Click here for production status of specific part numbers.

MAX17250 TDFN Evaluation Kit

Evaluates: MAX17250 in TDFN Package

General Description

The MAX17250 TDFN evaluation kit (EV kit) evaluates the MAX17250 IC in the TDFN package. The MAX17250 are high-efficiency, low quiescent current synchronous step-up DC-DC converters with True Shutdown™, programmable input current limit, and short-circuit protection. The MAX17250 EV kit operates over an input range of 2.7V to 18V, depending on load. The EV kit provides resistor-configurable output voltages from 3V to 18V. The input peak current limit can be set to 3.5A/2.7A/1.85A of current. The EV kit comes with the MAX17250ATD+ (TDFN) installed.

Features

- Evaluate the MAX17250 IC in a 14-Pin (3mm x 3mm) TDFN
- 2.7V to 18V Input Range
- 3V to 18V Configurable Output Voltage
- Up to 3.5A/2.7A/1.85A Input Peak Current
- Proven 4-Layer 1.5-oz Copper PCB Layout
- Demonstrates Compact Solution Size
- Fully Assembled and Tested

***Ordering Information* appears at end of data sheet.**

Quick Start

Required Equipment

- MAX17250 TDFN EV kit
- 18V, 5A DC power supply
- Electronic load capable of 2A
- Digital voltmeter (DVM)

Procedure

The EV kit is fully assembled and tested. Follow the steps below to verify board operation.

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

1) Verify that jumpers JU101 and JU102 are in their default positions, as shown in Table 1 and Table 2.
2) Connect the power supply between the IN and nearest PGND terminal posts.
3) Connect the electronic load between the OUT and nearest PGND terminal posts.
4) Connect the DVM between the OUT and nearest PGND terminal posts.
5) Set the power supply to 6V and turn it on.
6) Set the electronic load to 500mA at constant current mode, then enable the electronic load.
7) Verify that the voltage at the OUT terminal post is approximately 12V.

MAX17250 TDFN EV Kit Files

FILE	DECRIPTION
MAX17250 TDFN EV BOM	EV Kit Bill of Material
MAX17250 TDFN EV PCB Layout	EV Kit Layout
MAX17250 TDFN EV Schematic	EV Kit Schematic
MAX17250 TDFN Minimal Component Schematic	Minimal Component Circuit

319-100246; Rev 0; 8/18

maxim integrated™

Detailed Description of Hardware

The MAX17250 TDFN EV kit evaluates the MAX17250 IC in a TDFN package. The MAX17250 are high-efficiency, low quiescent current synchronous step-up DC-DC converters with True Shutdown, programmable input current limit and short-circuit protection. The MAX17250 TDFN EV kit operates over an input range of 2.7V to 18V, depending on load. The EV kit provides resistor-configurable output voltages from 3V to 18V. The inductor peak current limit can be set to 3.5A/2.7A/1.85A.

The EV Kit comes with the MAX17250ATD+ (TDFN) installed and is configured for a 12V output. The 12V output can deliver 720mA of current at 6V input.

EN

The MAX17250 TDFN EV kit provides a jumper JU101 to configure the EN pin of the MAX17250. Different settings of this jumper can simulate different controlling scenarios at the EN pin. Refer to Table 1 for JU101 jumper settings.

ISET

The MAX17250 TDFN EV kit provides a jumper JU102 to configure the ISET pin of the MAX17250. Different settings of this jumper set the input inductor peak current to a different value. Refer to Table 2 for JU102 jumper setting.

Spare Inductors

The MAX17250 TDFN EV Kit provides spare inductors on the PCB's solder side. These spare inductors can be used to reconfigure the EV Kit output current ratings.

Table 1. EN (JU101)

JU101 SHUNT POSITION	DESCRIPTION
1-2*	Enabled. EN = IN*R102/(R101 + R102)
1-3	External logic connected to EN test point (1.5V or higher = Enable, 0V = Disabled)
1-4	Disabled. EN = PGND
Not Installed	Disabled. EN = PGND through pulldown resistor R102.

**Default position.*

Table 2. ISET (JU102)

JU102 SHUNT POSITION	DESCRIPTION
1-2*	ISET = VL (Inductor Peak Current Limit set to 3.5A)
2-3	ISET = AGND (Inductor Peak Current Limit set to 2.7A)
Not Installed	ISET = OPEN (Inductor Peak Current Limit set to 1.85A)

**Default position.*

Component Suppliers

SUPPLIER	WEBSITE
Coilcraft	www.coilcraft.com
Murata/TOKO	www.murata.com
TDK	www.tdk.com
Wurth Elektronik	www.we-online.com

Note: *Indicate that you are using the MAX17250 when contacting these component suppliers.*

Ordering Information

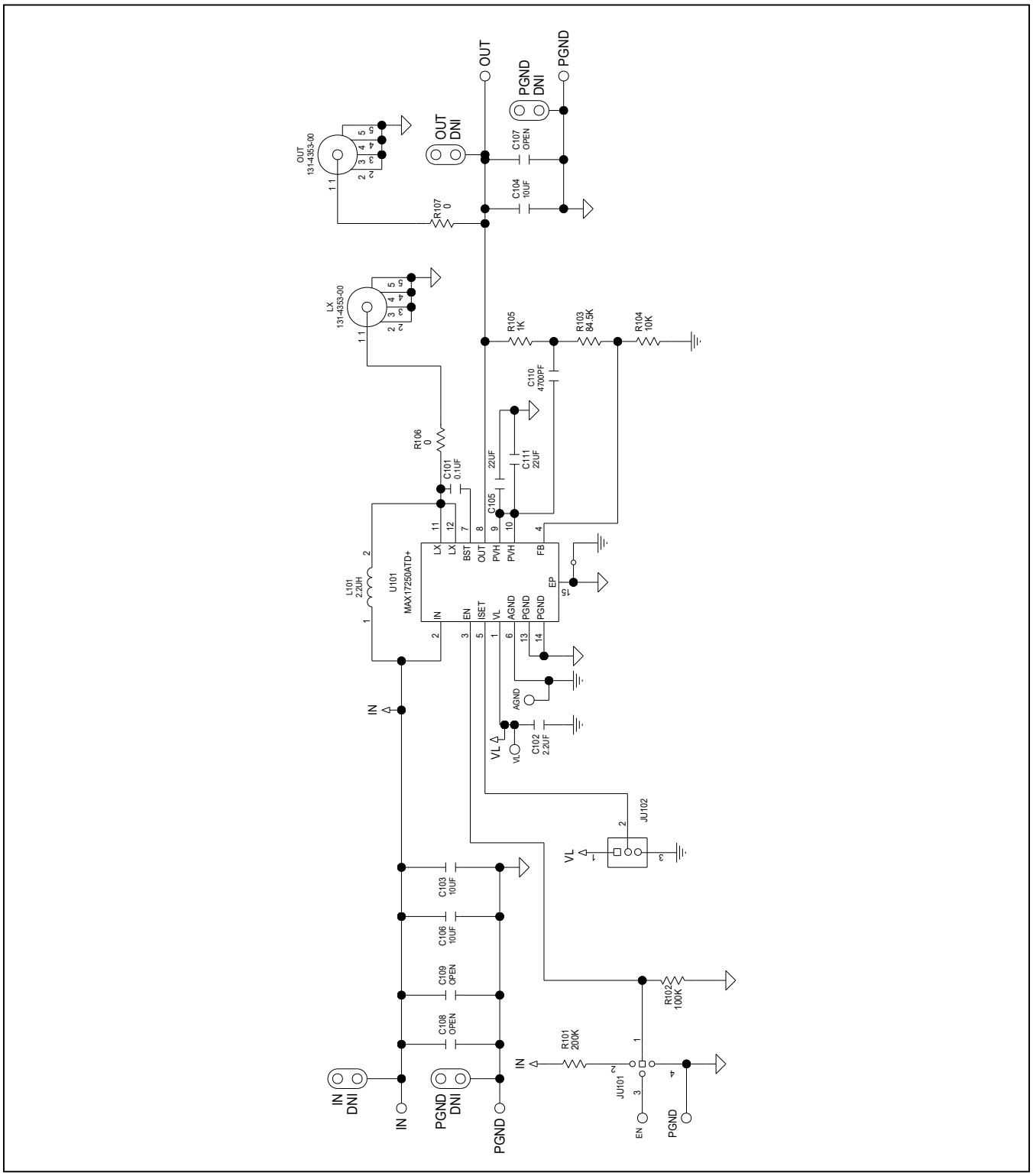
PART	TYPE
MAX17250EVKIT#TDFN	EV Kit

#Denotes RoHS

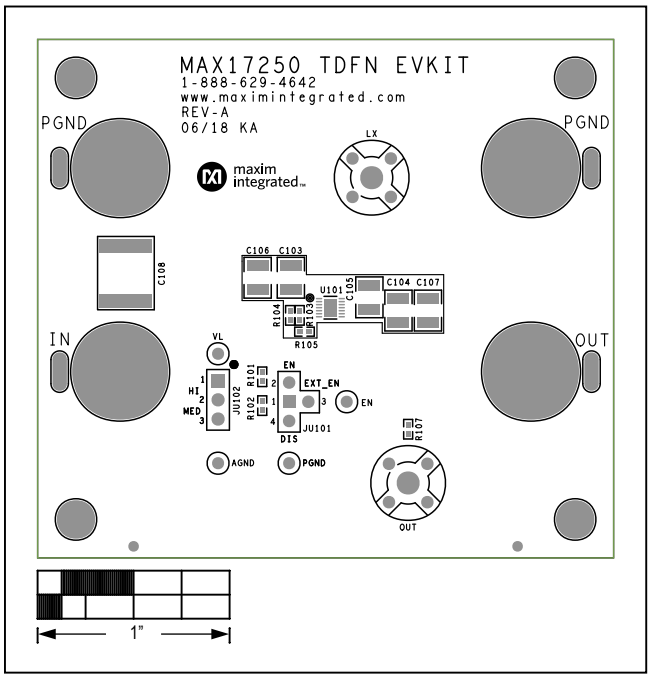
MAX17250 TDFN EV Kit Bill of Materials

ITEM	REF_DES	QTY	MFG PART #	MFG	VALUE	DESCRIPTION
1	C101	1	CGA2B3X7R1H104K; C1005X7R1H104K050BB; GRM155R71H104KE14; GCM155R71H104KE02	TDK;TDK; MURATA; MURATA	0.1UF	CAPACITOR; SMT (0402); CERAMIC CHIP; 0.1UF; 50V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7R
2	C102	1	TMK212B7225KG	TAIYO YUDEN	2.2UF	CAPACITOR; SMT (0805); CERAMIC CHIP; 2.2UF; 25V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7R
3	C103, C104, C106	3	C1210C106K3RAC; GRM32DR71E106K	KEMET; MURATA	10UF	CAPACITOR; SMT (1210); CERAMIC CHIP; 10UF; 25V; TOL=10%; MODEL=; TG=-55 DEGC TO +125 DEGC; TC=X7R
4	C105, C111	2	GRM32ER71E226KE15; CL32B226KAJNFN; CL32B226KAJNNW; TMK325B7226KM	MURATA; SAMSUNG ELECTRO-MECHANICS;TAIYO YUDEN	22UF	CAPACITOR; SMT (1210); CERAMIC CHIP; 22UF; 25V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7R
5	C110	1	GRM155R71E472KA01	MURATA	4700PF	CAPACITOR; SMT (0402); CERAMIC CHIP; 4700PF; 25V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7R
6	EN	1	5002	KEYSTONE	N/A	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; WHITE; PHOSPHOR BRONZE WIRE SILVER;
7	JU101	1	" 22-28-4043"	MOLEX	" 22-28-4043"	CONNECTOR; MALE; THROUGH HOLE; FLAT VERTICAL BREAKAWAY; STRAIGHT; 4PINS
8	JU102	1	PEC03SAAN	SULLINS	PEC03SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 3PINS
9	L1A	1	IHLP2020CZER1R5M11	VISHAY DALE	1.5UH	INDUCTOR; SMT; SHIELDED; 1.5UH; 20%; 7.5A
10	L1B	1	IHLP2020CZER3R3M11	VISHAY DALE	3.3UH	INDUCTOR; SMT; 3.3UH; TOL=+/-20%; 7A; -55 DEGC TO +125 DEGC
11	L1C	1	74438356033	WURTH ELECTRONICS INC	3.3UH	INDUCTOR; SMT; SHIELDED; 3.3UH; TOL=+/-20%; 3.6A
12	L101	1	IHLP2020CZER2R2M11	VISHAY DALE	2.2UH	INDUCTOR; SMT; SHIELDED; 2.2UH; 20%; 6.75A
13	LX, OUT	2	131-4353-00	TEKTRONICS	131-4353-00	CONNECTOR; WIREMOUNT; CIRCUIT BOARD TEST POINT MINIATURE PROBE; STRAIGHT; 4PINS;
14	R101	1	CRCW0402200KFK; RF73H1ELTP2003	VISHAY DALE;KOA SPEER ELECTRONICS	200K	RESISTOR; 0402; 200K; 1%; 100PPM; 0.0625W; THICK FILM
15	R102	1	CRCW0402100KFK; RC0402FR-07100KL	VISHAY DALE;YAGEO PHICOMP	100K	RESISTOR; 0402; 100K; 1%; 100PPM; 0.0625W; THICK FILM
16	R103	1	CRCW040284K5FK	VISHAY DALE	84.5K	RESISTOR; 0402; 84.5K OHM; 1%; 100PPM; 0.063W; METAL FILM
17	R104	1	CRCW040210K0FK; RC0402FR-0710K	VISHAY DALE;YAGEO PHICOMP	10K	RESISTOR; 0402; 10K; 1%; 100PPM; 0.0625W; THICK FILM
18	R105	1	MCR01MZPF1001	ROHM SEMICONDUCTOR	1K	RESISTOR; 0402; 1K OHM; 1%; 100PPM; 0.063W; THICK FILM
19	R106, R107	2	ERJ-2GE0R00X	PANASONIC	0	RESISTOR; 0402; 0 OHM; 0%; JUMPER; 0.10W; THICK FILM
20	SU101	1	S1100-B;SX1100-B	KYCON;KYCON	SX1100-B	TEST POINT; JUMPER; STR; TOTAL LENGTH=0.24IN; BLACK; INSULATION=PBT;PHOSPHOR BRONZE CONTACT=GOLD
21	U101	1	MAX17250ATD+	MAXIM	MAX17250ATD+	EVKIT PART - IC; CONV; 2.7V TO 18V; BOOST CONVERTER WITH 0.1MICROAMPERE TRUE SHUTDOWN; SHORT CIRCUIT PROTECTION AND SELECTABLE INPUT CURRENT LIMIT; PKG. OUTLINE: 21-0137; PKG. CODE: T1433-2C; LAND PATTERN: 90-
22	VL	1	5000	KEYSTONE	N/A	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; RED; PHOSPHOR BRONZE WIRE SILVER PLATE
23	X1, X2, X8, X9	4	108-0740-001	EMERSON NETWORK POWER	108-0740-001	CONNECTOR; MALE; PANELMOUNT; BANANA JACK; STRAIGHT; 1PIN
24	AGND, X3	2	5001	KEYSTONE	N/A	TESTPOINT;PINDIA=0.1IN;TOTALLENGTH=0.3IN;BOARDHOLE=0.04IN;BLACK;PHOSPHORBRONZEWIRESILVERPLATEFINISH;
25	PCB	1	MAX17250TDFN	MAXIM	PCB	PCB:MAX17250TDFN
26	C108, C109 DNP	0	N/A	N/A	OPEN	CAPACITOR; SMT (3025); OPEN; IPC MAXIMUM LAND PATTERN
27	C107 DNP	0	N/A	N/A	OPEN	CAPACITOR; SMT (1210); OPEN; IPC MAXIMUM LAND PATTERN
TOTAL		34				
NOTE: DNI--> DO NOT INSTALL(PACKOUT) ; DNP--> DO NOT PROCURE						

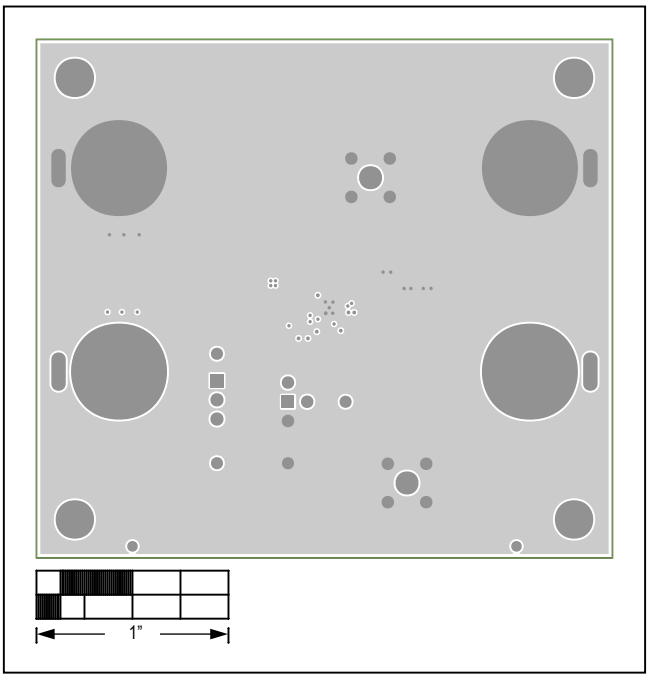
MAX17250 TDFN EV Kit Schematic



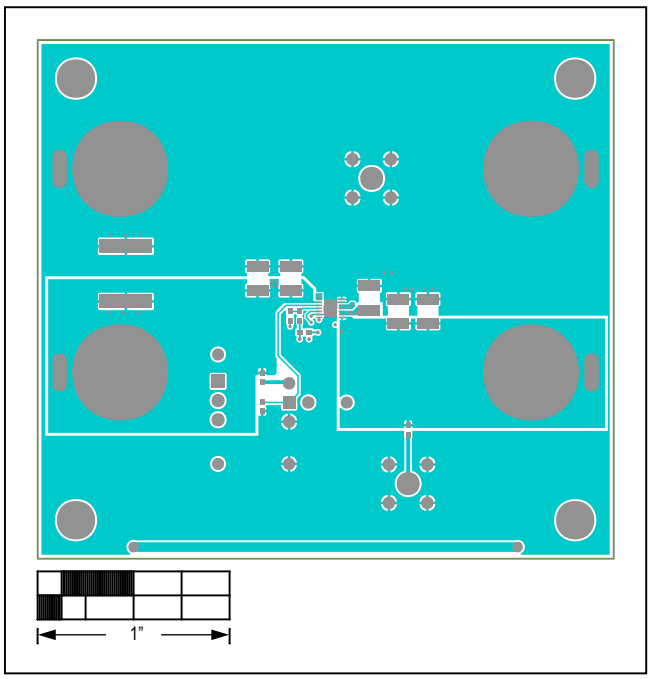
MAX17250 TDFN EV Kit PCB Layout Diagrams



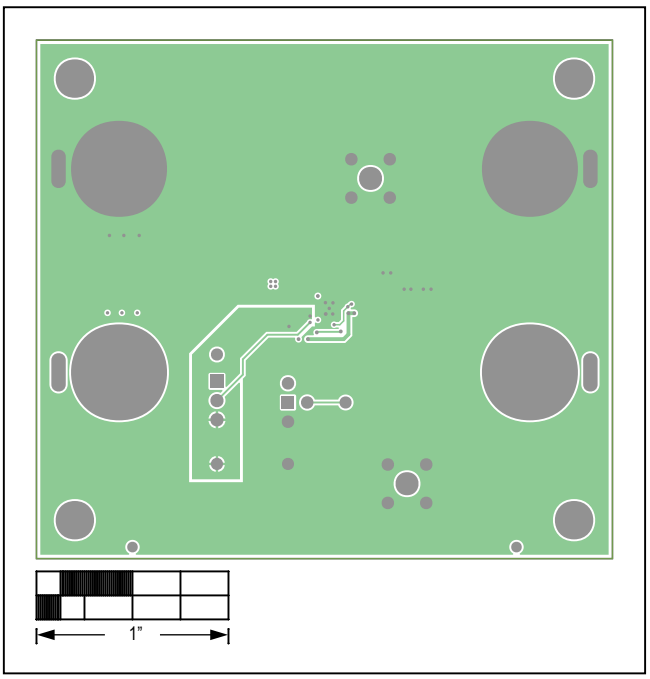
MAX17250 TDFN EV Kit—Top Silkscreen



MAX17250 TDFN EV Kit—Level 2 GND

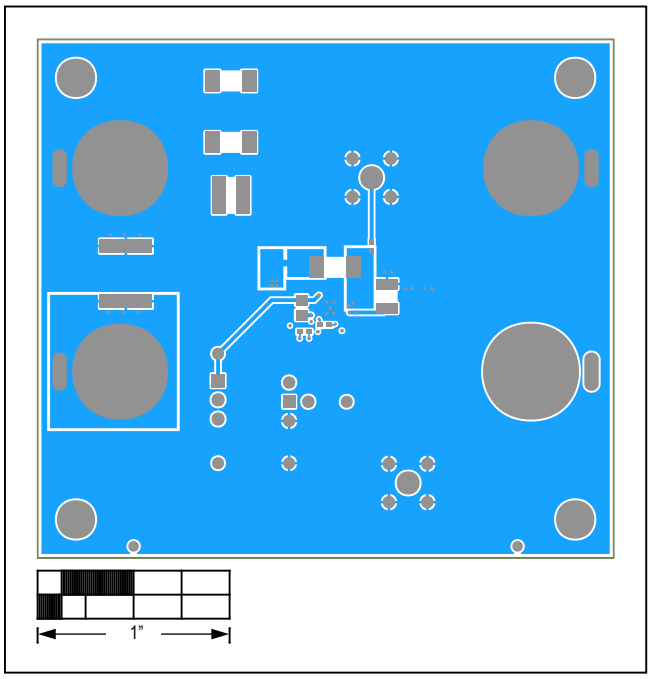


MAX17250 TDFN EV Kit—Top

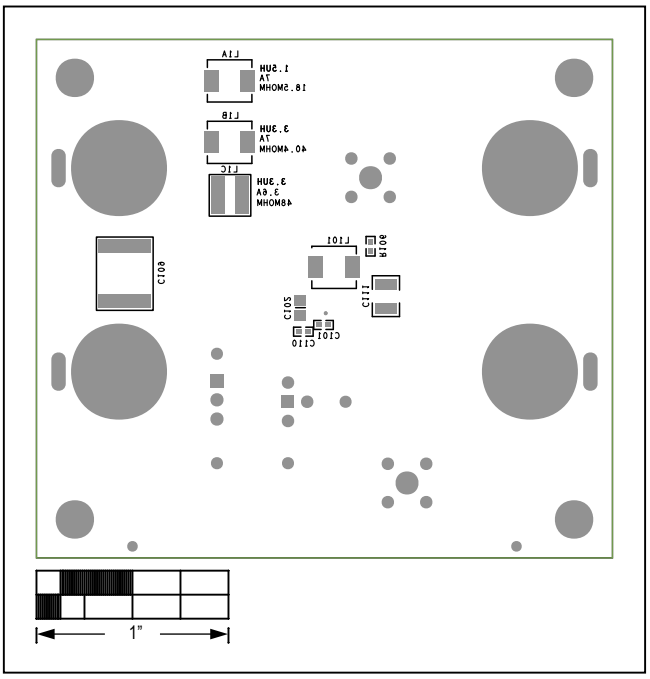


MAX17250 TDFN EV Kit—Level 3 POWER

MAX17250 TDFN EV Kit PCB Layout Diagrams (continued)



MAX17250 TDFN EV Kit—Bottom



MAX17250 TDFN EV Kit—Bottom Silkscreen

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	08/18	Initial release	—