

MAX28200 Evaluation Kit

Evaluates: MAX28200

General Description

The MAX28200 evaluation kit (EV kit) provides a development platform that provides access to all the features of the MAX28200 in a tiny, easy to use board. The ROM-based bootloader is accessed through JTAG or an I²C interface. Connectors are provided for a host bus adapter, the DS9481P programming tool, and for JTAG. Board power can be supplied by USB, host bus adapter, JTAG, or the DS9481P programming tool. This board provides a powerful processing subsystem in a very small space that can be easily integrated into a variety of applications.

EV Kit Contents

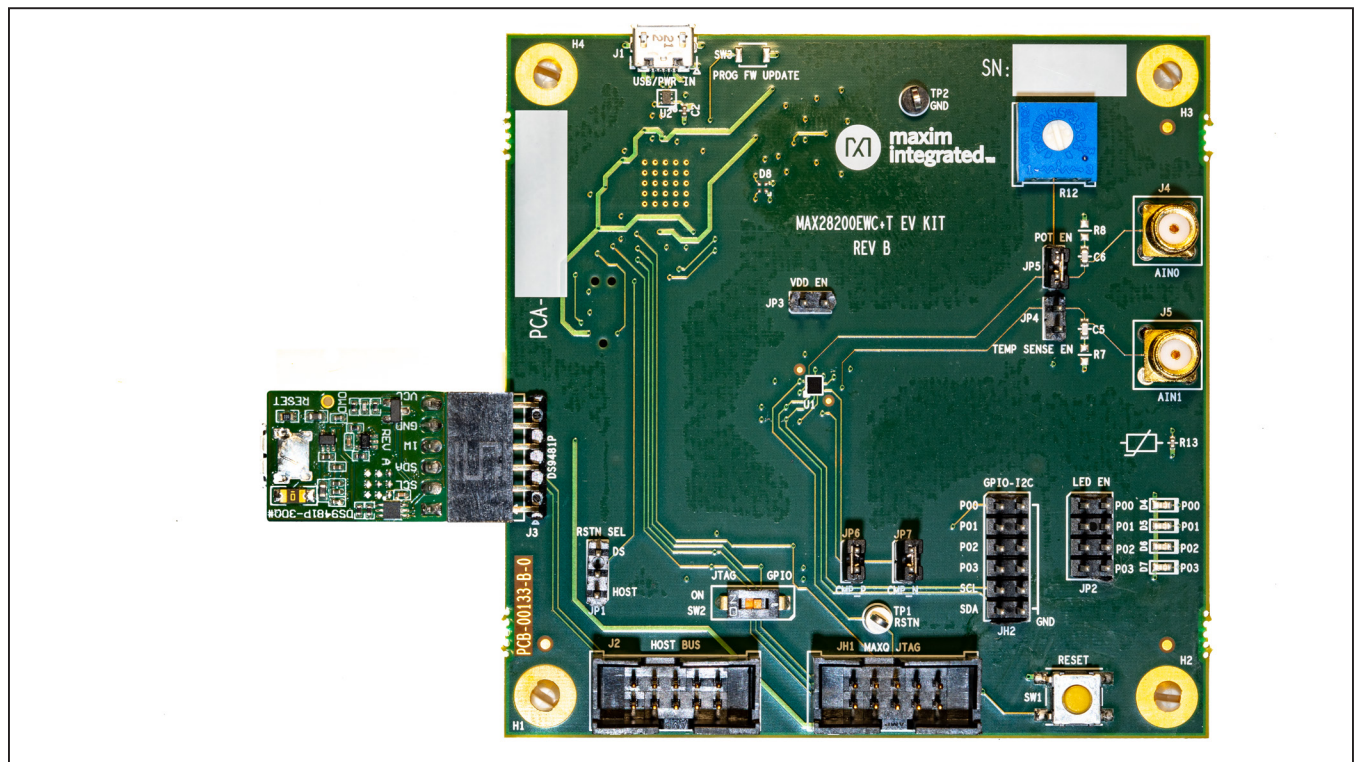
- MAX28200 EV Kit Board with a Sample Device Preprogrammed with Demo
- DS9481P-300# Programming Tool
- USB Type A to Micro-B Cable

Features

- MAX28200 Microcontroller
 - MAXQ20 16-Bit Core
 - 16KB Flash Memory
 - 2KB SRAM
 - PWM/Timer
 - 2-Channel, 10-Bit ADC
 - I²C
 - Hardware SHA-3 Engine
 - Comparator
- Integrated Peripherals
 - Status LEDs
 - Temperature Sensor
 - Potentiometer

[Ordering Information](#) appears at end of data sheet.

MAX28200 EV Kit Board



Quick Start

The EV kit is fully assembled, tested, and preprogrammed with demo firmware. Follow the steps below to begin evaluation:

- 1) Inspect the installed jumpers, which should match the defaults specified in [Table 1](#).
- 2) Set the switch, SW2, to GPIO mode (open).
- 3) Power the board by connecting the supplied USB cable to a PC or USB 5V source.
- 4) Verify that the demo is running by observing the LEDs blink in a pattern.
- 5) Evaluate the analog input by turning potentiometer R12 and observe the LEDs change.
- 6) If desired, press the RESET button to start over.

Detailed Description of Hardware

The MAX28200 EV kit board is designed to make developing with the MAX28200 quick and easy. In addition to making all the GPIOs accessible at 100-mil pitch headers, the EV kit also offers programming access to flash memory using a ROM resident bootloader. Electrical interface to the bootloader is by JTAG or I²C. I²C can be accessed through connectors for a host bus adapter or the included DS9481P programming tool. Configurable status LEDs and a thermistor plus potentiometer provide a convenient way to monitor port activity and exercise the ADC/comparator block.

Table 1. Jumper Settings

JUMPER	FUNCTION	SETTINGS	DESCRIPTION
JP1	RSTN SEL	1-2	Allows host bus adapter to assert a reset.
		2-3*	Allows DS9481P to assert a reset.
JP2	LED EN	1-2	PORT 0 LED enabled active-low.
		3-4	PORT 1 LED enabled active-low.
		5-6	PORT 2 LED enabled active-low.
		7-8	PORT 3 LED enabled active-low.
JP3	VDD EN	1-2*	Connects 3V3 power to DUT.
		2-3	Open to provide DUT current monitoring.
JP4	TEMP SENSE EN	1-2	Connects thermistor voltage-divider network to AIN1.
		Open*	Open to apply external signals through J5 SMA.
JP5	POT EN	1-2	Connects POT voltage-divider network to AIN0.
		Open*	Open to apply external signals through J4 SMA.
JP6	CMP_P	1-2*	Normal JTAG and GPIO functions available.
		Open	Pin 1 of header provides direct path to comparator P for high-Z sources.
JP7	CMP_N	1-2*	Normal JTAG and GPIO functions available.
		Open	Pin 1 of header provides direct path to comparator N for high-Z sources.

*Default jumper setting.

Power Supply

System power can be supplied by USB, the host bus adapter, or the DS9481P programming tool. Automatic source switching and voltage regulation is provided for the MAX28200.

Programming

A ROM resident bootloader provides access to flash memory by way of JTAG or I²C. I²C communication is handled through connectors for a host bus adapter, the DS9481P programming tool, or direct header connection.

JTAG/GPIO Mux

The four GPIOs provided on the MAX28200 double as JTAG connections. Switch SW2 controls routing of the

GPIOs. Closing SW2 enables JTAG mode, and opening SW2 enables GPIO mode.

Status LEDs

User-configurable status LEDs are provided for each GPIO. Jumpers provide an easy and positive way to deactivate LEDs when not needed.

Comparator and ADC

The comparator and 10-bit, dual-channel ADC are accessed through SMA connectors J4 and J5. An on-board NTC thermistor and potentiometer can also be connected to these analog inputs. Jumpers JP6 and JP7 provide an alternate path to the comparators for high-Z signals. Install shunts for normal GPIO operation.

Ordering Information

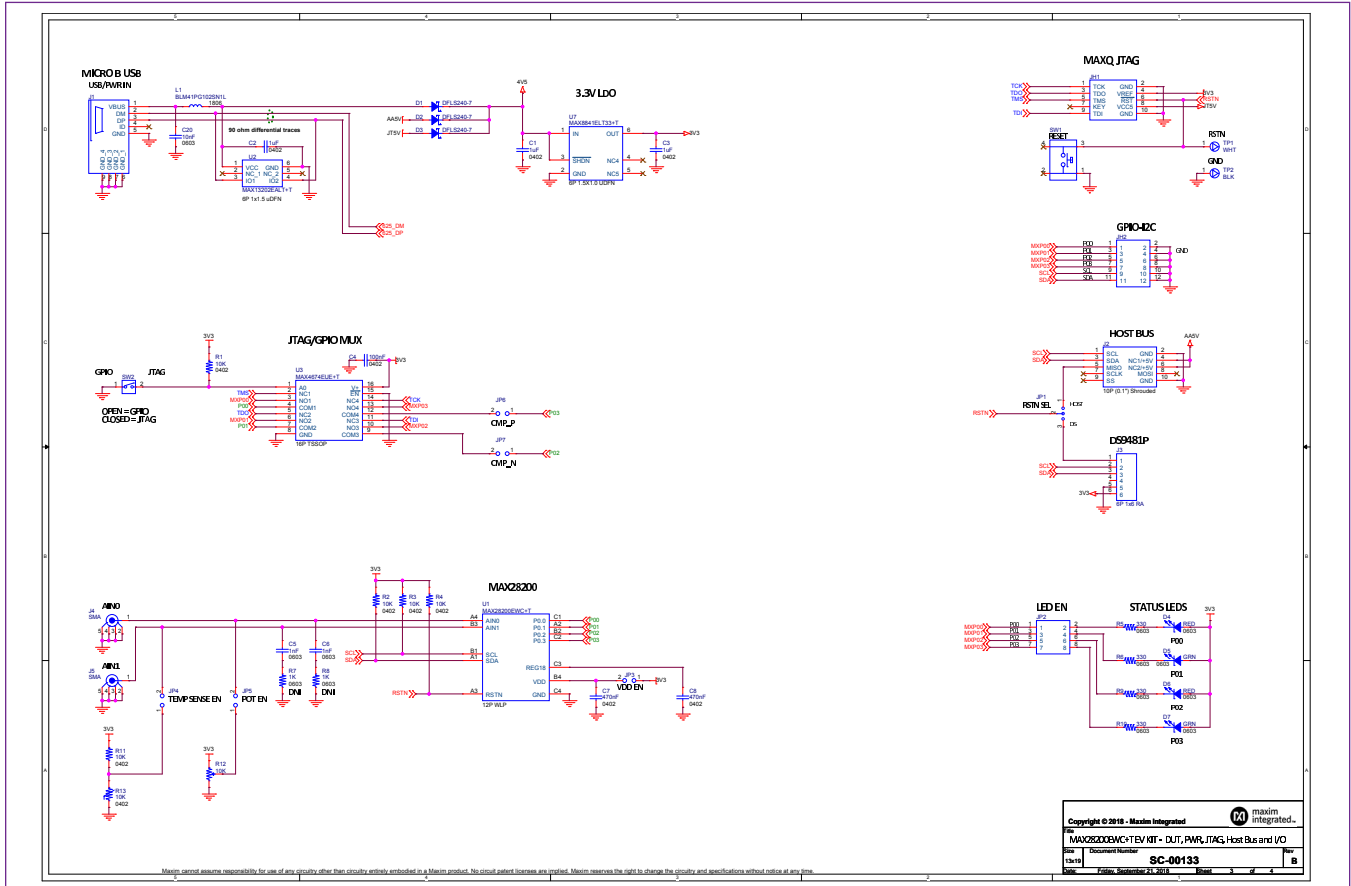
PART	TYPE
MAX28200WEVKIT#	EV Kit

#Denotes RoHS compliant.

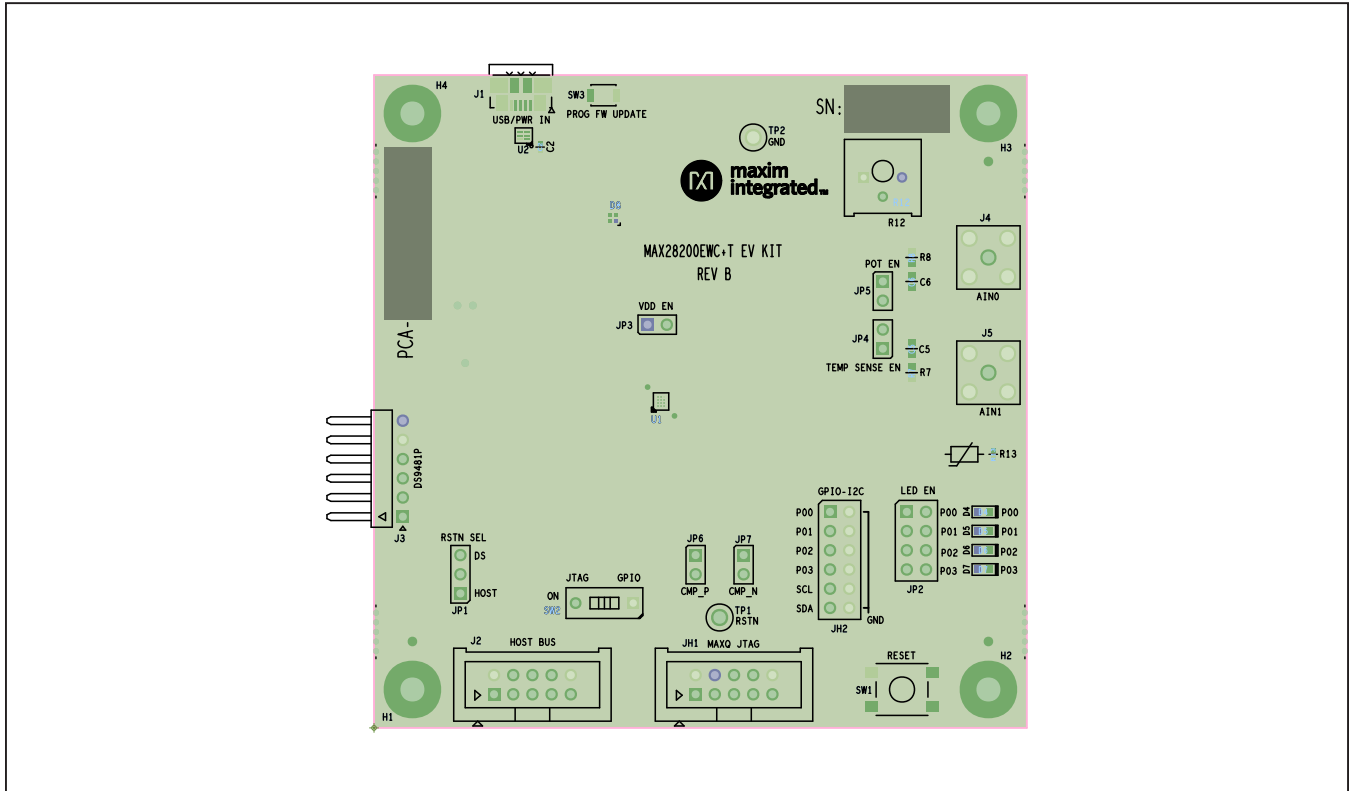
MAX28200 EV Kit Bill of Materials

QTY	PART REFERENCE	VALUE	BOM_DESCRIPTION	MANUFACTURER_PN	MANUFACTURER
11	C1,C2,C3,C9,C10,C14,C15,C16,C17,C18,C19	1uF	CAP CER 1UF 6.3V X5R 0402	GRM155R60J105KE19D	Murata
1	C4	100nF	CAP CER 0.1UF 16V 10% X7R 0402	GRM155R71C104KA88D	Murata Electronics
2	C5,C6	1nF	CAP CER 1nF 50V 5% NP0 0603	GRM1885C1H102JA01D	Murata
2	C7,C8	470nF	CAP CER 0.47UF 10V 10% X5R 0402	GRM155R61A474KE15J	Murata Electronics North America
2	C11,C12	4.7uF	CAP CER 4.7uF 10V 10% X5R 0603	C0603C475K8PACTU	Kemet
1	C13	10nF	CAP CER 10000PF 16V 10% X7R 0402	GRM155R71C103KA01D	Murata Electronics North America
1	C20	10nF	CAP CER 10nF 25V 10% X7R 0603	GRM188R71E103KA01D	Murata
3	D1,D2,D3	DFLS240-7	DIODE SCHOTTKY 40V 2A POWERDI12	DFLS240-7	Diodes Inc
2	D4,D6	RED	LED SMARTLED RED 633NM 0603	LS L296-P2Q2-1-Z	OSRAM Opto Semiconductors Inc
2	D5,D7	GRN	LED SMARTLED GREEN 570NM 0603	LG L29K-G2J1-24-Z	OSRAM Opto Semiconductors Inc
1	D8	SML-LX0404SIUPGUSB	LED RGB CLEAR 0404 SMD	SML-LX0404SIUPGUSB	Lumex Opto/Components Inc.
4	H1,H2,H3,H4	DNI	DNI MTG 125DRL 300PAD		
1	J1	MICRO USB B R/A	CONN RCPT 5POS MICRO USB B R/A	47346-0001	Molex
1	J2	HOST I2C SPI	HOST I2C SPI 10P HEADER	5104338-1	TE Connectivity
1	J3	6P 1x6 RA	CONN HEADER .100" SNGL R/A 6POS	PRPC006SBCN-M71RC	Sullins
2	J4,J5	SMA	CONN SMA JACK STR 50 OHM PCB	5-1814832-1	TE Connectivity
1	J6	MAXDAP	MAXDAP_POGO_PIN CBL PLUG-OF-NAILS 10-PIN	TC2050-IDC-NL	Tag-Connect LLC
1	JH1	JTAG MAXQ	CONN HEADER LOPRO STR 10POS GOLD	5104338-1	TE Connectivity
1	JH2	12P 2x6	CONN HEADER .100 DUAL STR 12POS	PEC06DAAN	Sullins
1	JP1	3P JUMPER	CONN HEADER .100 SNGL STR 3POS	PEC03SAAN	Sullins
1	JP2	8P 2x4	CONN HEADER .100 DUAL STR 8POS	PEC04DAAN	Sullins
5	JP3,JP4,JP5,JP6,JP7	JUMPER	CONN HEADER .100 SNGL STR 2POS (2x1)	PEC02SAAN	Sullins
1	L1	BLM41PG102SN1L	FERRITE CHIP 1K OHM 1500MA 1806	BLM41PG102SN1L	Murata Electronics
1	PCB1	PCB			
7	R1,R2,R3,R4,R11,R14,R15	10K	RES SMD 10K OHM 1% 1/16W 0402	RC0402FR-0710KL	Yageo
4	R5,R6,R9,R10	330	RES SMD 330 OHM 1% 1/10W 0603	ERJ-3EKF3300V	Panasonic
2	R7,R8	1K	RES 1K OHM 1/10W 1% 0603 SMD	ERJ-3EKF1001V	Panasonic
1	R12	10K	TRIMMER 10K OHM 0.5W PC PIN	3386P-1-103LF	Bourns Inc.
1	R13	10K	NTC THERMISTOR 10K OHM 1% 0402	NCP15XH103F03RC	Murata Electronics North America
1	R16	2.7K	RES SMD 2.7K OHM 1% 1/10W 0402	ERJ-2RKF2701X	Panasonic
1	R17	1.4K	RES SMD 1.4K OHM 1% 1/10W 0402	ERJ-2RKF1401X	Panasonic Electronic Components
1	R18	1K	RES 1K OHM 1/10W 1% 0402 SMD	ERJ-2RKF1001X	Panasonic
1	SW1	B3S-1002 BY OMZ	SWITCH TACTILE SPST-NO 0.05A 24V	B3S-1002 BY OMZ	Omron Electronics
1	SW2	DIP SW 1POS	SWITCH AUTODIP 1POS TOP ACT 24V	A6T-1104	Omron Electronics
1	SW3	B3U-1000P	SWITCH TACTILE SPST-NO 0.05A 12V	B3U-1000P	Omron Electronics
1	TP1	WHT	TEST POINT PC MULTI PURPOSE WHT	5012	Keystone Electronics
1	TP2	BLK	TEST POINT PC MULTI PURPOSE BLK	5011	Keystone Electronics
1	U1	MAX28200EWC+T	MAX28200EWC+T 12P_WLP	MAX28200EWC+T	Maxim Integrated
1	U2	MAX13202EALT+T	ESD PROTECT 2CH 6-UDFN	MAX13202EALT+	Maxim Integrated
1	U3	MAX4674EUE+T	IC MULTIPLEXER QUAD 2X1 16TSSOP	MAX4674EUE+T	Maxim Integrated
1	U4	MAX8841ELT18+T	IC REG LINEAR 1.8V 150MA 6UDFN	MAX8841ELT18+T	Maxim Integrated
1	U5	MAX32625ITK+	MAX32625ITK+ 68P TQFN	MAX32625ITK+	Maxim Integrated
1	U6	MAX38902AATA+	IC REG LDO LINEAR ADJ .5A 8TDFN	MAX38902AATA+	Maxim Integrated
1	U7	MAX8841ELT33+T	IC REG LINEAR 3.3V 150MA 6UDFN	MAX8841ELT33+T	Maxim Integrated
1	Y1	32.768KHz	CRYSTAL 32.7680KHZ 6PF SMD	ECS-.327-6-12-TR	ECS Inc.

MAX28200 EV Kit Schematics (continued)



MAX28200 EV Kit PCB Assembly Layout



Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	1/19	Initial release	—

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