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MAX17291 TDFN Evaluation Kit

Evaluates: MAX17291 in TDFN Package

General Description

The MAX17291 TDFN evaluation kit (EV kit) evaluates the MAX17291 IC in the TDFN package. The MAX17291 is a low quiescent current boost (step-up) DC-DC converter with a 1A peak inductor current limit, TrueShutdown™, and short-circuit protection. The MAX17291 EV kit operates over an input range of 1.8V to 5.5V and provides resistor-configurable output voltages from 5.5V to 20V. The EV kit comes with the MAX17291ATA+ (TDFN) installed.

Benefits and Features

- Evaluates the MAX17291 IC in an 8-pin (2mm x 2mm) TDFN
- 1.8V to 5.5V Input Range
- 5.5V to 20V Configurable Output Voltage
- Up to 1A Input Peak Current
- Proven 2-Layer, 2oz Copper PCB Layout
- Demonstrates Compact Solution Size
- Fully Assembled and Tested

MAX17291 TDFN EV Kit Files

FILE	DESCRIPTION
MAX17291 TDFN EV BOM	EV Kit Bill of Materials
MAX17291 TDFN EV PCB Layout	EV Kit Layout
MAX17291 TDFN EV Schematic	EV Kit Schematic

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

Quick Start

Required Equipment

- MAX17291 TDFN EV Kit
- 1.8V to 5.5V, 5A DC Power Supply
- Electronic Load Capable of 310mA
- 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 a shunt is installed on pins 1 and 2 of jumpers JU1 (EV kit enabled).
2) Verify that a shunt is installed on pins 1 and 2 of jumpers JU2 (POK pulled up to IN through R6).
3) Connect the power supply between the IN and nearest GND terminal posts.
4) Connect the electronic load between the OUT and nearest GND terminal posts.
5) Connect the DVM between the OUT and nearest GND terminal posts.
6) Set the power supply to 5.5V and turn it on.
7) Set the electronic load to 310mA at constant current mode, then enable the electronic load.
8) Verify that the voltage at the OUT terminal post is approximately 12V.

319-100611; Rev 0; 10/20

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Detailed Description of Hardware

The MAX17291 TDFN EV kit evaluates the MAX17291 IC in a TDFN package. The MAX17291 is a high efficiency, low quiescent current, step-up DC-DC converter with TrueShutdown and short-circuit protection. True Shutdown disconnects the output from the input with no forward or reverse current. The MAX17291 TDFN EV kit operates over an input range of 1.8V to 5.5V. The EV kit provides resistor-configurable output voltages from 5.5V to 20V.

The EV kit comes with the MAX17291ATA+ (TDFN) installed and is configured for a 12V output. The 12V output can deliver 310mA of current at 5.5V input.

EN

The MAX17291 TDFN EV kit provides a jumper JU1 to enable or disable the MAX17291. Refer to Table 1 for JU1 jumper settings.

Table 1. EN (JU1) Jumper Settings

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

**Default position*

Power OK (POK)

The MAX17291 features a power-ok (POK) output to indicate the device regulation status. The POK is open-drain and requires a pullup resistor between 10kΩ to 100kΩ. The EV kit provides a jumper JU2 to select a pullup voltage source for POK. See Table 2 for jumper JU2 setting.

Table 2. POK (JU2) Jumper Settings

SHUNT POSITION	DESCRIPTION
1-2*	POK pulled up to IN through R6 (100kΩ).
2-3	POK pulled up to OUT through R7 (100kΩ). Install an appropriate resistor value onto R5 to properly bias D1.
Not Installed	POK pulled up to an external voltage source (between 0V to 5.5V) through an external resistor (between 10kΩ and 100kΩ).

**Default position*

Component Suppliers

SUPPLIER	WEBSITE
Murata/TOKO	www.murata.com
Nexperia	www.nexperia.com
Nichicon	www.nichicon-us.com
Taiyo Yuden	www.ty-top.com

Note: *Indicate that you are using the MAX17291 when contacting these component suppliers.*

Ordering Information

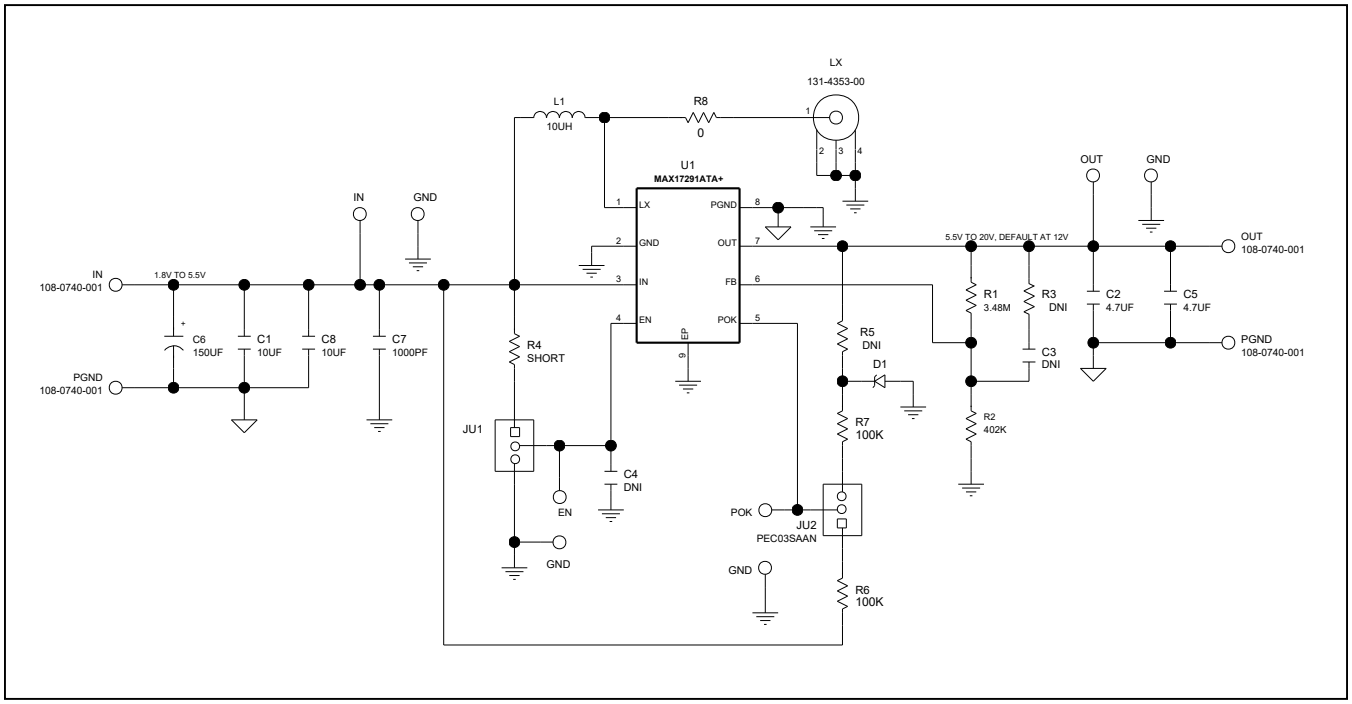
PART	TYPE
MAX17291EVK#TDFN	EV Kit

#Denotes RoHS compliant.

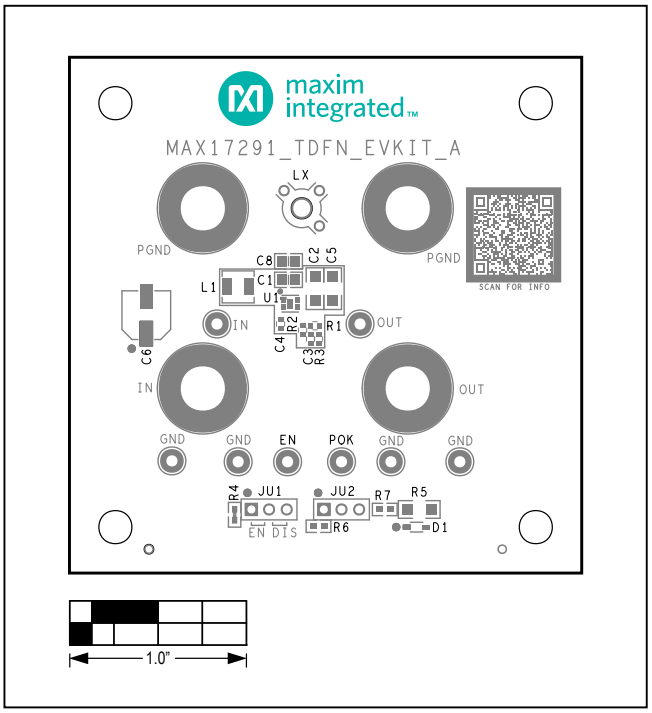
MAX17291 TDFN EV Kit Bill of Materials

ITEM	REF_DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
1	C1, C8	—	2	CL21B106KPQNNN; LMK212AB7106KG; C0805X106K8RACAUTO; GRM21BR71A106KA73; C2012X7R1A106K125AC	SAMSUNG; TAIYO YUDEN; KEMET; MURATA;TDK	10µF	CAP; SMT (0805); 10µF; 10%; 10V; X7R; CERAMIC CHIP
2	C2, C5	—	2	GRM31CR71H475KA12; GRJ31CR71H475KE11; GXM31CR71H475KA10; UMK316AB7475KL	MURATA;MURATA; MURATA; TAIYO YUDEN	4.7µF	CAPACITOR; SMT (1206); CERAMIC CHIP; 4.7µF; 50V; TOL = 10%; MODEL = ; TG = -55°C TO +125°C; TC = X7R
3	C6	—	1	UWJ0J151MCL	NICHICON	150µF	CAP; SMT; 150µF; 20%; 6.3V; ALUMINUM-ELECTROLYTIC
4	C7	—	1	GRM155R71H102JA01; GCM155R71H102JA37	MURATA; MURATA	1000PF	CAPACITOR; SMT (0402); CERAMIC CHIP; 1000PF; 50V; TOL = 5%; MODEL = GRM SERIES; TG = -55°C TO +125°C; TC = X7R
5	D1	—	1	PESD5V0U1UA	NEXPERIA	5V	DIODE; TVS; SMT (SOD-323); VRM = 5V
6	EN, POK, TP3, TP5	—	4	5012	KEYSTONE	N/A	TEST POINT; PIN DIA = 0.125IN; TOTAL LENGTH = 0.445IN; BOARD HOLE = 0.063IN; WHITE; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
7	IN, OUT, PGND, PGND1	—	4	108-0740-001	EMERSON NETWORK POWER	108-0740-001	CONNECTOR; MALE; PANELMOUNT; BANANA JACK; STRAIGHT; 1PIN
8	JU1, JU2	—	2	PEC03SAAN	SULLINS	PEC03SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 3PINS
9	L1	—	1	FDSD0420-H-100M	MURATA	10µH	INDUCTOR; SMT; SHIELDED; 10µH; 20%; 1.7A
10	LX	—	1	131-4353-00	TEKTRONICS	131-4353-00	CONNECTOR; WIREMOUNT; CIRCUIT BOARD TEST POINT MINIATURE PROBE; STRAIGHT; 4PINS
11	MH1-MH4	—	4	9032	KEYSTONE	9032	MACHINE FABRICATED; ROUND-THRU HOLE SPACER; NO THREAD; M3.5; 5/8IN; NYLON
12	R1	—	1	CRCW06033M48FK	VISHAY	3.48M	RES; SMT (0603); 3.48M; 1%; ±100PPM/°K; 0.1W
13	R2	—	1	CRCW06034023FK; ERJ-3EKF4023	VISHAY; PANASONIC	402K	RESISTOR; 0603; 402KΩ; 1%; 100PPM; 0.10W; THICK FILM
14	R6, R7	—	2	ERA-3AEB104; AT0603BRD07100KL	PANASONIC; YAGEO	100K	RESISTOR; 0603; 100KΩ; 0.1%; 25PPM; 0.1W; THIN FILM
15	R8	—	1	ERJ-2GE0R00	PANASONIC	0	RESISTOR; 0402; 0Ω; 0%; JUMPER; 0.10W; THICK FILM
16	SU1, SU2	—	2	2SN-BK-G	SAMTEC	2SN-BK-G	TEST POINT; JUMPER; STR; TOTAL LENGTH = 0.175IN; BLACK; INSULATION = PBT;PHOSPHOR BRONZE CONTACT = GOLD PLATED
17	TP1, TP2, TP4, TP6	—	4	5011	KEYSTONE	N/A	TEST POINT; PIN DIA = 0.125IN; TOTAL LENGTH = 0.445IN; BOARD HOLE = 0.063IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
18	U1	—	1	MAX17291ATA+	MAXIM	MAX17291ATA+	EVKIT PART-IC; MAX17291ATA+; HIGH-VOLTAGE MICROPOWER BOOST CONVERTER; PACKAGE OUTLINE: 21-0168; PACKAGE CODE: T822+3C; TDFN8-EP
19	PCB	—	1	MAX17291TDFN	MAXIM	PCB	PCB:MAX17291TDFN
20	C3, C4	DNP	0	N/A	N/A	OPEN	CAPACITOR; SMT (0603); OPEN; FORMFACTOR
21	R3	DNP	0	N/A	N/A	OPEN	RESISTOR; 0603; OPEN; FORMFACTOR
22	R5	DNP	0	CRCW12060000ZS; ERJ-8GEY0R00	VISHAY DALE; PANASONIC	0	RESISTOR; 1206; 0Ω; 0%; JUMPER; 0.25W; THICK FILM
23	R4	DNP	0	N/A	N/A	SHORT	PACKAGE OUTLINE 0603 RESISTOR
TOTAL			36				

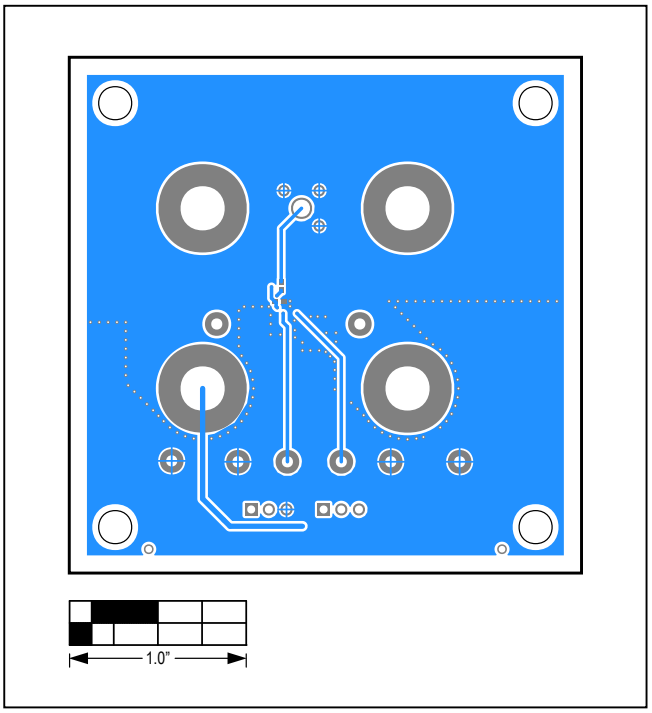
MAX17291 TDFN EV Kit Schematic Diagram



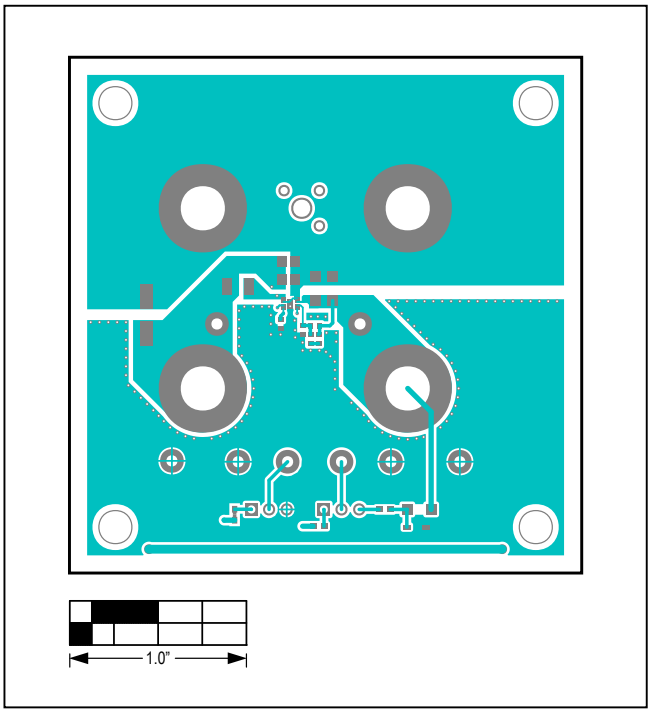
MAX17291 TDFN EV Kit PCB Layout Diagrams



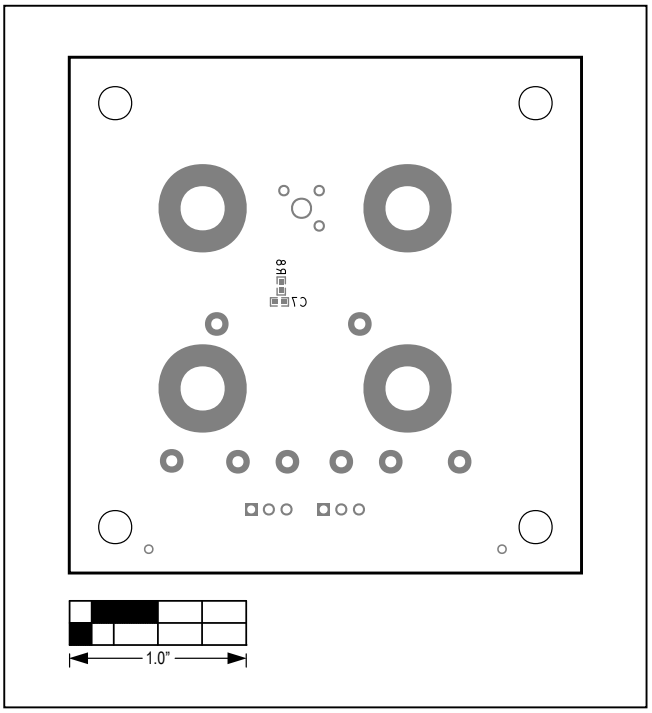
MAX17291 TDFN EV Kit PCB Layout—Top Silkscreen



MAX17291 TDFN EV Kit PCB Layout—Bottom View



MAX17291 TDFN EV Kit PCB Layout—Top View



MAX17291 TDFN EV Kit PCB Layout—Silkscreen Bottom

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	10/20	Initial release	—