

**Evaluates: MAX20335** 

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## MAX20335 Evaluation System

### **General Description**

The MAX20335 evaluation system (EV system) is a fully assembled and tested circuit board that demonstrates the MAX20335 low-power wearable power management integrated circuit (PMIC). The MAX20335 features two bucks, three linear regulators, and a battery charger.

The EV system comes with the MAX20335 board, the MAXPICO2PMB# board, and two USB micro-B cables. The EV system comes with the MAX20335BEWX+ installed. The MAX20335 is configurable through an I<sup>2</sup>C interface that allows for programming various functions and reading the device status. The EV system GUI application sends commands to the MAXPICO2PMB# adapter board to configure the device.

#### **Features**

- USB Power Option
- Flexible Configuration
- On-Board LED Indicator and Battery Simulation
- Sense Test Point for Output-Voltage Measurement
- Windows<sup>®</sup> 8/10-Compatible GUI Software
- Fully Assembled and Tested

### **EV System Contents**

- MAX20335 EV system
- MAXPICO2PMB# board
- Two USB A-to-USB micro-B cables

### **EV System Contents**

PART	TYPE
MAX20335EVKitSetupVxxx.exe	PC GUI Program

Ordering Information appears at end of data sheet.

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### **Quick Start**

#### **Required Equipment**

**Note:** In the following sections, software-related items are identified by bold text. Text in **bold** refers to items directly from the EV system software installation.

- MAX20335 EV system
- Windows PC with USB ports
- One USB A-to-USB micro-B cable and MAXPICO2PMB# adapter board
- One USB A-to-USB micro-B cable or power supply (for battery simulation or battery voltage)
- Optional one USB A-to-USB micro-B cable or power supply (for charger input CHGIN)
- Voltmeter

#### Procedure

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

- Visit <u>https://www.maximintegrated.com</u> to download the latest version of the EV system software, MAX20335EVKitSetupVxxx.zip located on the MAX20335 EV system web page. Download the EV system software to a temporary folder and unzip the zip file.
- Install the EV system software on the computer by running the MAX20335EVKitSetupVxxx.exe program inside the temporary folder.
- 3) Verify that all jumpers are in their default positions, as shown in Table 1.
- Connect the type-A end of a cable to the PC and micro-USB end of a cable to MAXPICO2PMB# board, and connect the MAXPICO2PMB# to J13 located on lower left of the EV system board.
- 5) Connect a USB A-to-micro-B cable from the computer to J21 on upper-right corner of the EV system board to use VBUS to power the battery simulation circuits on the board, or to power the battery simulation circuits from the VHC test point. (The user can also use a Li-ion battery or power source to evaluate the device if not using the battery simulation circuits. Connect the battery or power source to J2 on the EV system board. Skip step 6 if not using the battery simulation.)

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- Use a voltmeter to check that VHC is about 5V and BATSIM test point is about 3.7V. To adjust the BATSIM voltage, turn the R58 BATSIM potentiometer.
- On the computer, open the MAX20335 GUI. It should look like <u>Figure 1</u>; the status bar on the bottom displays MAX20335 Not Found.
- 8) Place a shunt on J15, then confirm that TP BAT is set to BATSIM voltage. The GUI status bar on the bottom displays **Connected**.
- 9) Check the SYS, B1OUT, and B2OUT test points have no voltage.
- 10) A CHGIN insertion turns on the device. Connect a USB A-to-micro-B cable from the computer to J1 on

lower-right corner of the EV system board to use VBUS to power CHGIN and shunt J3 jumper, the device then enters **ON** mode. When the device is ON, SYS is about 4.4V if CHGIN voltage is still present, SYS is about 3.7V (BAT voltage) if CHGIN voltage is removed, B1OUT is about 1.8V, and B2OUT is about 1.2V.

- 11) The EV system is now ready for additional evaluation.
- 12) To evaluate the battery charger, the user can shunt J3 and plug in a USB micro-B cable to J1 of the EV system to use USB VBUS power, or externally supply the charging power on TP CHGIN.

eneral Buck 1 Bu	ck 2 LDOs	Charger Re	egister Mar			
General Informati	ion and Co	nfigurations			Read	All
Hardware ID Firmware ID Boot Delay			0x04 0x00 80ms	Power/Reset Commands Soft Reset Hard Reset	Power	Off
SYS Minimum	Voltage Thre	shold 3.	6V +	MON Mux Pin Source	None	*
CHGIN Input Cu	urrent Limit	500	)mA 👻	MON Resistive Partition Ratio	<mark>4:1</mark>	*
Input Current Limiter Status Off			MON Off Mode Condition			
MPC0 State			Low	Pulled Low by 100k Resistor		
MPC1 State			Low	HI-Z		
PFN1 State			Low			
PFN2 State			Low			
Interrupts and Sta	tus				Read Inte	errupts
Interrupt Name	Mask	Status				
ThrmStat		Detection disa	abled due	CHGIN not present.		
UsbOk		CHGIN Input i	s not pre	nt or outside of valid range.		
UsbOVP	$\checkmark$	CHGIN OVP i	s not act			
ILim		CHGIN input of	current e	eds limit.		

Figure 1. MAX20335 Not Found Status

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le Device Optio	ns Help						
eneral Buck 1	Buck 2 LD	Os Charge	r Registe	er Map			
General Inform	ation and	Configurati	ons			Read	I All
Hardware ID				0x04	Power/Reset Commands		
Firmware ID			(	0x00	Coft Deart	Denne	044
Boot Delay			8	0ms	Son Reset Hard Reset	Power	UII
SYS Minimur	n Voltage T	hreshold	3.6V	T	MON Mux Pin Source	None	Ŧ
CHGIN Input	Current Lir	nit	500mA	•	MON Resistive Partition Ratio	<mark>4:1</mark>	*
Input Current	Limiter Sta	atus		Off	MON Off Mode Condition		
MPC0 State				Low	Pulled Low by 100k Resistor		
MPC1 State				Low	Hi-Z		
PEN1 State				Low			
DEN2 State				Low			
TTINZ State				LUW			
Interrupts and S	tatus					Read Inte	errupts
Interrupt Name	Mask	Status					
ThrmStat	$\checkmark$	Detectio	n disable	d due to C	HGIN not present.		
UsbOk	$\checkmark$	CHGIN Ir	nput is no	t present (	or outside of valid range.		
UsbOVP	$\checkmark$	CHGIN C	OVP is no	t active.			
ILim		CHGIN in	nput curre	ent exceed	ds limit.		
					Ĩ		

Figure 2. Connected Status

### **Detailed Description of Software**

#### **Software Startup**

Upon starting the program, the EV system software automatically searches for the USB interface circuit and then for the IC device addresses. The EV system enters normal operating mode when the connection is established and addresses are found. If the USB connection is not detected, the status bar displays **Not Connected**. If the USB connection is detected, but the MAX20335 is not found, the status bar shows **MAX20335 Not Found**.

#### **ToolStrip Menu Bar**

The **ToolStrip** menu bar (Figure 3) is located at the top of the GUI window. This bar comprises **File**, **Device**, **Options**, and **Help** menus whose functions are detailed in the following sections.

#### File Menu

The **File** menu contains the option to exit out of the GUI program.

#### **Device Menu**

The **Device** menu provides the ability to connect or disconnect the EV system to the GUI. The **Advanced**  $\rightarrow$  **I<sup>2</sup>C Read/Write** menu allows to read from or write to a selected register with a specified slave address.

#### **Options Menu**

In the **Options** menu, the **Disable Polling** option lets the user read the registers manually instead of getting automatically frequent register updates from the IC. The **Use USB2PMB2#** option should be checked if using with the USB2PMB2# adapter board.

#### **Help Menu**

The **Help** menu contains the **About** option, which displays the GUI splash screen indicative of the GUI version being used.

#### **Tab Controls**

The MAX20335 EV system software GUI provides a convenient way to test the features of the MAX20335. Each tab contains controls relevant to various blocks of the device. Changing these interactive controls triggers a write operation to the MAX20335 to update the register contents. The **Read All** button reads all the configuration registers that are visible on the current tab page. All statuses are polled continuously. The polling feature can be disabled in the **Options** section of the menu bar by selecting **Disable Polling**.

#### General Tab

The **General** tab (Figure 4) provides information on device info, set power reset command, SYS minimum voltage threshold, CHGIN input current limit, input current limiter status, MON setting, PFNs, and MPCs status.



Figure 3. The ToolStrip Menu Items

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ie bevice option.	s Help						
eneral Buck 1 Bu	ick 2 LDO	s Charger	Registe	r Map			
General Informat	tion and C	Configurati	ons			Read	All
Hardware ID Firmware ID Boot Delay			( ( 81	0x04 0x00 0ms	Power/Reset Commands Soft Reset Hard Reset	Power	Off
SYS Minimum	Voltage Th	reshold	3.6V	T	MON Mux Pin Source	None	
CHGIN Input C	urrent Limi	it	500mA	v	MON Resistive Partition Ratio	4:1	*
Input Current Limiter Status				Off	MON Off Mode Condition		
MPC0 State				Low	Pulled Low by 100k Resistor		
MPC1 State				low	Hi-Z		
PFN1 State				Low			
PFN2 State				Low			
Interrupts and Sta	atus					Read Inte	errupts
Interrupt Name	Mask	Status					
ThrmStat	$\checkmark$	Detection	n disableo	d due to C	HGIN not present.		
UsbOk	$\checkmark$	CHGIN Ir	nput is no	t present o	or outside of valid range.		
UsbOVP	$\checkmark$	CHGIN C	OVP is no	t active.			
ILim	$\checkmark$	CHGIN ir	nput curre	ent exceed	ls limit.		

Figure 4. General Tab

#### Buck1/2 Tab

In the **Buck1** and **Buck2** tabs (Figure 5 and Figure 6), the user can enable bucks, set buck voltages, inductor current settings, and some additional settings.

	Help				
neral Buck 1 Bu	ck 2 LDO	S Charger Register Map			
Buck 1 Configura	ation		Read All		
Buck 1 Enable Enabled Enabled by Disabled	MPC		Adaptive Inductor Peak Current Enabled Use Inductor Peak Current Setting		
Output Voltage			Inductor Peak Current		
	Se	.t	Set		
Fast Start			Dow EMI Mode		
Active Dis	charge		FET Scaling		
			Read Interrupts		
nterrupts and Sta	tus				
Interrupts and Sta	tus Mask	Status			
Interrupts and Sta Interrupt Name ThrmBuck1	tus Mask ☑	Status Buck1 not in Thermal Off me	ode.		

Figure 5. Buck1 Tab

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File De	evice Opt	ions Help			
General	Buck 1	Buck 2 LDO	s Charger Register Map		
Buck	2 Config	juration			Read All
Bu	uck 2 Ena Enabled Enabled Disabled	ble by MPC		Adaptive Inductor Peak Current <ul> <li>Enabled</li> <li>Use Inductor Peak Current S</li> </ul>	etting
0		age	1.2V	Inductor Peak Current	150mA
0	Fast S	tart Discharge		<ul> <li>Low EMI Mode</li> <li>FET Scaling</li> </ul>	
Interru	upts and	Status			Read Interrupts
Interr	upt Name	e Mask	Status		
Thrm	Buck2		Buck2 not in Thermal Of	f mode.	
2.27					

Figure 6. Buck2 Tab

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### LDOs Tab

The LDOs tab (Figure 7) lets the user enable LDOs, set LDO voltages, change to load switch mode.

eneral Buck 1 Bu	ck 2 LDOs	Charger	Register Map		
LDO 1			LDO 2	LDO 3	Read All
LDO 1 Enable Enabled by M Disabled Output Voltage Se Load Switcl Active Disc	PC 3 et h Mode harge	6V	LDO 2 Enable Enabled by MPC Disabled Output Voltage Set Load Switch Mode Active Discharge	LDO 3 Enabled Enabled by Disabled Output Voltage Load Swi Active Disable	MPC 1.3V Set tch Mode scharge
Interrupts and Sta	tus				Read Interrupts
Interrupt Name	Mask	Status			
ThrmLDO1		LDO1 not	in Thermal Off mode.		
ThrmLDO2	$\checkmark$	LDO2 not	in Thermal Off mode.		
ThrmLDO3	$\square$	LDO3 not	in Thermal Off mode.		

Figure 7. LDOs Tab

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#### **Charger Tab**

The **Charger** tab (Figure 8) lets the user set charger and thermistor monitor configurations. The charger and thermistor status section constantly polls the charger and

thermistor status and displays any changes. The polling happens even when the **Charger** tab is not selected. The polling can be disabled by selecting **Disable Polling** in the **Options** menu at the top of the application.

e pence options	пер				
eneral Buck 1 Bu	ck 2 LDOs	G Charger Register Map			
Charger Configu	ration			Read A	All .
Enable Ch	narger		Battery Regulation Threshold	4.20V	
Charger A	uto-Restar	t	Recharge Threshold	-120mV	*
Charger A	uto-Stop		Pre-charge Threshold	3.00V	Ŧ
		trans and a matrix	Pre-charge Current	0.05xlFchg	*
JEITA Monito	JEITA Mor	nitoring Mode	Charge Done Threshold	0.1xlFchg	v
T1-T2 Fast-cha	arge Currei	0.5 x IFChg 🔹	Maintain Charge Timer	Omin	•
T2-T3 Fast-cha	arge Curren	1.0 x IFChg 👻	Fast-charge Timer	300min	
T3-T4 Fast-cha	arge Curren	1.0 x IFChg 👻	Pre-charge Timer	30min	*
Interrupts and Sta	tus			Read Inter	rupts
Interrupt Name	Mask	Status			
ChgStat	$\checkmark$	Charger off.			
ChgThrmReg	$\checkmark$	Charger is functioning norm	ally, or disabled.		
ChgThrmSd	$\checkmark$	Charger and input current lir	miter is in normal operating mode.		
ChgTmo		Charger is running normally,	, or disabled.		

Figure 8. Charger Tab

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#### **Register Map Tab**

The **Register Map** tab allows for the configuration of all I<sup>2</sup>C registers, including those not configurable in other tabs. The register to be read from or written to can be selected in the left table. The right table contains descriptions for each register field of the selected 8-bit register. All bits, along with their field names, are displayed at the bottom of the page.

To set a bit, click the bit label. **Bold** text represents logic 1 and regular text represents logic 0. To configure the changes to the device, click the **Write** button at the bottom right.

The user can click **Read All** to perform a burst read of all registers.



Figure 9. Register Map Tab

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#### **Detailed Description of Hardware**

The MAX20335 EV system evaluates the MAX20335 lowpower wearable PMIC, which communicates over the I<sup>2</sup>C interface. The EV system demonstrates the IC features such as bucks, linear regulators, LED indicator, and battery charger. The EV system uses the IC in a 36-bump wafer-level package on a proven, four-layer PCB design. The EV system can use USB VBUS +5V DC for battery and charger input-power source. Alternatively, the EV system can be powered from an external power supply. <u>Figure 10</u> and <u>Figure 11</u> show the EV system and block annotated pictures.



Figure 10. MAX20335 EV System Board Picture

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Figure 11. MAX20335 EV System Block Annotated Picture

#### Hardware Setup

To use the EV system with GUI, connect the MAXPICO2PMB# to the PMOD connector in the bottom left corner of the board. The MAXPICO2PMB# also provides 3.3V to the logic voltage VIO of the EV system when shunting J20. The user can use J21 USB VBUS to power the battery simulation circuits on the EV system to supply BAT of the IC. Turning the R58 potentiometer can change the BATSIM voltage. Connect BATSIM to BAT of the IC with a shunt on J15. Alternatively, instead of using battery simulation circuits on board, the user can connect their Li-ion battery on the J2 connector. The user can use J1 USB VBUS as CHGIN source and place a shunt on J3.

#### **PFNs and MPCs States**

The PFNs and MPCs can be pulled up to VIO or connected to ground through a  $100 k \Omega$  resistor.

#### **Regulators and Peripherals**

All regulator outputs are made available on test points. The inputs to the LDO1, LDO2, and LDO3 must be supplied externally, or use J10, J14, J16 to power LDO1, 2, 3 from SYS voltage. The buck1 and buck2 outputs have sense test points which provide easy voltage measuring.

#### **Thermistor and SET Adjustment**

When the J4 shunt is installed, THM is pulled up to TPU through a  $10k\Omega$  resistor. Header J5 is used to select the pulldown resistor for THM. When pin 1 and 2 is shunted,

potentiometer R31 is used to simulate a thermistor at THM. When pin 2 and 3 is shunted, a fixed  $15k\Omega$  resistor is connected between THM and ground.

Header J18 is used to select the resistor for R<sub>ISET</sub> which sets the fast charge current I<sub>FCHG</sub>. Shunting pin 1 and 2 selects potentiometer R63 and the user can change R<sub>ISET</sub> to change I<sub>FCHG</sub>. Shunting pin 2 and 3 selects a fixed 39k $\Omega$  resistor, which sets the fast charge current to 51mA.

#### **INT** and **RST** LED Indicators

Shunts can be installed on J11 and J12 to show the status of  $\overline{\text{INT}}$  and  $\overline{\text{RST}}$  as LED indicators, DS2 and DS3. When the corresponding LED luminates, it means the active-low output is pulled low.

#### **LED Charger State Indicator**

The LED current sink (DS4) is an indicator of the charger state. The LED is on, off, or blink, depends on the charger state. Refer to the *Charger State Diagram* in the MAX20335 IC data sheet.

#### **Jumper Setting**

<u>Table 1</u> shows the detailed jumper setting, and <u>Table 2</u> shows the connector description.

JUMPER	SHUNT POSITION	DESCRIPTION
J3	1-2	CHGIN connect to USB VBUS from J1
J4	1-2*	THM connect to CAP for thermistor monitoring
15	1-2	THM connect to potentiometer
	2-3*	THM connect to $15k\Omega$ (60%/room zone)
	1-2	MPC1 pulldown to ground
J6	1-3	MPC1 connect to GPIO4
	1-4	MPC1 pullup to VIO
	1-2	MPC0 pulldown to ground
J7	1-3	MPC0 connect to GPIO3
	1-4	MPC0 pullup to VIO
	1-2	PFN2 pulldown to ground
J8	1-3	PFN2 connect to GPIO2
	1-4	PFN2 pullup to VIO

### Table 1. Jumper Setting

JUMPER	SHUNT POSITION	DESCRIPTION
	1-2	PFN1 pulldown to ground
J9	1-3	PFN1 connect to GPIO1
	1-4	PFN1 pullup to VIO
J10	1-2	L1IN connects to SYS
J11	1-2*	INT connect to pullup VIO and DS2.
J12	1-2*	RST connect to pullup VIO and DS3.
J14	1-2	L2IN connect to SYS
J15	1-2	BATSIM connect to BAT
J16	1-2	L3IN connect to SYS
14.0	1-2	ISET connect to potentiometer
J 18	2-3*	ISET connect to $39k\Omega$ (fast charge current 0.05A)
J20	1-2*	VIO connect to 3.3V from PMOD
J22	1-2*	VHC connect to USB VBUS from J21
J23	1-2*	LED supply from VIO
120	1-2	SDA connect to ground
128	2-3	SCL connect to ground

### Table 1. Jumper Setting (continued)

\*Default position.

### Table 2. Connectors Description

CONNECTOR	DESCRIPTION
J1	Connect to the USB cable for CHGIN voltage
J2	Connect to Battery
J13	Connect to the MAXPICO2PMB#
J21	Connect to the USB cable for battery simulation

### **Ordering Information**

PART	TYPE
MAX20335EVSYS#	EV Kit

#Denotes RoHS compliance.

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## MAX20335 EV System Bill of Materials

ITEM	REF DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION	COMMENTS
	B1OUT S.			-		-	TEST POINT: PIN DIA=0.1IN: TOTAL LENGTH=0.3IN:	
1	B2OUT S	-	4	5002	KEYSTONE	Ν/Δ	BOARD HOLE=0.04IN: WHITE: PHOSPHOR	
-	TP1/ TP15		-	5002	REISTONE	1975	BRONIZE WIRE SILVER:	
	11 14, 11 15						TEST POINT: PIN DIA-0 1IN: TOTAL LENGTH-0 2IN:	
2	BATSIM, TP1-TP6,		0	E002	VEVETONE	NI / A		
2	TP18, TP19	-	9	5005	RETSTONE	N/A		
			-				BRONZE WIRE SILVER PLATE FINISH;	
3	C1-C9	-	9	C1005X5R1V225K050BC	ток	2.2UF	CAP; SMT (0402); 2.2UF; 10%; 35V; X5R; CERAMIC	
4	C10-C12	-	3	GRM188R60J226ME15	MURATA	22UF	CAP; SMT (0603); 22UF; 20%; 6.3V; X5R; CERAMIC;	
				GRM31CR71H475KA12;				
				GRJ31CR71H475KE11;	MURATA;MURATA;			
5	C23, C27	-	2	GXM31CR71H475KA10;	MURATA; TAIYO	4.7UF	CAP; SMT (1206); 4.7UF; 10%; 50V; X7R; CERAMIC	
				UMK316AB7475KL;	YUDEN;MURATA			
				GRM31CR71H475KA12L				
				C0603C225K9PAC;				
6	C26	-	1	GRM188R60J225KE01;	KEMEI;	2.2UF	CAP; SMT (0603); 2.2UF; 10%; 6.3V; X5R; CERAMIC;	
				C1608X5R0J225K080AB	MURATA;TDK	-	- ,- (,,,,,	
7	C28	-	1	C0603C475K9PAC	KEMET	4 711F	CAP: SMT (0603): 4 7UE: 10%: 6 3V: X5B: CERAMIC:	
	620		-	C0402X7PE00 222KNE	KEIVIET	4.701	err , sin (6665), 4.761 , 1676, 6.54 , XSR, CERNINC,	
	c20		1	CD402X7R300-222RNL,	VENKEL LTD.;	220005	CAR, CAAT (0402), 220005, 10%, 50%, VZD, CERANALC	
8	C29	-	1	GRIVIISSR/IHZZZKAUI;	MURATA;TDK	2200PF	CAP; SIVIT (0402); 2200PF; 10%; S0V; X7R; CERAIVIIC	
				C1005X/R1H222K050BA				
9	C30	-	1	C0603C104K8RAC	KEMET	0.1UF	CAP; SMT (0603); 0.1UF; 10%; 10V; X7R; CERAMIC	
10	C31	-	1	C3216X5R1C476M160AB;	TDK·MURATA	47UF	CAP: SMT (1206): 47UE: 20%: 16V: X5B: CERAMIC	
10	001		-	GRM31CR61C476ME44				
11	C22		1	C3216X5R1H106K160AB;	TOKINALIBATA	10115	CAD: SMT (1206): 10115: 10%: 50V: YED: CEDAMIC	
11	C32	-	1	GRM31CR61H106KA12	TDK, WIOKATA	1001	CAF, SIVIT (1200), 100F, 10%, 50V, X5R, CERAMIC	
12	C33	-	1	C1608X5R1H104K080AA	TDK	0.1UF	CAP; SMT (0603); 0.1UF; 10%; 50V; X5R; CERAMIC	
13	C34	-	1	GRM188R60J105KA01	MURATA	1UF	CAP; SMT (0603); 1UF; 10%; 6.3V; X5R; CERAMIC;	
							DIODE: LED: SMT (0603): Vf=1.7V: lf(test)=0.002A:	
14	DS1-DS4, DS10	-	5	LG L29K-G2J1-24	OSRAM	LG L29K-G2J1-24	-40 DEGC TO +100 DEGC	
					HIROSE		CONNECTOR: MALE: SMT: MICRO LINIVERSAL	
15	J1, J21	-	2	ZX62D-B-5P8		ZX62D-B-5P8		
16	12		1	800 10 002 10 001000	MILLMANY	800 10 002 10 001000	CONNECTOR: MALE: TH: SINGLE POW: STRAIGHT: 20INS	
10	JZ	-	1	800-10-002-10-001000	IVIILLIVIAA	800-10-002-10-001000	CONNECTOR, MALE, TH, SINGLE ROW, STRAIGHT, 2PINS	
	J3, J4, J10-J12,				SULLINS		CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY;	
1/	J14-J16, J20,	-	11	PBC02SAAN	ELECTRONICS CORP.	PBC02SAAN	STRAIGHT; 2PINS	
	J22, J23						,	
18	15 118 139	-	3	ΡΒΟΟ35ΔΔΝ	SHILLINS	PRCO3SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY;	
10	35, 510, 555		,	1 De033/0414	SOLEINS	1 00000/0411	STRAIGHT; 3PINS; -65 DEGC TO +125 DEGC	
10	16.10			TCW/ 104 07 L C	CANATEC	TCW/ 104 07 L C	EVKIT PART-CONNECTOR; MALE; THROUGH HOLE;	
19	10-19	-	4	1300-104-07-L-3	SAIVITEC	13W-104-07-L-3	TSW SERIES; SINGLE ROW; STRAIGHT; 4PINS	
					SULLINS		CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; RIGHT	
20	J13	-	1	PBC06DBAN	ELECTRONICS CORP.	PBC06DBAN	ANGLE: 12PINS: 12PINS - ALTERNATE PIN NUMBERING	
							INDUCTOR: SMT (2016): METAL ALLOY CHIP: 2.2UH:	
21	L1, L2	-	2	DFE201610E-2R2M	токо	2.2UH	TOL=+/-20%: 2.6A	
<u> </u>		-						
22	MH1-MH4	-	4	9032	KEYSTONE	9032	NO THREAD: M3 5: 5/8IN: NVI ON	
<u> </u>							CMITCH, COCT, TUDOLICULUOLE, 2014, 2054	
			Ι.				SWITCH; SPST; THROUGH HOLE; Z4V; U.USA;	
23	РВ1	-	1	1825910-6	IE CONNECTIVITY	1825910-6	TACTILE SWITCH; RCOIL=0 OHM;	
							RINSULATION=100M OHM; TE CONNECTIVITY	
24	R1, R17, R18,		5		VISHAY DALE	400	RES: SMT (0402): 499: 1%: +/-100PPM/DEGC: 0.0630W/	
24	R21, R37	-	5	Chew0402455hrk	VISHAT DALL	455	RES, SIVIT (0402), 499, 1%, +/-100FFIVI/DEGC, 0.0030W	
25	R2	-	1	CRCW040215K0FK	VISHAY DALE	15K	RES; SMT (0402); 15K; 1%; +/-100PPM/DEGC; 0.0630W	
26	R3, R19, R20,		_	DC0403ED 0740W		10%	DEC. CMT (0402): 10K. 10K. 1 (10000) (DECC. 0.0020)	
26	R49, R53	-	5	KC0402FR-0710KL	TAGEU PHICUMP	TOK	RES; SIVIT (0402); 10K; 1%; +/-100PPIVI/DEGC; 0.0630W	
	R4, R6, R7. R9.		1					
1	R10, R12, R13							
27	D15 DAE DAC	-	13	ERJ-2GEJ104	PANASONIC	100K	RES; SMT (0402); 100K; 5%; +/-200PPM/DEGC; 0.1000W	
1	N13, N43, N40,							
20	R40, K5U, K57		-		DANACONIC	11/	DEC. CNT (0403)- 1/- 10/ / 1000001/05000-0 1000000	
28	кэ, к8, к11, К14	-	4	EKJ-2KKF1001	PANASUNIC	TV	RES; SIVIT (U4U2); 1K; 1%; +/-100PPM/DEGC; 0.1000W	
							RESISTOR; THROUGH-HOLE-RADIAL LEAD; PV36 SERIES;	
29	R31, R63	-	2	PV36Y105C01B00	MURATA	1M	1M OHM; 10%; 100PPM; 0.5W; TRIMMER POTENTIOMETER;	
							25 TURNS; MOLDER CERAMIC OVER METAL FILM	
30	R51	-	1	ERJ-2GE0R00	PANASONIC	0	RES; SMT (0402); 0; JUMPER; JUMPER; 0.1000W	

## Evaluates: MAX20335

## MAX20335 EV System Bill of Materials (continued)

ITEM	REF_DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION	COMMENTS
31	R52	-	1	ERJ-2RKF5100	PANASONIC	510	RES; SMT (0402); 510; 1%; +/-100PPM/DEGC; 0.1000W	
32	R54, R56	-	2	WSL0805R1000FEA18	VISHAY DALE	0.1	RES; SMT (0805); 0.1; 1%; +/-75PPM/DEGC; 0.1250W	
				3296Y-1-253LF	BOURNS	25К	RESISTOR; THROUGH-HOLE-RADIAL LEAD; 3296 SERIES;	
33	R58		1				25K OHM; 10%; 100PPM; 0.5W; SQUARE TRIMMING	
		-	1				POTENTIOMETER; 25 TURNS; MOLDER CERAMIC	
							OVER METAL FILM	
34	R59	-	1	ERJ-2RKF1152	PANASONIC	11.5K	RES; SMT (0402); 11.5K; 1%; +/-100PPM/DEGC; 0.1000W	
35	R61	-	1	CRCW04023K40FK	VISHAY DALE	3.4K	RES; SMT (0402); 3.4K; 1%; +/-100PPM/DEGC; 0.0630W	
36	R62	-	1	ERJ-2RKF3902X;	PANASONIC;	39К	RES; SMT (0402); 39K; 1%; +/-100PPM/DEGC; 0.0630W	
				CRCW040239K0FK	VISHAY DALE			
	TP7-TP10, VHC			5000	KEYSTONE	N/A	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN;	
37		-	5				BOARD HOLE=0.04IN; RED; PHOSPHOR BRONZE	
							WIRE SILVER PLATE FINISH;	
					KEYSTONE	N/A	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN;	
38	TP11-TP13,	-	16	5001			BOARD HOLE=0.04IN; BLACK; PHOSPHOR BRONZE	
	TP16, TP22-TP33						WIRE SILVER PLATE FINISH;	
	U1			MAX20335BEWX+	ΜΑΧΙΜ	MAX20335BEWX+	IC; PWRM; PMIC WITH ULTRA-LOW IQ VOLTAGE	
39		-	1				REGULATORS AND BATTERY CHARGERS FOR SMALL	
							LITHIUM ION SYSTEMS; WLP36	
40	U2	-	1	OPA569AIDWPR	TEXAS INSTRUMENTS	OPA569AIDWPR	IC; AMP; RAIL-TO-RAIL I/O; POWER AMPLIFIER;	
40							WSOIC20-EP 300MIL	
41	U3	-	1	MAX8880EUT+	MAXIM	MAX8880EUT+	IC; VREG; ULTRA-LOW-IQ LOW-DROPOUT LINEAR	
41							REGULATOR WITH POK; SOT23-6	
42	U4	-	1	NC7WZ07P6X	FAIRCHILD SEMICONDUCTOR	NC7WZ07P6X	IC; BUF; TINY LOGIC ULTRA-HIGH SPEED DUAL	
42			1				BUFFER; SC70-6	
43	PCB	-	1	MAX20335SYS	MAXIM	РСВ	PCB:MAX20335SYS	-
44	MAXPICO	DNI	1			MAXPICO2PMB#	ACCESSORY; BRD; PACKOUT; MAXPICO2PMB	
			1	IVIAAFICOZFIVIB#			ADAPTER BOARD	
45	USBCABLE1,	DNI	2	3025010-03	QUALTEK ELECTRONICS CORP	3025010-03	CONNECTOR; MALE; USB-A_MINI-B; USB	
	JSBCABLE2	DNI	2				4P(A)/M - USB MINI 5P(B)/M; STRAIGHT; 36IN	
16	Q1	DNP	0	SI8429DB-T1-E1 VISHAY		SI8429DB-T1-E1	TRAN; P-CHANNEL 8V (D-S) MOSFET; PCH;	OPEN
40					TAIICIV		SMT; PD-(6.25W); I-(-11.7A); V-(-8V)	
TOTAL			136					

## Evaluates: MAX20335

## MAX20335 EV System Schematics





## MAX20335 EV System Schematics (continued)



## MAX20335 EV System Schematics (continued)

Evaluates: MAX20335



## MAX20335 EV System PCB Layouts

MAX20335 EV System Component Placement Guide—Top Silkscreen



MAX20335 EV System PCB Layout—Top

Evaluates: MAX20335



## MAX20335 EV System PCB Layouts (continued)

MAX20335 EV System Component Placement Guide-GND



MAX20335 EV System PCB Layout—SYS

Evaluates: MAX20335



## MAX20335 EV System PCB Layouts (continued)

MAX20335 EV System PCB Layout— Bottom

### Evaluates: MAX20335

### **Revision History**

REVISION	REVISION	DESCRIPTION	PAGES
NUMBER	DATE		CHANGED
0	12/21	Initial release	—



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