

MAX20313 Evaluation Kit

Evaluates: MAX20313/MAX20314/
MAX20315/MAX20316

General Description

The MAX20313 evaluation kit (EV kit) is a fully assembled and tested circuit board that demonstrates the MAX20313 500mA to 6A adjustable current-limit switch device. The EV kit comes with the MAX20313EWC+ installed. The EV kit board can also be used to evaluate the MAX20314, MAX20315, and MAX20316.

Features

- 2.5V to 5.5V Operating Voltage Range
- Power, Enable, and Flag LED Reading
- Proven PCB Layout
- Fully Assembled and Tested

EV Kit Contents

- EV kit board containing a MAX20313

Ordering Information appears at end of data sheet.

Quick Start

Required Equipment

- MAX20313 EV kit
- 5V power supply
- Multimeter
- Load box

Procedure

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

- 1) Connect 4.3V on IN. Verify the OUT voltage is 4.3V and LED1 is on.
- 2) Install shunt on JU2. OUT voltage goes down and LED3 is on.
- 3) Remove shunt on JU2. OUT voltage is 4.3V and LED3 is off.
- 4) Connect load box to OUT. Increase the load current and verify OUT voltage goes down when output current goes up to about 2.06A, and LED2 turns on.
- 5) Decrease load current and verify OUT voltage goes back to 4.3V and LED2 turns off.

Detailed Description

The MAX20313 EV kit is a fully assembled and tested circuit board demonstrating the MAX20313 500mA to 6A adjustable current limit switch device in a 12-bump wafer-level package (WLP).

LED Indicator

The EV kit features LED1 to indicate power on VIN. LED2 indicates FLAG is asserted. LED3 indicates the device is disabled.

VIN Power

VIN can be powered from J1, IN, OUT, or test point TP7. Use jumper JU1 to connect VIN to IN or OUT. Use jumper JU3 to connect VIN to J1 VBUS. ([Table 1](#))

Enable Pin

Use jumper JU2 to enable/disable the device. ([Table 2](#))

Current Limit Threshold

Use jumper JU4, JU5, JU6 to choose R_{SETI}, which sets the current limit threshold. ([Table 4](#))

Table 1. JU1, JU3 Jumper Setting

JUMPER	SHUNT POSITION	DESCRIPTION
JU1	1-2	VIN is connected to V _{OUT}
	2-3*	VIN is connected to V _{IN}
JU3	Installed	VIN is connected to J1 VBUS
	Not installed*	VIN is not connected to J1 VBUS

*Default position.

Table 2. JU2 Jumper Setting

JUMPER	SHUNT POSITION	DESCRIPTION
JU2	Installed	EN is low (MAX20313 is disabled, LED3 is on)
	Not installed*	EN is high (MAX20313 is enabled, LED3 is off)

*Default position.

Table 3. Switch Truth Table

MAX20313 MAX20314	MAX20315 MAX20316	SWITCH STATUS
EN	$\overline{\text{EN}}$	
0	1	Off
1	0	On

Table 4. JU4, JU5, JU6 Settings

JUMPER	SHUNT POSITION	DESCRIPTION
JU4	Installed*	SETI is connected to 2k Ω (current limit 2.06A).
	Not installed	SETI is not connected to 2k Ω .
JU5	Installed	SETI is connected to 1k Ω (current limit 4.07A).
	Not installed*	SETI is not connected to 1k Ω .
JU6	Installed	SETI is connected to potentiometer (current limit adjustable).
	Not installed*	SETI is not connected to potentiometer.

*Default position.

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Ordering Information

PART	TYPE
MAX20313EVKIT#	EV Kit

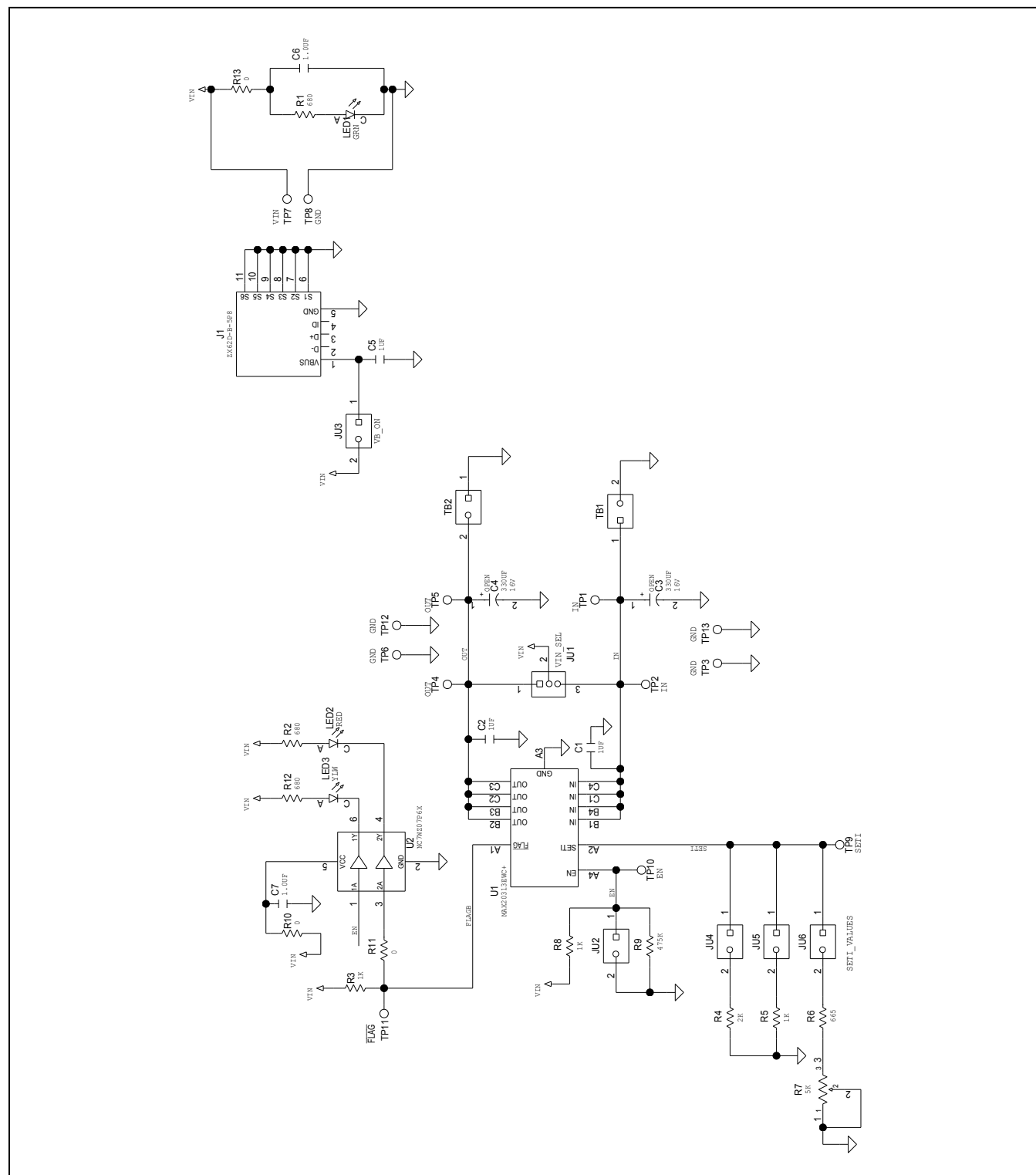
#Denotes RoHS compliant.

MAX20313 EV Bill of Materials

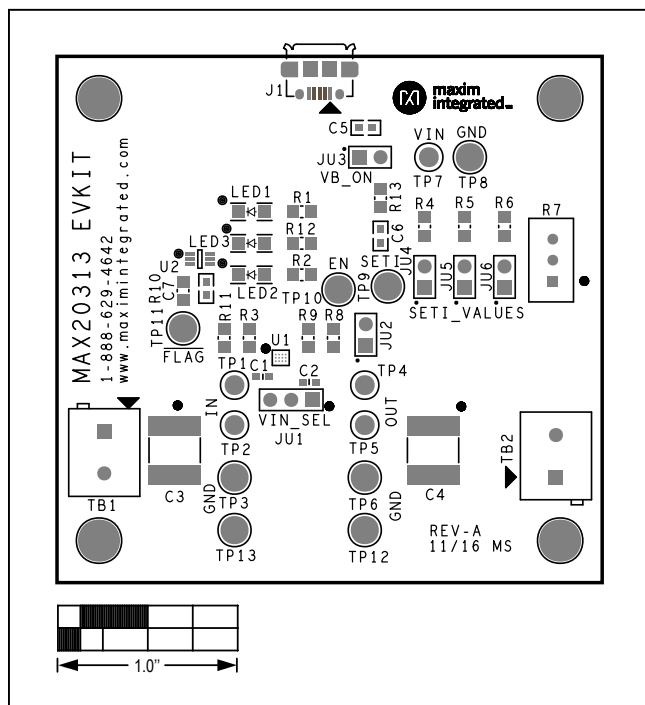
ITEM	REF DES	DN/DNP	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION	COMMENTS
1	C1, C2, C5	-	3	C1608X7R1V105K080AC	TDK	1UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 1UF; 35V; TOL = 10%; TG = -55°C TO +125°C; TC = X7R	
2	C6, C7	-	2	GRM188R70J105KA01; CL10B105KQ8NNNC	MURATA/SAMSUNG ELECTRONICS	1.0UF	CAPACITOR; SMT (0603); CERAMIC; 1UF; 6.3V; TOL = 10%; MODEL = GRM SERIES; TG = -55°C TO +125°C; TC = X7R;	
3	J1	-	1	ZX62D-B-5P8	HIROSE ELECTRIC CO LTD.	ZX62D-B-5P8	CONNECTOR; MALE; SMT; MICRO UNIVERSAL SERIES BUS B-TYPE CONNECTOR; RIGHT ANGLE; 5PINS	
4	JU1	-	1	PEC03SAAN	SULLINS	PEC03SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 3PINS	
5	JU2-JU6	-	5	PEC02SAAN	SULLINS	PEC02SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 2PINS	
6	LED1	-	1	LTST-C150KGKT	LITE-ON ELECTRONICS, INC.	LTST-C150KGKT	DIODE; LED; STANDARD; GREEN; SMT (1206); PIV=2V; IF = 0.02A; -55°C TO +85°C	
7	LED2	-	1	LTST-C150KRKT	LITE-ON ELECTRONICS, INC.	LTST-C150KRKT	DIODE; LED; STANDARD; RED; SMT (1206); PIV=2V; IF=0.02A; -30°C TO +85°C	
8	LED3	-	1	LTST-C150KSKT	LITE-ON ELECTRONICS, INC.	LTST-C150KSKT	DIODE; LED; ULTRA BRIGHT CHIP LED; YELLOW; SMT (1206); PIV = 2.1V; IF = 0.02A	
9	R1, R2, R12	-	3	CRCW0805680RFF	VISHAY DALE	680	RESISTOR; 0805; 680Ω; 1%; 100PPM; 0.125W; THICK FILM	
10	R3, R5, R8	-	3	CRCW08051K00FF; ERJ-6ENF1001V; MCR10EZHF1001; RC0805FR-071KL	VISHAY DALE; PANASONIC; ROHM; YAGEO	1K	RESISTOR; 0805; 1K; 1%; 100PPM; 0.125W; THICK FILM	
11	R4	-	1	CRCW08052K00FF	VISHAY DALE	2K	RESISTOR; 0805; 2K; 1%; 100PPM; 0.125W; THICK FILM	
12	R6	-	1	CRCW0805665RFF	VISHAY DALE	665	RESISTOR; 0805; 665Ω; 1%; 100PPM; 0.125W; THICK FILM	
13	R7	-	1	T83YA502K	VISHAY SFERNICE	5K	RESISTOR; THROUGH HOLE-RADIAL LEAD; T83YA SERIES; 5KΩ; 10%; 100PPM; 0.5W	
14	R9	-	1	CRCW0805475KFF	VISHAY DALE	475K	RESISTOR; 0805; 475K; 1%; 100PPM; 0.125W; THICK FILM	
15	R10, R11, R13	-	3	CRCW08050000ZS; ERJ-6GEY0R00V; RC2012J000; RMC0805ZT0R00	VISHAY DALE/PANASONIC/ STACKPOLE ELECTRONICS INC	0	RESISTOR; 0805; 0Ω; JUMPER; 0.125W; THICK FILM	
16	SU1-SU6	-	6	STC02SYAN	SULLINS ELECTRONICS CORP.	STC02SYAN	TEST POINT; JUMPER; STR; TOTAL LENGTH = 0.256IN; BLACK; INSULATION = PBT CONTACT = PHOSPHOR BRONZE; COPPER PLATED TIN OVERALL	
17	TB1, TB2	-	2	398800302	MOLEX	398800302	CONNECTOR; FEMALE; THROUGH HOLE; 5.08/200 EUROSTYLE LOW; SINGLE ROW FIXED BLOCK; RIGHT ANGLE; 2PINS	
18	TP1, TP2, TP4, TP5, TP7	-	5	5010	KEYSTONE	N/A	TESTPOINT WITH 1.80MM HOLE DIA; RED, MULTIPURPOSE;	
19	TP3, TP6, TP8, TP12, TP13	-	5	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;	
20	TP9-TP11	-	3	5013	KEYSTONE	N/A	TEST POINT; PIN DIA = 0.125IN; TOTAL LENGTH = 0.445IN; BOARD HOLE = 0.063IN; ORANGE; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;	
21	U1	-	1	MAX20313EWC+	MAXIM	MAX20313EWC+	EVKIT PART-IC; 0.5A TO 6A ADJUSTABLE CURRENT-LIMIT SWITCH; PACKAGE OUTLINE: 21-100118; PACKAGE CODE: W121K1+1; 0.40MM PITCH	
22	U2	-	1	NC7WZ07P6X	FAIRCHILD SEMICONDUCTOR	NC7WZ07P6X	IC; BUF; TINY LOGIC ULTRA-HIGH SPEED DUAL BUFFER; SC70-6	
23	C3, C4	DNP	0	594D337X0016R2	VISHAY SPRAGUE	330UF	CAPACITOR; SMT (CASE_R); TANTALUM CHIP; 330UF; 16V; TOL = 20%; TG = -55°C TO +125°C; LOW ESR	
24	PCB	-	1	MAX20313	MAXIM	PCB	PCB Board:MAX20313 EVALUATION KIT	
TOTAL			52					

NOTE: DNI--> DO NOT INSTALL; DNP--> DO NOT PROCURE

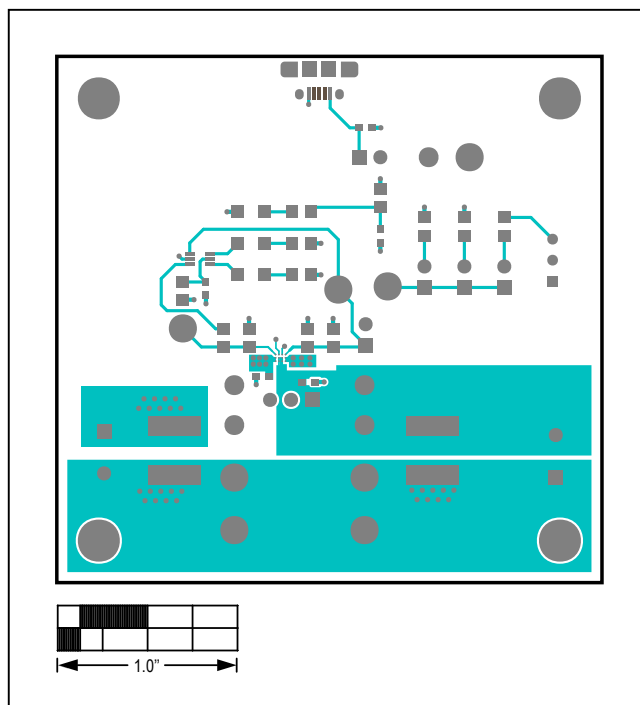
MAX20313 EV Kit Schematics



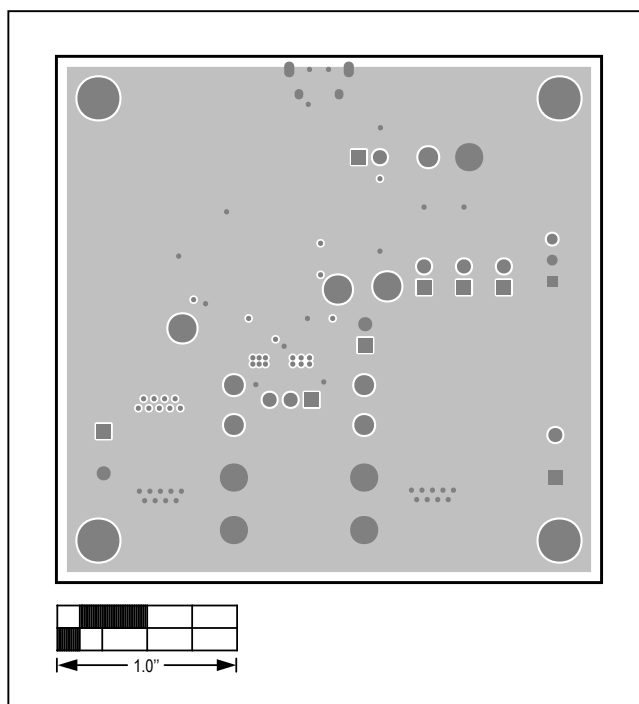
MAX20313 EV Kit PCB Layouts



MAX20313 EV Kit—Top Silkscreen

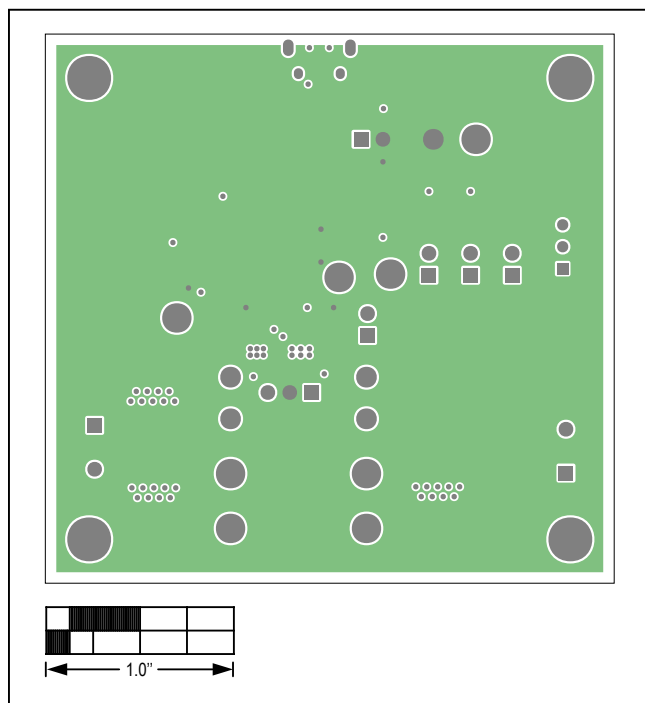


MAX20313 EV Kit—Top

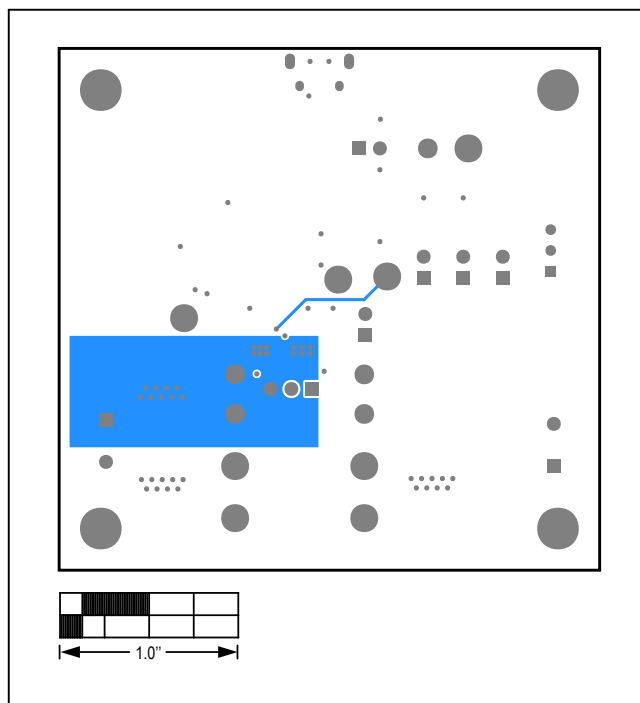


MAX20313 EV Kit— Layer 2 GND

MAX20313 EV Kit PCB Layouts (continued)



MAX20313 EV Kit—Layer 3 Power



MAX20313 EV Kit—Bottom

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Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	12/16	Initial release	—

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