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MAX32600MBED

ARM mbed Enabled Development Platform

General Description

The MAX32600MBED provides a convenient platform for evaluating the capabilities of the MAX32600 microcontroller. The MAX32600MBED also provides a complete, functional system ideal for developing and debugging applications.

The MAX32600MBED includes a MAX32600 Cortex[®]-M3 microcontroller, prototyping area with adjacent access to precision analog front end (AFE) connections, I/O access through Arduino[™]-compatible connectors, additional I/O access through 100mil x 100mil headers, USB interface, and other general-purpose I/O devices.

Kit Contents

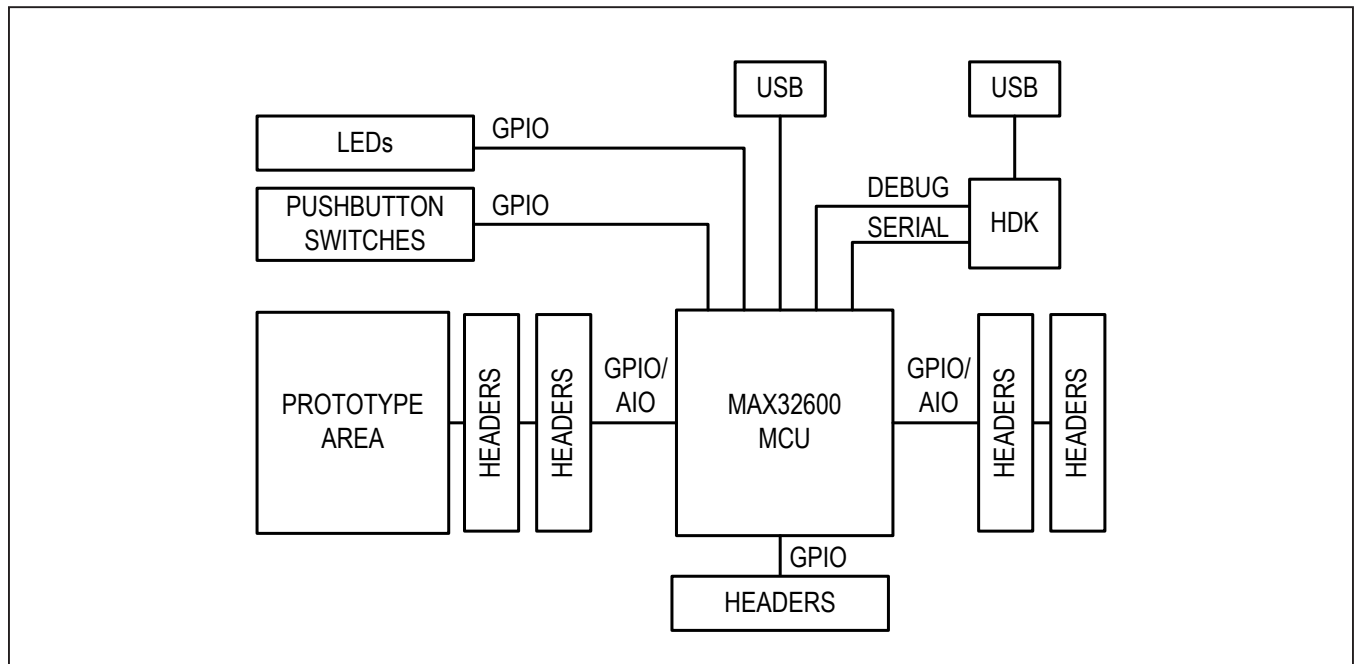
- MAX32600MBED board with MAX32600 microcontroller
- USB Standard-A to Micro-B adapter cable (for connecting on-board HDK to a PC)
- Quick Start Guide

Benefits and Features

- On-Board ARM[®] mbed[™] Hardware Development Kit (HDK) Interface Provides Quick Connection to Toolchains
- Arduino-Compatible Connectors Provide Connectivity to Existing Component Boards
- Prototyping Area Allows Construction of User Circuits in Close Proximity to Precision AFE I/O
- General-Purpose Pushbutton Switches and LEDs Allow for On-Board Tactile and Visual Interaction
- Serial Peripheral Interface (SPI) and Inter-Integrated Circuit (I²C) Connectivity on a 2 x 6 Header Provide Connectivity to Existing Evaluation Modules
- USB Micro-B Connection to MAX32600 USB Device Controller Provides 12Mbps User Data Channel

Ordering Information appears at end of data sheet.

Block Diagram



Cortex is a registered trademark of ARM Limited.

Arduino is a registered trademark of Arduino, LLC.

ARM is a registered trademark and registered service mark of ARM Limited.

mbed is a registered trademark of ARM Limited.



Detailed Description

The MAX32600MBED board is general purpose in nature. However, the ability to access the majority of I/O signals allow for easy evaluation of the MAX32600. This section describes each major function or component on the MAX32600MBED.

Board Power

The MAX32600MBED can be powered by either of the USB Micro-B connectors or an external source: VIN, V5.0, or V3.3.

HDK USB Supply

Power supplied from the HDK USB connector, CN2, shall be limited to 500mA. Only the HDK USB connector, CN2, powers the HDK circuitry. This supply is regulated to supply the HDK_V3.3 rail and is also connected to the V5.0 rail through a forward biased diode. From the V5.0 rail, it is regulated to supply V3.3.

MAX32600 USB Device Interface Supply

Power supplied from the MAX32600 USB device interface connector, CN1 is limited to 500mA. This supply is connected to the V5.0 rail through a forward biased diode. From the V5.0 rail, it is regulated to supply V3.3.

External Supply VIN

Power supplied from the VIN, J4 pin 8, is regulated to supply the V5.0 rail. The voltage input range for this input is 5V to 12V DC.

External Supplies V5.0 and V3.3

Power supplied by V5.0, J4 pin 5, is connected directly to the V5.0 rail. Likewise, power supplied by V3.3, J4 pin 4, is connected directly to the V3.3 rail.

Current Monitoring

Jumper JP4 provides a convenient current monitoring point for V3.3.

Pushbuttons

Two pushbuttons are available for application use: SW2 and SW3 are connected to port pins P6.4 and P6.5, respectively. Pushbuttons are normally open; therefore, provide a logic 0 when depressed. Firmware defines the action taken on switch closure.

Pushbutton SW4 provides a power-on reset function for the MAX32600 by asserting the RSTN input.

USB

The MAX32600 provides an integrated USB2.0 Full-speed interface (12Mbps). This interface is accessed through the USB Micro-B connector, CN1.

LEDs

Four LEDs are available for application use: D4 (yellow), D5 (red), D6 (blue) and D7 (green) are connected to MAX32620 GPIO pins P7.0, P7.1, P6.7, and P6.6, respectively. LED GPIOs should be configured as open-drain due to 3.3V LED source voltages. An LED illuminates when the appropriate GPIO pin is driven low.

Two power supply status LEDs, D9 and D10, are connected to supply rails V3.3 and V5.0, respectively.

Prototyping Area

An area for adding customer-specific circuitry is provided. This matrix is on 100mil spacing and is usable for solder or wire-wrap construction. Power and ground rails are conveniently located above and below this area.

Component List, Schematic, PCB

See the following links for component, schematic, and PCB information:

- [MAX32600MBED BOM](#)
- [MAX32600MBED Schematic](#)
- [MAX32600MBED PCB Layout](#)

Reference Material

- MAX32600 Data Sheet
- MAX32600 User Guide
- [MAX32600MBED mbed Platform Page](#)

Ordering Information

PART	TYPE
MAX32600MBED#	EV Kit

#DenotesRoHS compliant.

Revision History

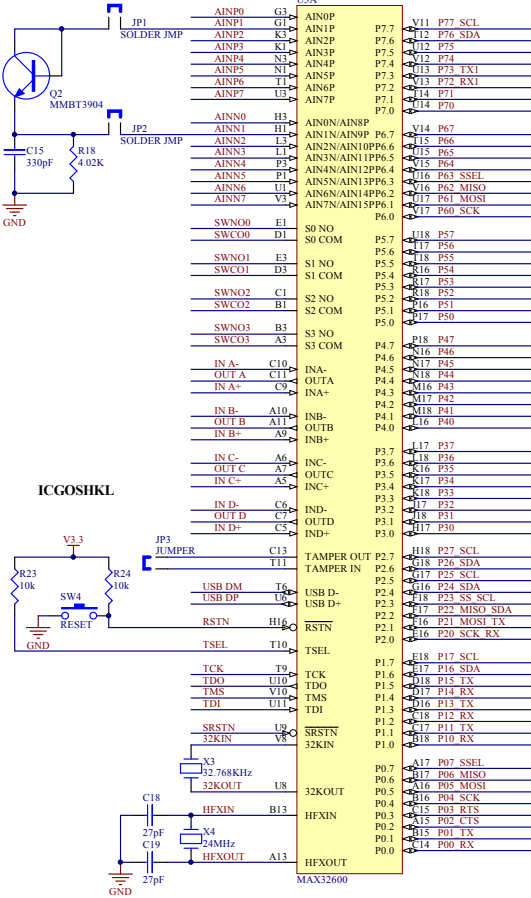
REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	10/15	Initial release	—

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.

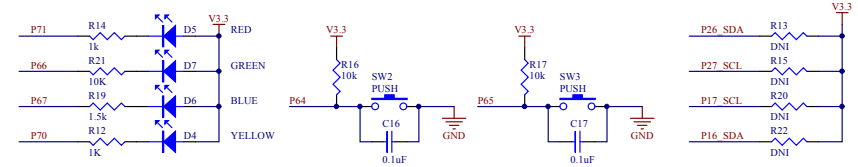
Maxim Integrated cannot assume responsibility for use of any circuitry other than circuitry entirely embodied in a Maxim Integrated product. No circuit patent licenses are implied. Maxim Integrated reserves the right to change the circuitry and specifications without notice at any time. The parametric values (min and max limits) shown in the Electrical Characteristics table are guaranteed. Other parametric values quoted in this data sheet are provided for guidance.

Item #	Quantity	Designator	Notes	Footprint	Comment	Manufacturer Name	Part Number	Description	Vendor	Vendor Part Number
1	6	C1, C3, C16, C17, C41, C47		CAP0603-3D	0.1uF	Samsung Electro-Mechanics America, Inc	CL10B104K08BNNC	CAP CER 0.1UF 16V 10% X7R 0603	Digikey	1276-1005-2-ND
2	1	C2		CAP0603-3D	30pF	Samsung Electro-Mechanics America, Inc	CL10C300B08BNNC	CAP CER 30PF 50V 5% NPO 0603	Digikey	1276-1021-1-ND
3	4	C4, C5, C18, C19		CAP0603-3D	27pF	Samsung Electro-Mechanics America, Inc	CL10C2707B8BNNC	CAP CER 27PF 50V 5% NPO 0603	Digikey	1276-1086-2-ND
4	11	C6, C11, C22, C23, C24, C25, C29, C30, C34, C36, C37		CAP0402-3D	1.0uF	Samsung Electro-Mechanics America, Inc	CL05A105K05SNNC	CAP CER 1UF 6.3V 10% X5R 0402	Digikey	1276-1010-2-ND
5	7	C7, C9, C10, C13, C14, C20, C31		CAP0402-3D	0.1uF	Samsung Electro-Mechanics America, Inc	CL05A104K05SNNC	CAP CER 0.1UF 6.3V 10% X5R 0402	Digikey	1276-1442-2-ND
6	1	C8		CAP0402-3D	0.01uF	Samsung Electro-Mechanics America, Inc	CL10B103K8BNCNC	CAP CER 10000PF 16V 10% X7R 0402	Digikey	1276-1051-2-ND
7	3	C12, C43, C48		CAP0805-3D	10uF	TDK Corporation	C2012X5R1A106K125AB	CAP CER 10UF 10V 10% X5R 0805	Digikey	445-7660-1-ND
8	1	C15		CAP0603-3D	330pF	Murata Electronics North America	GRM1885C1H31JA01D	CAP CER 330PF 50V 5% NPO 0603	Digikey	490-1439-1-ND
9	7	C21, C26, C27, C28, C32, C33, C35		CAP0603-3D	4.7uF	Samsung Electro-Mechanics America, Inc	CL10B475K08BQNC	CAP CER 4.7UF 6.3V 10% X7R 0603	Digikey	1276-2087-2-ND
10	2	C38, C44		CAP0805-3D	22uF	TDK Corporation	C2012X5R1C226M085AC	CAP CER 22UF 16V 20% X5R 0805	Digikey	445-14374-1-ND
11	2	C39, C45		CAP0603-3D	0.01uF	Samsung Electro-Mechanics America, Inc	CL10B103K8BNCNC	CAP CER 10000PF 50V 10% X7R 0603	Digikey	1276-1921-2-ND
12	2	C40, C46		CAP0805-3D	2.2uF	Murata Electronics North America	GRM21BF51C252A01L	CAP CER 2.2UF 16V Y5V 0805	Digikey	490-1741-1-ND
13	1	C42		CAP0805-3D	4.7uF	Samsung Electro-Mechanics America, Inc	CL12A475KPFNNNE	CAP CER 4.7UF 10V 10% X5R 0805	Digikey	1276-1259-2-ND
14	2	CN1, CN2		USBMICROB-3D	Micro USB	FCI	10103594-0001LF	USB MICRO B TOP MOUNT	Digikey	609-4050-1-ND
15	4	D1, D4, D9, D10		0603LED-3DRED	RED	Lite-On Inc	LTST-C193KRKT-5A	LED RED RECT CLEAR 0603	Digikey	160-1830-1-ND
16	2	D2, D5		0603LED-3DBLUE	BLUE	OSRAM Opto Semiconductors Inc	LB Q39G-L2N2-35-1	LED CHIPLED BLUE 470NM 0603 SMD	Digikey	475-2816-1-ND
17	2	D3, D6		0603LED-3DGREEN	GREEN	Dialight	598-8081-107F	LED INGAN GREEN CLEAR 0603 SMD	Digikey	350-2036-1-ND
18	1	D7		0603LED-3DORANGE	YELLOW	Vishay Electronics Inc	150060Y575000	WL-SMCW SMD CHIP LED WATERCLEAR 120mcd	Digikey	732-4981-1-ND
19	2	DB, D11		DIODE2223-3D	ES1B-E3/SAT	Wurth Semiconductor Diodes Division	ES1B-E3/SAT	DIODE UFAST 100V 1A D0214AC	Digikey	ES1B-E3/SATGIC1-ND
20	2	F81, F82		0805FB-3D	BLM21PG221SN1D	Murata Electronics North America	BLM21PG221SN1D	FERRITE CHIP 220 OHM 0805	Digikey	490-1054-1-ND
21	1	J3		SIP10	CON10	Sullins Connector Solutions	PPPC101LFBN-RC	CONN HEADER FEMALE 10POS. 1" GOLD	Digikey	5740-153-ND
22	2	J4, J6		SIP8	CON8	Sullins Connector Solutions	PPPC081LFBN-RC	CONN HEADER FEMALE 8POS. 1" GOLD	Digikey	57041-ND
23	1	J5		SIP6	CON6	Sullins Connector Solutions	PPPC061LFBN-RC	CONN HEADER FEMALE 6POS. 1" GOLD	Digikey	57039-ND
24	1	J11		DH10X2	PORT 2 & 3	FCI	68602-220HLF	CONN HEADER 20POS. 100 STR 15AU	Digikey	609-3375-ND
25	2	J7	DNI	SIP2						
26	3	J13, J15, J16		DH8X2	PORTS, PORT 1 & 4	FCI	68602-216HLF	CONN HEADER 16POS. 100 STR 15AU	Mouser	"609-3374-ND" "649-68602-216HLF"
27	1	J17	DNI	DH6X2	PORT0	Sullins Connector Solutions	PPPC062LJBN-RC	CONN FEMALE 12POSDL. 1" R/A GOLD	Digikey	S5559-ND
28	1	J18		DH3x2	PORT6	FCI	68602-206HLF	CONN HEADER 6POS. 100 STR 15AU	Digikey	609-3370-ND
29	2	JP3, JP4	Cut to 2 pin lengths	SIP2	JUMPER	Sullins Connector Solutions	PBC36SAAN	CONN HEADER .100 SINGL STR 36POS	Digikey	S1011E-36-ND
30	1	Q1		16001-3D	2N7002	NXP Semiconductors	2N7002BK, 215	MOSFET N-CH 60V 350MA SOT23	Digikey	568-5981-1-ND
31	1	Q2		SOT523-3D	MMBT3904	Diodes Incorporated	MMBT3904T-7-F	TRANS NPN 40V 0.2A SOT523	Digikey	MMBT3904T-FDICT-ND
32	1	R1		0603-3D	20k	Rohm Semiconductor	MCR03ERT2002	RES SMD 20K OHM 1% 1/10W 0603	Digikey	RHM20.0KCFTR-ND
33	2	R2, R4		0603-3D	500k	Yageo	CRCW0603499KFKEA	RES SMD 499K OHM 1% 1/10W 0603	Digikey	541-499KHTR-ND
34	5	R3, R12, R21, R26, R27		0603-3D	1K	Yageo	RC0603FR-071KL	RES SMD 1K OHM 1% 1/10W 0603	Digikey	311-1.00KHTR-ND
35	2	R5, R14		0603-3D	1.5K	Panasonic Electronic Components	ERI-3EK1F501V	RES SMD 1.5K OHM 1% 1/10W 0603	Digikey	P1.50KHTR-ND
36	8	R6, R9, R10, R16, R17, R19, R23, R24		0603-3D	10K	Panasonic Electronic Components	ERI-3EK1002V	RES SMD 10K OHM 1% 1/10W 0603	Digikey	P10.0KHTR-ND
37	1	R7		0603-3D	68 ohm	Samsung Electro-Mechanics America, Inc	RC1608F680CS	RES SMD 68 OHM 1% 1/10W 0603	Digikey	1276-4550-1-ND
38	3	R8, R30, R31		0603-3D	100 ohm	Samsung Electro-Mechanics America, Inc	RC1608F101CS	RES SMD 100 OHM 1% 1/10W 0603	Digikey	1276-3482-2-ND
39	1	R11		0603-3D	4.7K	Rohm Semiconductor	MCR03ERT4701	RES SMD 4.7K OHM 1% 1/10W 0603	Digikey	RHM4.7KCFTR-ND
40	1	R18		0603-3D	4.02K	Yageo	RT0603DRD074K02L	RES SMD 4.02K OHM 0.5% 1/10W	Digikey	311-4.02KCT-ND
41	1	R25	DNI	0402-3D	DNI	N/A	N/A	N/A	N/A	N/A
42	1	R13, R15, R20, R22, R25	DNI	0603-3D	DNI	N/A	N/A	N/A	N/A	N/A
43	2	R28, R29		0603-3D	10 ohm	Panasonic Electronic Components	ERI-3EK10RDV	RES SMD 10 OHM 1% 1/10W 0603	Digikey	P10.0HTR-ND
44	2	R33, R35		0603-3D	0 Ohm	Panasonic Electronic Components	ERI-3GEY0RDV	RES SMD 0.0 OHM JUMPER 1/10W	Digikey	P0.0GTR-ND
45	2	RT1, RT2		1206POLYFUSE-3D	PTC Fuse	Bourns Inc.	MF-NSMF012-2	PTC RESETTABLE 12A 30V 1206	Digikey	MF-NSMF012-2CT-ND
46	1	SW1	DNI	SIP2			N/A	N/A	N/A	N/A
47	3	SW2, SW3, SW4		RESET11-3D	PUSH	C&K Components	KSR2212GLFS	SWITCH TACTILE SPST-NO 0.05A 32V	Digikey	401-1703-1-ND
48	1	U1		BGA121 8x8mm 0.65p	MAX32550	Maxim Integrated	MAX32550	Secure Cortex-M3 Flash Microcontroller	Digikey	N/A
49	1	U2		SOT23-5-3D	NC7S232	Fairchild Semiconductor	NC7S232M5X	IC GATE OR 1CH 2-INP SOT-23-5	Digikey	NC7S232M5XCT-ND
50	1	U3		VFSOP8	SN74LVC3G34	Texas Instruments	SN74LVC3G34DCLR	IC BUFFER TRPL NON-INV US8	Digikey	296-13286-1-ND
51	1	U4		TSSOP20	SN74LVC541A	Texas Instruments	SN74LVC541ADBRR	IC BUFF/DVR TRI-ST 8BIT 20SSOP	Digikey	296-8518-1-ND
52	1	U5		WASPBGA192	MAX32600	Maxim Integrated	MAX32600	Secure Sensor Measurement Microcontroller	N/A	N/A
53	1	U6		TDFN8 3mm 65T	MAX16910CATAB+	Maxim Integrated	MAX16910CATAB/+	Linear Regulator 3V/5V/ADJ 200mA	N/A	N/A
54	2	U7, U9		SOT23-5-3D	MAX8887EZK33+T	Maxim Integrated	MAX8887EZK33+	LDO 300mA Linear Regulator 3.3v version	N/A	N/A
55	2	U8, U10		sot23-6-3D	MAX3207EAUT+	Maxim Integrated	MAX3207EAUT+	Dual High-Speed Differential ESD-Protection IC	N/A	N/A
56	2	X1, X3		CRYSTAL-ABS07	32.768KHZ	Abracon LLC	ABS07-32.768KHZ-6-T	CRYSTAL 32.768KHZ 6-PF SMD	Digikey	535-11898-1-ND
57	1	X2		CRYSTAL-ABM3X	12 MHz	Abracon LLC	ABM3B-12.000MHZ-B2-T	CRYSTAL 12MHZ 18PF SMD	Digikey	535-9116-1-ND
58	1	X4			24MHz	Abracon LLC	ABM7-24.000MHZ-D2Y-T	CRYSTAL 24MHZ 18PF SMD	Digikey	535-9845-1-ND

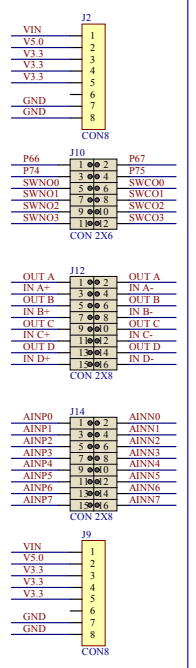
TEMP SENSOR CPU LO



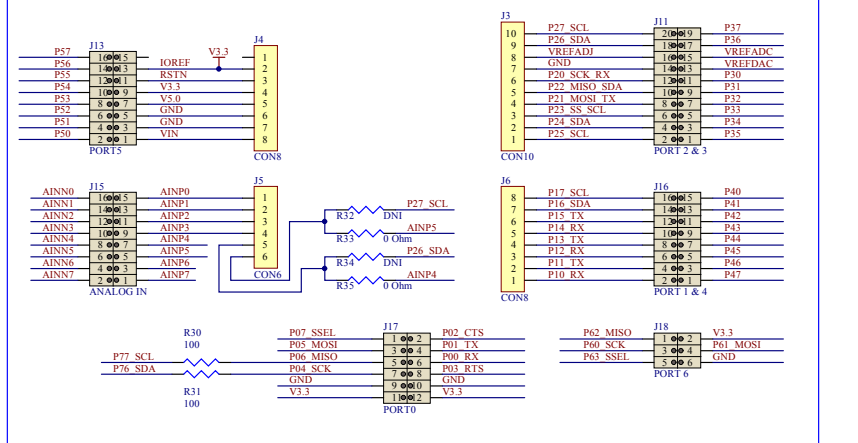
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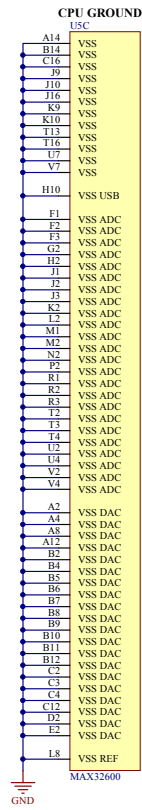
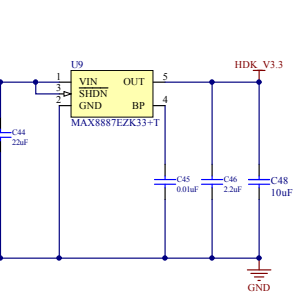
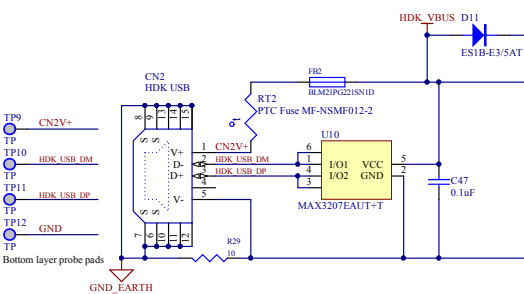
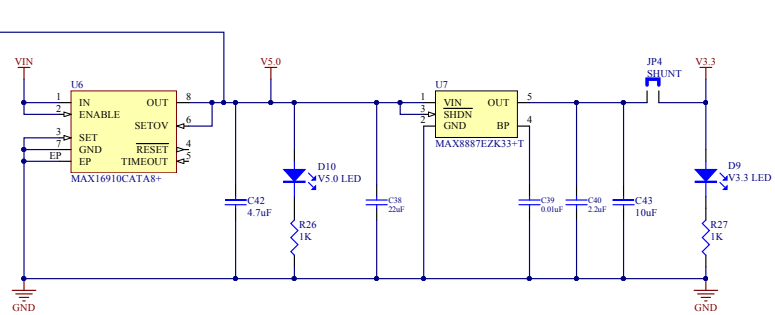
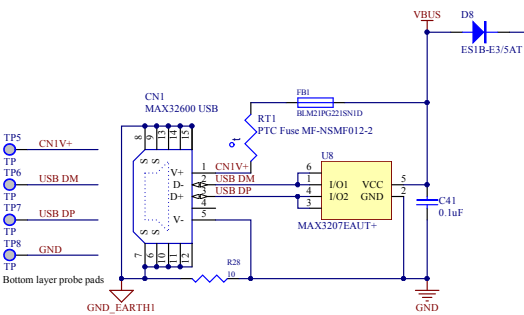
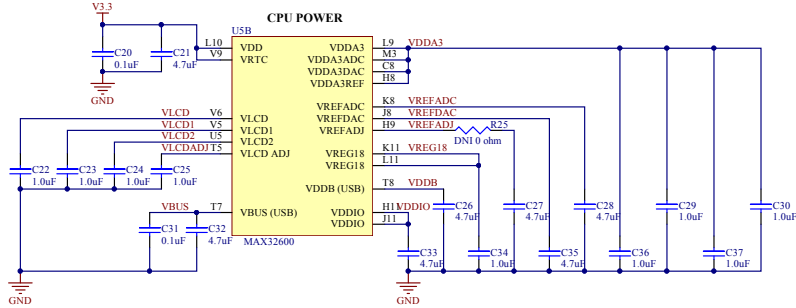
BREADBOARD AREA LESS EMPTY HOLES



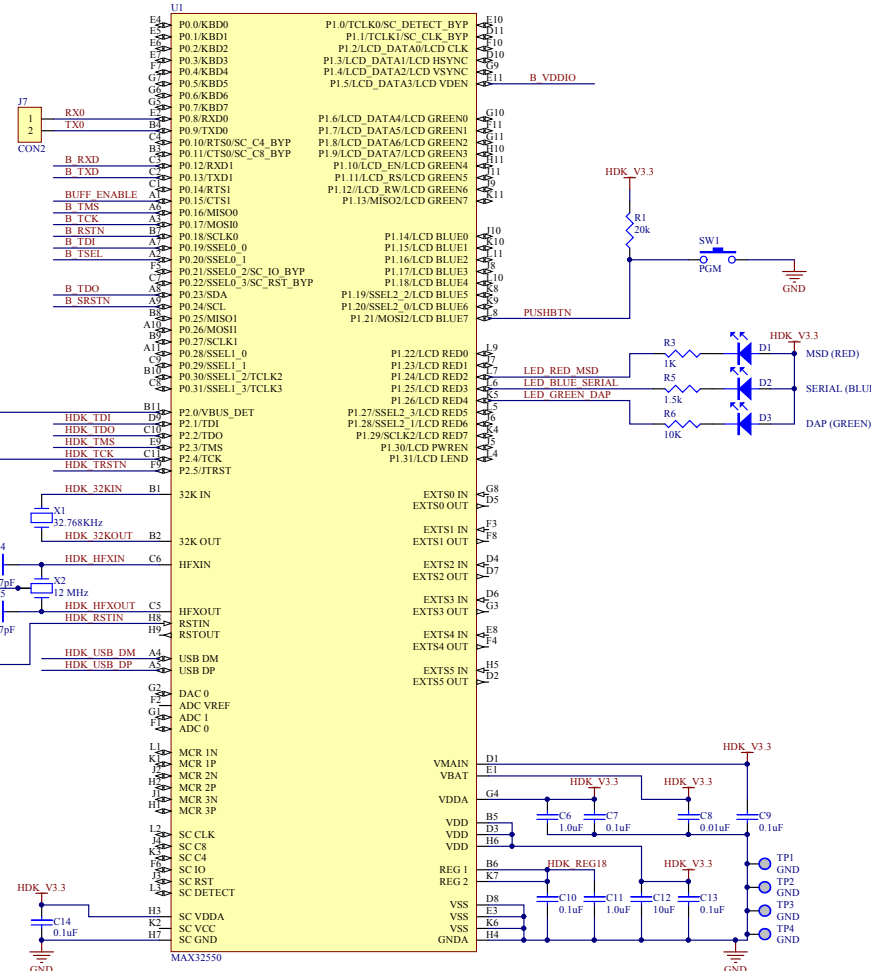
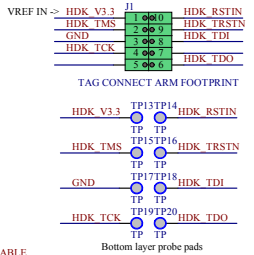
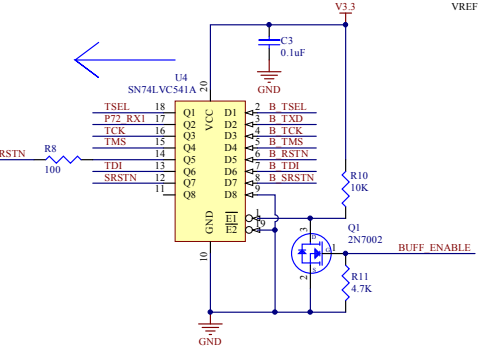
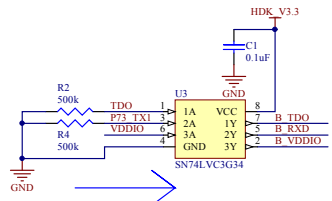
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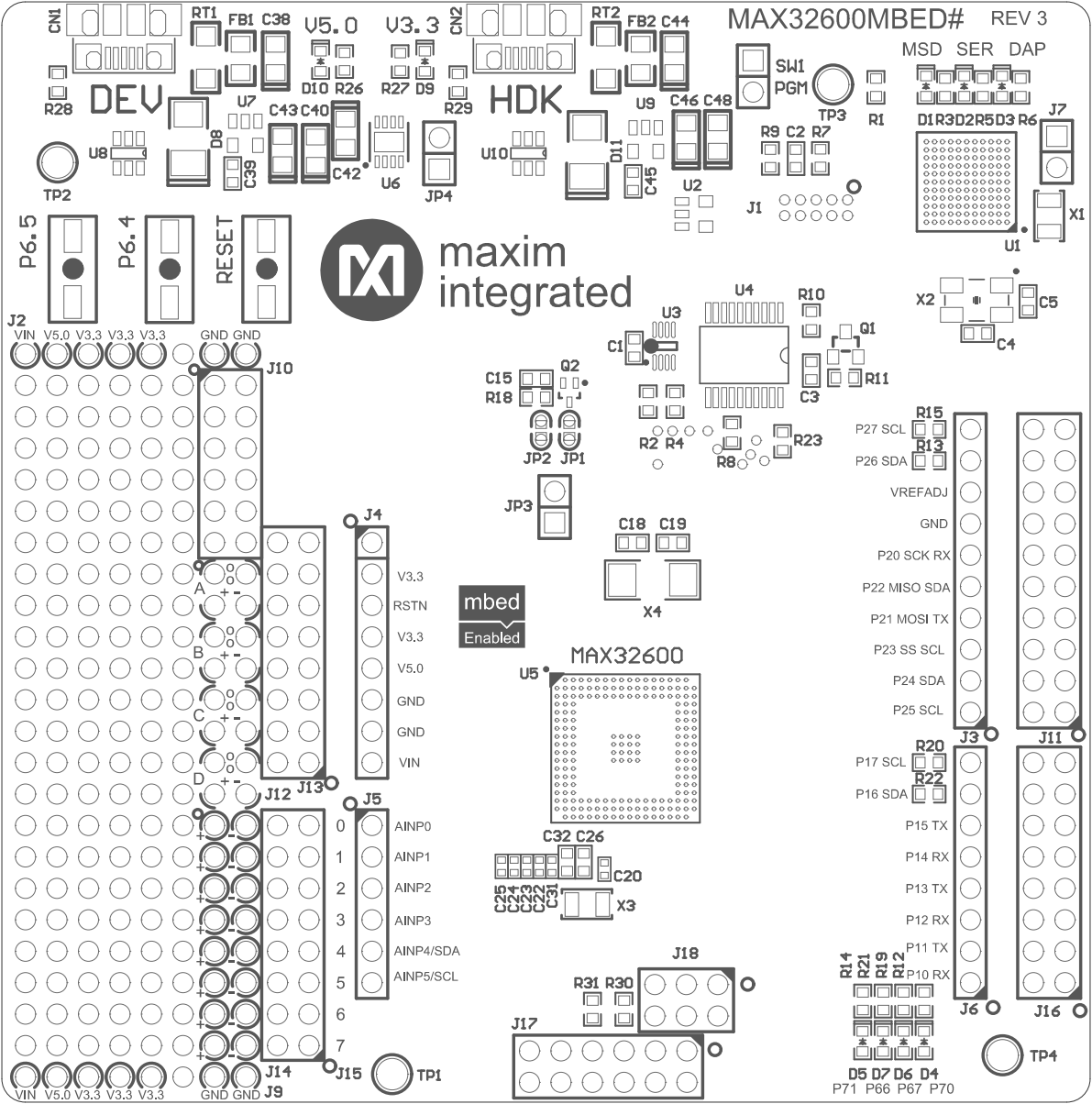


MAX32600



BUFFERS





MBED
Enabled

MAX32600

VIN V5.0 V3.3 V3.3 V3.3

GND GND

J10

A + -

B + -

C + -

D + -

J12 J13

J14 J9

VIN V5.0 V3.3 V3.3 V3.3

GND GND

J15

AINP0

AINP1

AINP2

AINP3

AINP4/SDA

AINP5/SCL

J17

J18

TP1

VIN V5.0 V3.3 V3.3 V3.3

GND GND

J16

J16

TP4

D5 D7 D6 D4

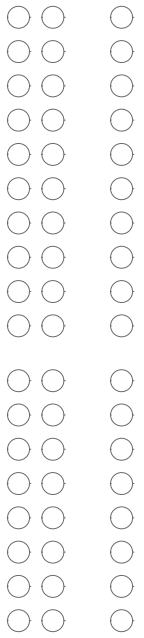
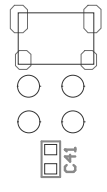
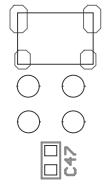
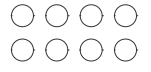
P71 P66 P67 P70

V3.3
RSTN
V3.3
V5.0
GND
GND
VIN

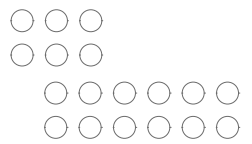
P27 SCL
P26 SDA
VREFADJ
GND
P20 SCK RX
P22 MISO SDA
P21 MOSI TX
P23 SS SCL
P24 SDA
P25 SCL

P17 SCL
P16 SDA
P15 TX
P14 RX
P13 TX
P12 RX
P11 TX
P10 RX

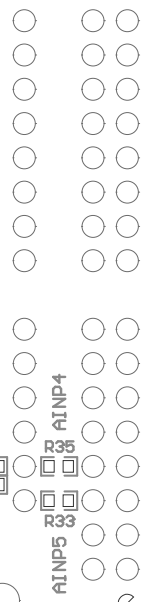
C14
C13 C8
C9
C10
C7
C6
C12
C11



C27 R25
C33 C29
C34 C30
C21 C35
C28
C36 C37



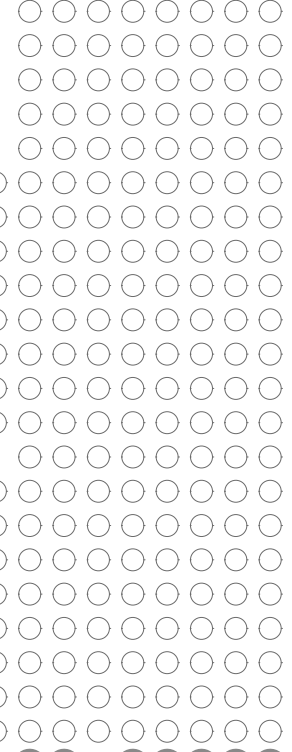
SDA R34
SCL R32



AINP4
AINP3
AINP2
AINP1

R24
R16 C16
R17 C17

GND GND V3.3 V3.3 V3.3 V5.0 VIN



GND GND V3.3 V3.3 V3.3 V5.0 VIN