Evaluation Board User Guide

MAX22915 Evaluation Kit

Evaluates: MAX22915

General Description

This evaluation kit (EV kit) provides a proven design to evaluate the MAX22915, 8-channel high-switch with advanced diagnostics. The EV kit includes the MAX22915 evaluation board, a USB-C cable, and a graphical user interface (GUI) that provides communication from a PC to the EV kit through a USB port. The MAX22915 EV kit comes with a MAX22915AFG+ in a 50-pin 6mm × 7mm FC2QFN package, installed as U1. The EV kit can operate in multiple modes, which include addressable SPI mode with Analog Devices GUI, or through PMOD connector to interface with external MCUs and firmware, and daisy-chained SPI mode through two PMOD connectors with multiple devices connected in daisy-chain.

The GUI is compatible with Windows® 11 for exercising the features of the MAX22915 digital output. The EV kit software gives access to the full register map and diagnostic data, which allows individual control of the eight high-side switches. The EV kit software retrieves all the diagnostic information from the MAX22915, such as per-channel open-wire conditions with outputs on, off, or switching at up to 131Hz. Other diagnostic information includes the status of output channels, supply undervoltage alerts, global and per-channel overload alarms, temperature warnings, and other global fault alarms. In addition, the EV kit software configures the internal 7-bit ADC and executes continuous, on-demand or single measurement on supply voltage, per-channel load current or chip temperature.

The MAX22915 EV kit must be powered from an external +24V power supply and can consume up to 8A (typ) when fully loaded. The USB2GPIO interface, as well as the digital galvanic isolation, is powered from the USB-C port.

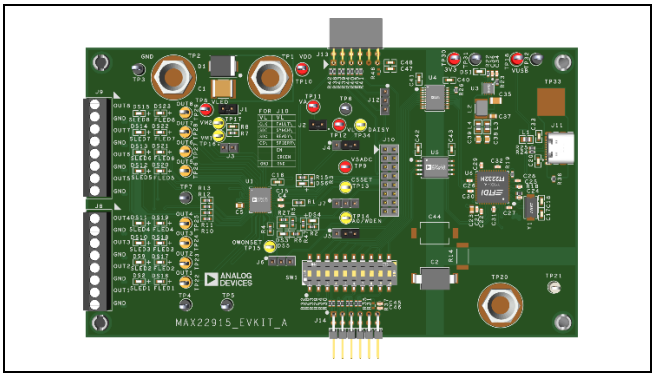
A single TVS diode on V_{DD} protects all output channels against ±1kV/42Ω IEC 61000-4-5 surge transients. The MAX22915 EV kit is specified operate normally with its enhanced noise immunity to IEC 61000-4-4 EFT and IEC 61000-4-6 conducted RF.

Windows based GUI software is available for use with the EV kit and a user can download it from Analog Devices website. Windows 10 or newer Windows operating system is required to use the EV kit software.

Features and Benefits

- Full and Easy Evaluation of MAX22915
- Per-Channel Active Current Limit at 1A (typ)/1.3A (max)
- Robust Operation with Wide Range Of Input Voltages and Load Conditions
- $\overline{VMOK}$, $\overline{FAULT}$, and $\overline{READY}$ LED Indications
- LED Indication of Channels Status and Faults
- Fast Inductive Load Demagnetization
- Per-Channel Open-wire, Overload, short-to-V_{DD}, and Overcurrent Detection
- 7-Bit ADC to Monitor Chip Temperature, Per-Channel Output Current, or V_{DD} Supply Voltage
- Supports SPI and SYNCH Watchdogs
- Communication Error Indication at $\overline{SPIERR}$
- Pin Addressable and Daisy-Chain SPI Communication with On-Board USB2GPIO Interface
- −40°C to +125°C Temperature Range
- Transient Immunity according to IEC 61000-4-2 Surge and IEC 61000-4-5 ESD Standards
- Enhanced EFT and RF Conducted Immunity on Per-Channel Diagnostics with Switches On, Off, or Toggling at up to 131Hz
- Safe Operation with On-Board Digital Isolation, Functional Earth Connection and Y-cap
- Proven PCB Layout
- Fully Assembled and Tested
- Windows 10 or Newer Compatible Software

EV Kit Photo



Ordering Information ***appears at end of data sheet***.

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Setup and Operation

Quick Start

Required Equipment

- MAX22915 EV kit
- PC with USB-C cable
- 24V power supply

Note: In the following sections, software-related items are identified by bolding. Text in bold refers to items directly from the EV kit software. Text in bold and underlined refers to items from the Windows operating system.

Procedure

The EV kit is fully assembled and tested. The EV kit software can be run without hardware attached. Note that after communication is established, the MAX22915 must still be configured correctly for required operation mode. Make sure the PC is connected to the internet throughout the process so that the USB driver can be automatically installed. To install the EV kit software, make required hardware connections, start operation of the kit, and do the following steps:

1. To download the latest version of the MAX22915 EV kit software, refer to the product web page. Save the software to a temporary folder and unpack the zip file.
2. Install the EV kit software on the computer by running the MAX22915EVKITSetupV1.0.1.exe program inside the temporary folder. This copies the program files and creates an icon in the Windows | Start menu. The software requires the .NET Framework 4.5 or later. If connected to the internet, Windows automatically updates the .NET Framework, as required.
3. Verify that all jumpers are in their default positions, as shown in *Table 1*.

Table 1. MAX22915 EV Kit Board Shunt Positions and Settings

HEADER	SHUNT POSITION	DESCRIPTION
J1	1-2*	Connect V_{LED} to V_{DD}.
	Open	Use an external V_{LED} source. Apply V_{LED} power between V_{LED} test point (TP8) and GND.
J2	1-2*	Connect V_A to V_L to set logic level.
	Open	Use an external V_L source between V_L test point (TP12) and GND.
J3	1-2	Internal V_A regulator disabled. Use an external V_A source between V_A test point (TP11) and GND.
	Open*	Leave REGEN floating to enable internal regulator at V_A.
J4	1-2	Connect DAISY to V_L to enable daisy-chained SPI mode. Do not leave J4 floating.
	2-3*	Connect DAISY to GND to disable daisy-chained SPI mode. Do not leave J4 floating.
J5	1-2	Connect A0/WDEN to V_L to set address bit to 1. Do not leave J5 floating.
	2-3*	Connect A0/WDEN to GND to set address bit to 0. Do not leave J5 floating.
J6	1-2	Connect CRCEN to GND to always disable CRC error detection.
	2-3	Connect CRCEN to V_L to always enable CRC error detection.
	Open*	Leave CRCEN pin floating for software control. The pin has a weak pull-down.
J7	1-2	Connect EN to V_L to always enable output switches.
	2-3	Connect EN to GND to always disable output switches.
	Open*	Leave EN pin floating for software control. The pin has a weak pull-up.
J12	1-2	Connect the SDO signal from the next device in the daisy-chain, SDO_DC on the J13 PMOD female connector, to the SDO_R signal on the J14 PMOD male connector so that the SDO signal from the last device in the daisy-chain can be passed to the first device in the daisy-chain and be connected to the digital isolator *MAX14483* ISDO input. This option is used when the EV kit is operating in daisy-chained SPI mode and is not the last device in the daisy-chain.
	2-3*	Connect the MAX22915 SDO signal to the ISDO input of the digital isolator, the *MAX14483*. This option is used when the EV kit is operating in addressable SPI mode, or the EV kit is the last device in the daisy-chain when operating in daisy-chained SPI mode.

HEADER	SHUNT POSITION	DESCRIPTION
SW1	Closed*	All switches on SW1 are closed. The MAX22915 SPI interface and logic signals are connected to the MAX14483 isolator. This option is used when the EV kit is operating in addressable SPI mode, or the EV kit is the first device in the daisy-chain.
	Open	All switches on SW1 are open. The MAX22915 SPI interface and logic signals are disconnected from the MAX14483 isolator. This option is used when the EV kit is operating in daisy-chained SPI mode and is not the first device in the daisy-chain.

**Default Positions.*

4. Power up the EV kit with +24V from an external power supply through TP1 and TP2 Banana Plugs. Connect the EV kit to a PC through J11 USB-C port. A user can use the USB-C cable, which is included in the EV kit.
5. When 24V is supplied, the green DS5 and DS1 and red DS6 LEDs are on (as long as the USB-C is connected). Typical V_{DD} current is 12mA. Verify that the voltage at VA and VL test points are 3.3V. The voltage at V5ADC test point (TP9) is 5V, and at OWONSET test point (TP15) is 0.7V.
6. Start the EV kit software by opening its icon in the Start | Programs menu. Select the MAX22915EVKIT button in the startup window. The EV kit software appears, as shown in Figure 1. Verify that the lower-right status bar indicates the EV kit hardware is Connected. The GUI automatically detects EV kit is connected to the PC and enables serial communication. A user can change any configuration on **Register Settings** tab, as shown in Figure 2.

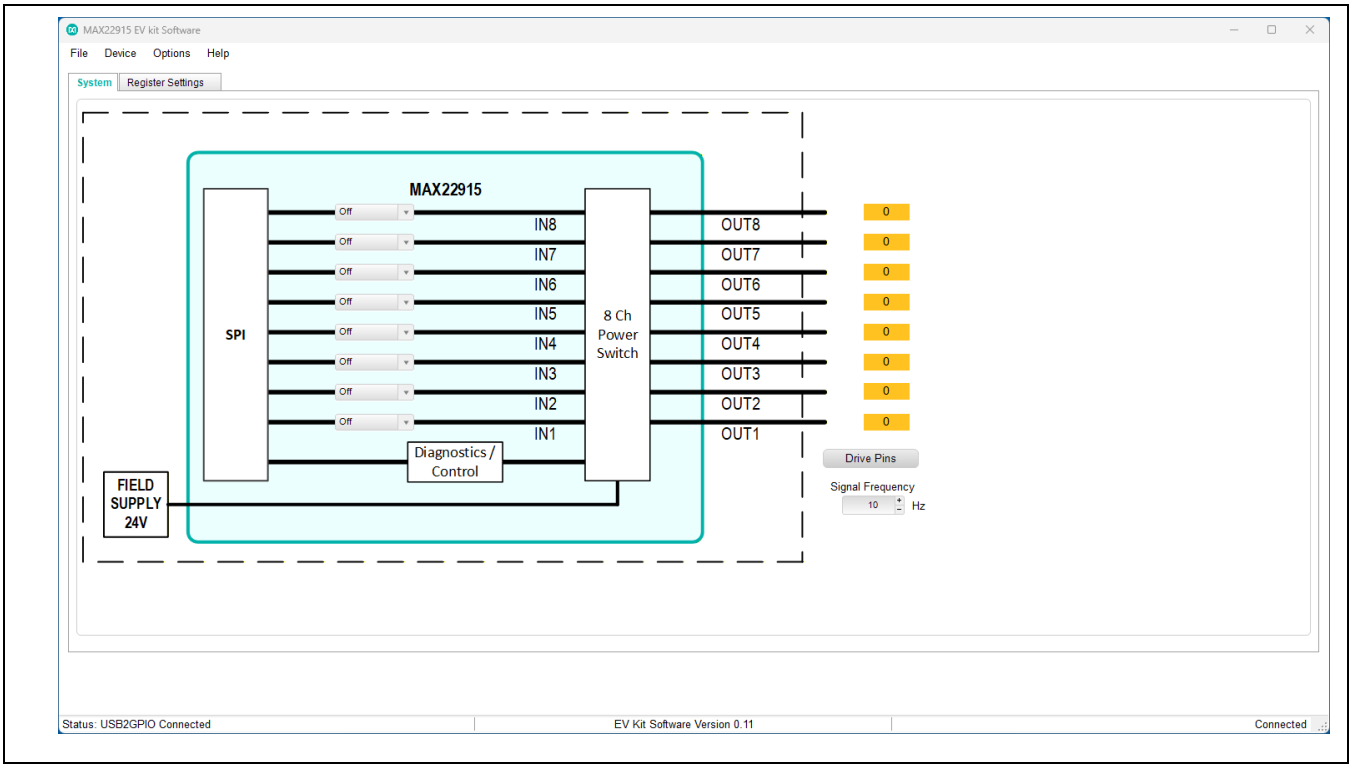


Figure 1. MAX22915 EV Kit GUI System Tab

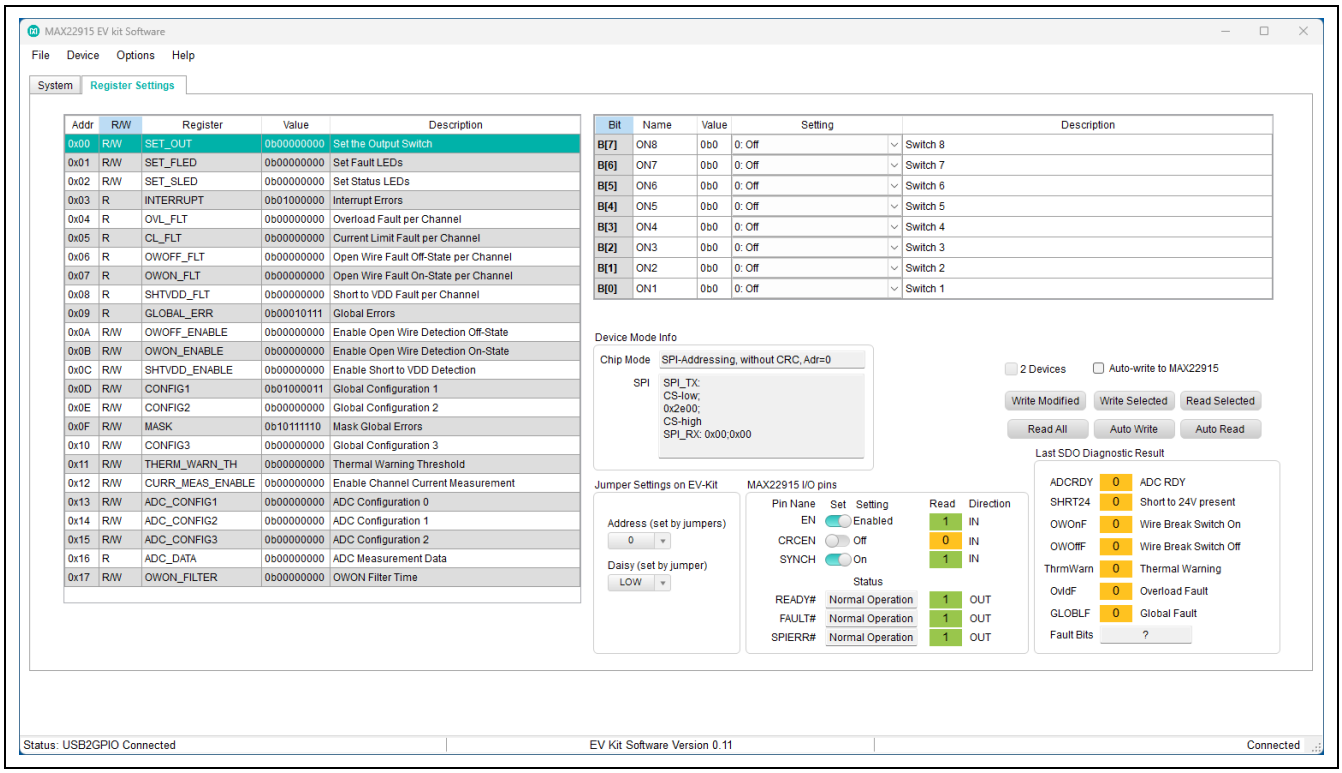


Figure 2. MAX22915 EV Kit GUI Register Settings Tab

The EV kit is ready for operation. The following steps provide an example of open-wire diagnostics of the MAX22915:

7. Select **Register Settings** tab and click the **Read All** button. The red DS6 LED turns off. Click the **Read All** button again. The INTERRUPT register at 0x03 and the GLOBAL_FAULT register at 0x09 are clear.
8. Connect a no-less-than 1.2kΩ resistor to OUT1 to set the load current at more than 20mA. Write 0x03 to OWON_EN register to enable open-wire detection on OUT1 and OUT2. Write 0x03 to SET_OUT register to enable OUT1 and OUT2 switches. As a consequence the OUT1 is not at fault and OUT2 is at fault because the connection at OUT2 is open-wire. Click the **Read All** button and verify that the INTERRUPT register at 0x03 reads 0x08, and OWON_FAULT register at 0x07 reads 0x02 due to OUT2 at fault.
9. The $\overline{\text{FAULT}}$ pin remains high and DS6 red LED is off due to MASK register at 0x0F masking open-wire fault. Write 0b0 to OWON_MASK bit in MASK register to unmask the OWON fault. The DS6 red LED is turned on and $\overline{\text{FAULT}}$ pin is asserted low.
10. Write 0x00 to SET_OUT register to disable all switches. Click the **Read All** button again to clear fault its in INTERRUPT register and OWON_FAULT register, as well as turning off red DS6 LED.

Detailed Description of Hardware

The MAX22915 EV kit provides an easy-to-use, flexible, and robust solution for evaluation of the MAX22915, 8-channel high-side switch for industrial applications. It allows SPI communication between the Windows compatible GUI installed on a PC, and the MAX22915 through on-board *USB2GPIO* interface. Two digital isolators are used to provide galvanic isolation for SPI interface and logic signals. The MAX22915 is powered by a single +24V external power supply, while the digital isolation and *USB2GPIO* is powered by PC through the USB-C cable.

EV Kit Configuration

The MAX22915 EV kit can be used as a standalone board connected to SPI bus, and up to two EV kits can share the same SPI bus by configuring the SPI address using J5 jumpers. For full configurations, see *Table 1*.

Load for each channel must be connected to the J8 and J9 terminal block with each channel can provide up to 1A (typ). The outputs can handle resistive, capacitive, or inductive loads. During turn-off of inductive loads, the free-wheel energy is clamped by the internal V_{CL} clamps. This energy must be limited to 150mJ (max) at T_J = +125°C at $I_{OUT\_}$ = −600mA per-channel, all channels switching simultaneously. On-board diagnostics provide device ready signal through LED DS4, V_{DD} monitoring through LED DS5, communication error through LED DS3, and the global fault condition through LED DS6. Per-channel output state and per-channel fault conditions are visible via LED matrix, SLED1 through SLED8, and FLED1 through FLED8, correspondently. For list of full test points and connectors, see *Table 2*. Detailed diagnostics are provided through the SPI interface by reading the diagnostic registers 0x03 through 0x09.

Table 2. MAX22915 EV Kit Test Points and Connectors

TEST POINTS	DESCRIPTION
TP1, TP10	MAX22915 V_{DD}.
TP2 to TP7	MAX22915 field-side ground.
TP8	MAX22915 V_{LED}.
TP9	MAX22915 V_{5ADC}.
TP11	MAX22915 V_A.
TP12	MAX22915 V_L.
TP13	MAX22915 CSSET.
TP14	MAX22915 A0/WDEN.
TP15	MAX22915 OWONSET.
TP16	MAX22915 V_{M1}.
TP17	MAX22915 V_{M2}.
TP18	Supply voltage from USB-C cable.
TP19, TP31, TP32	Digital-side ground.
TP20, TP21	Functional earth.
TP22 to TP29	OUT1 to OUT8, respectively.
TP30	3.3V supply voltage for *USB2GPIO*.
TP33	Shield pad, shorted to digital-side ground.
TP34	MAX22915 DAISY.
CONNECTORS	
J8	Terminal block for OUT1 to OUT4.
J9	Terminal block for OUT5 to OUT8.
J10	16-pin header for SPI interface and logic signals.
J11	USB-C connector.
J13	The 12-pin Pmod-compatible female connector. It is used in daisy-chain mode by connecting to the PMOD male connector of another MAX22915 EV kit.
J14	The 12-pin Pmod-compatible male connector. It allows external microcontroller or FPGA to configure the device. It can also be used in daisy-chain mode by connecting to the PMOD female connector of another MAX22915 EV kit.

In addition to diagnostics, MAX22915 EV kit allows user to execute on-demand, continuous, or single mode ADC measurement on one of the three areas: per-channel load current, chip temperature, and supply voltage.

Transient Immunity Compliance

The industrial application for the MAX22915 requires it to pass multiple transient immunity standards as defined by IEC 61000-4-2 for ESD, -4 for Electrical Fast Transient/Burst (EFT), -5 for Surge Immunity, and -6 for Conducted RF Immunity. The MAX22915 EV kit supports testing to these standards and passes 1kV line-to-ground surge with a single TVS diode at V_{DD}, ±8kV contact ESD, and ±15kV air-gap ESD at all eight output switches. Moreover, The MAX22915 EV kit provides enhanced IEC 61000-4-4 EFT and IEC 61000-4-6 conducted RF immunity for open-wire on and off, as well as short-to-V_{DD} detections when switch is open, closed, or toggling at up to 131Hz.

Digital Isolation

The MAX22915 EV kit uses two digital isolators to provide galvanic isolation for SPI interface and logic signals, between the logic and field sides. The logic side of the isolators is powered from 3V3_USB while the field side of the isolator is powered from V_L of the MAX22915.

The MAX22915 EV kit provides a functional earth (FE) with a 4700pF safety-rated Y-capacitor connected between itself and GND. The MAX22915 EV kit does not include a revsere current blocking diode and a user is required to limit the reverse current into the device, as it might damage the part thermally.

Detailed Description of Software

The MAX22915 software provides access to all registers and allows full configuration and control of the MAX22915. There are two tabs available to control the EV kit. The **System** tab provides system-level control of the selected output pins, which includes static and dynamic control. The **Register Settings** tab provides access to registers as well as enhanced diagnostic configuration.

System Tab

The System tab allows driving the output swtiches by configuring each output either on, off, or selecting square wave frequency from pull-down menu, as shown in *Figure 3*. Click the Drive Pins button on the right-side of the GUI to drive the outputs. The indicators connected to the OUT_ pins show the state of each output. Users can connect the oscilloscope probe to OUT_ test points on the EV kit to see the output signal in real-time.

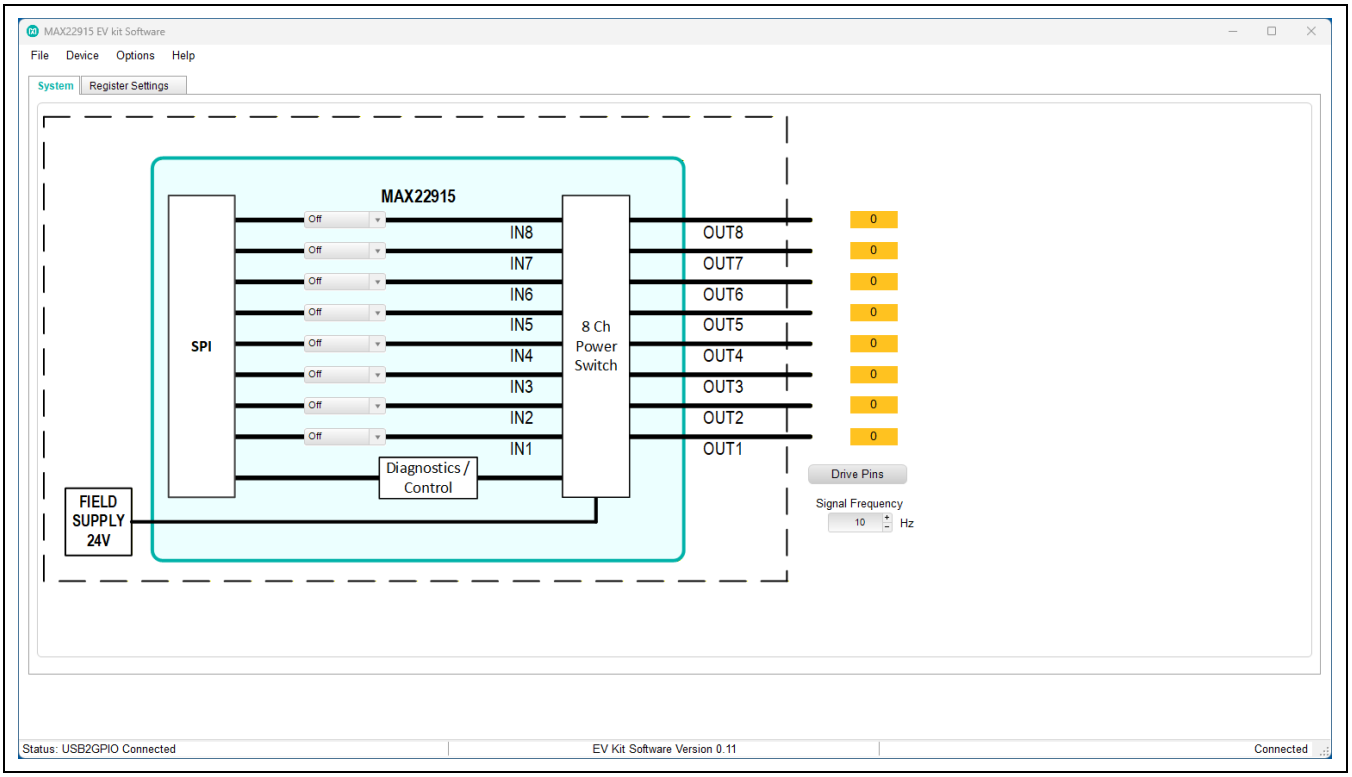


Figure 3. System Tab to Configure Outputs

Register Settings Tab

The **Register Settings** tab allows detailed configuration of the device to explore all the available features, as shown in *Figure 4*. The full register map table of the MAX22915 is located on the left-side of the tab, and the bit-by-bit control and description table is located on the right side. When the register is selected in the register map table, the detailed description of each bit is shown on the right table. The register setting can be changed directly in the register map table by double-clicking on the **Value** cell. Each data entry should follow by the Enter/Return button on the keyboard. The **Value** cell accepts binary (0b), decimal, or hex (0x) numbers. The modified register changes its color from black to red until the data is actually written to the register. The data in the right table can be changed using drop-down menus in the **Setting** cell for each bit individually. Both tables are synchronized that changes made in one table appear at both tables.

There are several write and read options available through the corresponding control buttons located below the register bit-by-bit description table:

- When a user clicks the **Auto Write** button, any data typed in, or selected through the **Setting** drop-down menu is automatically written into the corresponding writable register. This button is then renamed to **Stop Auto Write** and auto-write function can be canceled by clicking on this button a second time.

- When a user clicks the **Auto Read** button, the write function is disabled, and the GUI is constantly monitoring and updates the status and fault conditions of the device. This button is then renamed to **Stop Auto Read** and auto-read function can be canceled by clicking on this button a second time.
- The **Read All** button performs a read operation of all registers after each click.
- The **Read Selected** button performs a read operation of the selected register after each click.
- The **Write Selected** button performs a write operation of the selected register after each click.
- The **Write Modified** button performs a write operation of all modified register (in red) after each click.

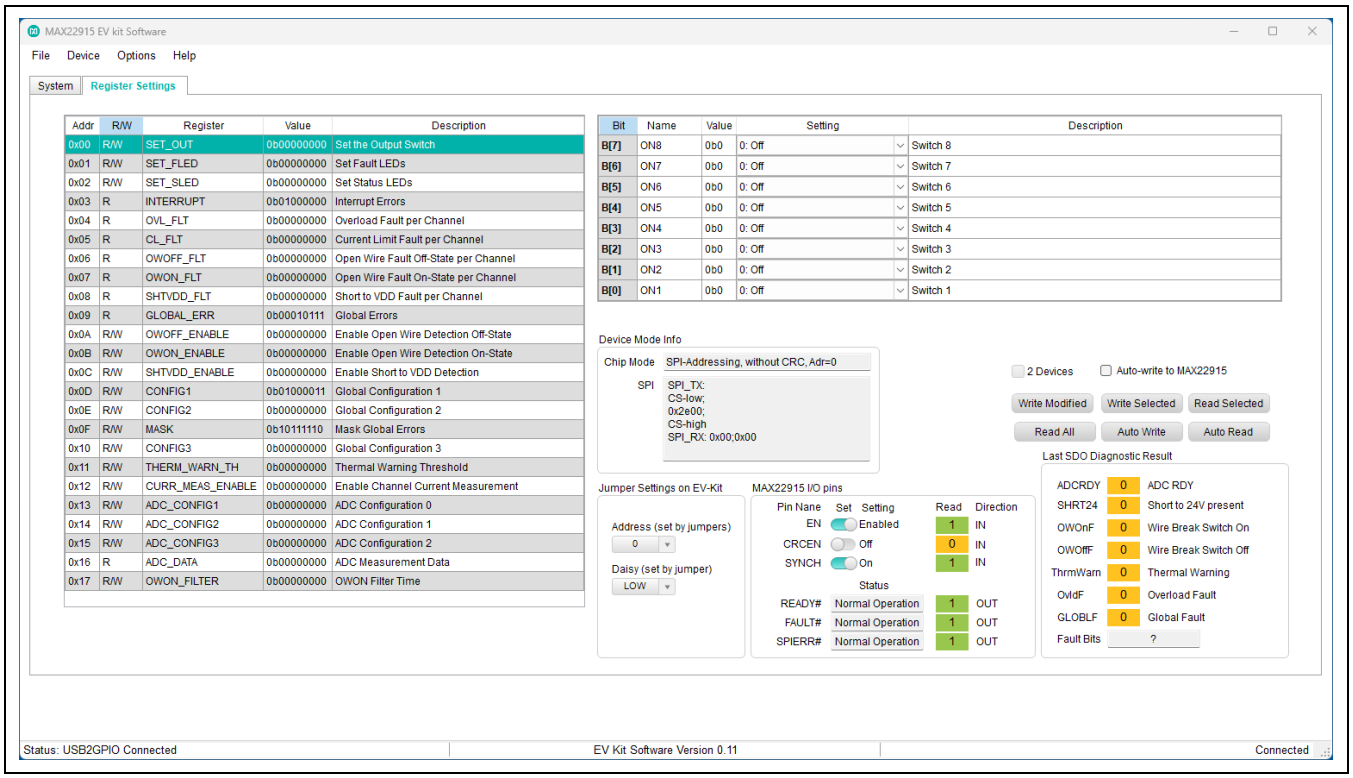


Figure 4. Register Settings Tab

When the fault conditions occur, it set the bit(s) in the corresponding read-only registers 0x03 to 0x09. SDO data contains diagnotics results and these bits are updated in the lower-right corner of the software. The fault condition must be carefully evaluated and removed externally (over/undervoltage, overload, and open-wire).

It is recommended to read INTERRUPT (0x03) and GLOBAL_ERR (0x09) registers first to identify what kind of fault conditions happened, then read per-channel diagnostic registers 0x04 to 0x08 twice to make sure that condition is gone and to clear interrupts.The **Write Selected** button allows to write to the selected register only, while the **Write Modified** button performs write operation to all modified registers after each click.

There are I/O pins control and status boxes and per-bit diagnostic result provided by the MAX22915 after each SPI write or read operation below the buttons in the lower-right corner of the software. The **EN** slider allows to enable or disable output switches, the **CRCEN** slider allows to enable or disable error-detecting code to be added to each SPI transaction, and the **SYNCH** slider allows manual synchronization of multiple settings.

A user must match the A0/WDEN level on the EV kit with the SPI address selected from the **Address (set by jumpers)** drop-down menu, located below the register map table. The default address is **0**. Each SPI transaction data appear in the **Device Mode Info** box for the user convenience.

Ordering Information

PART NUMBER	TYPE
MAX22915EVKIT#	EV Kit
MAX22915EVKITSetupV1.01.exe	EV Kit Software

#Denotes RoHS-compliant.

MAX22915 EV Kit Bill of Materials

ITEM	REF_DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	DESCRIPTION
1	C1	-	1	22201C106KAT2A	AVX	Ceramic capacitor, SMT, 10µF, 10%, 100V, X7R, 2220
2	C2	-	1	EVA86Q7UTF472KA01K	Murata	Ceramic capacitor, SMD, 4700pF, 10%, 305V, U2J
3	C3, C5	-	2	08051C105K4Z2A	AVX	Ceramic capacitors, SMT, 1µF, 10%, 100V, X7R, 0805
4	C4	-	1	UMK107AB7105KA, CC0603KRX7R9BB105	Taiyo Yuden, Yageo	Ceramic capacitor, SMT, 1µF, 10%, 50V, X7R, 0603
5	C6 to C13	-	8	CGA3EANP02A103J080AC	TDK	Ceramic capacitors, SMT, 0.01µF, 5%, 100V, C0G, 0603
6	C14	-	1	CC0603KRX7R0BB104, GRM188R72A104KA35, HMK107B7104KA, 06031C104KAT2A, GRM188R72A104K	Yageo, Murata, Taiyo Yuden, AVX, Murata	Ceramic capacitor, SMT, 0.1µF, 10%, 100V, X7R, 0603
7	C15, C16, C19 to C22, C24 to C33, C40 to C43, C45 to C48	-	24	CGA3E2X7R1H104K080AE, UMK107B7104KAH	TDK	Ceramic capacitors, 0.1µF, 10%, 50V, X7R, 0603
8	C17, C18	-	2	C0603C0G500-180JNE, C1608C0G1H180J080AA, GRM1885C1H180J	Venkel Ltd., TDK, Murata	Ceramic capacitors, SMT, 18pF, 5%, 50V, C0G, 0603
9	C23, C38, C39	-	3	CGA4J1X7R1E475K125AC	TDK	Multilayer ceramic chip capacitors, SMT, 4.7µF, 10%, 25V, X7R, 0805
10	C34	-	1	C1608X7R1H474K080AC	TDK	Ceramic capacitor, SMT, 0.47µF, 10%, 50V, X7R, 0603
11	C35	-	1	CGA5L1X7R1H106K160AE	TDK	Ceramic capacitor, SMT, 10µF, 10%, 50V, X7R, 1206
12	C36	-	1	C1608C0G2A102J080AA, C0603C102J1GAC	TDK, Kemet	Ceramic capacitor, SMT, 1000pF, 5%, 100V, C0G, 0603
13	C37	-	1	C2012X5R1C226K125AC	TDK	Ceramic capacitor, SMT, 22µF, 10%, 16V, X5R, 0805
14	D1	-	1	SMCJ36A	Littel Fuse	TVS Diode, SMC, DO-214AB, V_{RM} = 36V, I_{PP} = 25.9A
15	DS1, DS2, DS5, DS9 to DS15	-	10	LGL29K-G2J1-24-Z	OSRAM	Diodes, LED, series SMARTLED, color green, SMT, P_{IV} = 1.7V, I_F = 0.02A
16	DS3, DS4, DS6, DS16 to DS23	-	11	LS L29K-G1J2-1-Z	OSRAM	Diodes, LED, series SMARTLED, color red, SMT, P_{IV} = 1.8V, I_F = 0.02A, −40°C to +100°C, 0603
17	J1 to J3	-	3	PCC02SAAN	Sullins	Connectors, through hole, male breakaway headers, straight, 2-positions, −65°C to +125°C

MAX22915 EV Kit Bill of Materials (continued)

ITEM	RES_DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	DESCRIPTION
18	J4 to J7, J12	-	5	PCC03SAAN	Sullins	Connectors, through hole, male breakaway headers, straight, 3-positions, −65°C to +125°C
19	J8, J9	-	2	OSTTE080104	On-Shore Technology Inc.	Connectors, male, through hole, terminal blocks, wire-to-board, straight, 8-positions
20	J10	-	1	PBC08DAAN	Sullins	Connector, through hole, male breakaway headers, straight, 16-positions, −65°C to +125°C
21	J11	-	1	USB4105-GF	Global Connector Tech	Connector, female, SMT, USB Type-C USB 2, receptacle, right angle, 16-positions
22	J13	-	1	PPPC062LJBN-RC	Sullins	Connector, female, through hole, 0.1in CC, header, 2-row, right angle, 12-positions
23	J14	-	1	TSW-106-08-S-D-RA	Samtec	Connector, through hole, post terminal strip assembly, right angle, 12-positions
24	L1, L3, L4	-	3	BLM21PG331SN1	Murata	Inductors, ferrite beads, SMT, 330Ω, tolerance = ±25%, 1.5A, 0805
25	L2	-	1	B82432T1332K000	TDK	Inductor, ferrite core, SMT, 3.3µH, tolerance = ±10%, 0.9A, 1812
26	R1, R9, R15, R20, R21, R26, R27, R47	-	8	CRCW060310K0FK, ERJ-3EKF1002, AC0603FR-0710KL, RMCF0603FT10K0	Vishay, Panasonic, Yageo, Stackpole	Resistors, SMT, 10kΩ, 1%, ±100ppm/°C, 0.1000W, 0603
27	R2, R3, R5, R6, R19, R22	-	6	ERJ-3GEYJ102	Panasonic	Resistors, SMT, 1kΩ, 5%, ±200ppm/°C, 0.1000W, 0603
28	R4	-	1	CRCW060380K6FK, ERJ-3EKF8062, RC0603FR-0780K6L	Vishay, Panasonic, Yageo	Resistor, SMT, 80.6kΩ, 1%, ±100ppm/°C, 0.1000W, 0603
29	R7	-	1	ERJ-3EKF1213, CRCW0603121KFK	Panasonic, Vishay	Resistor, SMT, 121kΩ, 1%, ±100ppm/°C, 0.1000W, 0603
30	R8	-	1	CRCW06036K80FK	Vishay Dale	Resistor, SMT, 6.8kΩ, 1%, ±100ppm/°C, 0.1000W, 0603
31	R10 to R13	-	4	CRCW06035K60FK	Vishay Dale	Resistors, SMT, 5.6kΩ, 1%, ±100ppm/°C, 0.1000W, 0603

MAX22915 EV Kit Bill of Materials (continued)

ITEM	RES_DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	DESCRIPTION
32	R16	-	1	ERA-3AEB4870	Panasonic	Resistor, SMT, 487Ω, 0.10%, ±25ppm/°C, 0.1000W, 0603
33	R17	-	1	CRCW06032K20FK	Vishay Dale	Resistor, SMT, 2.2kΩ, 1%, ±100ppm/°C, 0.1000W, 0603
34	R18	-	1	CRCW060312K0FK, ERJ-3EKF1202	Vishay, Panasonic	Resistor, SMT, 12kΩ, 1%, ±100ppm/°C, 0.1000W, 0603
35	R23	-	1	CRCW0603100RFK, ERJ-3EKF1000, AC0603FR-07100RL	Vishay, Panasonic, Yageo	Resistor, SMT, 100Ω, 1%, ±100ppm/°C, 0.1000W, 0603
36	R24, R25, R28 to R35, R38 to R45	-	18	CRCW060310R0FK, MCR03EZPFX10R0, ERJ-3EKF10R0	Vishay, Rohm Semiconducor, Panasonic	Resistors, SMT, 10Ω, 1%, ±100ppm/°C, 0.1000W, 0603
37	R36	-	1	CRCW06030000ZS, MCR03EZPJ000, ERJ-3GEY0R00, CR0603AJ/-000ELF	Vishay, Rohm Semiconducor, Panasonic, Bourns	Resistors, SMT, 0Ω, jumper, 0.1000W, 0603
38	SPACER1 to SPACER4	-	4	9032	Keystone	Machine fabricated, round-thru hole spacers, no thread, M3.5, 5/8in, nylon
39	SU1 to SU4	-	4	S1100-B, SX1100-B, STC02SYAN	Kycon, Kycon, Sullins	Test points, jumpers, straight total length = 0.24in, black, insulation = PBT, phosphor bronze contact = gold plated
40	SW1	-	1	219-10MST	CTS	Switch, SPST, SMT, straight, 20V, 0.1A, surface mount dip switch - auto placeable, insulation resistance = 1000MΩ
41	TP1, TP2, TP20	-	3	6095	Keystone	Connectors, female, panel mount, non-insulated recessed head, banana jack, straight through, 1-position
42	TP3 to TP7, TP31, TP32	-	7	5011	N/A	Test points, pin dia = 0.125in, total length = 0.445in, board hole = 0.063in, black, phosphor bronze wire silver plate finish
43	TP8 to TP12, TP18, TP30	-	7	5010	Keystone	Test points, pin dia = 0.125in, total length = 0.445in, board hole = 0.063in, red, phosphor bronze wire silver plate finish
44	TP13 to TP17, TP34	-	6	5009	Keystone	Test points, pin dia = 0.125in, total length = 0.35in, board hole = 0.063in, yellow, phosphor bronze wire silver plate finish
45	TP21	-	1	5007	Keystone	Test point, pin dia = 0.125in, total length = 0.35in, board hole = 0.063in, white, phosphor bronze wire silver plate finish
46	TP22 to TP29	-	8	5013	N/A	Test points, pin dia = 0.125in, total length = 0.445in, board hole = 0.063in, orange, phosphor bronze wire silver plate finish

MAX22915 EV Kit Bill of Materials (continued)

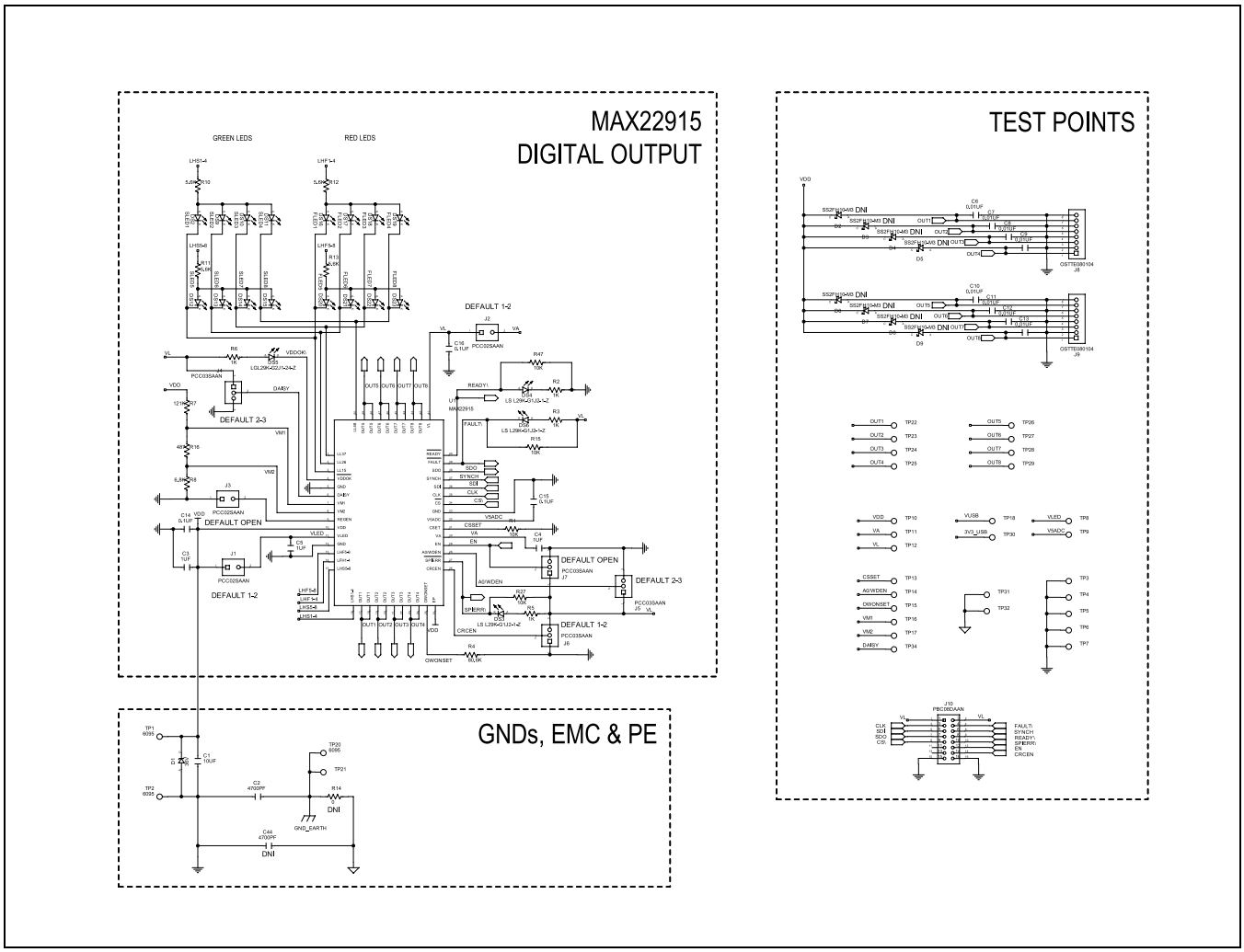
ITEM	RES_DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	DESCRIPTION
47	U1	-	1	MAX22915	Analog Devices, Inc.	EV kit part – IC, package outline drawing number: 21-100765, land pattern number: 90-100269
48	U2	-	1	93LC66BT-E/OT	Microchip	IC, 4Kbit microwire compatible serial EEPROM, 6-lead SOT23
49	U3	-	1	MAX1556ETB+	Analog Devices, Inc.	IC, 16µA I_Q, 1.2A PWM step-down DC-DC converters, 10-pin TDFN-EP (3mm × 3mm)
50	U4	-	1	MAX14483AAP+	Analog Devices, Inc.	IC, 6-Channel, low-power, 3.75kV_{RMS}, SPI digital isolator, 20-SSOP package
51	U5	-	1	MAX22246FAWA+	Analog Devices, Inc.	IC, reinforced, fast, low-power, 2-Channel digital isolators, 8 wide SOIC package
52	U6	-	1	FT2232HQ	Future Technology Devices Intl Ltd.	Dual high speed USB to multipurpose UART/FIFO IC, 64-pin QFN-EP package
53	Y1	-	1	ABM7-12.000MHZ-D2Y-T	Abracon	Crystal, SMT, 12MHZ, 18pF, tol = ±20ppm, stability = ±30ppm
54	PCB	-	1	MAX22915	Analog Devices, Inc.	PCB, MAX22915
55	C44	DNP	0	EVA86Q7UTF472KA01K	Murata	Ceramic capacitor, SMD, 4700pF, 10%, 305V, U2J
56	D2 to D9	DNP	0	SS2FH10-M3	Vishay	Schottky diodes, SMT, DO-219AB, P_{IV} = 100V, I_F = 2A
57	R14	DNP	0	CRCW25120000Z0EGHP	Vishay Dale	Resistor, SMT, 0Ω, jumper, 1.5000W, 2512
58	R37, R46	DNP	0	N/A	N/A	Resistors, package outline 0603

DNI means do not install.

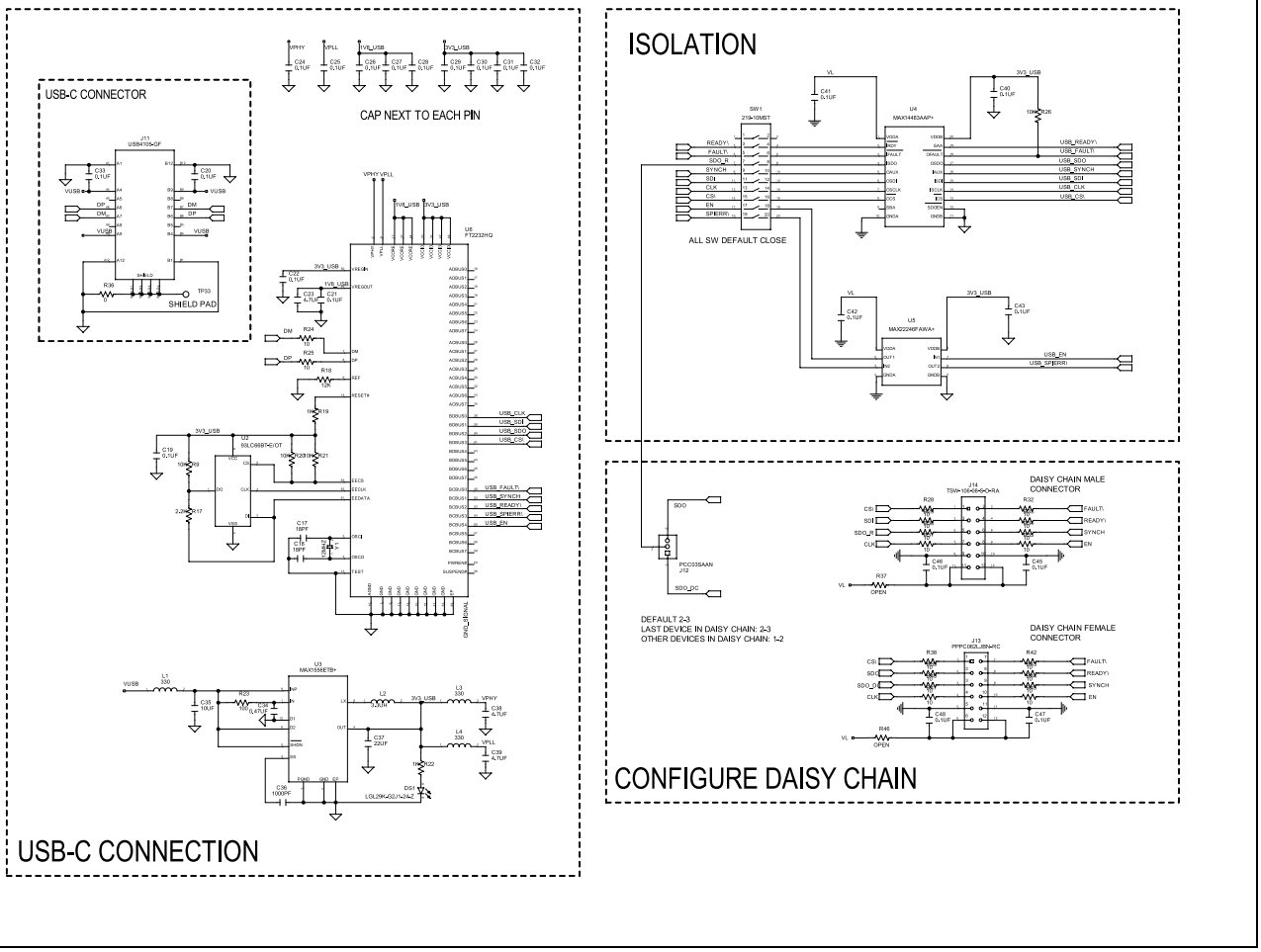
DNP means do not procure.

N/A means not applicable.

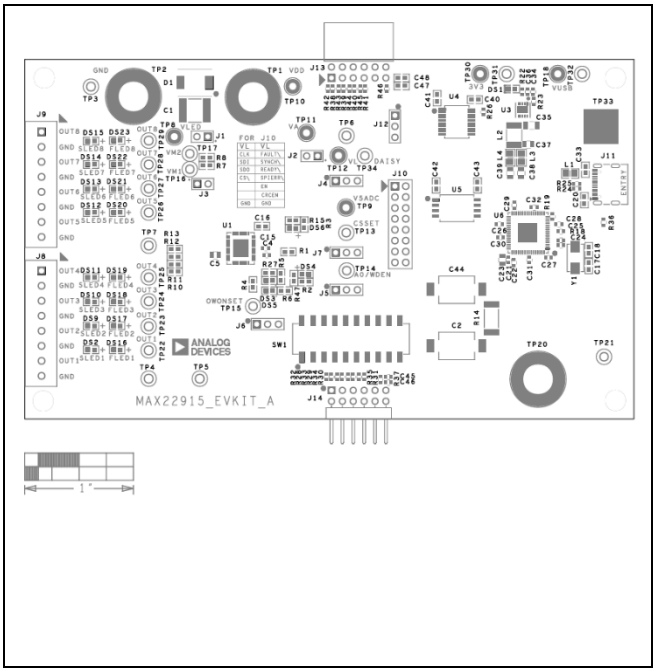
MAX22915 EV Kit Schematic



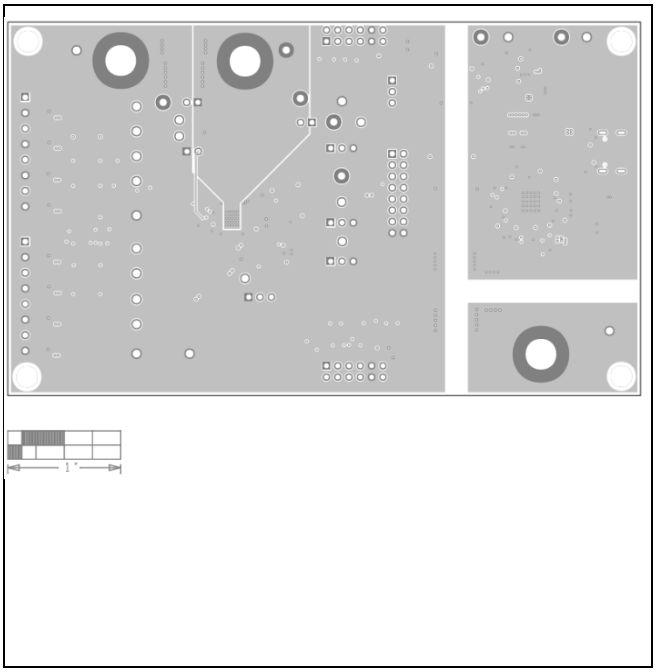
MAX22915 EV Kit Schematic (continued)



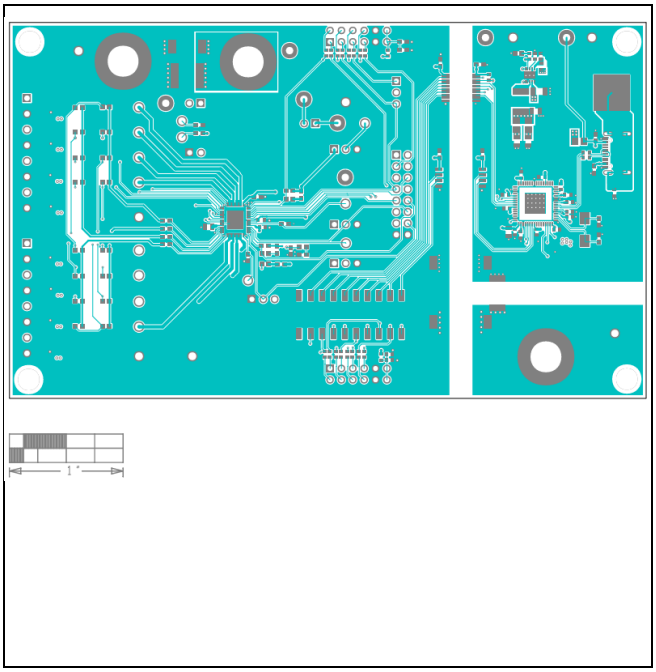
MAX22915 EV Kit PCB Layout



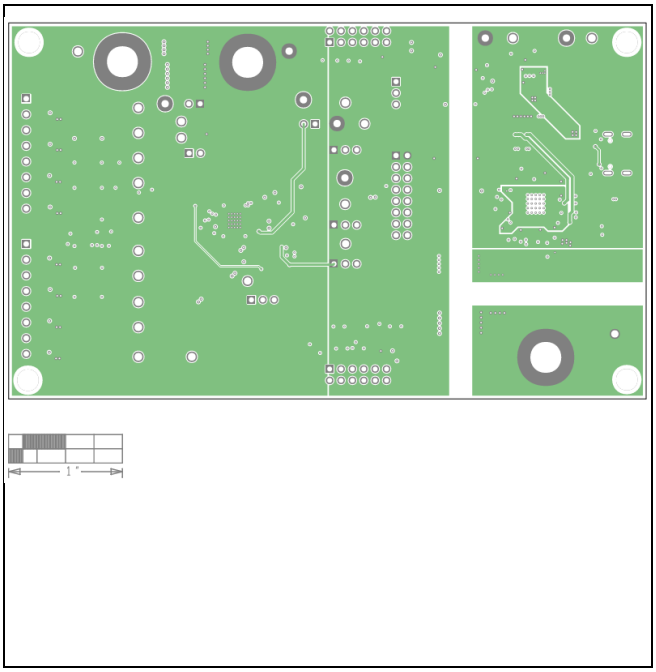
MAX22915 EV Kit Component Placement Guide—Top Silkscreen



MAX22915 EV Kit PCB Layout—Layer 2

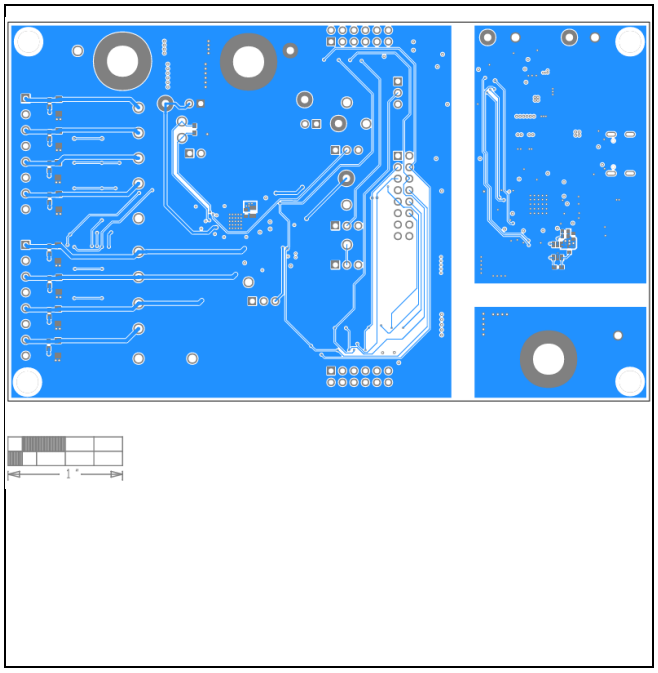


MAX22915 EV Kit PCB Layout—Top

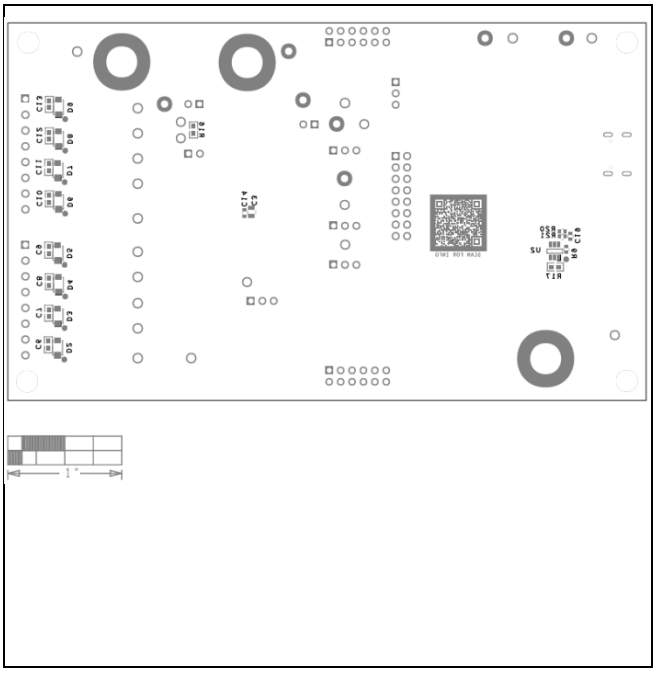


MAX22915 EV Kit PCB Layout—Layer 3

MAX22915 EV Kit PCB Layout (continued)



MAX22915 EV Kit PCB Layout—Bottom



MAX22915 EV Kit Component Placement Guide—Bottom Silkscreen

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	3/26	Initial release	—

Notes