

## 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

$$V_{IN} = 3V \text{ to } 5.5V$$

$$V_O = 1.8V$$

$$I_o = 2A$$

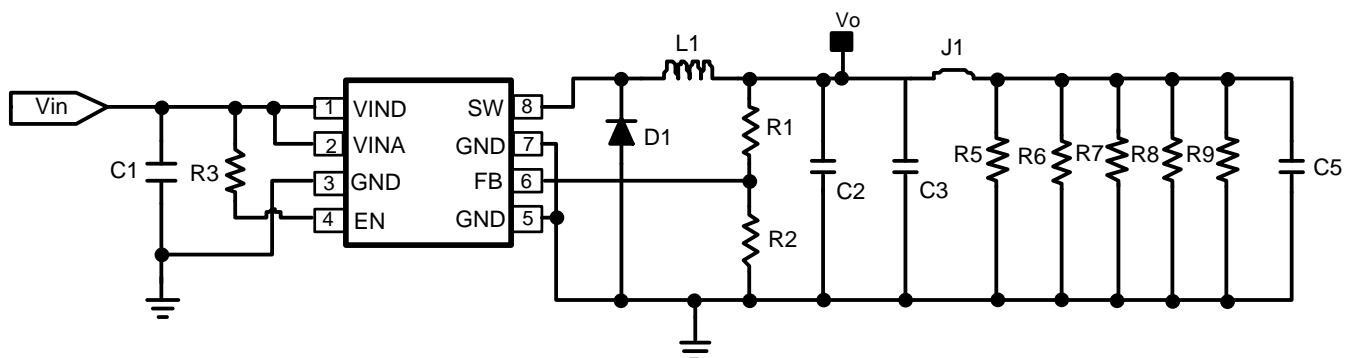
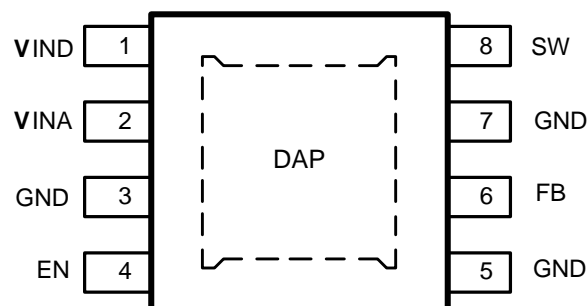


Figure 1. LM2832X 8-Pin MSOP-PowerPAD Demo Board Schematic

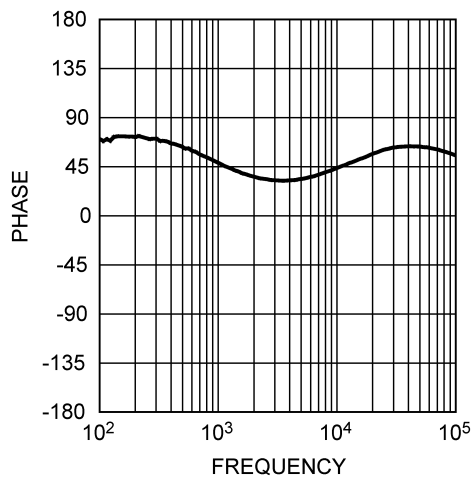
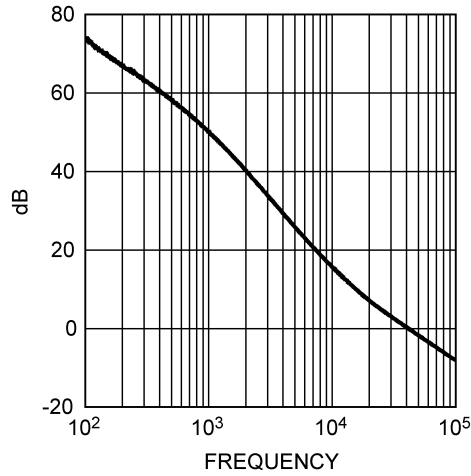
### 2 Pin-Out



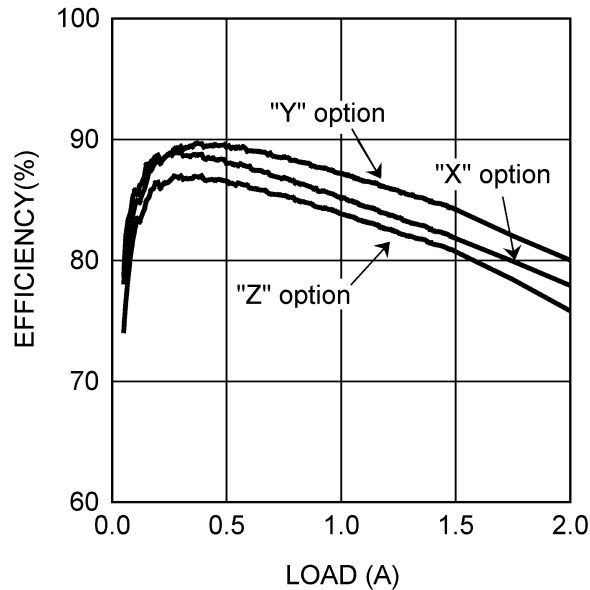
### 3 Pin Description 8-Pin MSOP-PowerPAD

| 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 $V_{IN} + 0.3V$ . |
| 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.                  |

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



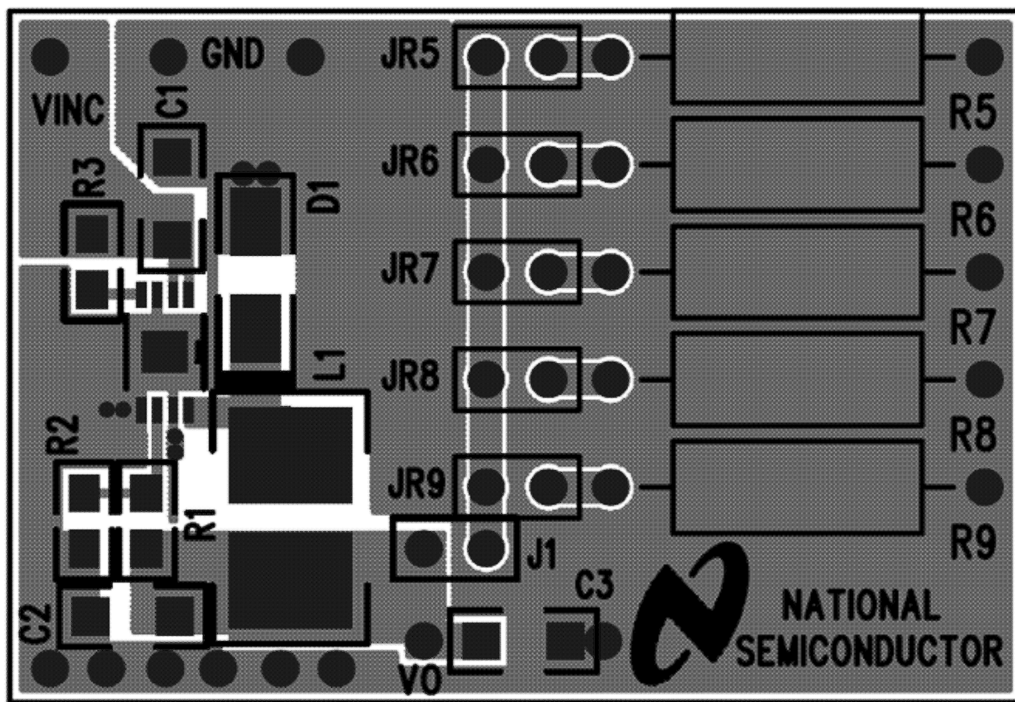
**5 LM2832 Efficiency: Vin = 3.3V, Vo = 1.8V**



**Table 1. Bill Of Materials LM2832X-Version**

| Part ID         | Part Value  | Manufacturer | Part Number    |
|-----------------|---|--------------|----------------|
| U1              | 2A Buck Regulator                                 | TI           | LM2832         |
| C1, Input Cap   | 22 $\mu$ F, 6.3V, X5R                             | TDK          | C3216X5ROJ226M |
| C2 Output Cap   | 22 $\mu$ F, 6.3V, X5R                             | TDK          | C3216X5ROJ226M |
| C3 Output Cap   | 22 $\mu$ F, 6.3V, X5R                             | TDK          | C3216X5ROJ226M |
| D1, Catch Diode | 0.3V <sub>f</sub> Schottky 1.5A, 30V <sub>R</sub> | TOSHIBA      | CRS08          |
| L1              | 3.3 $\mu$ H, 3.5A                                 | CoilCraft    | MSS7341-332NL  |
| R1              | 20.0 k $\Omega$ , 1%                              | Vishay       | CRCW08052002F  |
| R2              | 10.0 k $\Omega$ , 1%                              | Vishay       | CRCW08051002F  |
| R3              | 20.0 k $\Omega$ , 1%                              | Vishay       | CRCW08052002F  |
| J1              | No Load   |              |                |
| R5 – R9         | No Load   |              |                |

**6 Layout**



**Figure 2. Top Layer**

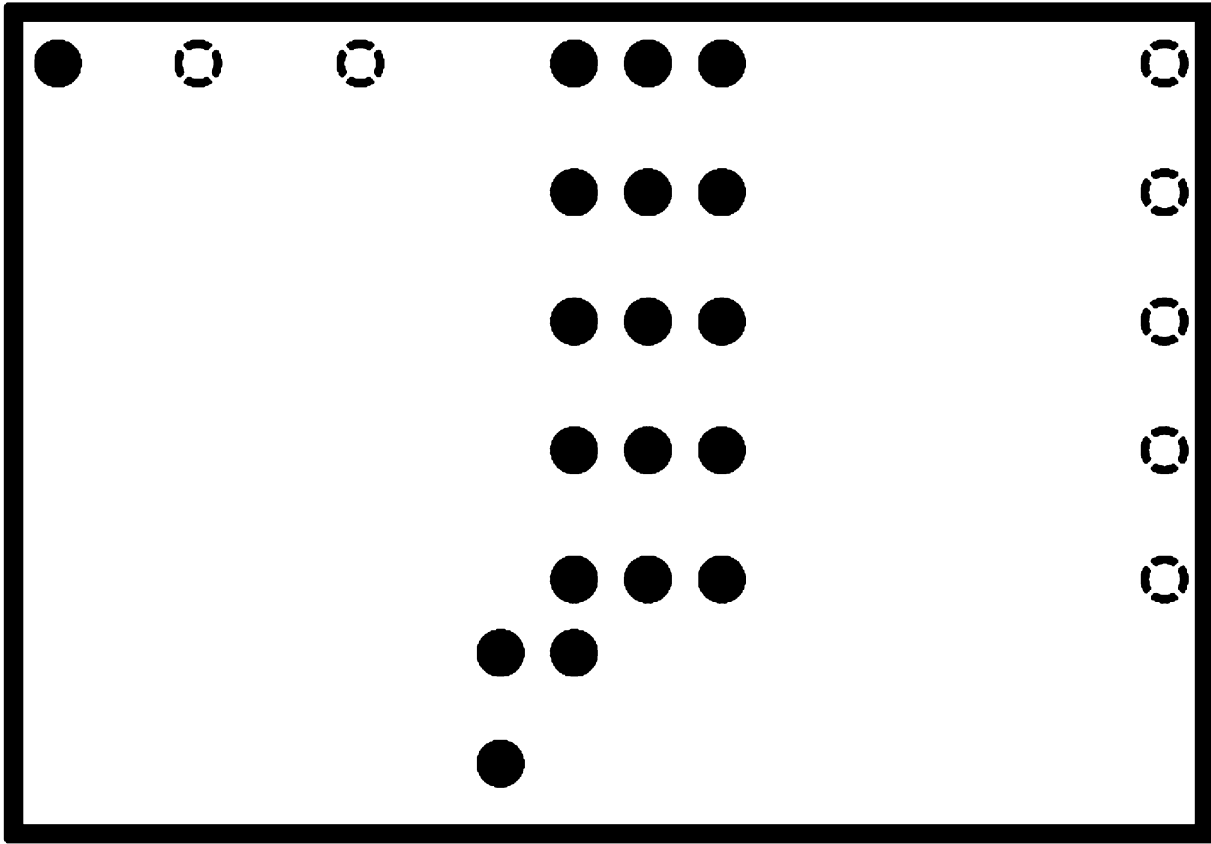


Figure 3. Internal Plane 1 (GND)

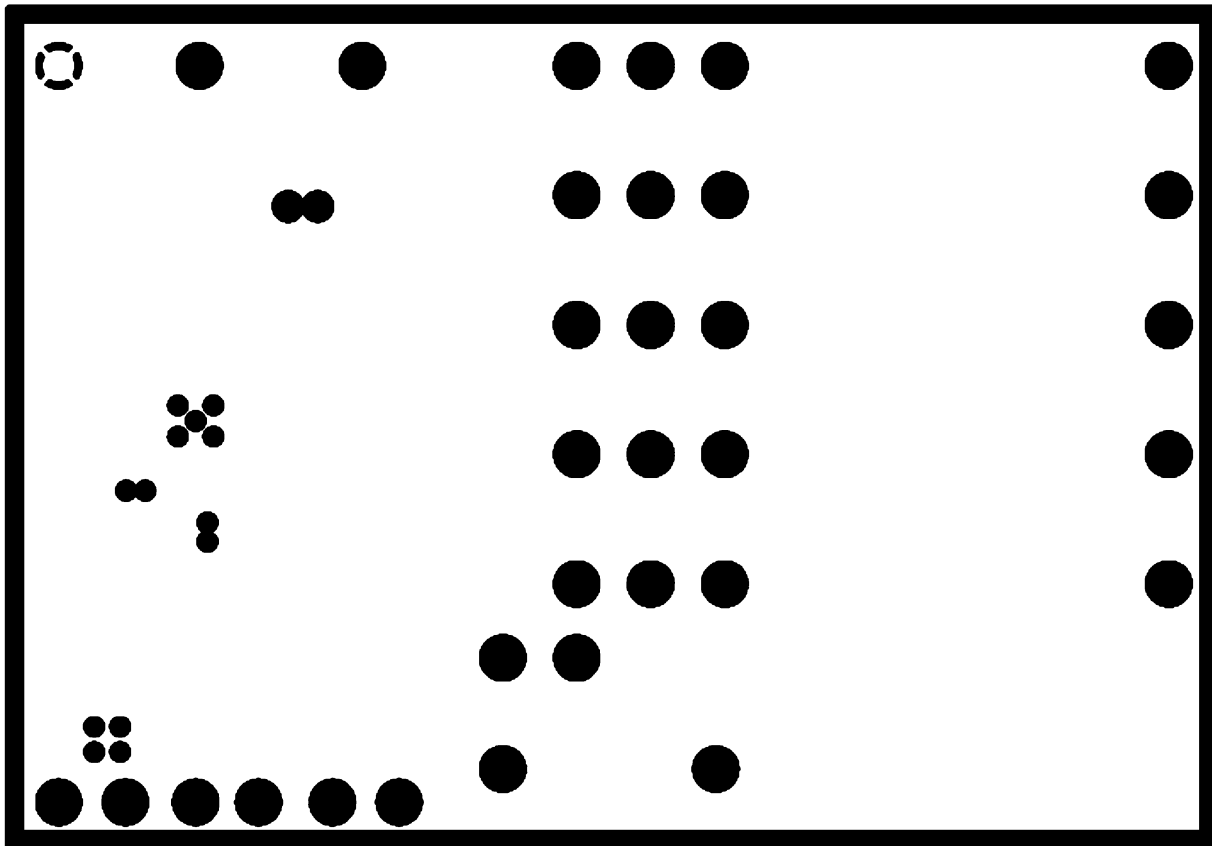


Figure 4. Internal Plane 2 (V<sub>IN</sub>)

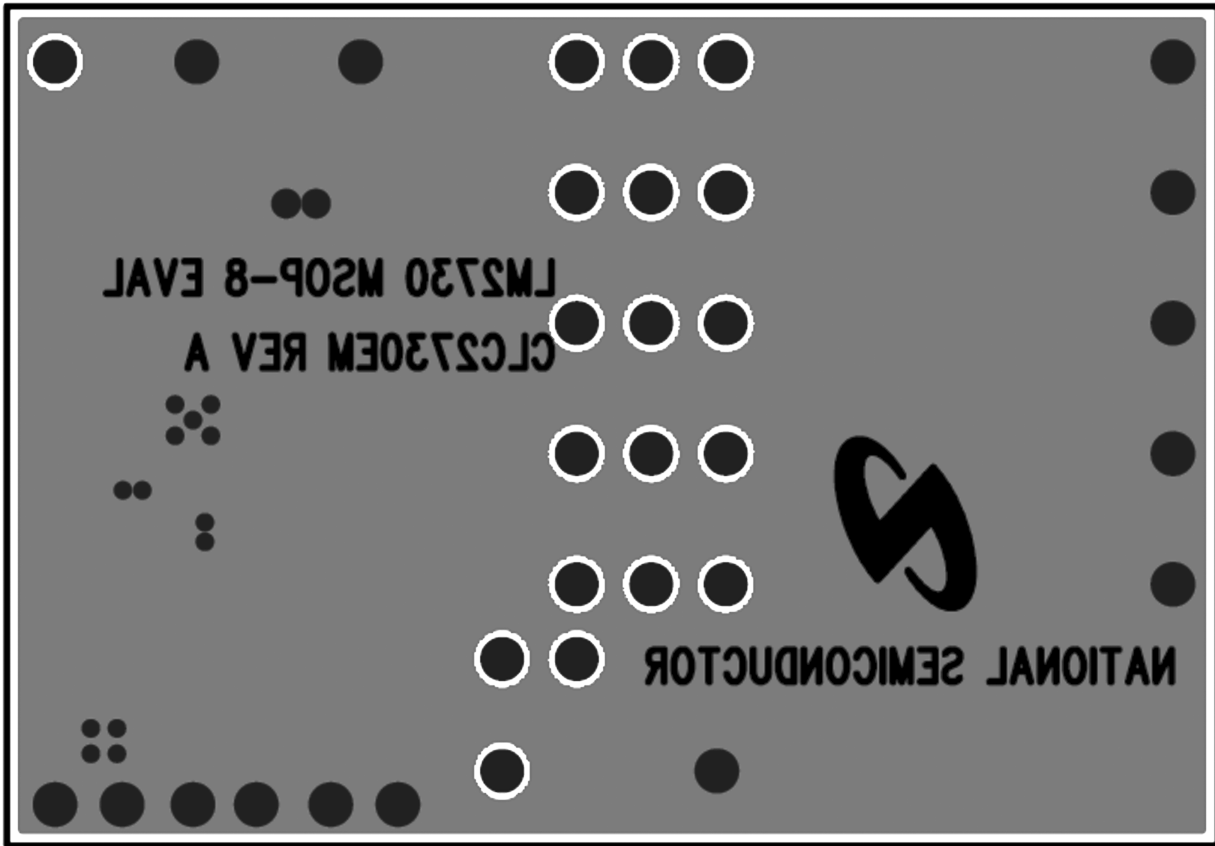


Figure 5. Bottom Layer

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