

General Description

The MAX17523 evaluation kit (EV kit) is a fully assembled and tested circuit board that demonstrates the MAX17523 adjustable overcurrent and overvoltage protector. The EV kit features TVS diode on input and Schottky diode on output. Input power to the EV kit uses a 4.5V to 36V input supply.

The EV kit circuit can be configured to demonstrate the device's different current-limit types, adjustable overvoltage, undervoltage, and current-limit threshold.

Features

- 4.5V to 36V Operating Voltage Range
- Features TVS Diode and Schottky Diode
- Evaluates Three Current-Limit Types, Current-Limit Threshold, OVLO, and UVLO
- Proven PCB Layout
- Fully Assembled and Tested

Ordering Information appears at end of data sheet.

Quick Start

Required Equipment

- MAX17523 EV kit
- 36V DC power supply
- Multimeter
- USB-A male to USB-B male cable or 5V DC power supply

Procedure

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

- 1) Verify that all jumpers are in their default positions.
- 2) Connect the USB cable to J1 from a computer or connect a 5V DC power supply to TP3.
- 3) Verify that LED1 is on.
- 4) Connect a 20V DC power supply to IN. Verify that OUT is 20V.
- 5) Increase voltage on the DC power supply and verify that the OUT voltage goes down and FLAG goes low when input reaches approximately 33V.
- 6) Decrease voltage on the DC power supply and verify that OUT goes back and FLAG goes high when the input reaches approximately 32V.

Detailed Description of Hardware

The MAX17523 EV kit is a fully assembled and tested circuit board that demonstrates the MAX17523 1A adjustable overcurrent and overvoltage protector IC in a 16-pin surface-mount TQFN-EP package.

Using jumper JU1, the EV kit circuit can be configured to evaluate different current-limit thresholds with a different resistor on SETI. Using jumpers JU3–JU5, the EV kit circuit can be configured to evaluate the internal OVLO/UVLO threshold or external threshold using a resistor-divider. Using jumpers JU14 and JU15, the EV kit circuit can be configured to evaluate different current-limit types (autoretry, latching, and continuous). The EV kit also features an LED to indicate the power for logic pins.

Table 1. LED Indicator

LED	NAME	DESCRIPTION
LED1	POWER	LED1 is on when the V _{BUS} /5V supply for the logic pins is powered

Current-Limit Threshold

The EV kit features a jumper (JU1) to select current-limit threshold. Install a jumper as shown in [Table 2](#) to change the current-limit threshold.

Use the following equation to calculate the current limit:

$$R_{SETI} (k\Omega) = \frac{6100}{I_{LIM} (mA)}$$

UVLO/OVLO Threshold

Use jumpers JU3–JU5 to select UVLO and OVLO threshold. See [Table 3](#) for jumper settings.

Switch Control

The EV kit features two jumpers (JU6, JU8) to enable or disable the switch. See [Table 4](#) for jumper settings and [Table 5](#) for switch status.

Table 2. Current-Limit Threshold (JU1)

JUMPER	SHUNT POSITION	DESCRIPTION
JU1	1-2*	Current limit 0.15A
	3-4	Current limit 0.5A
	5-6	Current limit 0.98A
	7-8	Current limit adjustable

*Default position.

Table 3. UVLO/OVLO Threshold (JU3–JU5)

JUMPER	SHUNT POSITION	DESCRIPTION
JU3	Installed*	UVLO connected to ground. Internal UVLO threshold is selected.
	Not installed	UVLO not connected to ground. Install JU5 to use external resistors to set UVLO threshold.
JU4	Installed*	OVLO connected to ground. Internal OVLO threshold is selected.
	Not installed	OVLO not connected to ground. Install JU5 to use external resistors to set OVLO threshold.
JU5	Installed	Use external resistors to set the OVLO/UVLO threshold.
	Not installed*	Not using external resistors to set the OVLO/UVLO threshold.

*Default position.

Table 4. Switch Control (JU6, JU8)

JUMPER	SHUNT POSITION	DESCRIPTION
JU6	1-2	HVEN connected to IN through 100kΩ.
	2-3*	HVEN connected to ground.
JU8	Installed*	EN connected to VBUS.
	Not installed	EN connected to ground through 100kΩ.

*Default position.

Table 5. Enable Inputs

HVEN	EN	SWITCH STATUS
0	0	On
0	1	On
1	0	Off
1	1	On

Reverse-Current Block Enable

Use jumper JU9 to enable or disable the reverse-current flow protection. The reverse-current block is enabled when $\overline{\text{RIEN}}$ is logic-low. See [Table 6](#) for jumper settings.

Current-Limit Type Select

The EV kit features jumpers JU12, JU14, JU15 to select different current-limit type and sampled time. See [Table 7](#) for jumper settings.

Table 6. Reverse-Current Block Enable (JU9)

JUMPER	SHUNT POSITION	DESCRIPTION
JU9	Installed	$\overline{\text{RIEN}}$ connected to V_{BUS} .
	Not installed*	$\overline{\text{RIEN}}$ connected to ground through 100k Ω .

*Default position.

Table 7. Current-Limit Type Select (JU12, JU14, JU15)

JUMPER	SHUNT POSITION	DESCRIPTION
JU12	1-2*	CLTS_MODE high. CLTS1 and CLTS2 are sampled continuously.
	2-3	CLTS_MODE low. CLTS1 and CLTS2 are sampled only when $\text{V}_{\text{IN}} - \text{V}_{\text{OUT}} < 0.6\text{V}$.
JU14	1-2*	CLTS1 high.
	2-3	CLTS1 low.
JU15	1-2	CLTS2 high.
	2-3*	CLTS2 low.

*Default position.

Output Load Capacitor

Use jumper JU13 to connect output to 330 μF capacitor. See [Table 9](#) for jumper settings.

Table 8. Logic Inputs

CLTS2	CLTS1	CURRENT-LIMIT TYPE
0	0	Latchoff
0	1	Autoretry
1	0	Continuous
1	1	Continuous

Table 9. Output Load Capacitor (JU13)

JUMPER	SHUNT POSITION	DESCRIPTION
JU13	Installed	OUT connected to C7 and C8.
	Not installed*	OUT not connected to C7 and C8.

*Default position.

Component Suppliers

SUPPLIER	WEBSITE
Bourns, Inc.	www.bourns.com
Fairchild Semiconductor	www.fairchildsemi.com
FCI Electronics Interconnection Solutions	www.fciconnect.com
Lite-On, Inc.	www.us.liteon.com
Lumex Inc.	www.lumex.com
Murata Americas	www.murata.com
Panasonic Corp.	www.panasonic.com
Phoenix Contact, Inc.	www.phoenixcontact.com
STMicroelectronics	www.us.st.com
TDK Corp.	www.component.tdk.com

Note: Indicate that you are using the MAX17523EV when contacting these component suppliers.

Component Information, PCB Layout, and Schematic

See the following links for component information, PCB layout diagrams, and schematic.

- [MAX17523 EV BOM](#)
- [MAX17523 EV PCB Layout](#)
- [MAX17523 EV Schematics](#)

Ordering Information

PART	TYPE
MAX17523EVKIT#	EV Kit

#Denotes RoHS compliant.

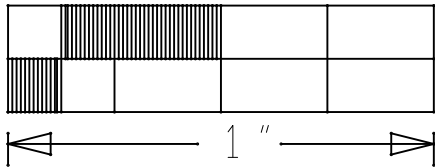
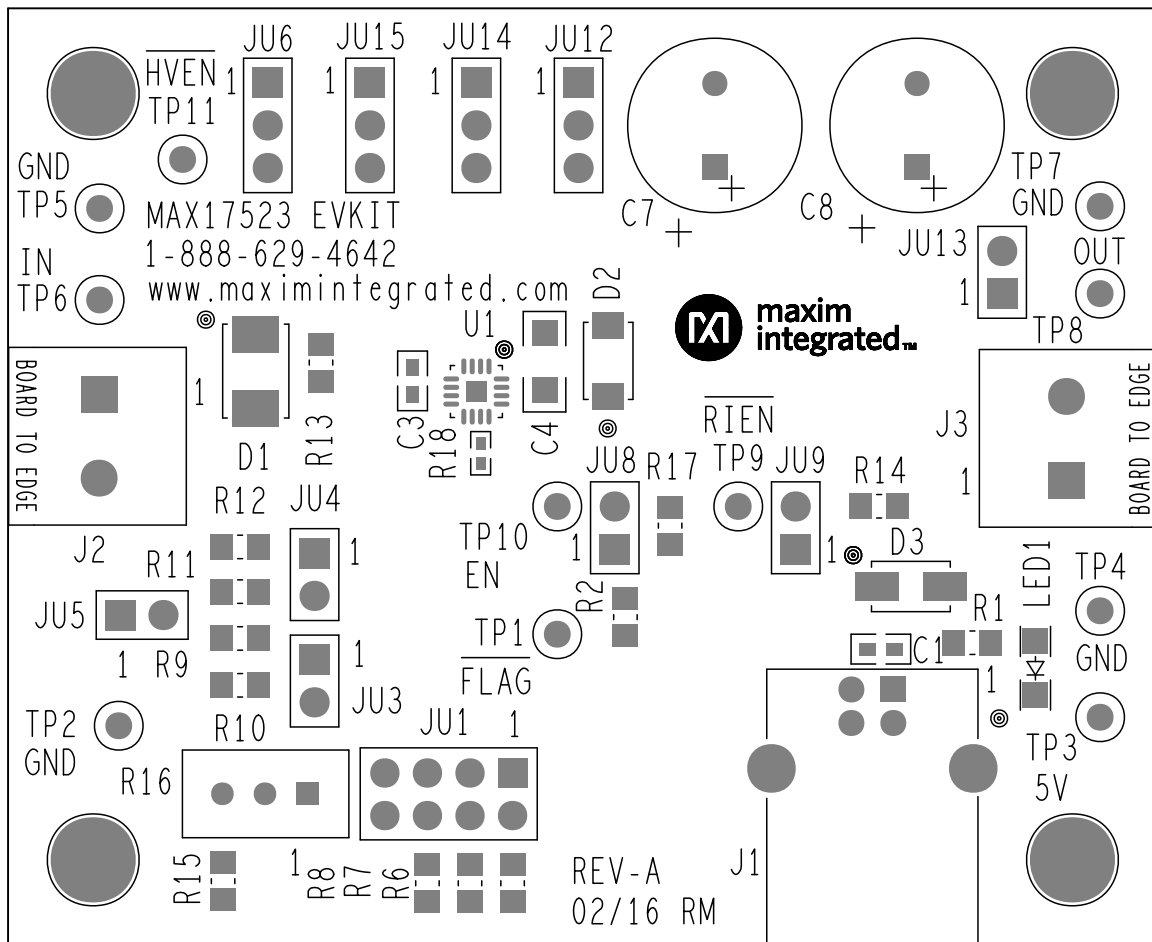
Revision History

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

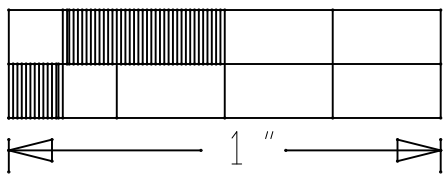
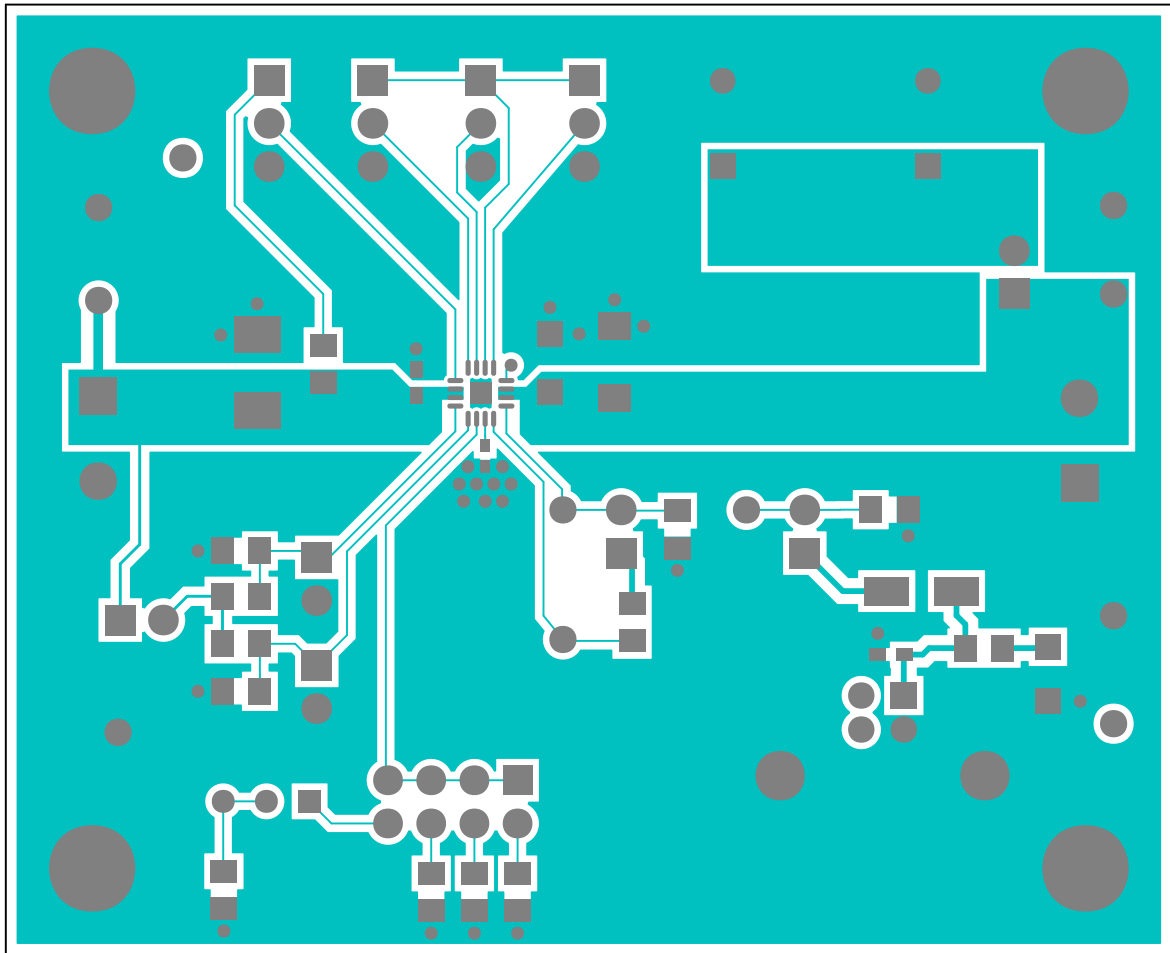
For pricing, delivery, and ordering information, please contact Maxim Direct at 1-888-629-4642, or visit Maxim Integrated's website at www.maximintegrated.com.

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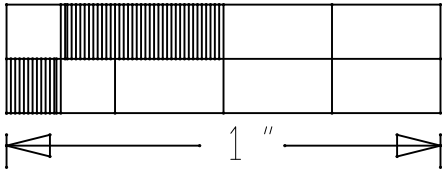
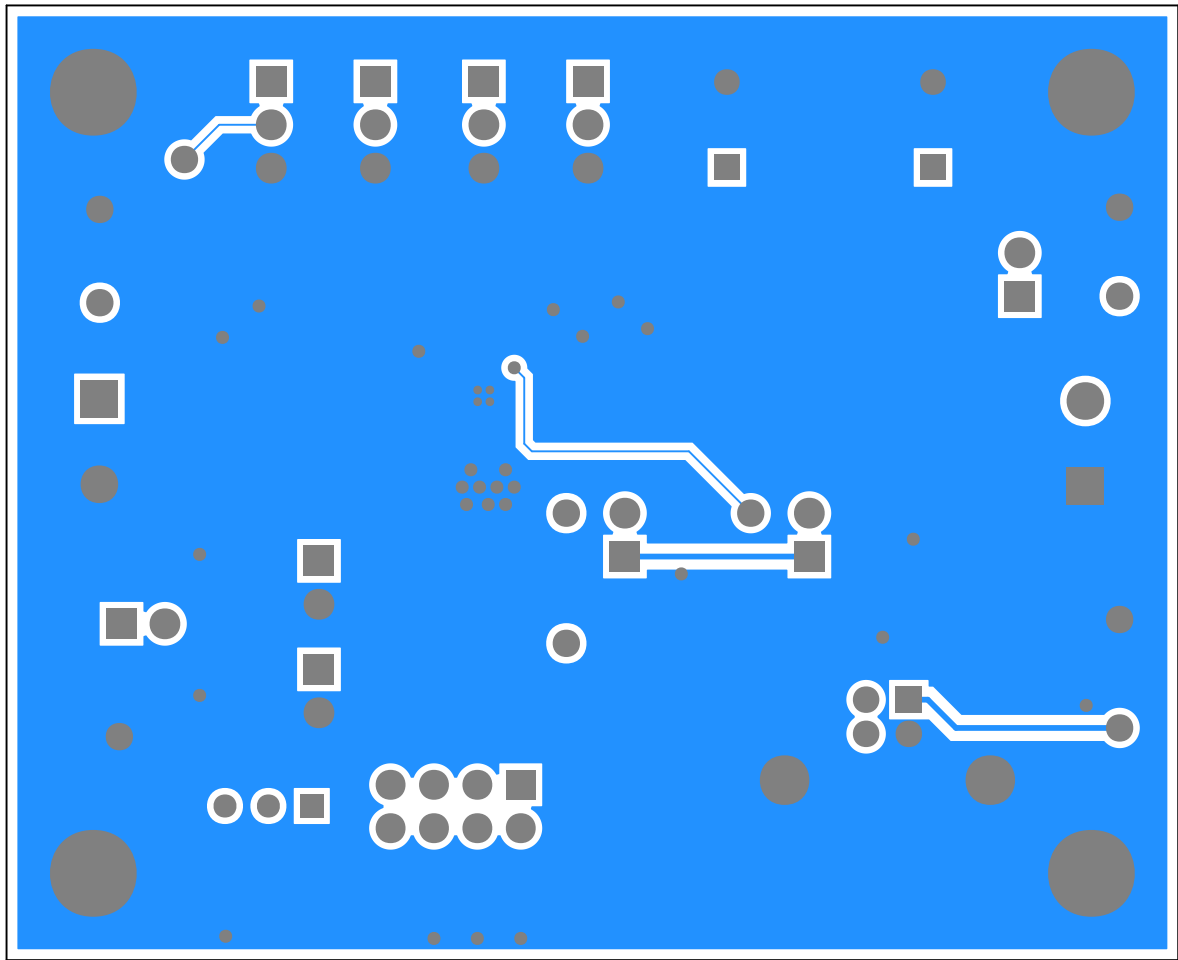
TITLE: Bill of Materials - Revision 12/16		
DESIGN: max17523_evkit_a		
Part Reference	Qty	Description
C1	1	CAPACITOR CER 1UF 25V ±10% X5R 0603
C3	1	CAPACITOR CER 0.47UF 50V ±10% X5R 0603
C4	1	CAPACITOR CER 1UF 50V ±10% X7R 1206
C7	1	CAPACITOR RADIAL 330UF 50V ±20%
D1	1	DIODE TVS 12A 36V
D2, D3	2	DIODE 1A 60V
J1	1	USB B-TYPE CONNECTOR
J2, J3	2	Power Terminals
JU1	1	CONN HEADER 8PINS
JU3-JU5, JU8, JU9, JU13	6	CONN HEADER 2PINS
JU6, JU12, JU14, JU15	4	CONN HEADER 3PINS
LED1	1	LED GREEN 1206
R1	1	RES 1K 1% 0805 SMD
R2	1	RES 10K 1% 0805 SMD
R6	1	RES 40.2K 1% 0805 SMD
R7	1	RES 12.1K 1% 0805 SMD
R8	1	RES 6.2K 1% 0805 SMD
R9, R11	2	RES 2.2M 5% 0805 SMD
R13, R14, R17	3	RES 100K 1% 0805 SMD
R15	1	RES 4.7K 1% 0805 SMD
R16	1	RES TRIMMER POTENTIOMETER 50K OHM
R18	1	RES 10 1% 0402 SMD
TP1	1	WHITE TEST POINT
TP2, TP4, TP5, TP7	4	BLACK TEST POINT
TP3, TP6, TP8	3	RED TEST POINT
TP9	1	PURPLE TEST POINT
TP10	1	GREEN TEST POINT
TP11	1	GREY TEST POINT
U1	1	IC OVERCURRENT OVERVOLTAGE PROTECTOR (MAX17523ATE+)
C8	0	CAP RADIAL 330UF 50V ±20%
R10, R12	0	RES 1.47K 1% 0805 SMD
PCB	1	PCB: EPCB17523



SILKSCREEN TOP



TOP



BOTTOM

