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## Trademarks

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## 1 Specifications of the Board

The LM2742 Evaluation board has been designed for a wide variety of components in order to show the flexibility of the LM2742 IC. The example design steps input voltages from 2.0 V to 13.2 V, down to 1.2 V, at 4 A, with a switching frequency of 500 kHz. This design can be modified by following the *Design Considerations* section of the [LM2742 N-Channel FET Synchronous Buck Regulator Controller for Low Output Voltages](#) data sheet. The board is four layers, consisting of signal/power traces on top and bottom, one internal ground plane, and an internal split power plane. All planes are 1-oz. copper, and the board is 62-mil FR4 laminate.

## 2 MOSFET Footprints

The LM2742 demo board has three footprints for single N-MOSFETs with SO-8 packages and standard pinouts. See [Figure 2-1](#). Q1 is the high-side FET. Q2 and Q3 are connected in parallel for the low-side FET to accommodate higher currents when the circuit design uses low duty cycles. Q4 is a footprint for a dual N-MOSFET in SO-8 with a pinout shown in [Figure 2-2](#).

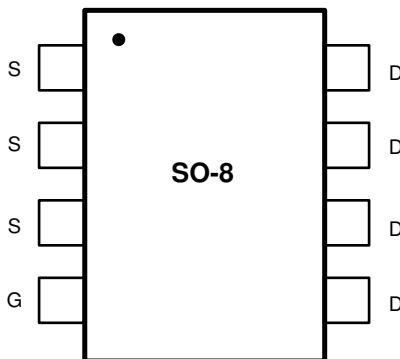


Figure 2-1. Single N-MOSFETs with SO-8 Package

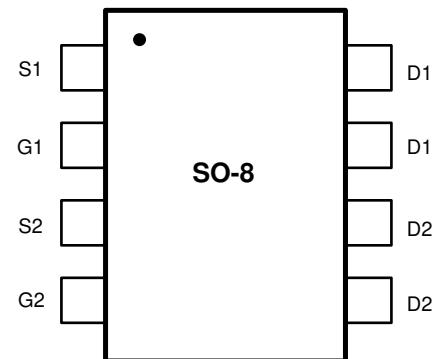


Figure 2-2. Dual N-MOSFETs with SO-8 Package

## 3 Low-Side Diode

A footprint D2 is available for a Schottky diode to be placed in parallel with the low-side FET. This can improve efficiency because a discrete Schottky will have a lower forward voltage than the low-side FET body diode. The footprint fits SMB size devices.

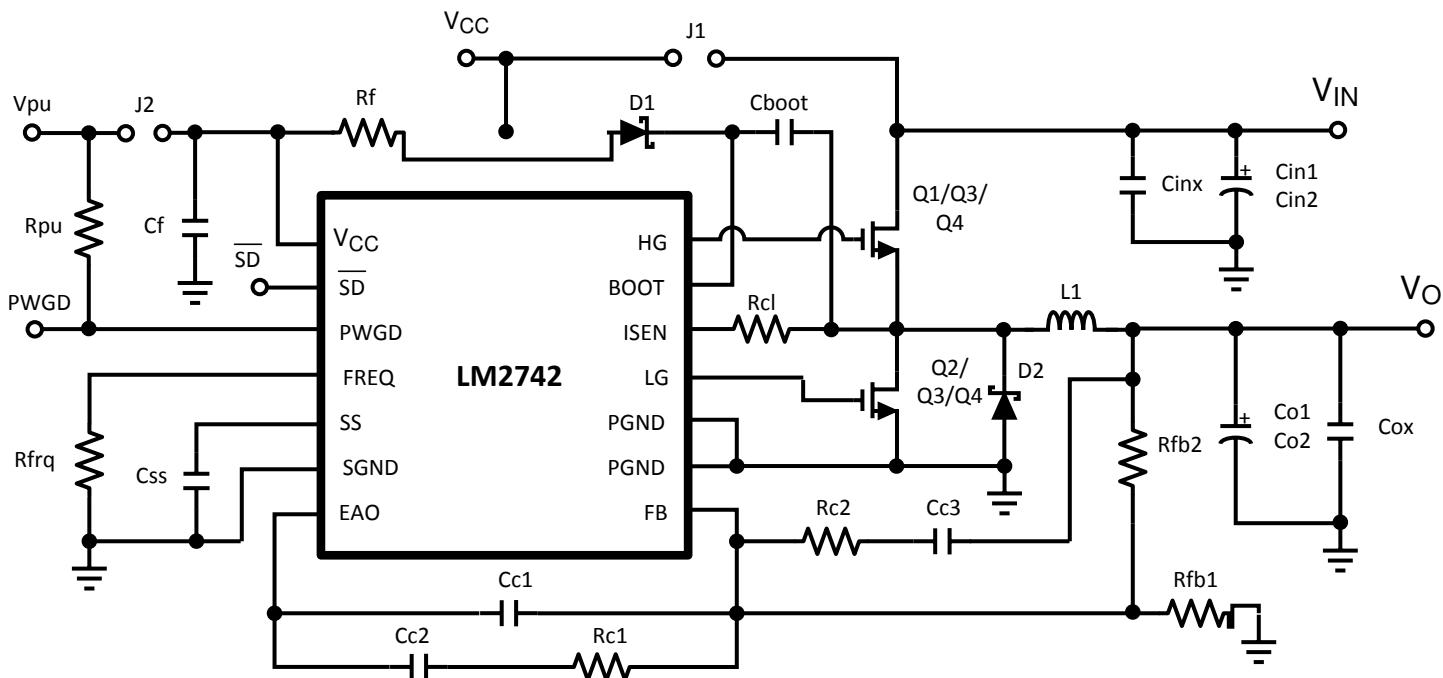
## 4 Additional Footprints

The 1206 footprints Rc2 and Cc3 are available for designs with more complex compensation needs. Jumper J1 can be stuffed with a 0- $\Omega$  resistor to connect the  $V_{CC}$  pin of the LM2742 to the input voltage. This can only be done when the input voltage is 5 V  $\pm$ 10%. Jumper J2 connects the pullup resistor,  $R_{pu}$ , to  $V_{CC}$ . This is the recommended way to connect the power-good circuitry.

## 5 Use with Other ICs

The LM2742 IC shares the same pinout as the LM2727 and the LM2737. This evaluation board can also be used with those ICs.

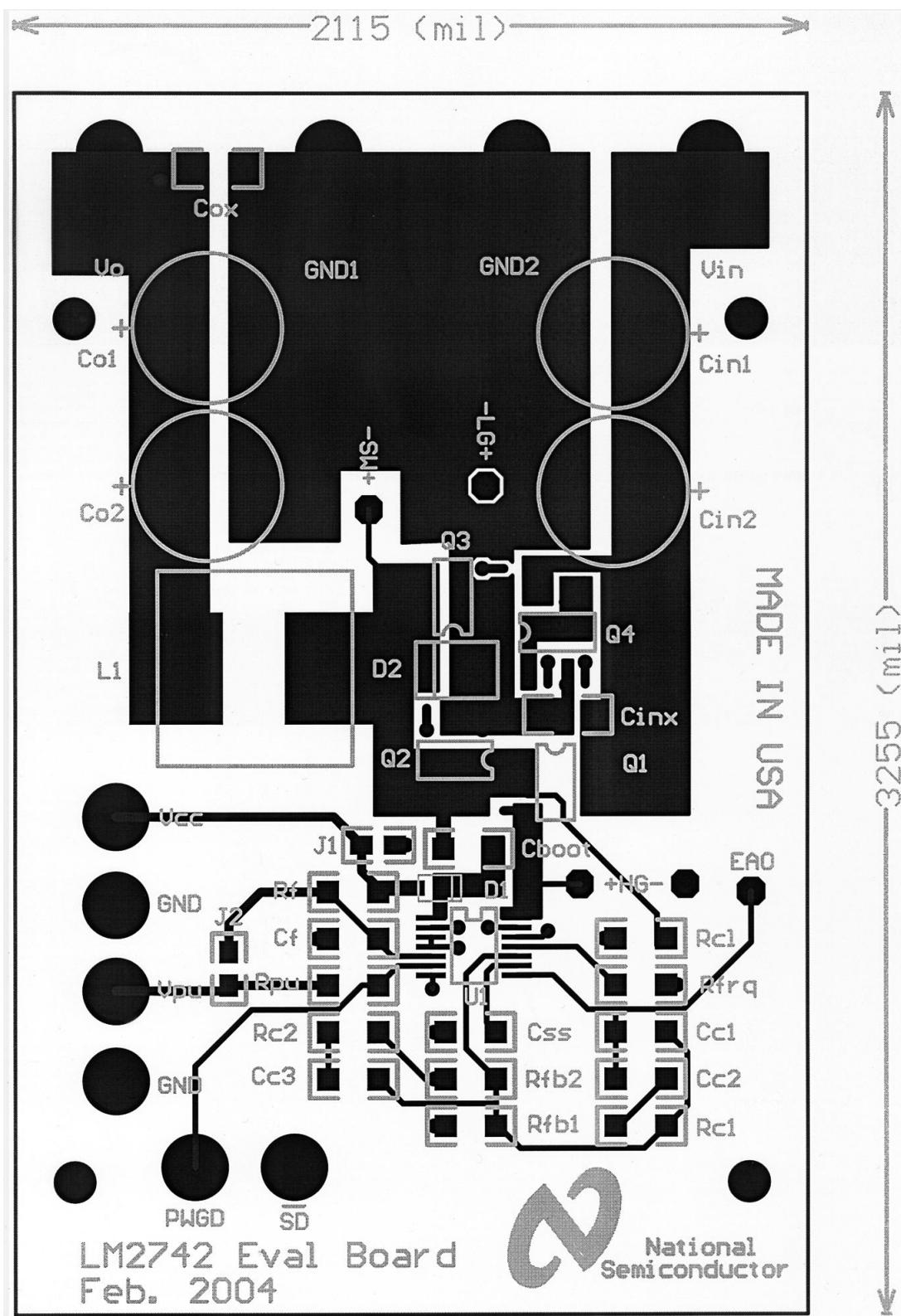
## 6 Schematic



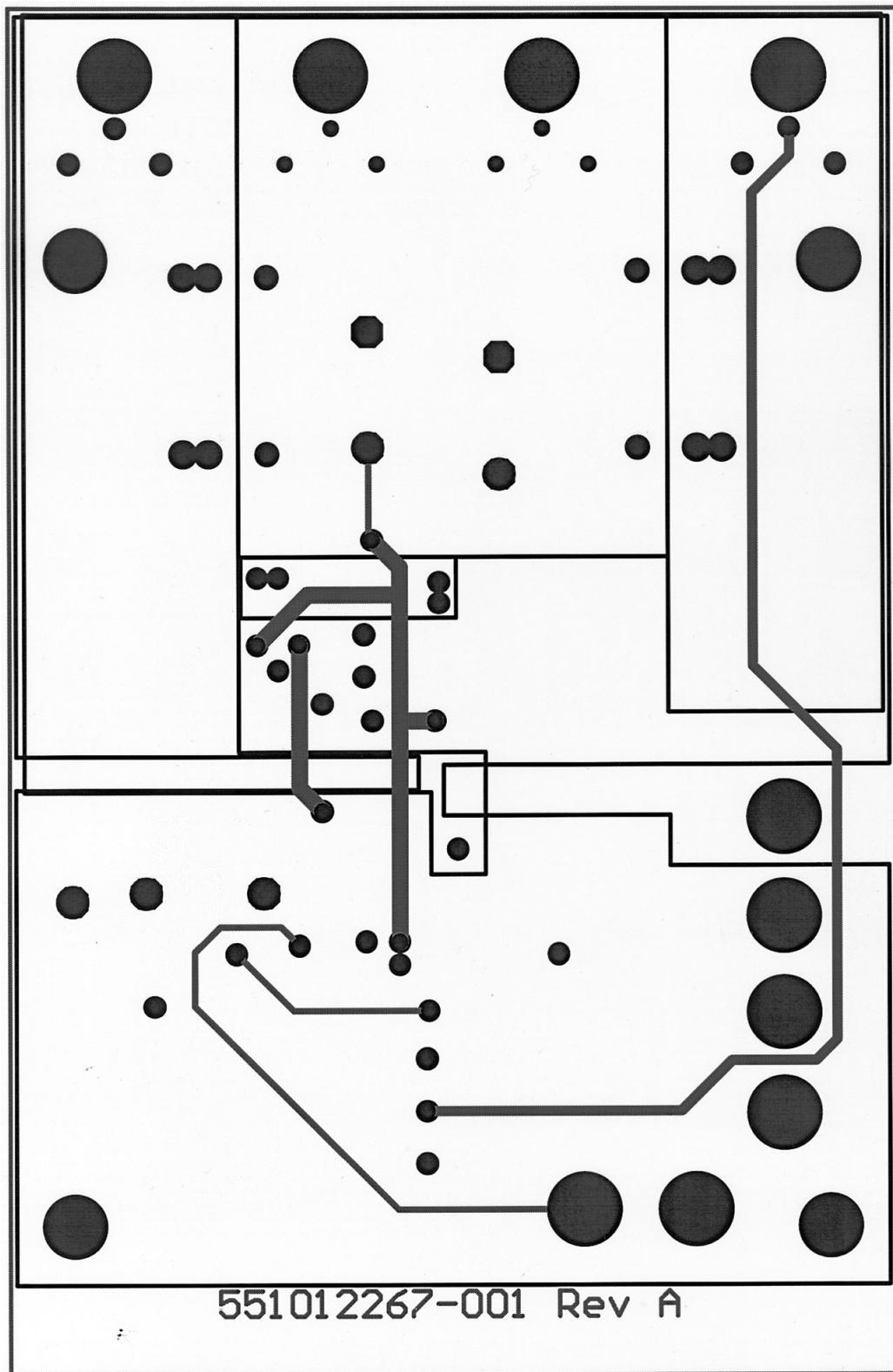
## 7 Bill of Materials

ID	Part Number	Type	Size	Parameters	Qty	Vendor
U1	LM2742	Synchronous Controller	TSSOP-14		1	Texas Instruments
Q4	SI4828DY	Dual Asymmetric N-MOSFET	SO-8	30 V 30-mΩ Top 18-mΩ Bottom	1	Vishay
Db	MBR0520	Schottky Diode	SOD-123	20 V	1	ON
L1	RLF7030T-2R2M5R4	Inductor	7.3 x 6.8 x 3.2mm	2.2 µH, 5.4 A, 12 mΩ	1	TDK
Cin1	C3225X5R1E106M	Capacitor	1210	10 µF, 25 V, 3.3 Arms	1	TDK
Cinx, Cf	C3216X7R1E105K	Capacitor	1206	1 µF, 25 V	2	TDK
Co1, Co2	C3216X5R106M	Capacitor	1206	10 µF, 6.3 V, 3 Arms	2	TDK
Css	VJ1206X123KXX	Capacitor	1206	12 nF, 25 V	1	Vishay
Cc1	VJ1206A221KXX	Capacitor	1206	220 pF, 10%	1	Vishay
Cc2	VJ1206X562KXX	Capacitor	1206	5.6 nF, 10%	1	Vishay
Cc3	VJ1206X122KXX	Capacitor	1206	1.2 nF, 10%	1	Vishay
Rf	CRCW1206100J	Resistor	1206	10 Ω, 5%	1	Vishay
Rrfrq	CRCW12064992F	Resistor	1206	49.9 kΩ, 1%	1	Vishay
Rc1, Rcl	CRCW12062431F	Resistor	1206	2.43 kΩ, 1%	1	Vishay
Rc2, J1	CRCW1206000Z	Resistor	1206	0 Ω	1	Vishay
Rfb1, Rfb2	CRCW12064871F	Resistor	1206	10 kΩ, 1%	2	Vishay

## 8 PCB Layout



**Figure 8-1. Top Layer and Top Overlay**



**Figure 8-2. Bottom Layer and Internal Power Plane**

## 9 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

<b>Changes from Revision A (May 2013) to Revision B (January 2022)</b>	<b>Page</b>
• Updated the numbering format for tables, figures, and cross-references throughout the document. ....	<a href="#">2</a>
• Updated the user's guide title .....	<a href="#">2</a>

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