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MAX17227J TDFN Evaluation Kit

Evaluates: MAX17227J

General Description

The MAX17227J TDFN evaluation kit (EV kit) evaluates the MAX17227J IC in a TDFN package. The MAX17227J is a nanoPower Boost converter with a 500mA peak inductor current limit and offers automatic pass-through operation when the input voltage is higher than the set output voltage. The EV kit operates over an input range of 400mV to 5.5V depending on load, with a 0.88V typical startup with 3kΩ load. The EV kit provides resistor configurable output voltages from 2.3V to 5.4V. Refer to the MAX17227J IC data sheet for output voltage settings. The EV kit comes with the MAX17227JATA+ installed.

Features and Benefits

- Evaluates the MAX17227J in an 8-pin TDFN Package
- 400mV to 5.5V Input Range
- 800mV Minimum Startup Voltage
- 2.3V to 5.4V Configurable Output Voltage
- Up to 300mA Output Current at 5.0V (V_{IN} > 3.6V)
- Proven 2-Layer 1oz Copper PCB Layout
- Demonstrates Compact Solution Size
- Fully Assembled and Tested

MAX17227J TDFN EV Kit Files

FILE	DESCRIPTION
MAX17227J TDFN EV BOM	EV Kit Bill of Material
MAX17227J TDFN EV PCB Layout	EV Kit PCB Layout
MAX17227J TDFN EV Schematic	EV Kit Schematic

Ordering Information *appears at end of data sheet.*

Quick Start

Required Equipment

- MAX17227J TDFN EV kit
- 400mV to 5.5V, 3A DC power supply
- Electronic load capable of 300mA
- Digital voltmeter (DVM)

Procedure

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

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

1. Verify that a shunt is installed on pins 1 and 2 of jumper JU1 (EV kit enable).
2. Verify that a shunt is installed on pins 1 and 5 of jumper JU2 (OUT = 5V).
3. Connect the power supply between the IN and the nearest GND terminal posts.
4. Connect the electronic load between the OUT and the nearest GND terminal posts.
5. Connect the DVM between the OUT and the nearest GND terminal posts.
6. Set the input power supply to 4V and turn on the power supply.
7. Set the electronic load to 300mA and turn on the electronic load.
8. Verify that the voltage at the OUT terminal post is approximately 5V.

EV Kit Photo

319-100874; Rev 0; 1/22

ANALOG DEVICES

Detailed Description of Hardware

The MAX17227J TDFN EV kit evaluates the MAX17227J in a TDFN package. The MAX17227J is a nanoPower boost converter with a 500mA peak inductor current limit and has an Automatic Pass-Through mode when the input voltage is higher than the set output voltage. The EV kit operates over an input range of 400mV to 5.5V depending on load, with 0.88V typical startup with a 3kΩ load. The EV kit provides resistor-configurable output voltages from 2.3V to 5.4V. The EV kit comes with the MAX17227JATA+ installed.

EN

The MAX17227J TDFN EV kit provides a jumper JU1 to enable or disable the MAX17227J. See Table 1 for jumper JU1 settings. Note that for the MAX17227J IC version, the input will automatically pass through to the output when the input voltage is higher than the set output voltage.

Table 1. EN (JU1)

SHUNT POSITION	DESCRIPTION
1-2*	EN = IN (EV kit enabled)
2-3	EN = GND (EV kit disabled)
Not Installed	EN is driven by an external TTL voltage source connected between the EN and GND test point • EN = High (EV kit enabled) • EN = Low (EV kit disabled)

*Default Position

Output Voltage Selection

The MAX17227J TDFN EV kit provides a jumper JU2 to select the output voltage of the MAX17227J. See *Table 2* for jumper JU2 settings.

Table 2. Output Voltage Selection (JU2)

SHUNT POSITION	DESCRIPTION
1-2	OUT = 2.5V
1-3	OUT = 3.0V
1-4	OUT = 4.0V
1-5*	OUT = 5.0V
Not Installed	Output voltage is configured by resistor R1. Refer to the MAX17227J IC Data Sheet RSEL Selection Table to select the resistor value for the desired output voltage

*Default Position

Ordering Information

PART	TYPE
MAX17227JEVK#TDFN	EV Kit

#Denotes RoHS-compliant.

Component Supplier

SUPPLIER	WEBSITE
Murata/TOKO	www.murata.com
Wurth Electronics	www.we-online.com

Note: indicate that you are using the MAX17227J when contacting these component suppliers.

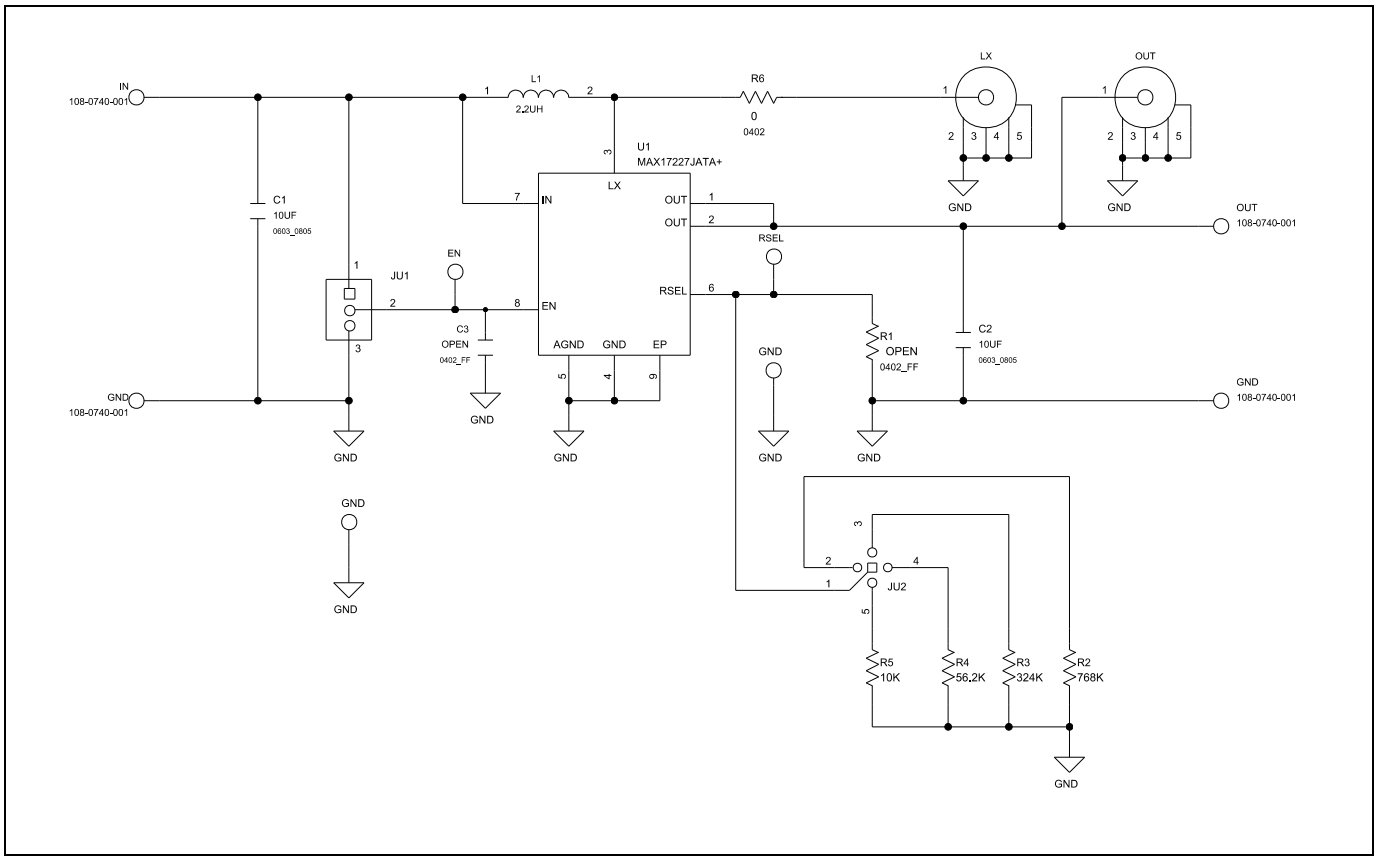
MAX17227J TDFN EV Kit Bill of Materials

ITEM	REF_DES	QTY	MFG PART #	MANUFACTURER	DESCRIPTION
1	C1, C2*	2	GRM188Z71A106KA73 GRM21BR71A106KA73L	MURATA MURATA	CAP; SMT (0603); 10UF; 10%; 10V; X7R; CERAMIC; CAP; SMT (0805); 10UF; 10%; 10V; X7R; CERAMIC;
2	EN, RSEL	2	5002	KEYSTONE	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; WHITE; PHOSPHOR BRONZE WIRE SILVER;
3	GND, GND2, IN, OUT1	4	108-0740-001	EMERSON NETWORK POWER	CONNECTOR; MALE; PANELMOUNT; BANANA JACK; STRAIGHT; 1PIN
4	GND3, GND4	2	5001	KEYSTONE	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
5	JU1	1	PEC03SAAN	SULLINS	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 3PINS
6	JU2	1	PBC05SAAN	SULLINS ELECTRONICS CORP.	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 5PINS; -65 DEGC TO +125 DEGC
7	L1	1	74479276222	WURTH ELECTRONICS INC.	INDUCTOR; SMT (0806); MOLDED CHIP; 2.2UH; 30%; 1.40A
8	LX, OUT	2	131-4353-00	TEKTRONICS	CONNECTOR; WIREMOUNT; CIRCUIT BOARD TEST POINT MINIATURE PROBE; STRAIGHT; 4PINS;
9	R2	1	CRCW0603768KFK	VISHAY DALE	RES; SMT (0603); 768K; 1%; +/-100PPM/DEGC; 0.1000W
10	R3	1	CRCW0603324KFK	VISHAY DALE	RES; SMT (0603); 324K; 1%; +/-100PPM/DEGC; 0.1000W
11	R4	1	CRCW060356K2FK; ERJ-3EKF5622	VISHAY; PANASONIC	RES; SMT (0603); 56.2K; 1%; +/-100PPM/DEGC; 0.1000W
12	R5	1	CRCW060310K0FK; ERJ-3EKF1002; AC0603FR-0710KL; RMCF0603FT10K0	VISHAY DALE; PANASONIC; YAGEO	RES; SMT (0603); 10K; 1%; +/-100PPM/DEGC; 0.1000W
13	R6	1	ERJ-2GE0R00	PANASONIC	RES; SMT (0402); 0; JUMPER; JUMPER; 0.1000W
14	SU1, SU2	2	S1100-B;SX1100-B; STC02SYAN	KYCON; KYCON; SULLINS ELECTRONICS CORP.	TEST POINT; JUMPER; STR; TOTAL LENGTH=0.24IN; BLACK; INSULATION=PBT;PHOSPHOR BRONZE CONTACT=GOLD PLATED
15	U1	1	MAX17227JATA+	MAXIM	IC; CONV; NANOPOWER BOOST CONVERTER WITH SHORT-CIRCUIT PROTECTION AND AUTOMATIC PASS-THROUGH MODE; TDFN8-EP
16	PCB	1	MAX17227JTDFN	MAXIM	PCB:MAX17227JTDFN
17	C3	0	N/A	N/A	CAPACITOR; SMT, 0402; OPEN; FORMFACTOR

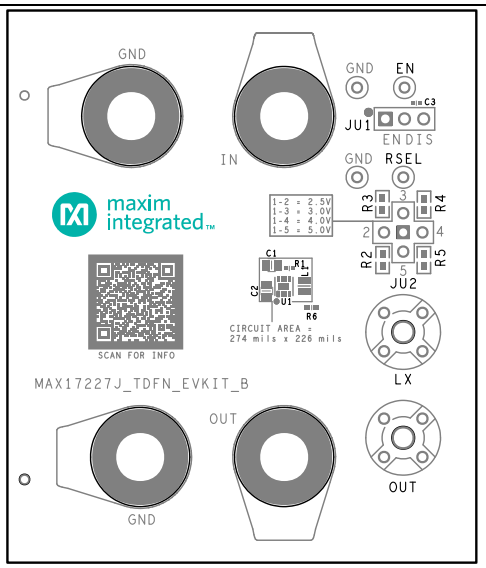
18	R1	0	N/A	N/A	RESISTOR; SMT, 0402; OPEN; FORMFACTOR
Total		24			

*C1 and C2 footprints can accommodate both (0603) and (0805) ceramic capacitors. C1 and C2 can be replaced with the Murata GRM21BR71A106KA73L if an (0805) footprint is required.

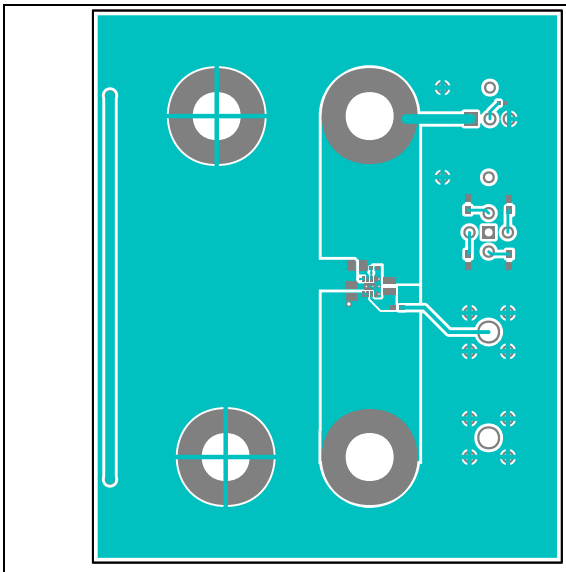
MAX17227J TDFN EV Kit Schematic



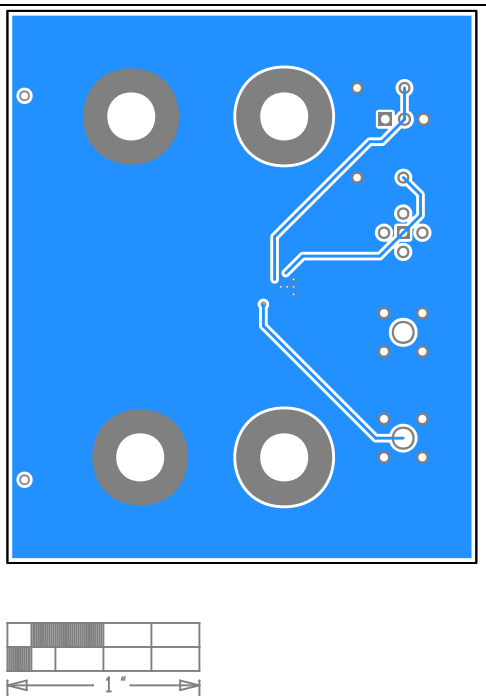
MAX17227J TDFN EV Kit PCB Layout



MAX17227J TDFN EV Kit PCB Layout—Top Silkscreen



MAX17227J TDFN EV Kit PCB Layout—Top



MAX17227J TDFN EV Kit PCB Layout—Bottom

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Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	1/22	Initial Release	—