

MAXM17225 Evaluation Kit

Evaluates: MAXM17225

General Description

The MAXM17225 is a nanoPower, 300nA Quiescent current, synchronous step-up DC-DC converter module available in the eMGA package. This datasheet provides an overview of how to use the MAXM17225 EV kit (EV kit) with detailed procedure and circuit connections to test the Boost modules' functionality.

The EV kit ships with boost module MAXM17225AMB+T placed in-circuit. The product is RoHS compliant.

Features and Benefits

- EV Kit Board Evaluates MAXM17225AMB+T
 - 10 lead - 2.1mm x 2.6mm- only package variant.
- 0.4V to 5.5V Input Range, V_{IN} MIN Startup: 0.88V.
- 1.8V to 5V Resistor Selectable Output Voltage.
- 1A Peak Inductor Current Limit.
- Proven 2-Layer 1-oz Copper PCB Layout.
- Demonstrates Compact Solution Size.
- Fully Assembled and Tested.

Ordering Information appears at end of data sheet.

MAXM17225 EV Kit Photo



Figure 1. MAXM17225 EV Kit

Quick Start

Required Equipment

- MAXM17225 EV Kit
- 5.5 V, 2A DC Power supply
- Electronic load capable of 100mA
- Digital Voltmeter (DVM)

Procedure

The EV kit is fully assembled and tested. Use the following steps to verify board operation.

Caution: Do not turn on power supply until all connections are completed.

1. Verify that jumper JU1 is in its default position as shown in [Table 1](#).
2. Connect the DC power supply between the IN and nearest GND terminal posts.
3. Connect the 100mA electronic load between the OUT and nearest GND terminal posts.
4. Connect the DVM between the OUT and nearest GND terminal posts.
5. Set the Power Supply Input to EV kit to 1.8V. Turn ON.
6. Enable the electronic load.
7. Verify that the voltage at the OUT terminal post is approximately 3.3V.

MAXM17225 EV Kit Files

FILE	DESCRIPTION
MAXM17225 EV BOM	EV Kit Bill of Materials
MAXM17225 EV PCB layout	EV Kit Layout
MAXM17225 EV Schematic	EV Kit Schematic Diagram

Table 1. EN Jumper Connection Guide

JU1 SHUNT POSITION	DESCRIPTION
1-2*	Enabled. EN = IN
2-3	Disabled. EN = GND

*Default position

Detailed Description of Hardware

The following documentation should be used with the MAXM17225EVKIT#EMGA PCB Evaluation kit:

- MAXM17225 IC Datasheet
- MAXM17225EVKIT#EMGA EV kit Datasheet (this document)

Hardware Description

Enabling/ Disabling the Device

The hardware has an EN device pin which can be operated through a Jumper connector JU1. The default position is set to EN = IN, see [Table 1](#), meaning the device is enabled. Make connections to the EV kit as listed in the [Procedure](#) above and power up the device in the required sequence for reliable operation.

Setting Output Voltage

The MAXM17225 has a single external RSEL resistor used for Output voltage configuration. R1 is the ref des in MAXM17225 EV kit for the RSEL resistor. Refer to the MAXM17225 datasheet for *Output Voltage Vs. corresponding RSEL resistor*. The default value of R1 that ships with EV kit is 80.6k Ω , which sets the output voltage to 3.3V nominal. The EV kit uses 0402, a 1% tolerance resistor for R1. Bear in mind that as this is a boost module, the input voltage applied should be less than the output voltage set by R1 value to ensure the module regulates the output voltage reliably upon power up.

Integrated inductor

The Boost module uses an integrated 1 μ H inductor part from Murata. The manufacturer part # is DFE201610E-1R0M=P2.

LX pin (Switch node)

In the MAXM17225, the boost inductor is integrated between the IN and LX pins. There is no need for an external inductor. As a result, the LX pin should be left floating, as it is solely utilized for programming by the manufacturer.

Input Capacitor

The input capacitors C1 and C2 reduce the peak current drawn from the battery or input power source and reduces the switching noise in the module. C1 is not populated and C2 is a 10 μ F ceramic capacitor having X7R temperature characteristics making it suitable for 125 $^{\circ}$ C module operation.

Output Capacitor

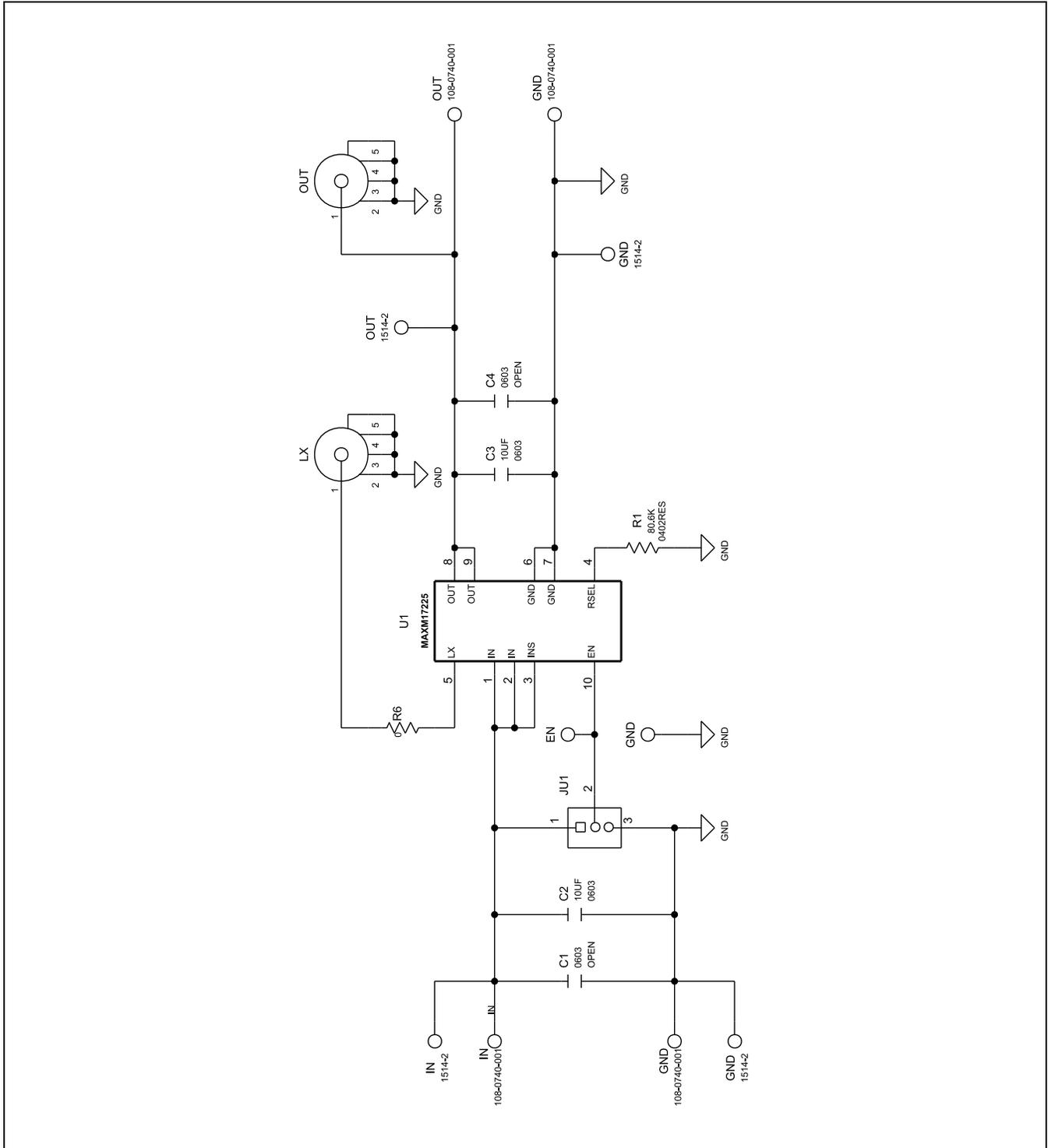
The output capacitors C3 and C4 are required to keep the output voltage ripple small and to ensure loop stability. The capacitors must have low impedance at the switching frequency. C3 is a 10 μ F ceramic capacitor having X7R temperature characteristics making it suitable for 125 $^{\circ}$ C module operation. C4 is not populated.

Ordering Information

PART	TYPE
MAXM17225EVKIT#EMGA	EV Kit

#Denotes RoHS-compliant.

MAXM17225 EV Kit Schematic Diagram



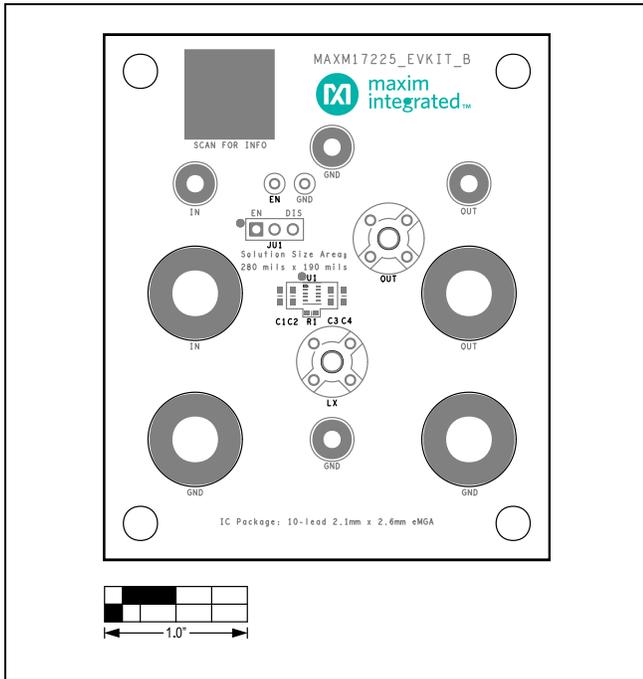
MAXM17225 EV Kit Schematic Diagram

MAXM17225 EV Kit Bill of Materials

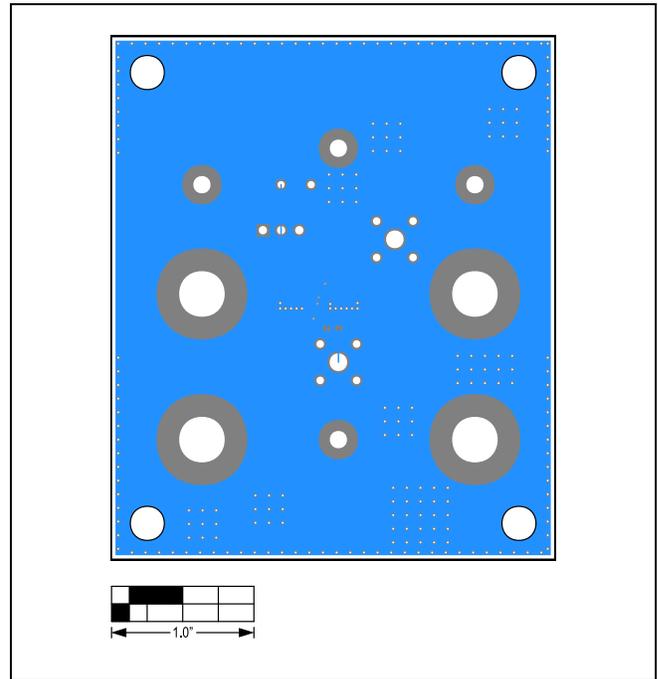
ITEM	QTY	REF DES	MAX INV#	MFG PART#	MFR	DESCRIPTION
1	2	C2, C3	20-0010U-R1A	CL10B106MQ8NRN	SAMSUNG ELECTRONICS	CAP; SMT (0603); 10UF; 20%; 6.3V; X7R; CERAMIC
2	1	EN	02-TPMINI5002-00	5002	KEYSTONE	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; WHITE;
3	4	GND, GND2, IN, OUT1	01-10807400011P-80	108-0740-001	EMERSON NETWORK POWER	CONNECTOR; MALE; PANELMOUNT; BANANA JACK; STRAIGHT; 1PIN
4	4	GND5, GND6, IN1, OUT2	02-15142-00	1514-2	KEYSTONE	TERMINAL; TURRET; PIN DIA = 0.090IN; TOTAL LENGTH=0.105IN, RECOMMENDED FOR 0.062" PCB
5	1	JU1	01-PEC03SAAN3P-21	PEC03SAAN	SULLINS	3- PIN BERG CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 3PINS, BLACK
6	2	LX, OUT	01-131435300-10	131-4353-00	TEKTRONICS	TEST POINT MINIATURE PROBE; STRAIGHT; 4PINS; NOTE: CUSTOM FOOTPRINT
7	1	R1	80-080K6-23	ERJ-2RKF8062	PANASONIC	RES; SMT (0402); 80.6K; 1%;
8	1	R6	ER111000004224	RC0603FR-070RL	YAGEO	RES; SMT (0603); 0; 1%; JUMPER;
9	1	SU1	02-JMPFS1100B-00	S1100-B; SX1100-B; STC02SYAN	KYCON; KYCON; SULLINS	TEST POINT; JUMPER; STR; TOTAL LENGTH=0.24IN; BLACK
10	1	TP1	02-TPMINI5001-00	5001	KEYSTONE	GND TEST POINT; BLACK, PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN;
11	1	U1	MAXM17225AMB+T	MAXM17225AMB+T	MAXIM INTEGRATED	EVKIT PART - IC; TINY 0.4V - 5.5V INPUT; 300nA IQ; 1A PEAK NANOPOWER BOOST MODULE
12	4	MH1-MH4	02-SOM35016H-00	9032	KEYSTONE	MACHINE FABRICATED; ROUND-THRU HOLE SPACER; NO THREAD; M3.5; 5/8IN; NYLON
13	1	PCB	MAXM17225EVK#EMGA	MAXM17225EVK#EMGA	MAXIM INTEGRATED	MAXM17225_EVKIT_REV B, BOOST MODULE MAXM17225
14	0**	C1, C4	20-0010U-R1A	CL10B106MQ8NRN	SAMSUNG ELECTRONICS	CAP; SMT (0603); 10UF; 20%; 6.3V; X7R; CERAMIC
TOTAL	24					

**DNP (Do not populate)

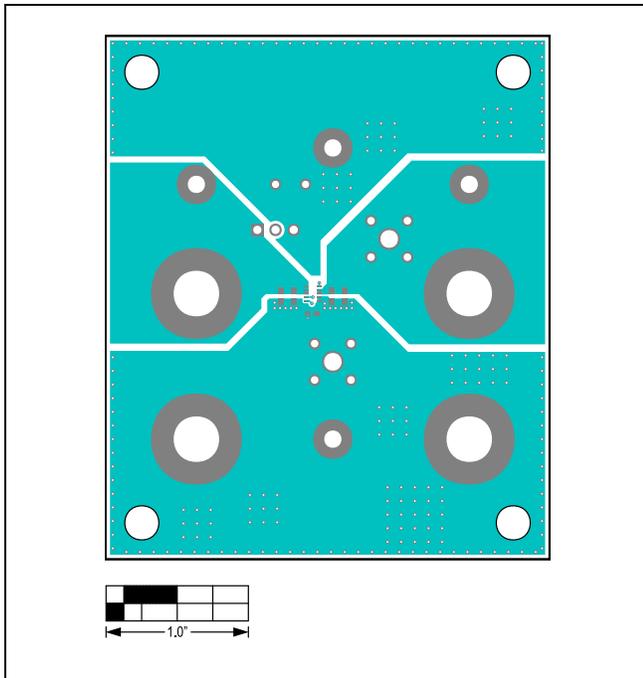
MAXM17225 EV Kit PCB Layout Diagrams



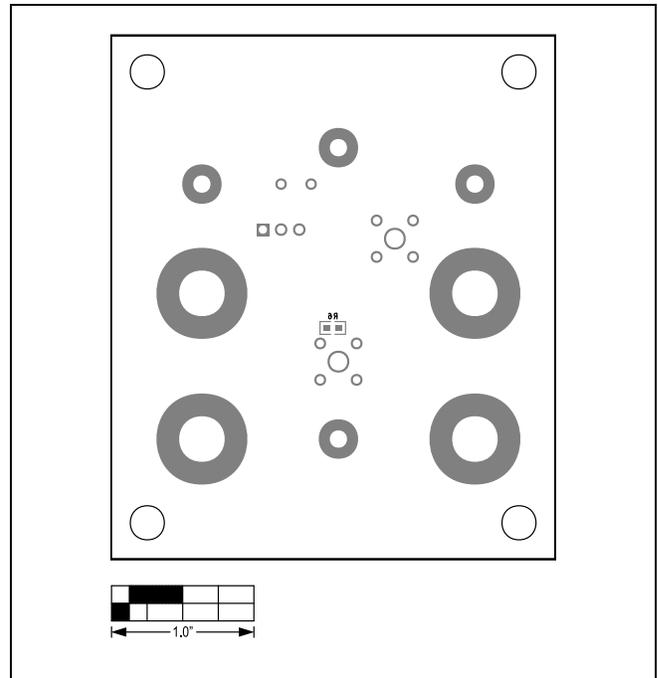
MAXM17225 EV Kit PCB Layout—Top Silkscreen



MAXM17225 EV Kit PCB Layout—Bottom View



MAXM17225 EV Kit PCB Layout—Top View



MAXM17225 EV Kit PCB Layout—Bottom Silkscreen

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	05/21	Release for Market Intro	—

For pricing, delivery, and ordering information, please visit Maxim Integrated's online storefront at <https://www.maximintegrated.com/en/storefront/storefront.html>.

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