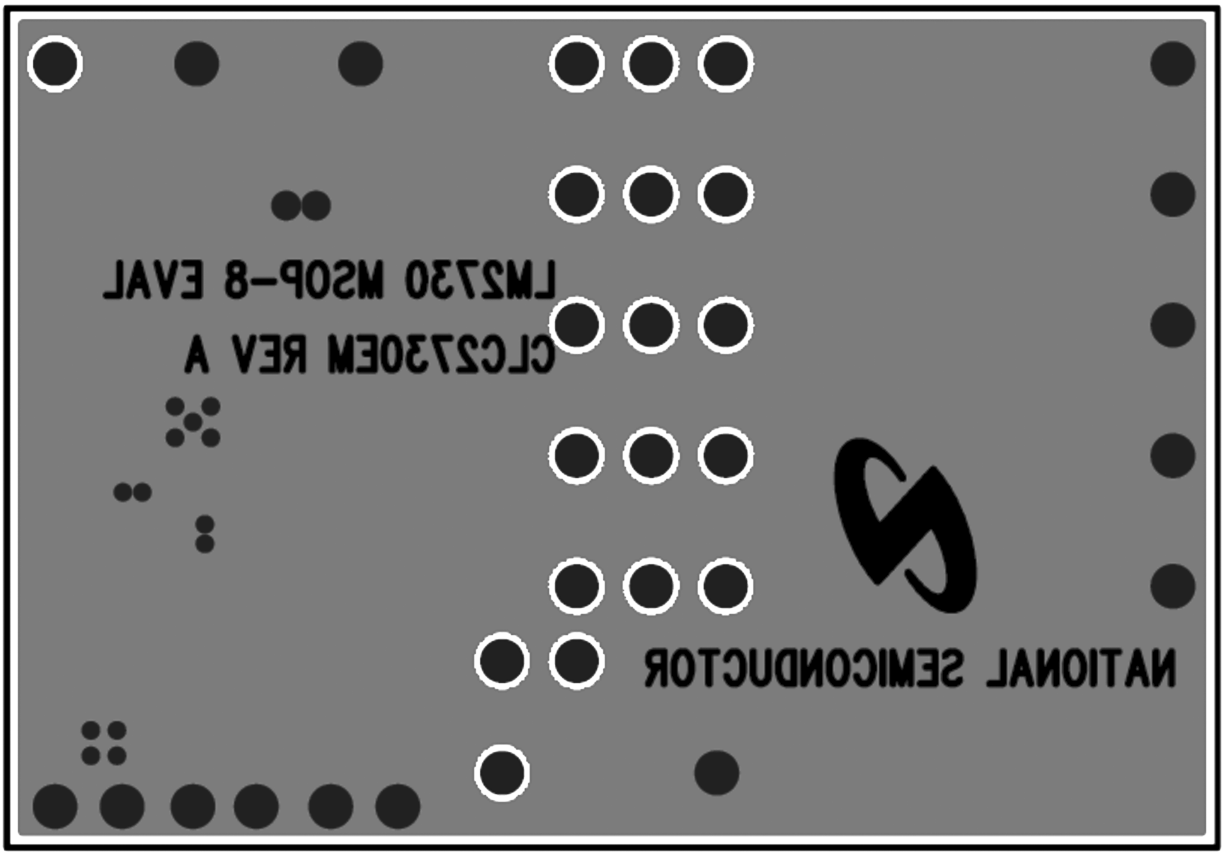


Figure 5. Bottom Layer

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Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
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