

MAXIM

MAX1624 Evaluation Kit

General Description

The MAX1624 evaluation kit (EV kit) provides a digitally programmable output voltage between 1.1V and 3.5V from a 5V input supply. It delivers up to 11.5A output current with greater than 90% efficiency. The MAX1624 EV kit features 1% output accuracy. The MAX1624 features a resistor-programmable switching frequency from 100kHz to 1MHz, as well as current-mode operation for superior load- and line-transient response. This EV kit is a fully assembled and tested circuit board. For a low-cost version of this kit that includes the Intel V_{RM} connector and aluminum-electrolytic filter capacitors, order the MAX1624VRMEVKIT.

Ordering Information

PART	TEMP. RANGE	BOARD TYPE
MAX1624EVKIT	0°C to +70°C	Surface Mount
MAX1624VRMEVKIT	0°C to +70°C	Through Hole

Features

- ◆ 4.5V to 5.5V Input Voltage Range
- ◆ 1.1V to 3.5V Output Voltage
- ◆ 11.5A Output Current
- ◆ Efficiency = 90%, V_{IN} = 5V, V_{OUT} = 2.5V @ I_{OUT} = 10A
- ◆ Selectable 0.5%, 1%, 2% AC Load Regulation
- ◆ Power-OK Output
- ◆ Glitch-Catcher™ Provides Excellent Load-Transient Response
- ◆ 500kHz Switching Frequency
- ◆ 24-Pin SSOP Package
- ◆ Low-Profile Components

Component List

DESIGNATION	QTY	DESCRIPTION
C1, C2, C3	3	100µF, 10V electrolytic capacitors Sanyo 10SL100M
C4	0	Open
C5, C6, C7	3	220µF, 4V electrolytic capacitors Sanyo 4SP220M
C8, C9, C10	3	0.1µF ceramic capacitors
C11, C12	2	4.7µF, 16V tantalum capacitors Sprague 595D475X0016A2T
C13	1	2.2µF ceramic capacitor United Chemicon/Marcon THCR30E1E225Z
C14, C15	2	4700pF ceramic capacitors
C16	1	1µF ceramic capacitor
C17	1	22µF ceramic capacitor TDK C5650Y5U1E226M
CC1	1	1000pF ceramic capacitor
CC2		0.056µF ceramic capacitor
D1	1	Schottky diode Central Semiconductor CMPSH-3
L1	1	0.5µH power inductor Coiltronics UP4-R47 or Coilcraft DO5022P-501HC
N1, N2	2	N-channel MOSFETs (D2PAK) International Rectifier IRL3103S

DESIGNATION	QTY	DESCRIPTION
U2	1	N- and P-channel MOSFET (SO-8) International Rectifier IRF7107
R1, R2	2	0.012Ω, 1%, 1W resistors Dale WSL-2512-R012-F or IRC LR2512-01-R012-F
R3	1	0.5Ω, 5%, 1/2W resistor Dale WSL-2010-R5-J or IRC LR2010-01-R5-J
R4	1	100Ω, 5% resistor
R5	1	40.2kΩ, 1% resistor
R6-R11	6	100kΩ, 5% resistors
R12, R13	2	39Ω, 5% resistors
R14, R15	0	Open
R16	1	1kΩ, 5% resistor
U1	1	MAX1624EAG
JU1	1	4-pin header
JU2	1	2-pin header
None	1	Shunt
SW1	1	Dip-10 dip switch
None	1	MAX1624 PC board
None	1	MAX1624 data sheet

Evaluates: MAX1624



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Component Suppliers

SUPPLIER*	PHONE	FAX
AVX	(803) 946-0690	(803) 626-3123
Central Semiconductor	(516) 435-1110	(516) 435-1824
Coilcraft	(708) 639-6400	(708) 639-1469
Dale-Vishay	(402) 564-3131	(402) 563-6418
International Rectifier	(310) 322-3331	(310) 322-3332
IRC	(512) 992-7900	(512) 992-3377
Motorola	(602) 303-5454	(602) 994-6430
Sanyo	(619) 661-6835	(619) 661-1055
Siliconix	(408) 988-8000	(408) 970-3950
Sprague	(603) 224-1961	(603) 224-1430
Sumida	(847) 956-0666	(847) 956-0702

* Please indicate that you are using the MAX1624 when contacting these component suppliers.

Quick Start

The MAX1624 EV kit is fully assembled and tested. Follow these steps to verify board operation. **Do not turn on the power supply until all connections are completed.**

- 1) Connect a 5V supply voltage to the VIN pad. The ground connects to the GND pad.
- 2) Connect a voltmeter and load, if any, to the VOUT pad.
- 3) Turn on the power supply to the board. Verify that the output voltage is 0V.
- 4) Set switch SW1 per Table 1 to get the desired output voltage.

Detailed Description

Jumper Selection

The 3-pin header JU1 selects the loop gain. Table 2 lists the selectable jumper options. JU1 allows the user to trade off AC load regulation, transient response, and output filter capacitor size. Load regulation can be set to 0.5%, 1%, and 2%. The default value is 1%.

The 2-pin header JU2 selects the shutdown mode. Table 3 lists the selectable jumper options.

Table 1. MAX1624 Output-Voltage Adjustment Settings (Abbreviated)

D4	D3	D2	D1	D0	OUTPUT VOLTAGE (V)	COMPATIBILITY
1	0	0	0	0	3.5	Intel-compatible codes
1	0	0	0	1	3.4	
1	-	-	-	-	Decreases in 100mV increments	
1	1	1	1	0	2.1	
1	1	1	1	1	No CPU (off)	
0	0	0	0	0	1.9	Non-Intel-compatible codes
0	0	0	0	1	1.8	
0	0	-	-	-	Decreases in 100mV increments	
0	0	1	1	1	1.2	
0	1	0	0	0	1.1	
0	1	-	-	-	1.1	
0	1	1	1	0	1.1	
0	1	1	1	1	No CPU (off)	

Table 2. Jumper JU1 Functions

SHUNT LOCATION	LG PIN	AC LOAD REGULATION (%)
1 & 4	Connected to GND	0.5
1 & 3	Connected to REF	1
1 & 2	Connected to VCC	2

Table 3. Jumper JU2 Functions

SHUNT LOCATION	REF PIN	MAX1624 OUTPUT
On	Connected to GND	Shutdown mode, V _{OUT} = 0V
Off	Connected to REF	MAX1624 enabled

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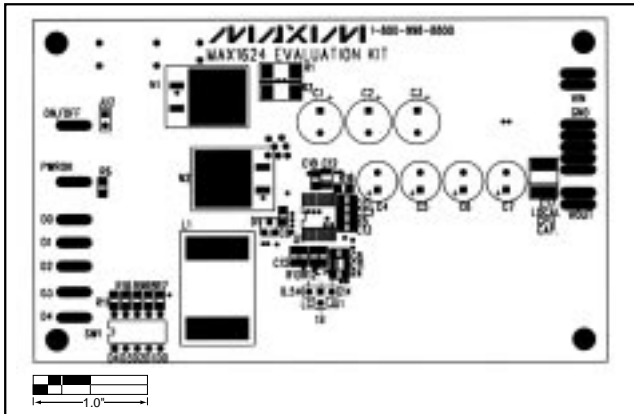


Figure 2. MAX1624 EV Kit Component Placement Guide—Component Side

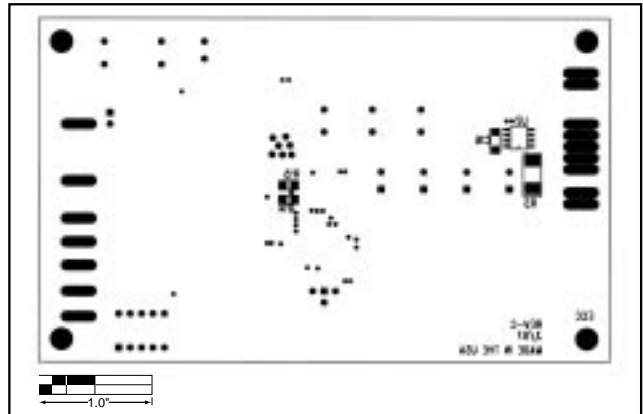


Figure 3. MAX1624 EV Kit Component Placement Guide—Solder Side

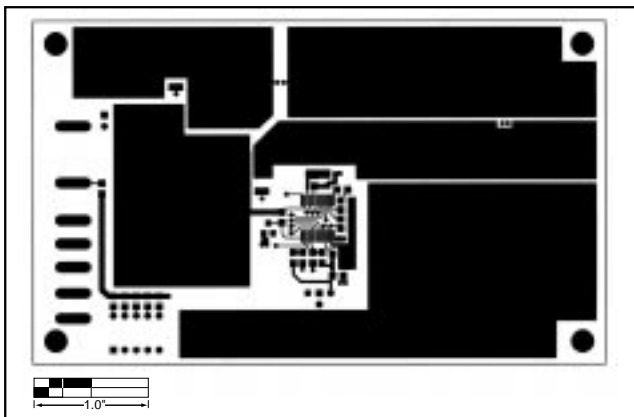


Figure 4. MAX1624 EV Kit PC Board Layout—Component Side

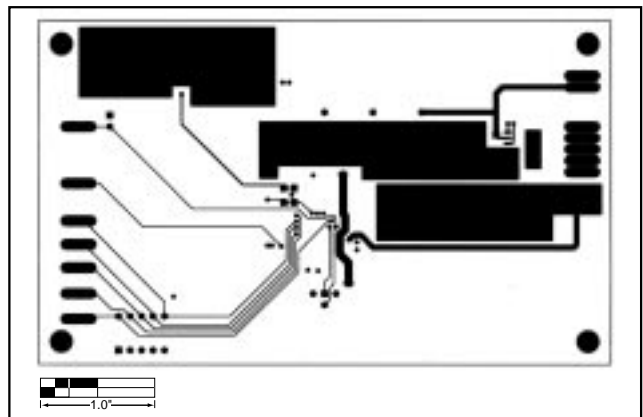


Figure 5. MAX1624 EV Kit PC Board Layout—Solder Side

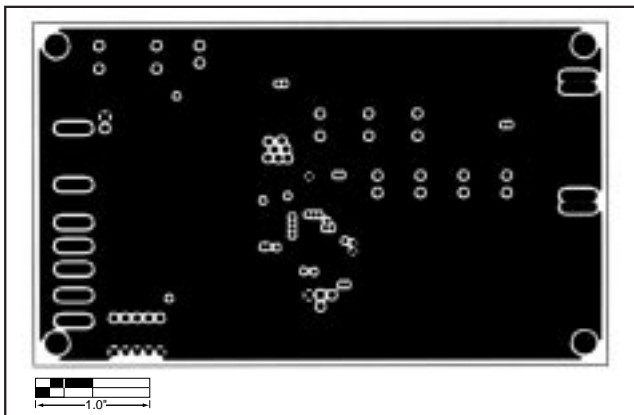


Figure 6. MAX1624 EV Kit PC Board Layout—Internal GND Plane (layer 2)

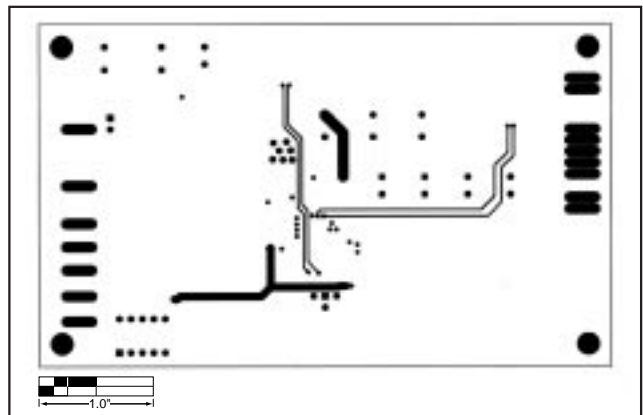


Figure 7. MAX1624 EV Kit PC Board Layout—Internal Signal Plane (layer 3)

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