

MAXIM

MAX742 Evaluation Kit

Evaluates: MAX742

General Description

The MAX742 evaluation kit (EV kit) is a built and tested surface-mount printed circuit assembly intended for quick prototyping and testing purposes. This kit generates a dual regulated $\pm 12V$ or $\pm 15V$ output from a 5V regulated input supply. Power conversion efficiency ranges up to 90%, depending on output loading. Applications include low-noise power supplies for precision analog subsystems and distributed power.

Component List

| DESIGNATION | QTY | DESCRIPTION |
|-------------|-----|--|
| C1, C2 | 2 | 220 μ F, 10V low-ESR tantalum capacitors AVX TPSE227M010R0100 |
| C11-C16 | 6 | 120 μ F, 20V low-ESR tantalum capacitors Sprague 595D127X0020R2B |
| C6, C7 | 2 | 0.01 μ F ceramic capacitors |
| C3, C8 | 2 | 0.1 μ F ceramic capacitors |
| C4, C5 | 2 | 1 μ F, 20V tantalum capacitors Sprague 595D105X0020T2B or Matsuo 267M 1602 105 |
| C10 | 1 | 22 μ F, 25V tantalum capacitor Sprague 595D225X0025B2B or Matsuo 267E 2502 225 |
| C9 | 1 | 10 μ F, 10V tantalum capacitor Sprague 595D106X0010A2B |
| D1, D2 | 2 | 3A, 30V 1N5821 equivalent (SMT) Schottky diodes, Nihon NSQ03A03 or Motorola MBRS340T3 |
| D3 | 1 | Dual Schottky diode (SOT-23) Central Semiconductor CMPSH-3S |
| L1, L2 | 2 | 47 μ H inductors, Coiltronics CTX03-12384-1 (500mA output) or CoilCraft D03316-473 (alternate for ± 250 mA output) |
| R1 | 1 | 100 Ω , 5% resistor |
| R2, R3 | 2 | 0.082 Ω , 1% resistors, Dale WSL-2512-R082F or IRC LR2512-01-R082-F |
| N1 | 1 | Dual N-channel MOSFET (both sections in parallel), Motorola MMDF3N02HD or Siliconix Si9936HD |
| P1 | 1 | Dual P-channel MOSFET (both sections in parallel), Motorola MMDF2P03HD |
| U1 | 1 | Maxim MAX742CWP |
| JU1, JU2 | 2 | 3-pin headers |
| None | 2 | Shunts |
| None | 1 | MAX742 PC board |
| None | 1 | MAX742 data sheet |

Features

- ◆ $\pm 12V$ or $\pm 15V$ Dual Tracking Outputs
- ◆ 15W Output Power: $\pm 12V$ at 625mA
 $\pm 15V$ at 500mA
- ◆ 13mA Quiescent Supply Current
- ◆ 100kHz or 200kHz Fixed-Frequency PWM Operation
- ◆ All Surface-Mount Construction

Ordering Information

| PART | TEMP. RANGE | BOARD TYPE |
|----------------|--------------|---------------|
| MAX742EVKIT-SO | 0°C to +70°C | Surface Mount |

Component Suppliers

| SUPPLIER | PHONE | FAX |
|-------------|----------------|----------------|
| AVX | (207) 282-5111 | (207) 283-1941 |
| CoilCraft | (708) 639-6400 | (708) 639-1469 |
| Coiltronics | (407) 241-7876 | (407) 241-9339 |
| Dale | (402) 563-6582 | (402) 563-6418 |
| IRC | (704) 264-8861 | (704) 264-8866 |
| Matsuo | (714) 969-2491 | (714) 960-6492 |
| Motorola | (602) 244-3576 | (602) 244-4015 |
| Murata-Erie | (404) 436-1300 | (404) 684-1591 |
| Siliconix | (408) 988-8000 | (408) 970-3950 |
| Sprague | (603) 224-1961 | (603) 224-1430 |

EV Kit



MAXIM

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Call toll free 1-800-998-8800 for free samples or literature.

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Quick Start

The MAX742 EV kit is a fully assembled and tested surface-mount board. Follow these steps to verify board operation. **Do not turn on the power supply until all connections are completed.**

- 1) Connect a 4.5V to 6.0V supply to the pad marked VIN. The ground connects to the GND pad.
- 2) Connect a voltmeter and load (if any) to the VOUT pad.
- 3) Place the shunt on JU1 across pins 1 & 2 for 200kHz operation and on JU2 across pins 1 & 2 for $\pm 15V$ outputs.
- 4) Turn on the power and verify that the output voltage is $\pm 15V$.
- 5) For $\pm 12V$ outputs, remove the shunt from JU2 pins 1 & 2 and place it across pins 2 & 3.

Detailed Description

Jumper Selection

The 3-pin header JU1 selects the frequency of operation. Table 1 lists the jumper-selectable options.

The 3-pin header JU2 selects the output voltages. Table 2 lists the jumper-selectable options.

Table 1. Jumper JU1 Functions

| SHUNT LOCATION | 100/200 PIN | FREQUENCY |
|----------------|------------------|-----------|
| 2 & 3 | Connected to VIN | 100kHz |
| 1 & 2 | Connected to GND | 200kHz |

Table 2. Jumper JU2 Functions

| SHUNT LOCATION | 12/15 PIN | OUTPUT VOLTAGE |
|----------------|------------------|----------------|
| 2 & 3 | Connected to VIN | $\pm 12V$ |
| 1 & 2 | Connected to GND | $\pm 15V$ |

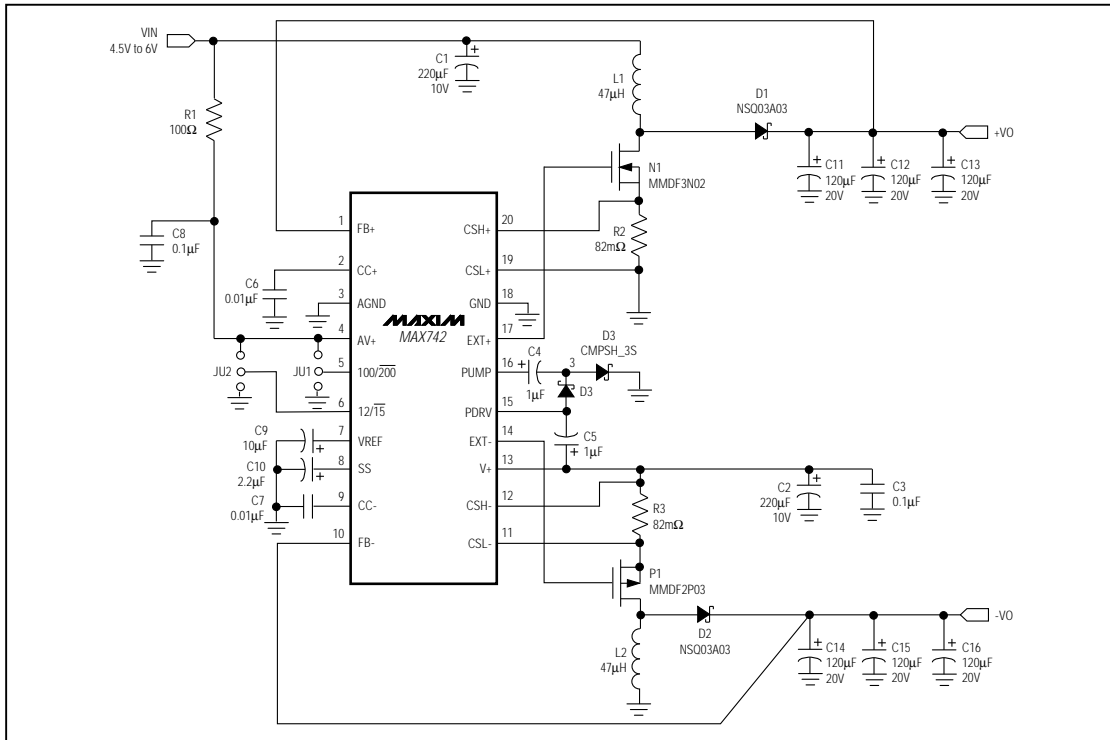


Figure 1. MAX742 EV Kit Schematic

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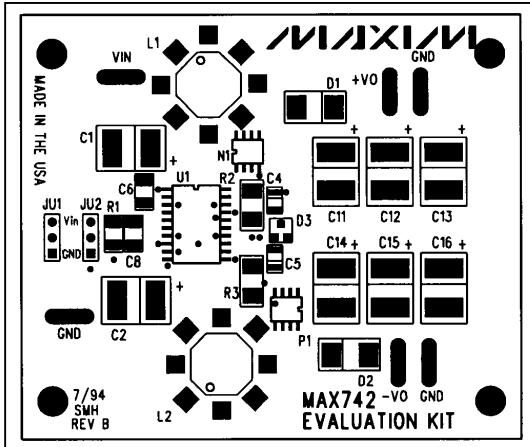


Figure 2. MAX742 EV Kit Component Placement Guide—Component Side

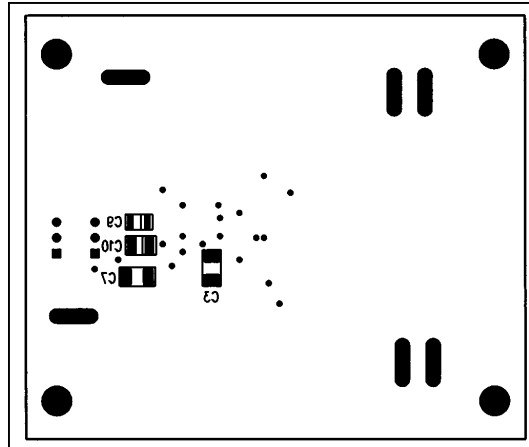


Figure 3. MAX742 EV Kit Component Placement Guide—Solder Side

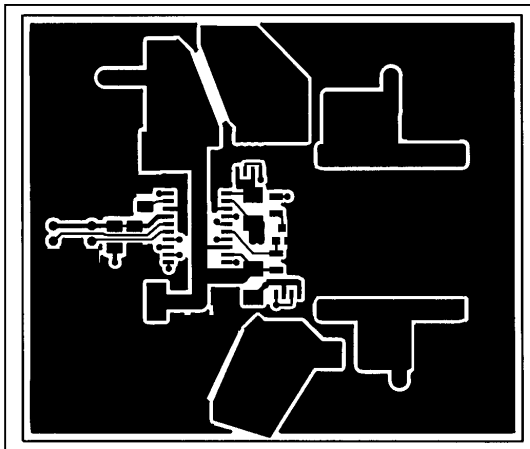


Figure 4. MAX742 EV Kit PC Board Layout—Component Side

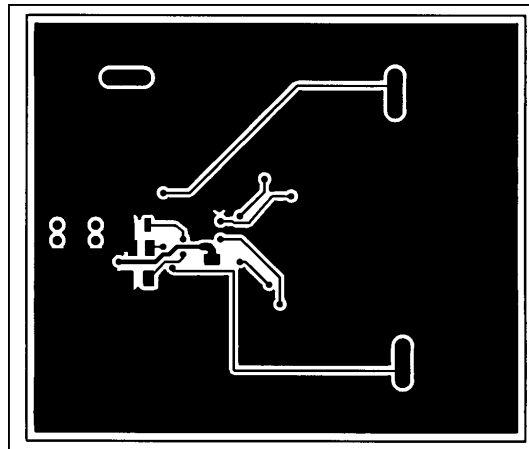


Figure 5. MAX742 EV Kit PC Board Layout—Solder Side

