Click here to ask about the production status of specific part numbers.

MAX25301 Evaluation Kit

Evaluates: MAX25301A/MAX25301B

General Description

The MAX25301 evaluation kit (EV kit) evaluates the MAX25301A/MAX25301B IC family of low noise linear regulators. The EV kit operates over an input range of 1.7V to 5.5V, provides any output voltage range from 0.6V to 5.3V, and delivers up to 1A of current. The EV kit comes with the MAX25301BATB/V+ installed.

Features

- Evaluates the MAX25301A/MAX25301B IC in a 10-pin (3mm x 3mm) TDFN
- 1.7V to 5.5V Input Range
- 0.6V to 5.3V Resistor-Configurable Output Voltage (MAX25301B, On Board with Output Set to 3.3V)
- 1.2V to 5.0V Jumper-Configurable Output Voltage (MAX25301A, with IC Replacement)
- Up to 1A Output Current
- Proven 2-Layer 1oz Copper PCB Layout
- Demonstrates Compact Solution Size
- Fully Assembled and Tested

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

Quick Start

Required Equipment

- MAX25301 EV kit
- 5.5V, 1A DC power supply
- Electronic load capable of 1A
- Digital voltmeter (DVM)

Procedure

The EV kit is fully assembled and tested. To verify board operation, follow the steps:

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

1) Verify that jumpers JU101, SELA and SELB are in their default positions, as shown in Tables 1, 2, and 3.
2) Connect the 5.5V power supply between the IN and nearest GND terminal posts.
3) Connect the 1A electronic load between the OUT and nearest GND terminal posts.
4) Connect the DVM between the OUT and nearest GND terminal posts.
5) Turn on the power supply.
6) Enable the electronic load.
7) Verify that the voltage at the OUT terminal post is approximately 3.3V.

MAX25301 EV Kit Files

FILE	DECRIPTION
MAX25301 EV Kit BOM	EV Kit Bill of Material
MAX25301 EV Kit PCB Layout	EV Kit Layout
MAX25301 EV Kit Schematic	EV Kit Schematic

319-100571; Rev 0; 8/20

maxim integrated™

Detailed Description of Hardware

The MAX25301 EV kit evaluates the MAX25301A/MAX25301B IC family. The MAX25301A/MAX25301B are low noise linear regulators that deliver 1A of output current with only $12uV_{RMS}$ of output noise from 10Hz to 100kHz. These regulators require only 100mV of input-to-output headroom at full load.

The MAX25301 EV kit operates over an input range of 1.7V to 5.5V. The EV kit comes with the MAX25301BATB/V+ installed and the output voltage is resistor configured to 3.3V and can deliver 1A of current. The output voltage on the MAX25301B can be reconfigured to other voltages from 0.6V to 5.3V by replacing feedback resistors R101 and R102. Refer to the MAX25301 IC data sheet for feedback resistor calculation.

EN for the MAX25301A/MAX25301B

The EV kit provides a jumper JU101 to enable or disable the MAX25301B (or the MAX25301A after IC replacement). See Table 1 for jumper setting of jumper JU101.

GS for the MAX25301B

When evaluating the MAX25301B, the Ground Sense (GS) pin must be connected to ground to stabilize the output with load. The EV kit provides a jumper SELA to connect the MAX25301B GS pin to ground. See Table 2 for jumper setting of jumper SELA.

POK for the MAX25301B

The EV kit provides a test point to access the POK output signal from the MAX25301B. Remove shunt from jumper SELB to access the MAX25301B POK test point. See Table 3 for jumper setting of jumper SELB.

Table 1. EN on MAX25301A/MAX25301B (JU101)

JU101 SHUNT POSITION	DESCRIPTION
1-2*	Enabled. EN = IN
2-3	Disabled. EN = GND

**Default position.*

Table 2. GS on MAX25301B (SELA)

SELA SHUNT POSITION	DESCRIPTION
1-2	Not allowed (for MAX25301A output selection)
2-3*	GS = GND

**Default position.*

Table 3. POK on MAX25301B (SELB)

SELA SHUNT POSITION	DESCRIPTION
1-2	Not allowed (for MAX25301A output selection)
2-3	Not allowed (for MAX25301A output selection)
Not Installed*	Access signal at the POK test point

**Default position.*

Evaluating the MAX25301A

The EV kit can evaluate the MAX25301A after IC (U1) replacement. When evaluating the MAX25301A, modify the EV kit with the following steps:

1) Replace U1 with the MAX25301AATB/V+.
2) Replace R101 with a 0Ω resistor.
3) Remove R102.
4) See Table 4 to configure the MAX25301A output voltage using jumpers SELA and SELB.

Output Selection (SELA and SELB) for the MAX25301A

The EV kit provides a set of jumpers SELA and SELB to configure the output voltage of the MAX25301A, after IC (U1) replacement. See Table 4 for jumper setting of jumpers SELA and SELB.

Table 4. SELA and SELB on MAX25301A (SELA, SELB)

SELA		SELB		OUTPUT VOLTAGE
SHUNT POSITION	SELA CONNECTION	SHUNT POSITION	SELB CONNECTION	
Not Installed	Hi-Z	1-2	IN	1.2
1-2	IN	Not Installed	Hi-Z	1.5
Not Installed	Hi-Z	2-3	GND	1.8
Not Installed	Hi-Z	Not Installed	Hi-Z	2.5
2-3	GND	2-3	GND	3.0
2-3	GND	1-2	IN	3.1
2-3	GND	Not Installed	Hi-Z	3.3
1-2	IN	2-3	GND	4.0
1-2*	IN	1-2*	IN	5.0

**Default position.*

Component Suppliers

SUPPLIER	WEBSITE
Murata/TOKO	www.murata.com
TDK	www.tdk.com
Samsung Electro-Mechanics America, Inc.	www.samsungsem.com

Note: *Indicate that you are using the MAX25301A/MAX25301B when contacting these component suppliers.*

Ordering Information

PART	TYPE
MAX25301EVKIT#	EV Kit

#Denotes RoHS compliant.

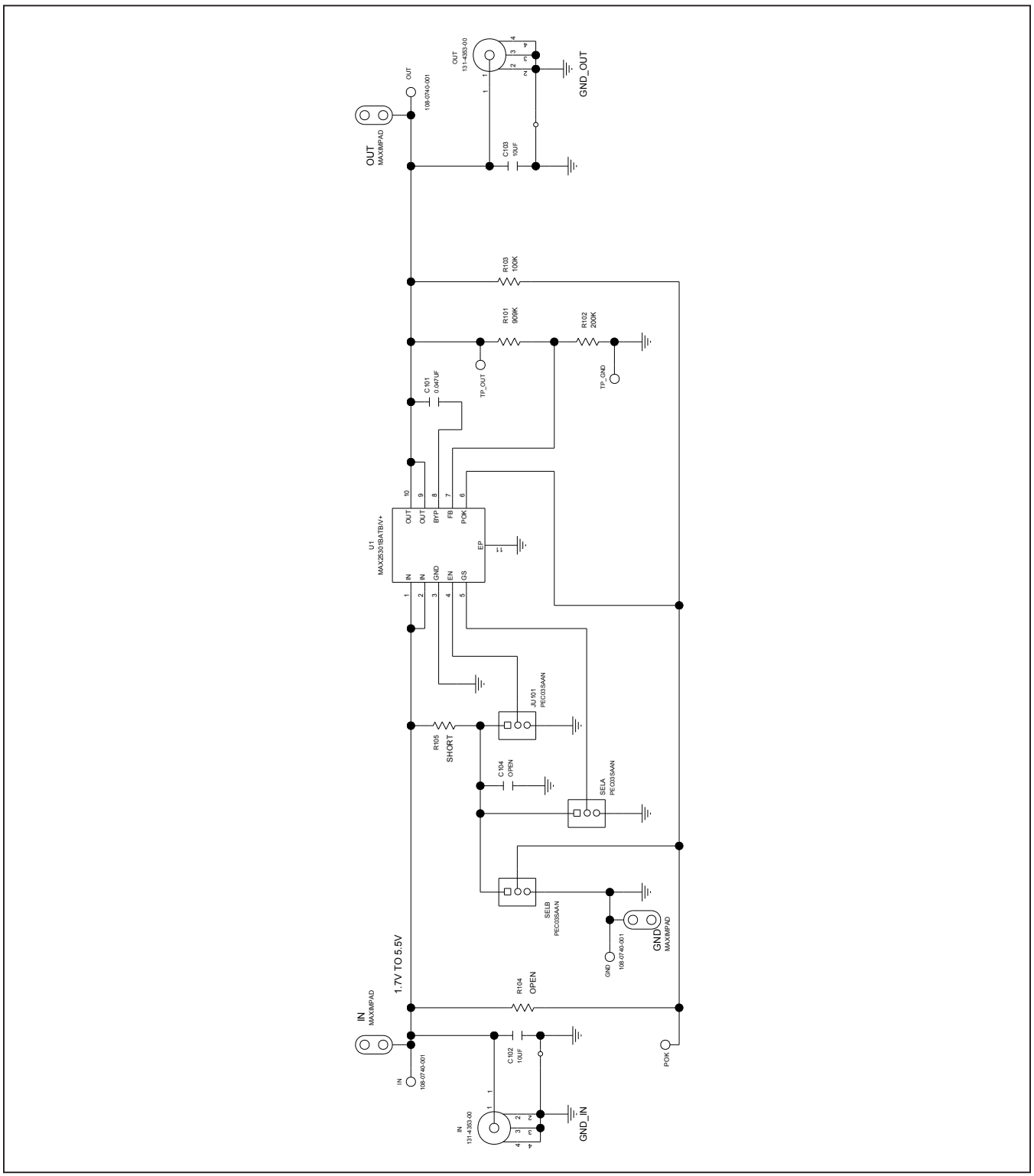
MAX25301 EV Kit Bill of Materials

ITEM	QTY	REF DES	VAR STATUS	MAXINV	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION	COMMENTS
1	1	C101	Pref	20-0U047-91	C0603C473K5RAC; GRM188R71H473KA61; GCM188R71H473KA55; CGA3E2X7R1H473K080AA	KEMET;MURATA;MURATA;TDK	0.047UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 0.047UF; 50V; TOL=10%; MODEL=X7R; TG=-55 DEGC TO +125 DEGC; TC=X7R	
2	2	C102, C103	Pref	20-0010U-R1A	CL10B106MQ8NRN	SAMSUNG ELECTRONICS	10UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 10UF; 6.3V; TOL=20%; MODEL=CL SERIES; TG=-55 DEGC TO +125 DEGC; TC=X7R	
3	3	GND, IN, OUT	Pref	01-10807400011P-80	108-0740-001	EMERSON NETWORK POWER	108-0740-001	CONNECTOR; MALE; PANELMOUNT; BANANA JACK; STRAIGHT; 1PIN	
4	3	GND_PAD, IN_PAD, OUT_PAD	Pref	01-9020BUSS20AWG-00	9020 BUSS	WEICO WIRE	MAXIMPAD	EVK KIT PARTS; MAXIM PAD; WIRE; NATURAL; SOLID; WEICO WIRE; SOFT DRAWN BUS TYPE-S; 20AWG	
5	3	JU101, SELA, SELB	Pref	01-PEC03SAAN3P-21	PEC03SAAN	SULLINS	PEC03SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 3PINS	
6	1	POK	Pref	02-TPMINI5002-00	5002	KEYSTONE	N/A	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; WHITE; PHOSPHOR BRONZE WIRE SILVER; NOT FOR COLD TEST ;NOTE: SET TO OBSOLETE DUE TO CORRECTION IN STEP MODEL COLOR	
7	1	R101	Pref	80-0909K-AA4	CRCW0603909KFK	VISHAY DALE	909K	RESISTOR; 0603; 909K OHM; 1%; 100PPM; 0.1W; THICK FILM	
8	1	R102	Pref	80-0200K-AA4	ERJ-3EKF2003	PANASONIC	200K	RESISTOR; 0603; 200K OHM; 1%; 100PPM; 0.1W; THICK FILM	
9	1	R103	Pref	80-0100K-24	CRCW0603100KFK; RC0603FR-07100KL; RC0603FR-13100KL; ERJ-3EKF1003; AC0603FR-07100KL	VISHAY DALE;YAGEO;YAGEO; PANASONIC	100K	RESISTOR; 0603; 100K; 1%; 100PPM; 0.10W; THICK FILM	
10	3	SU1-SU3	Pref	02-JMPFSTC02SYAN-00	STC02SYAN	SULLINS ELECTRONICS CORP.	STC02SYAN	TEST POINT; JUMPER; STR; TOTAL LENGTH=0.256IN; BLACK; INSULATION=PBT CONTACT=PHOSPHOR BRONZE; COPPER PLATED TIN OVERALL; NOTE: SET TO OBSOLETE USE MAXINV NO 02-JMPFS1100B-00	
11	2	TP1, TP6	Pref	01-131435300-10	131-4353-00	TEKTRONICS	131-4353-00	CONNECTOR;WIREMOUNT; CIRCUITBOARDTESTPOINTMINIATURE PROBE;STRAIGHT;4PINS	(TP1:IN) (TP6:OUT)
12	1	TP_GND	Pref	02-TPMINI5001-00	5001	KEYSTONE	N/A	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH; RECOMMENDED FOR BOARD THICKNESS=0.062IN; NOT FOR COLD TEST;NOTE: SET TO OBSOLETE DUE TO CORRECTION IN STEP MODEL COLOR	
13	1	TP_OUT	Pref	02-TPMINI5000-00	5000	KEYSTONE	N/A	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; RED; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH; RECOMMENDED FOR BOARD THICKNESS=0.062IN; NOT FOR COLD TEST;NOTE: SET TO OBSOLETE DUE TO CORRECTION IN STEP MODEL COLOR	
14	1	U1	Pref	00-SAMPLE-01	MAX25301BATB/V+	MAXIM	MAX25301BATB/V+	EVKIT PART-IC; MAX25301BATB/V+; 1 AMPERE AUTOMOTIVE LOW NOISE LDO LINEAR REGULATORS; PACKAGE OUTLINE DRAWING: 21-0137; LAND PATTERN DRAWING: 90-0003	
15	1	PCB	-	EPCB25301	MAX25301	MAXIM	PCB	PCB:MAX25301	-
TOTAL	25								

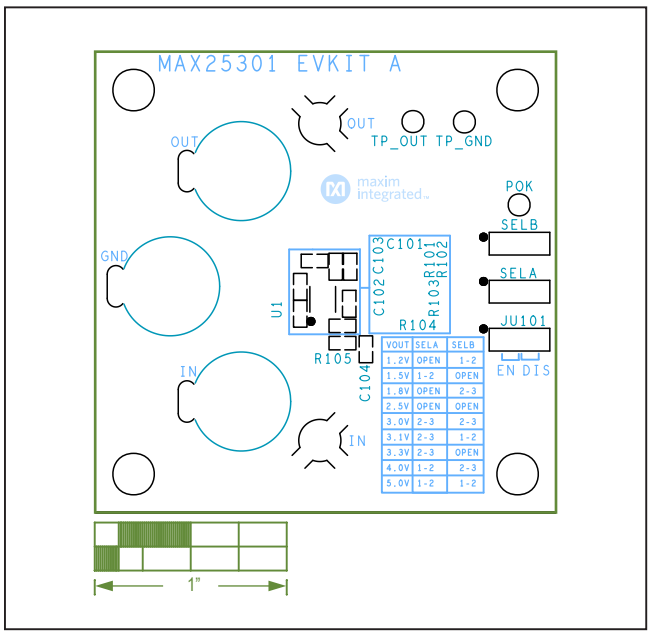
PURCHASE(DNP)									
ITEM	QTY	REF DES	VAR STATUS	MAXINV	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION	COMMENTS
1	1	C104	DNP	N/A	N/A	N/A	OPEN	PACKAGE OUTLINE 0603 NON-POLAR CAPACITOR - EVKIT	
2	1	R104	DNP	N/A	N/A	N/A	OPEN	PACKAGE OUTLINE 0603 RESISTOR - EVKIT	
3	1	R105	DNP	N/A	N/A	N/A	SHORT	PACKAGE OUTLINE 0603 RESISTOR - EVKIT	
TOTAL	3								

t not assembled on PCB and will be shipped with PCB)									
ITEM	QTY	REF DES	VAR STATUS	MAXINV	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION	COMMENTS
1	1	PACKOUT_BOX	Pref	88-00711-SML	88-00711-SML	N/A	N/A	BOX;SMALL BROWN 9 3/16X7X1 1/4 - PACKOUT	
2	1	PACKOUT_BOX	Pref	87-02162-00	87-02162-00	N/A	N/A	ESD BAG;BAG;STATIC SHIELD ZIP 4inX6in;W/ESD LOGO - PACKOUT	
3	1	PACKOUT_BOX	Pref	85-MAXKIT-PNK	85-MAXKIT-PNK	N/A	N/A	PINK FOAM;FOAM;ANTI-STATIC PE 12inX12inX5MM - PACKOUT	
4	1	PACKOUT_BOX	Pref	EVINSERT	EVINSERT	N/A	N/A	WEB INSTRUCTIONS FOR MAXIM DATA SHEET	
5	1	PACKOUT_BOX	Pref	85-84003-006	85-84003-006	N/A	N/A	LABEL(EV KIT BOX) - PACKOUT	
TOTAL	5								

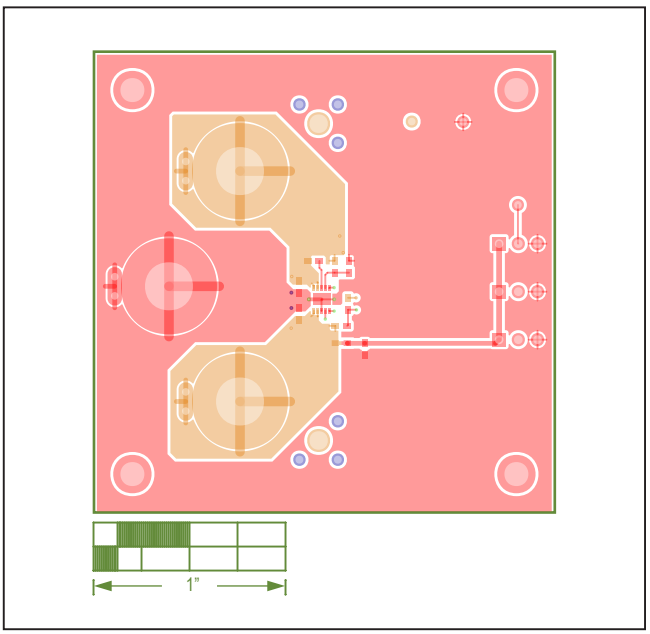
MAX25301 EV Kit Schematic



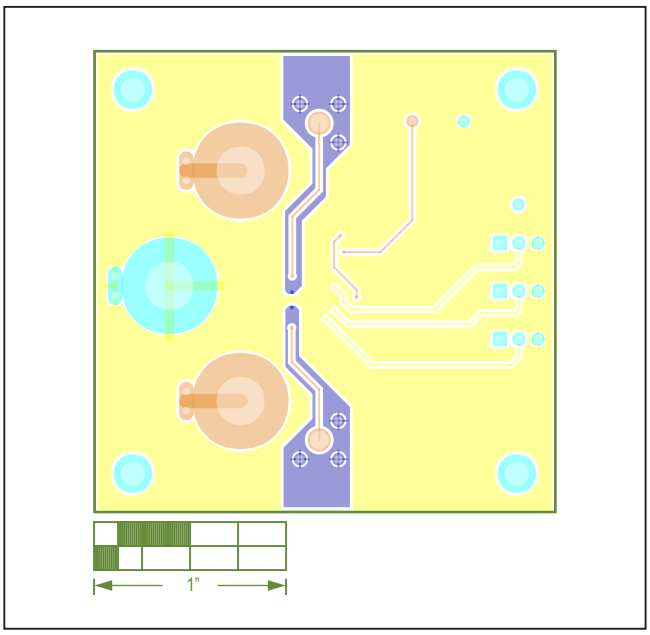
MAX25301 EV Kit PCB Layout Diagrams



MAX25301 EV Kit—Top Silkscreen



MAX25301 EV Kit—Top



MAX25301 EV Kit—Bottom

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	8/20	Initial release	—

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

Maxim Integrated cannot assume responsibility for use of any circuitry other than circuitry entirely embodied in a Maxim Integrated product. No circuit patent licenses are implied. Maxim Integrated reserves the right to change the circuitry and specifications without notice at any time.

