MAX25300 Evaluation Kit

Evaluates: MAX25300A/MAX25300B

General Description

The MAX25300 evaluation kit (EV kit) evaluates the MAX25300A/MAX25300B IC family of low noise linear regulators. The MAX25300 EV kit features two independent circuits to evaluate two different IC packages. The TDFN circuit evaluates the MAX25300A/MAX25300B. Both circuits on the EV kit operate over an input range of 1.7V to 5.5V, and provide any output voltage range of 0.6V to 5.3V. Each circuit output on the EV kit delivers up to 500mA of current. The EV kit comes with the MAX25300AATA/V+ installed.

Features

- Two Independent Circuits on One Board
  - Evaluates the MAX25300A/MAX25300B IC in an 8-pin (2mm x 2mm) TDFN
- 1.7V to 5.5V Input Range
- 1.2V to 5.0V Jumper-Configurable Output Voltage (MAX25300A, On Board)
- 0.6V to 5.3V Resistor-Configurable Output Voltage (MAX25300B, with IC Replacement)
- Up to 500mA Output Current
- Proven 2-Layer 1oz Copper PCB Layout
- Demonstrates Compact Solution Size
- Fully Assembled and Tested

MAX25300 EV Kit Files

FILE	DESCRIPTION
MAX25300 EV BOM	EV Kit Bill of Material
MAX25300 EV PCB Layout	EV Kit Layout
MAX25300 EV Schematic	EV Kit Schematic
MAX25300 EV Minimal Component Schematic	Minimal Component Circuit

Quick Start

Required Equipment

- MAX25300 EV kit
- 5.5V, 1A DC power supply
- Electronic load capable of 500mA
- Digital voltmeter (DVM)

Procedure

Testing the (TDFN) OUT Output Circuit

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 Table 1 and Table 2.
2) Connect the 5.5V power supply between the IN and nearest GND terminal posts.
3) Connect the 500mA 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 5V.

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

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Detailed Description of Hardware

The MAX25300 EV kit evaluates the MAX25300A/MAX25300B IC family. The MAX25300A/MAX25300B are low noise linear regulators that deliver 500mA of output current with only 12μV_{RMS} of output noise from 10Hz to 100kHz. These regulators require only 100mV of input-to-output headroom at full load.

The MAX25300 EV kit features two independent circuits to evaluate two different IC packages of the MAX25300A/MAX25300B family. Both circuits on the EV kit operate over an input range of 1.7V to 5.5V. The TDFN circuit evaluates the MAX25300A/MAX25300B. Each circuit output on the EV kit delivers up to 500mA of current.

The MAX25300 (TDFN) circuit on the EV kit comes with the MAX25300AATA/V+ installed. The output is jumper-configurable between 1.2V and 5.0V (Table 2), and can deliver 500mA of current.

EN for the MAX25300A/MAX25300B (TDFN) Circuit

The MAX25300A/MAX25300B (TDFN) circuit on the EV kit provide a jumper JU101 to enable or disable the MAX25300A (or the MAX25300B after IC replacement). See Table 1 for jumper setting of jumper JU101.

Table 1. EN on MAX25300A/MAX25300B (JU101)

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

**Default position.*

Output Selection (SELA and SELB) for the MAX25300A/MAX25300B (TDFN) Circuit

The MAX25300A/MAX25300B (TDFN) circuit on the EV kit provide a set of jumpers SELA and SELB to configure the output voltage of the MAX25300A. See Table 2 for jumper setting of jumpers SELA and SELB.

Evaluating the MAX25300B

The MAX25300A/MAX25300B (TDFN) circuit can evaluate the MAX25300B after IC (U101) replacement. When evaluating the MAX25300B, modify the EV kit with the following steps:

1) Replace U101 with the MAX25300BATA/V+.
2) Install feedback resistors R101 and R102 to obtain the desired output voltage between 0.6V and 5.3V. Refer to the MAX25300 IC data for feedback resistor calculations.
3) Install a shunt on jumper SELA pins 2 and 3 (GS = GND).
4) Remove shunt from jumper SELB. POK is accessible on the POK test point.
5) Install a 100kΩ resistor on R103. POK open-drain is pulled up through resistor R103. When the regulator output reaches its regulation, POK goes low.

Table 2. SELA and SELB on MAX25300A (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.*

Ordering Information

PART	TYPE
MAX25300EVKIT#	EV Kit

#Denotes RoHS compliant.

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 MAX25300A/MAX25300B when contacting these component suppliers.*

MAX25300 EV Kit Bill of Materials

ITEM	QTY	REF DES	VAR STATUS	MAXINV	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION	COMMENTS
1	1	C101	Pref	20-00U01-77	C1608C0G1H103J080AA; CGA3E2C0G1H103J080AD; GRM1885C1H103JA01	TDK;TDK;MURATA	0.01UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 0.01UF; 50V; TOL=5%; TG=-55 DEGC to +125 DEGC; TC=C0G	
2	2	C102, C103	Pref	20-004U7-R1	GMC10X7R475K6R3NT; CL10B475KQ8NQN; JMK107BB7475KA	CAL-CHIP ELECTRONIC INC.; SAMSUNG EL;TAIYO YUDEN	4.7UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 4.7UF; 6.3V; TOL=10%; MODEL=; TG=-55 DEGC TO +125 DEGC; TC=X7R; NOT RECOMMENDED FOR NEW DESIGN-USE 20-004u7-16	
3	4	GND, GND_OUT, IN, OUT	Pref	02-15142-00	1514-2	KEYSTONE	1514-2	TERMINAL; TURRET; PIN DIA=0.090IN; TOTAL LENGTH=0.105IN; BOARD HOLE=0.098IN; BRASS; TIN PLATING; RECOMMENDED FOR BOARD THICKNESS=0.062IN	
4	3	JU101, SELECTA, SELECTB	Pref	01-PEC03SAAN3P-21	PEC03SAAN	SULLINS	PEC03SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 3PINS	
5	5	POK, TP1_GND_OUT, TP1_OUT, TP_GND_IN, TP_IN	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	
6	1	R101	Pref	80-0000R-AA6	CRCW06030000Z0	VISHAY DALE	0	RESISTOR; 0603; 0 OHM; 0%; JUMPER; 0.1W; THICK FILM	
7	4	SU1-SU4	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	
8	2	TP3, TP6	Pref	01-131435300-10	131-4353-00	TEKTRONICS	131-4353-00	CONNECTOR;WIREMOUNT; CIRCUITBOARDTESTPOINTMINIATUREPROBE;STRAIGHT;4PINS	(TP3:IN) (TP6:OUT)
9	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	
10	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	
11	1	U101	Pref	00-SAMPLE-02	MAX25300AATA/V+	MAXIM	MAX25300AATA/V+	EVKIT PART-IC; MAX25300AATA/V+; 2 MICROVOLT LOW NOISE 500 MILLIAMPERE LDO LINEAR REGULATORS; PACKAGE OUTLINE DRAWING: 21-0168; LAND PATTERN DRAWING: 90-0065	
12	1	PCB	-	EPCB25300	MAX25300	MAXIM	PCB	PCB:MAX25300	-
TOTAL	26								

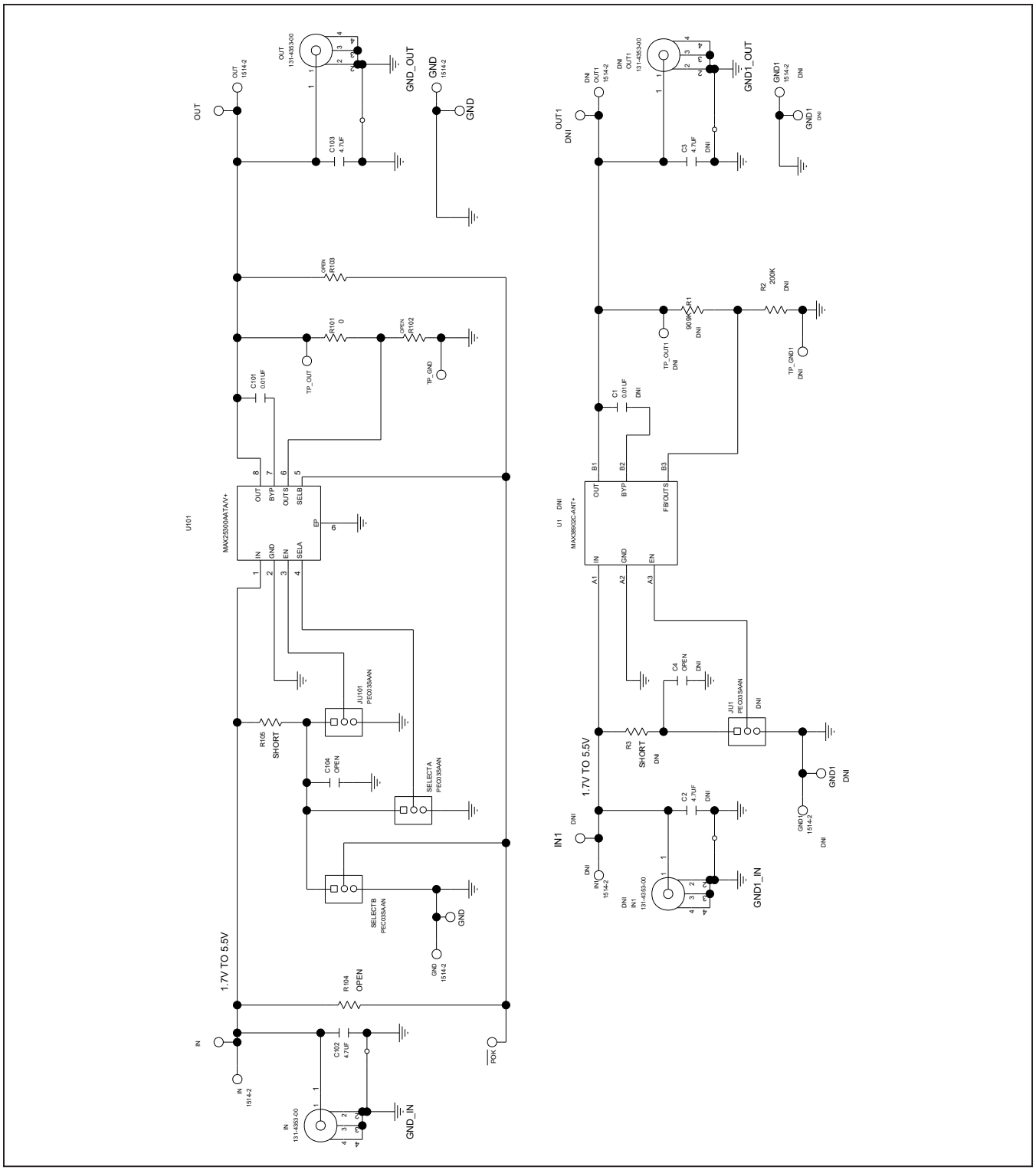
DO NOT PURCHASE(DNP)

ITEM	QTY	REF DES	Var Status	MAXINV	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION	COMMENTS
1	1	C1	DNP	20-00U01-77	C1608C0G1H103J080AA; CGA3E2C0G1H103J080AD; GRM1885C1H103JA01	TDK;TDK;MURATA	0.01UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 0.01UF; 50V; TOL=5%; TG=-55 DEGC to +125 DEGC; TC=C0G	
2	2	C2, C3	DNP	20-004U7-R1	GMC10X7R475K6R3NT; CL10B475KQ8NQN; JMK107BB7475KA	CAL-CHIP ELECTRONIC INC.; SAMSUNG EL;TAIYO YUDEN	4.7UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 4.7UF; 6.3V; TOL=10%; MODEL=; TG=-55 DEGC TO +125 DEGC; TC=X7R; NOT RECOMMENDED FOR NEW DESIGN-USE 20-004u7-16	
3	2	C4, C104	DNP	N/A	N/A	N/A	OPEN	PACKAGE OUTLINE 0603 NON-POLAR CAPACITOR - EVKIT	
4	4	GND1, GND1_OUT, IN1, OUT1	DNP	02-15142-00	1514-2	KEYSTONE	1514-2	TERMINAL; TURRET; PIN DIA=0.090IN; TOTAL LENGTH=0.105IN; BOARD HOLE=0.098IN; BRASS; TIN PLATING; RECOMMENDED FOR BOARD THICKNESS=0.062IN	
5	1	JU1	DNP	01-PEC03SAAN3P-21	PEC03SAAN	SULLINS	PEC03SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 3PINS	
6	1	R1	DNP	80-0909K-AA4	CRCW0603909KFK	VISHAY DALE	909K	RESISTOR; 0603; 909K OHM; 1%; 100PPM; 0.1W; THICK FILM	
7	1	R2	DNP	80-0200K-24	CRCW06032003FK	VISHAY DALE	200K	RESISTOR; 0603; 200K; 1%; 100PPM; 0.10W; THICK FILM	
8	2	R3, R105	DNP	N/A	N/A	N/A	SHORT	PACKAGE OUTLINE 0603 RESISTOR - EVKIT	
9	4	TP1_GND1_OUT, TP1_OUT1, TP_G	DNP	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	
10	1	TP4	DNP	01-131435300-10	131-4353-00	TEKTRONICS	131-4353-00	CONNECTOR; WIREMOUNT; CIRCUIT BOARD TEST POINT MINIATURE PROBE; STRAIGHT; 4PINS	IN1
11	1	TP5	DNP	01-131435300-10	131-4353-00	TEKTRONICS	131-4353-00	CONNECTOR; WIREMOUNT; CIRCUIT BOARD TEST POINT MINIATURE PROBE; STRAIGHT; 4PINS	OUT1
12	1	TP_GND1	DNP	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_OUT1	DNP	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	DNP	N/A	MAX38902C-ANT+	MAXIM	MAX38902C-ANT+	EVKIT PART - IC; MAX38902C-ANT+; WLP6; PACKAGE OUTLINE DEVICE: 21-100055; PKG. CODE: N60C1+1	
15	3	R102-R104	DNP	N/A	N/A	N/A	OPEN	PACKAGE OUTLINE 0603 RESISTOR - EVKIT	
TOTAL	26								

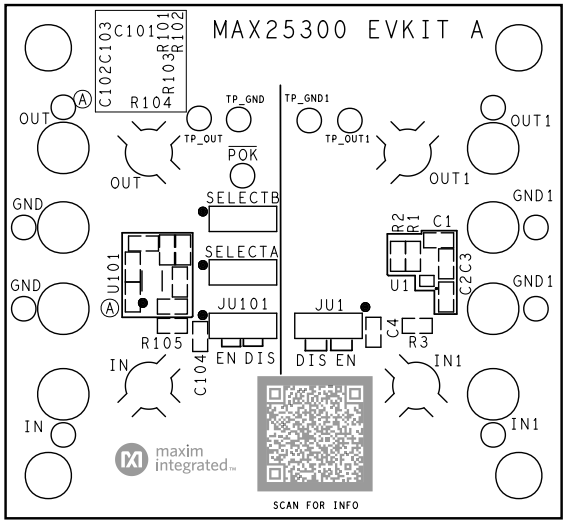
PACKOUT (These are purchased parts but not assembled on PCB and will be shipped with PCB)

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	
6	4	BUMP1-BUMP4	DNI	02-SJ5003-00	SJ-5003(BLACK)	3M ELECTRONIC SOLUTIONS DIVISION	SJ-5003(BLACK)	BUMPER; BLACK-HEMISPHERICAL SHAPE EVKIT EH0231; 0.44D/0.2BH; RESILIENT ELASTOMER POLYURETHANE	PACKOUT (INSTALL AFTER TEST)
TOTAL	9								

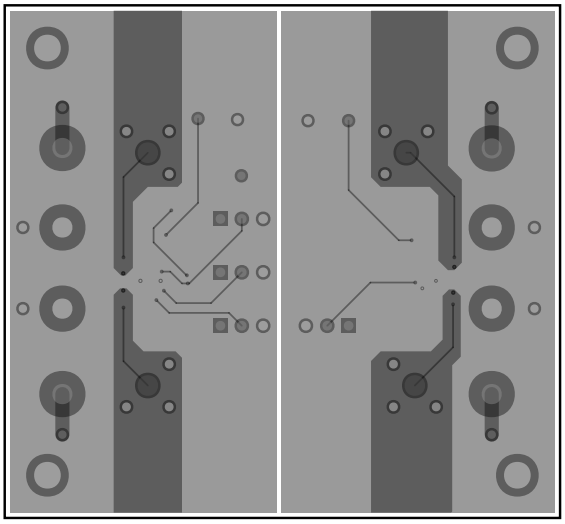
MAX25300 EV Kit Schematic



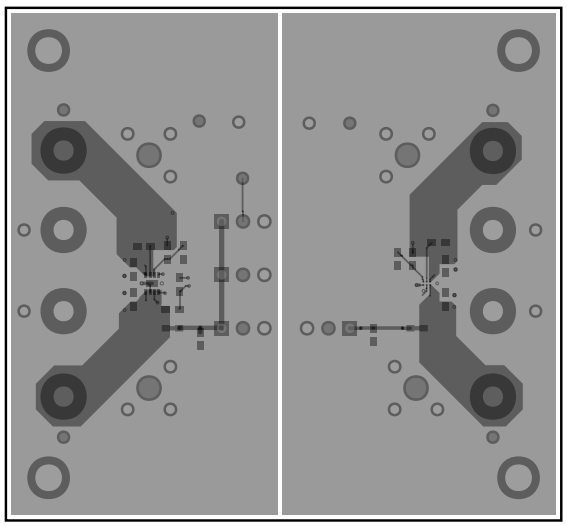
MAX25300 EV Kit PCB Layout Diagrams



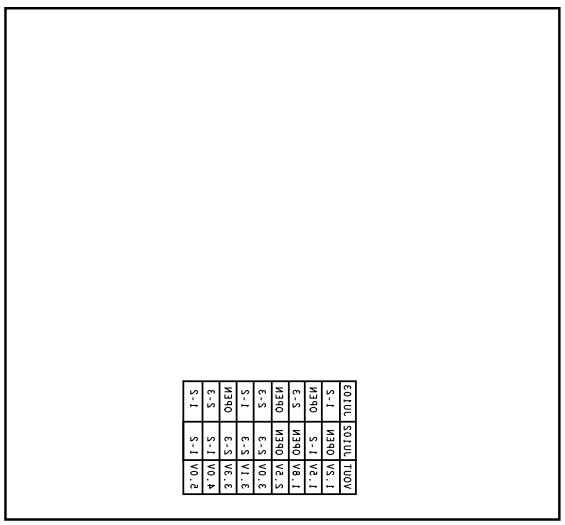
MAX25300 EV Kit—Top Silkscreen



MAX25300 EV Kit—Bottom View



MAX25300 EV Kit—Top View



MAX25300 EV Kit—Bottom Silkscreen

Revision History

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

For pricing, delivery, and ordering information, please contact Maxim Direct at 1-888-629-4642, or visit Maxim Integrated's website at www.maximintegrated.com.

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