General Description

The MAX12900 evaluation kit (EV kit) provides a proven design to evaluate the MAX12900, loop-powered 4–20mA sensor transmitter. The EV kit includes an evaluation board and a graphical user interface (GUI) that provides communication from a PC to the target device through a USB port.

The EV kit includes Windows® 7, Windows 8, and Windows 10 compatible software for exercising the features of the IC. The EV kit GUI allows to set the Coarse and Fine PWM duty cycle inputs to the MAX12900 to control the 4-20mA loop current with ±1µA resolution.

The EV kit must be powered from an external +24V power supply and consumes less than 2.7mA.
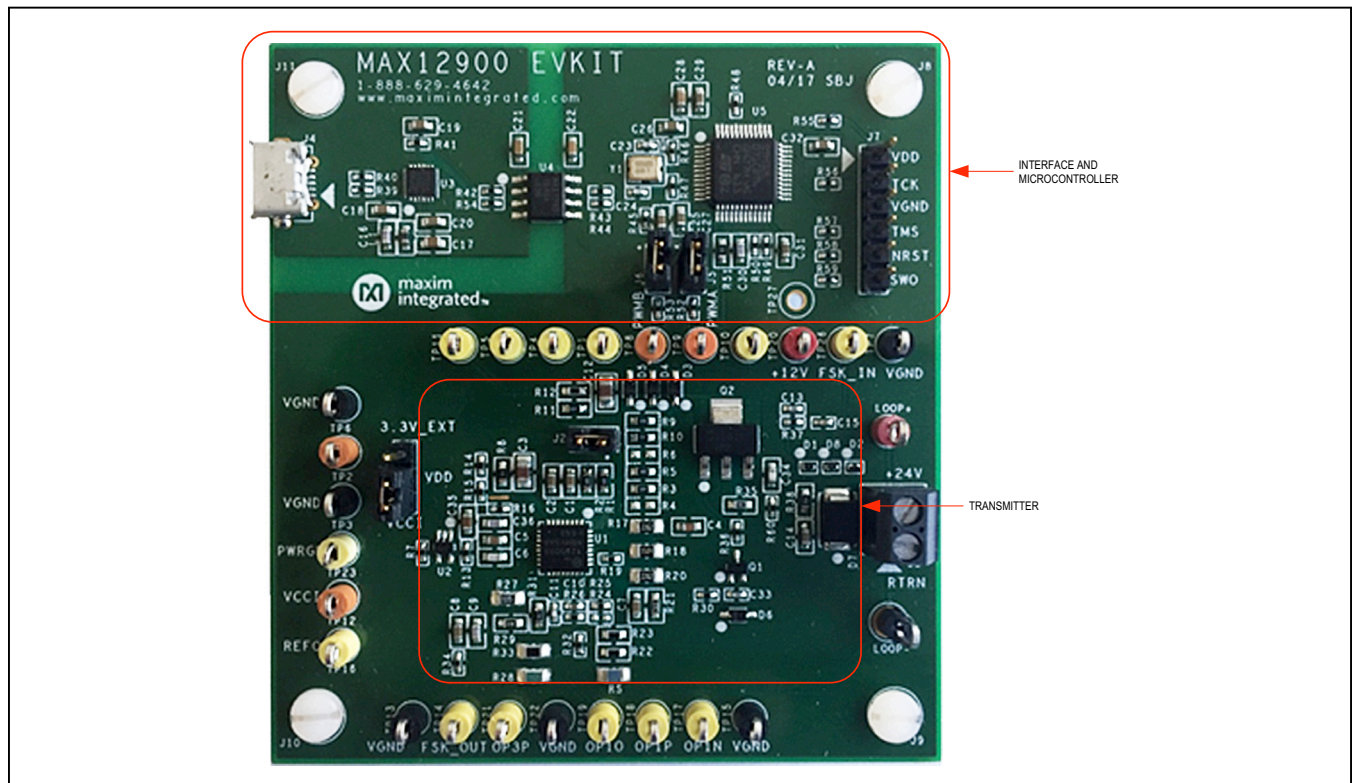
The MAX12900 EV kit comes with a MAX12900ATJ+ installed in a 32-pin, 5 x 5mm TQFN-EP package.

Features

- Loop-powered 4mA–20mA Transmitter with PWM Inputs
- Robust Operation with Wide Range Of Input Voltages
- On-Board Microcontroller to Generate Two PWM Inputs and Provide Fault Diagnostic
- Supports HART and Fieldbus H1 Communication
- -40°C to +125°C Temperature Range
- Reverse Voltage Protection
- Proven PCB Layout
- Fully Assembled and Tested
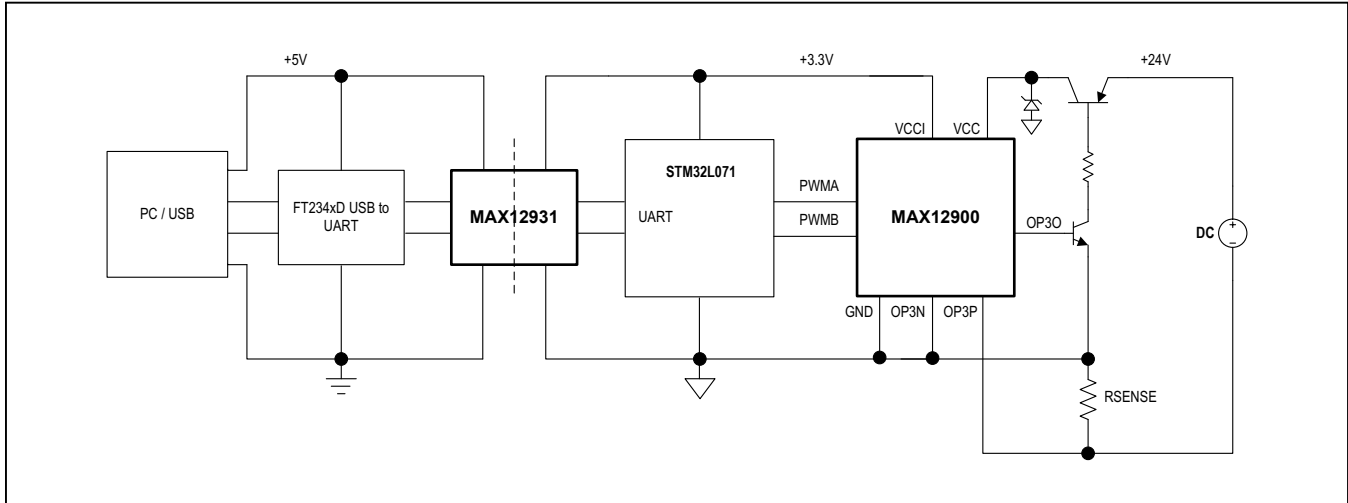- Windows 7, Windows 8, and Windows 10 Compatible Software

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

MAX12900 EV Kit

Windows is a registered trademark and registered service mark of Microsoft Corporation.

MAX12900 EV System Block Diagram

MAX12900 EV Kit Files

FILE	DESCRIPTION
MAX12900EVKITSetupV1.0.exe	Application Program (GUI)

Quick Start

Required Equipment

- MAX12900 EV kit
- +24V DC power supply
- Ampere meter
- PC with installed Windows 7, Windows 8, or Windows 10 and USB port

Note: In the following section(s), software-related items are identified by bolding. Text in **bold** refers to items directly from the EV system software. Text in **bold and underline** refers to items from the Windows operating system.

Procedure

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

1) Visit **www.maximintegrated.com/evkitsoftware** to download the latest version of the EV kit software, MAX12900EVKIT.ZIP. Save the EV kit software to a temporary folder and uncompress the ZIP file.

2) Install the EV kit software on your computer by running the **MAX12900EVKITSetupV1.0.exe** program inside the temporary folder. The program files are copied to your PC and icons are created in the Windows **Start | Programs** menu.

3) Verify that all jumpers are in their default positions (Table 1). Note the hardware is configured for communication with a PC and onboard microcontroller by default.

4) Power up the EV kit with +24V from an external power supply through J3 Terminal Block or using LOOP+ and LOOP- test points. Connect an ampere meter in series with the power supply and external load. The load range is from 0 to 1kΩ. Alternatively, use a voltmeter in parallel with the resistive load to calculate the loop current.

5) Connect the EV kit to a USB port of a PC. A microUSB cable is included.

6) Start the EV kit software by opening its icon in the **Start | Programs** menu. 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 communication with the onboard microcontroller. It also retrieves calibration coefficients from the onboard microcontroller EEPROM and indicates them in the Status Log window.
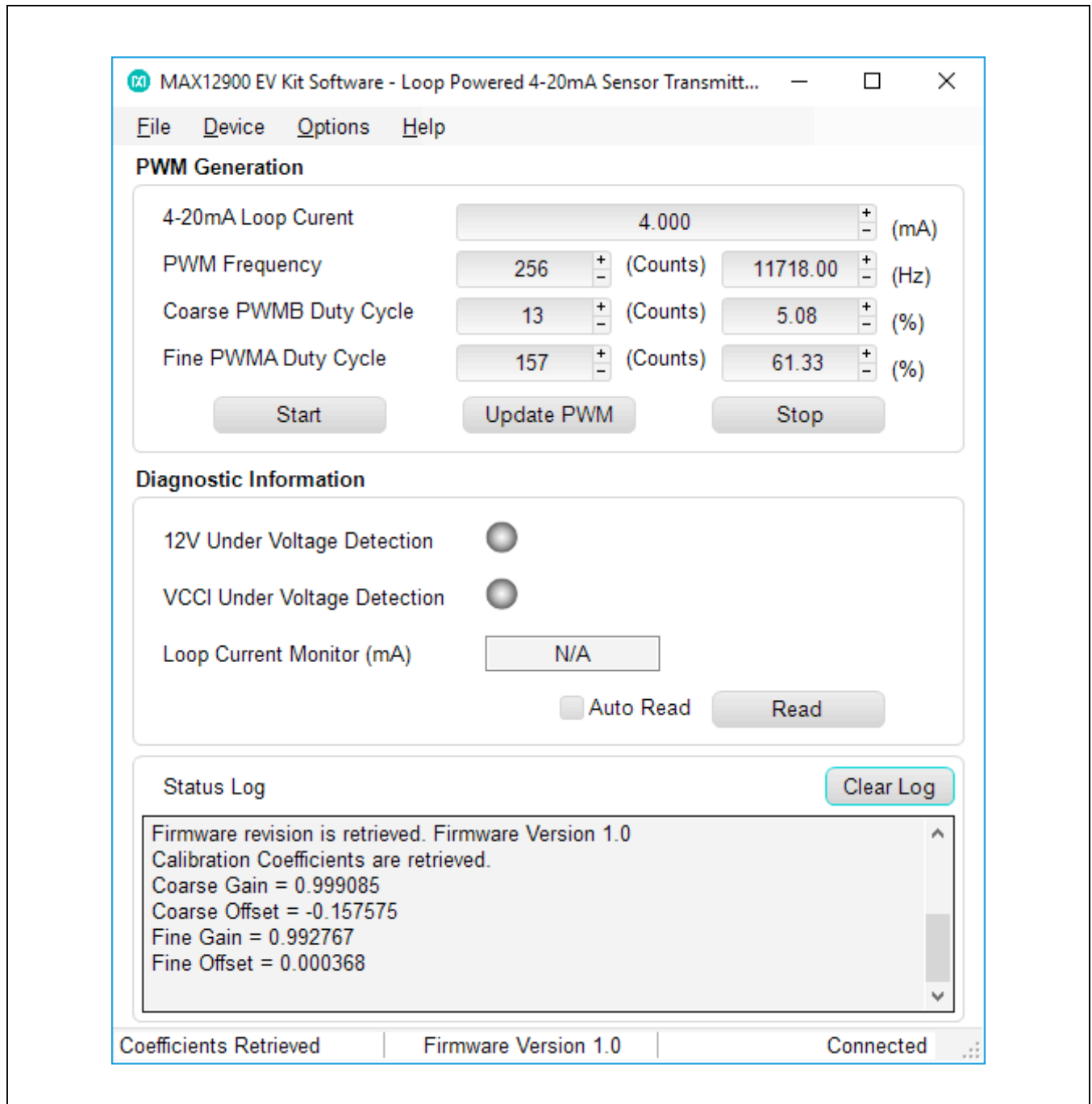
Figure 1. MAX12900 EV Kit GUI

(the following steps are used to verify functionality of the MAX12900)

7) Press the Start button in PWM Generation block. By default, it sets the loop current to 15.19mA. Use an ampere meter to check the loop current is correct. The Start button must be pressed every time when GUI starts to enable PWM generation.

8) Set the loop current to 4mA by typing in the 4–20mA Loop Current box and pressing the Update PWM button. Verify the loop current changed to 4mA by ampere meter.

9) Repeat the previous step with the different values from 4mA to 20mA. Alternatively, change the Coarse and Fine Duty cycle values in the corresponding set boxes (Counts or %). Note that the number of counts is different for different PWM frequencies. The default frequency is 11718.00Hz, based on the oscillator frequency and calculation convenience.

10) Press the Stop button to stop PWM. The loop current drops to approximately 2.66mA which is a minimum current consuming by the EV Kit.

General Description of Software

When the GUI starts, it automatically detects if the EV kit is connected to a PC and indicates that in the status bar at the bottom edge of the GUI. If the GUI does not recognize the EV kit make sure that the software and all drivers are properly installed, check the USB connection and go to the Device pulldown menu and select Search for Hardware option. When the EV kit is properly connected, press the Start button to start PWM generation by the microcontroller. Type in a new value to the 4mA–20mA Loop Current control box and press the Update PWM button to set the loop current. The GUI automatically calculates the desired PWMB and PWMA duty cycles based on loop current settings and sends corresponding commands to the microcontroller. All communication commands are shown in the Status Log window for your convenience. Note, the actual data sent to the microcontroller is different from the Coarse and Fine settings due to inversion configuration of the MAX12900 and calibration coefficients, refer to Figure 2.

The Status Log window can be cleared by pressing the Clear Log button and hidden by selecting Hide Log option from the Options menu, or by pressing CTRL+H buttons on the keyboard.

The GUI receives diagnostic information from the COMP1 (12V supply diagnostic) and COMP2 (VCCI diagnostic) comparators and illuminates the corresponding boxes if any of these supplies drops approximately by 20% (not implemented until rev. 2.0).

Also, the GUI can monitor the loop current by enabling ADC reading of the OP2 output. Press the Read button for single read or enable continuous reading by selecting the Auto Read control box in the Diagnostic Information window (not implemented until rev. 2.0).

Table 1. MAX12900 Board Shunt Positions and Settings

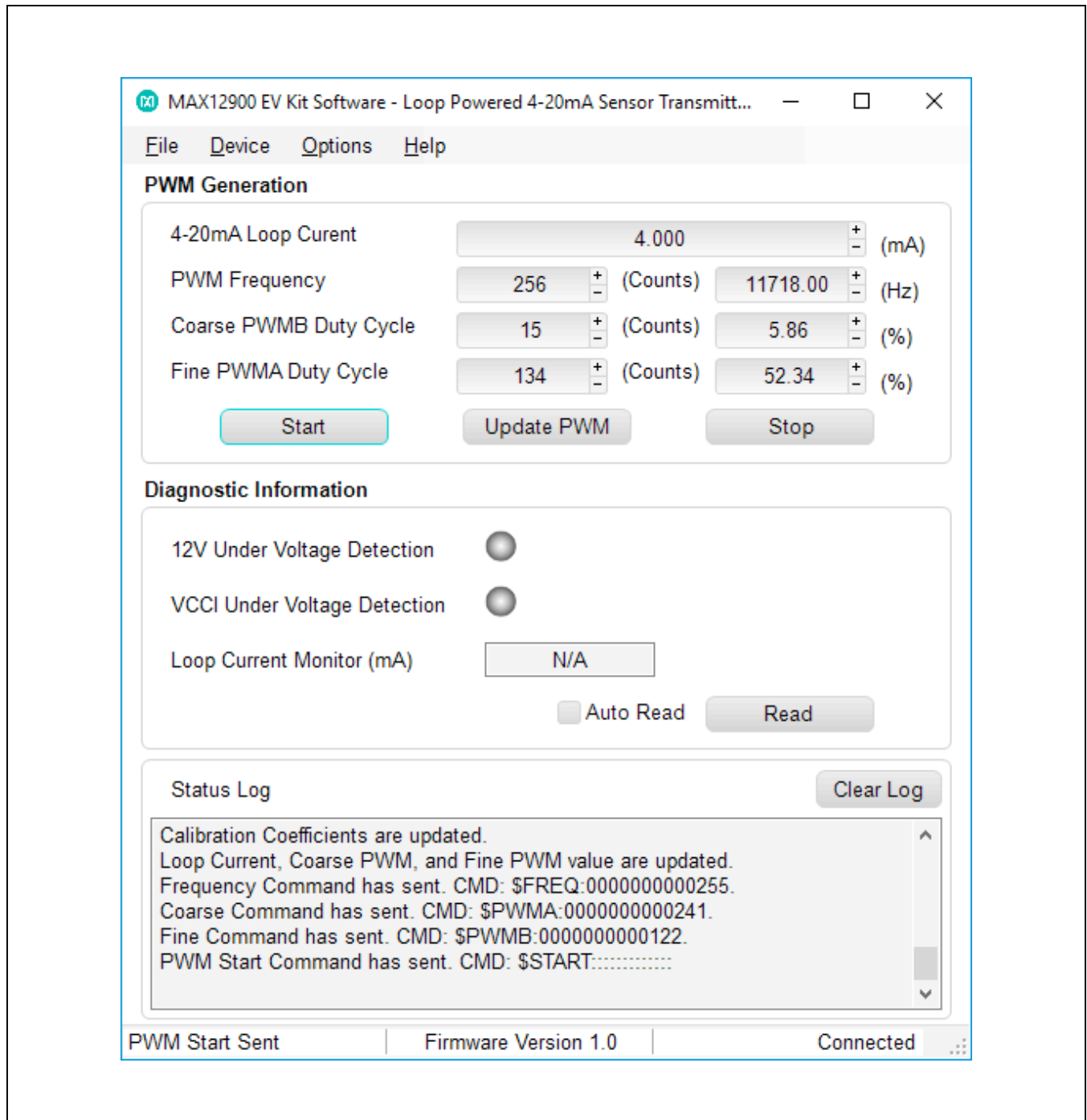| HEADER	SHUNT POSITION	DESCIPTION
J1	1-2*	Supply microcontroller from 3.3V VCCI
	2-3	Supply microcontroller from an external 3.3V source.
J2	1-2	Connect VCC pin to 12V shunt regulator. Place an ampere meter to monitor power consumption of the MAX12900.
J5	1-2	Connect the Fine PWM output of microcontroller to PWMA input.
J6	1-2	Connect the Coarse PWM output of microcontroller to PWMB input.

*Default configuration

Figure 2. MAX12900 EV Kit GUI Status Log

Board Calibration

The EV kit is factory calibrated and does not require additional calibration. The calibration coefficients are stored in the microcontroller's EEPROM memory and read by the GUI when the board is connected to a PC. In some cases, the calibration coefficients can be adjusted by the user. Go to Device menu and select Calibration option. The Calibration window pops up, as shown in Figure 3.

A 6.5 digit or better ampere meter should be connected in series with LOOP- terminal and a 24V supply to make a 4-20mA current loop. Follow the 1,2,3,4 steps in Calibration Procedure by pressing the Set button and typing in a measured by the ampere meter loop current. Press the Calculate button when all four steps are completed. A pop-up window will inform that calibration is finished and all coefficients are updated. The new coefficients will be used for loop current/duty cycle calculations.
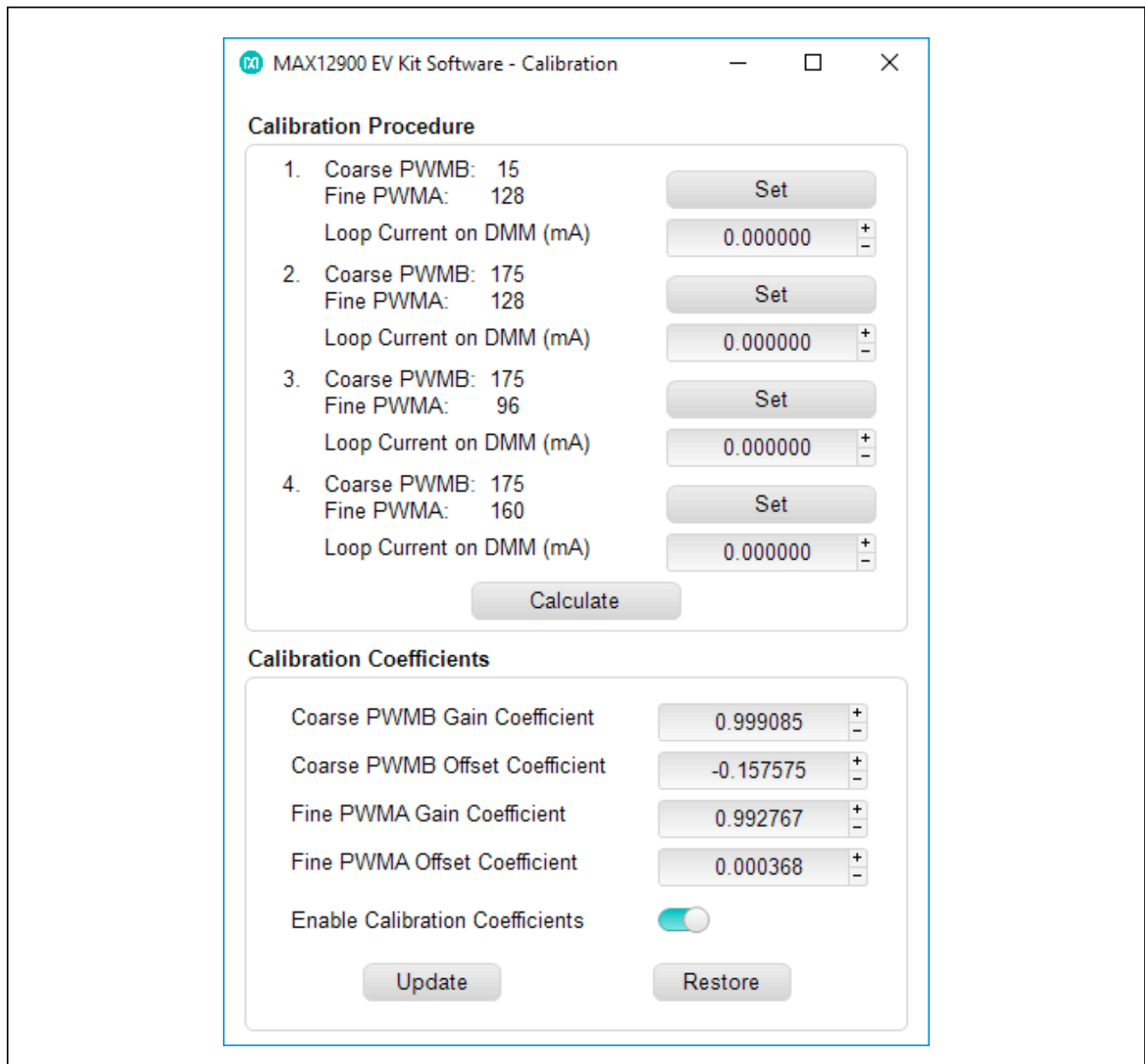

Figure 3. Calibration Window

General Description of Hardware

The MAX12900 EV kit allows evaluating features and performance of MAX12900 when it is used in a typical 4mA–20mA transmitter application.

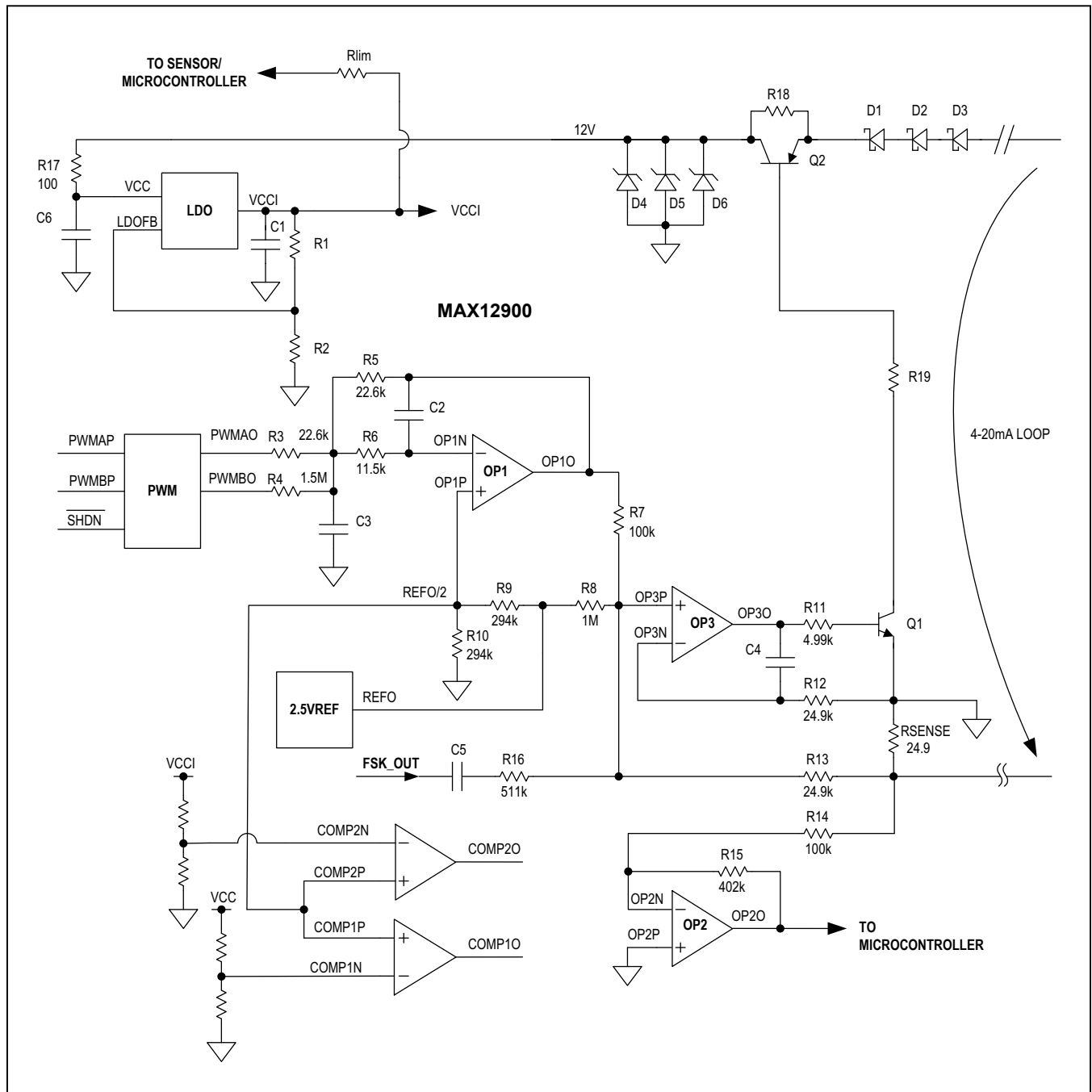The detailed block diagram of MAX12900 configuration is shown in Figure 4.

Figure 4. MAX12900 EV Kit Configuration Block Diagram

The two PWM signals (PWMB and PWMA) generated by the onboard microcontroller represent data from the sensor. An ultra-low-power, high-resolution digital-to-analog converter (DAC) is realized with the combination of two conditioner circuits (PWMB and PWMA) and the active filter (OP1). The outputs of the two-conditioner circuits provide a stable PWM amplitude over voltage supply and temperature variation. The wide bandwidth amplifier (OP3) in combination with the discrete transistors Q1 and Q2 implements a voltage to 4mA–20mA loop current converter. The OP3 amplifier features zero-offset and in combination with the low-drift voltage reference provide negligible error over a wide temperature range. Wide bandwidth allows this circuit to realize either HART or Fieldbus Foundation signal modulation. The low-power operational amplifier (OP2) and comparators provide building blocks for enhanced diagnostic features. Supply rail monitoring, output current readback, open circuit and failure detection are a few examples of diagnostic features. The power sequencer circuit and PWRGOOD signaling allow a smooth power up with configurable maximum output current.

User-Supplied PWMs

To evaluate the EV kit with user-supplied PWMs, remove the J5 and J6 jumpers and apply the coarse PWM to TP8 and fine PWM to TP9. Make sure that the PWM voltage level does not exceed the VCCI level on TP12.

External +3.3V Power Supply for the Microcontroller

An external +3.3V voltage can supply to TP2, 3.3V_EXT, to evaluate the performance of the on-chip LDO without loading by microcontroller.

Hot Plug and Reverse-Voltage Protection

The EV kit is protected for up to 60V reverse-voltage connection and hot plug connections.

HART or Fieldbus Communication

The EV kit is HART (Highway Addressable Remote Transducer) enabled and meets the FSK Physical Layer Test Specification HCF_TEST-2. Applying a 500mV HART signal from an external HART modem, such as Maxim's DS8500, between TP14 and VGND, the FSK signal over the loop load can be observed with an oscilloscope.

Warning! Usually the scope probes are Earth/Chassis grounded. Make sure that only one probe is used for measurement or all probes are connected to the same common point. Do not short the sense resistor RS by the probes.

Some modifications need to be done to satisfy Fieldbus H1 requirements, such as,

1) Replace the R29 by 100k, 1%, 0805-size resistor.
2) Replace the C11 by 82pF, 0603-size capacitor.
3) Replace the C33 by 390pF, 0603-size capacitor.

MAX12900 EV Kit Typical Performance

Typical scope shots of MAX12900 EV kit performance are shown in Figure 5 to Figure 16.

Noise Measure On Time Domain

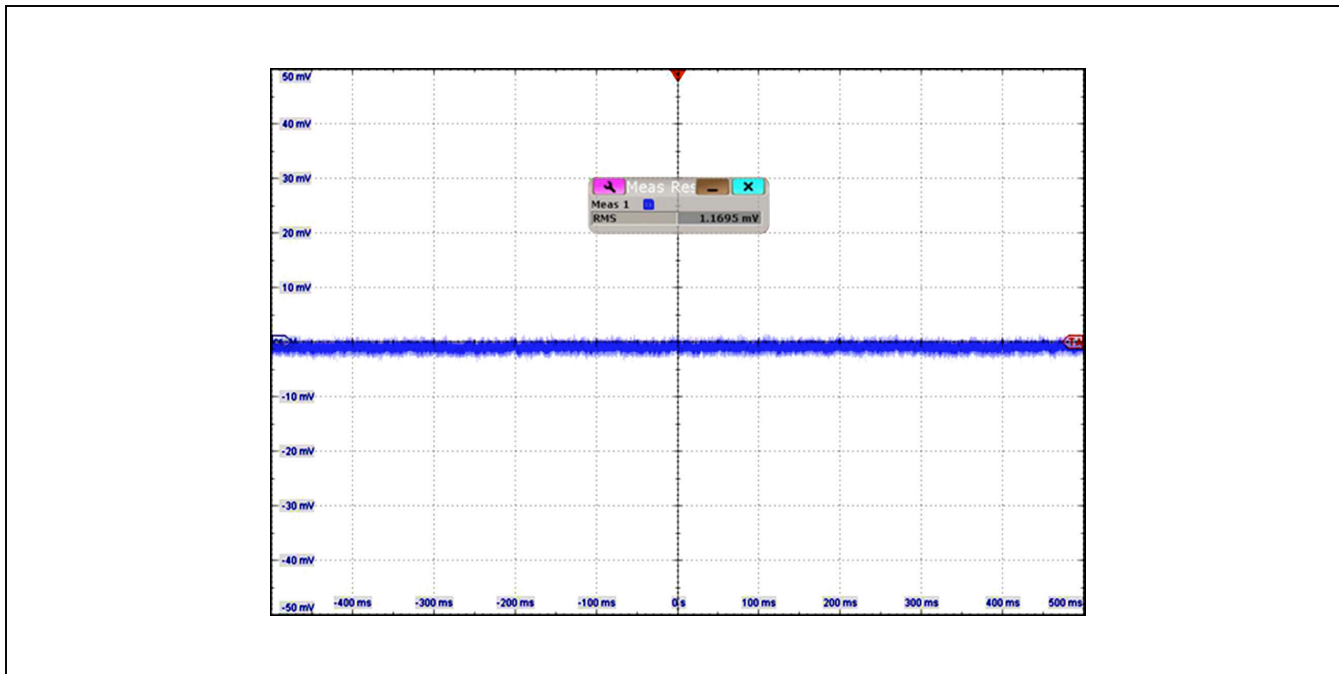The current noise measured as a voltage drop across 500Ω load resistor.

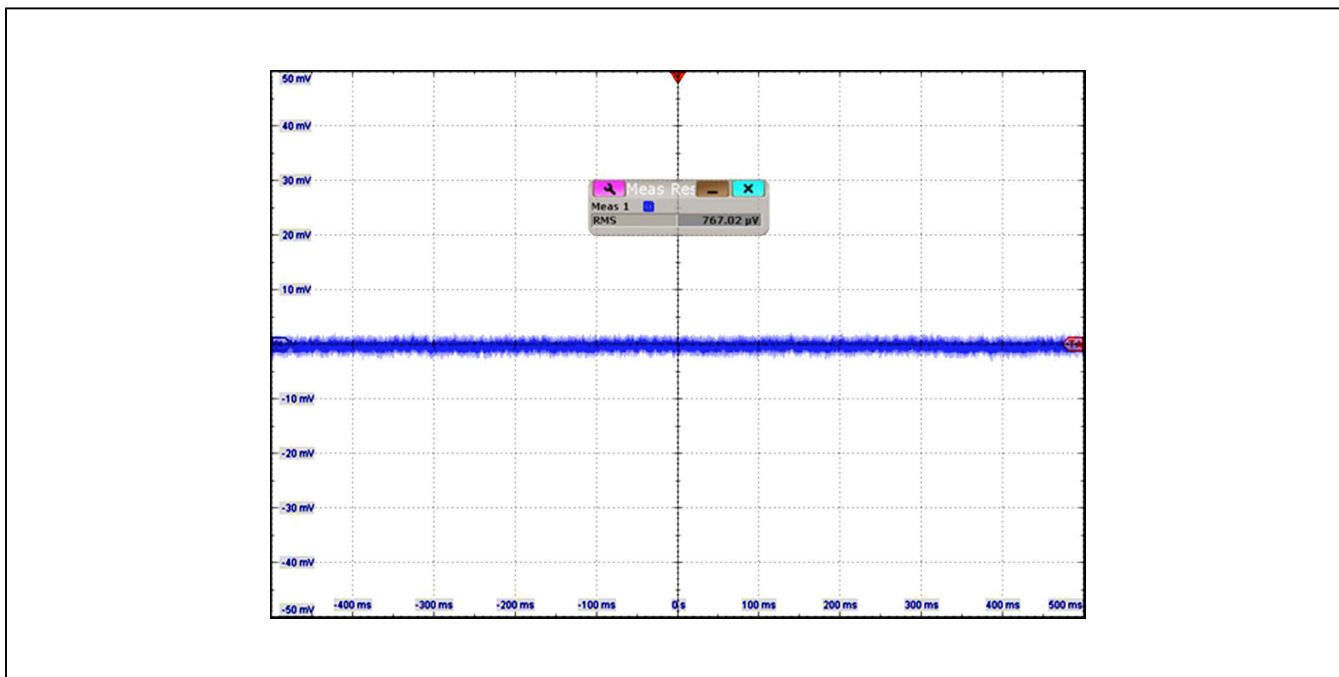Figure 5. 4mA Loop Current Noise During Silence Over 500Ω Load Resistor

Figure 6. 20mA Loop Current Noise During Silence over 500Ω Load Resistor
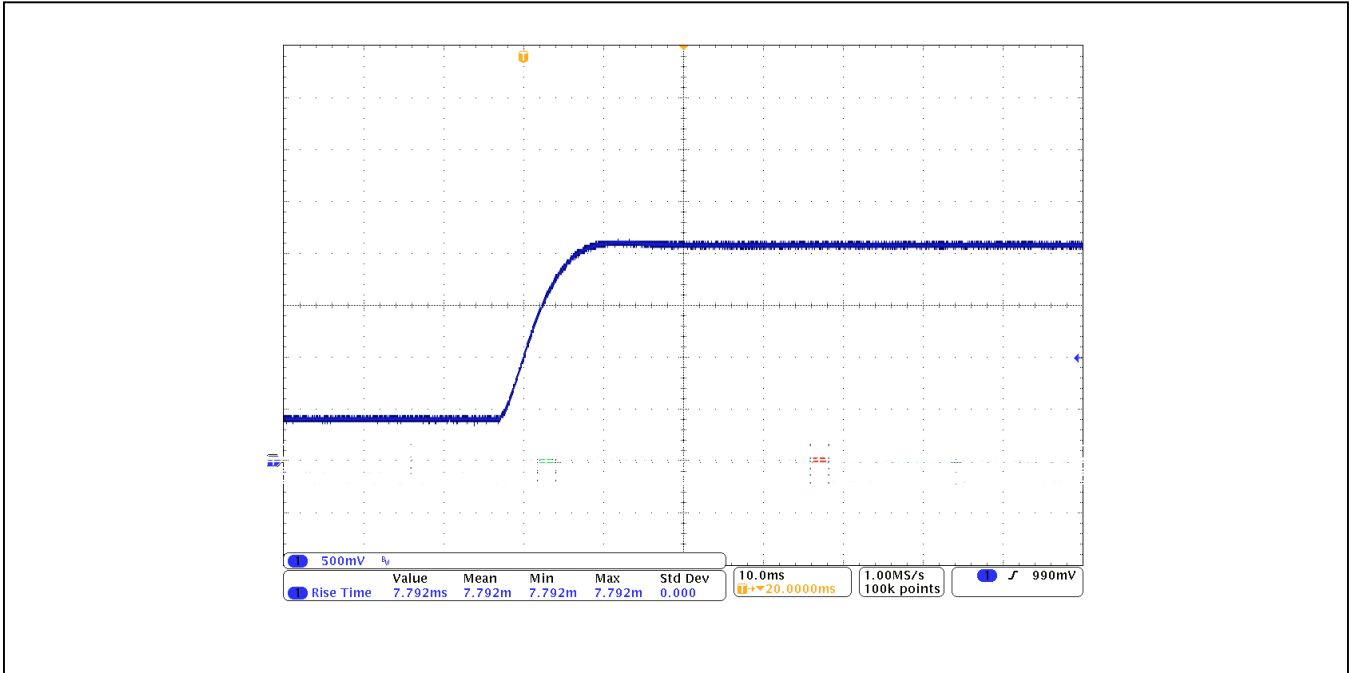
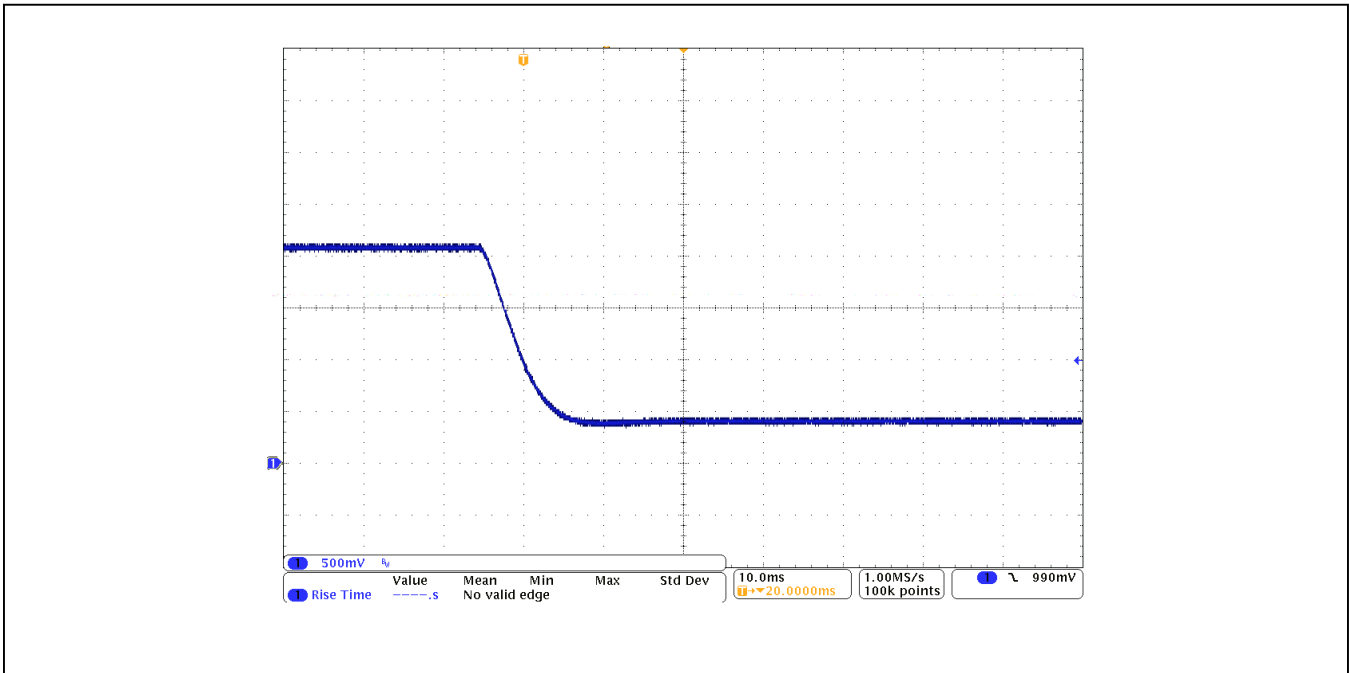**Big-Signal Step Response**

Figure 7. 4mA to 20mA Transition

Figure 8. 20mA to 4mA Transition
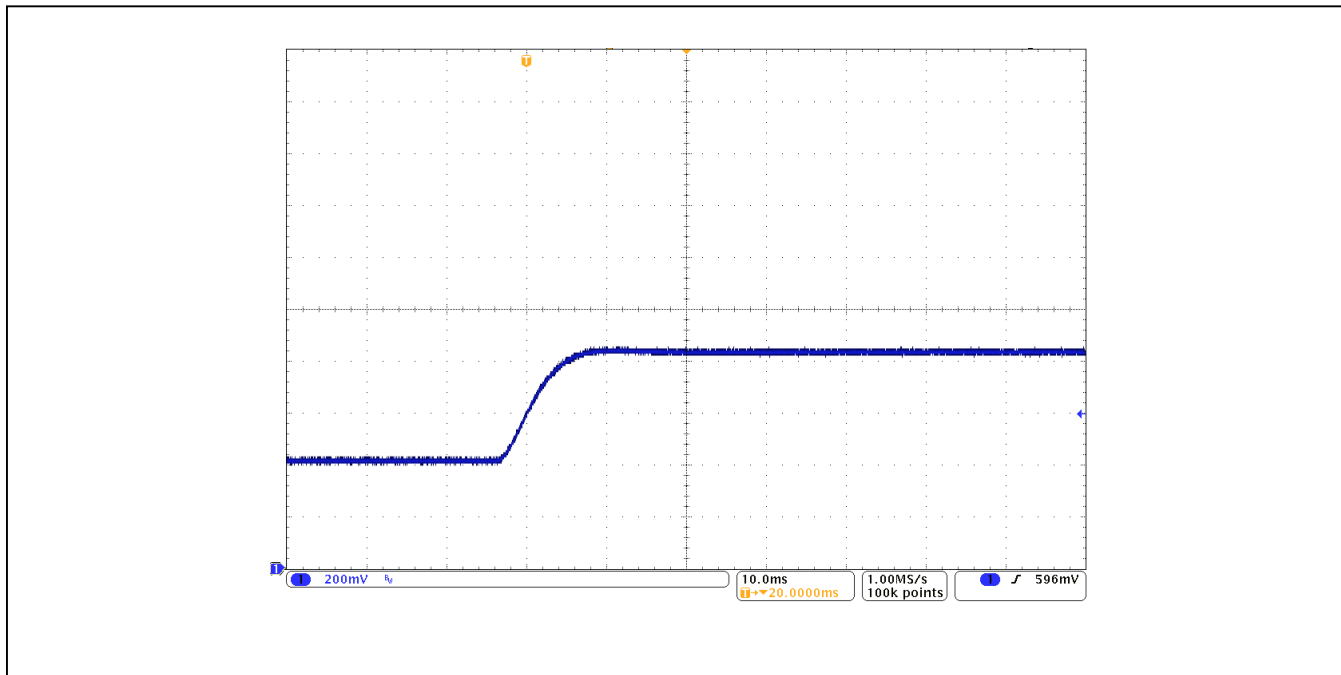
Small-Signal Step Response

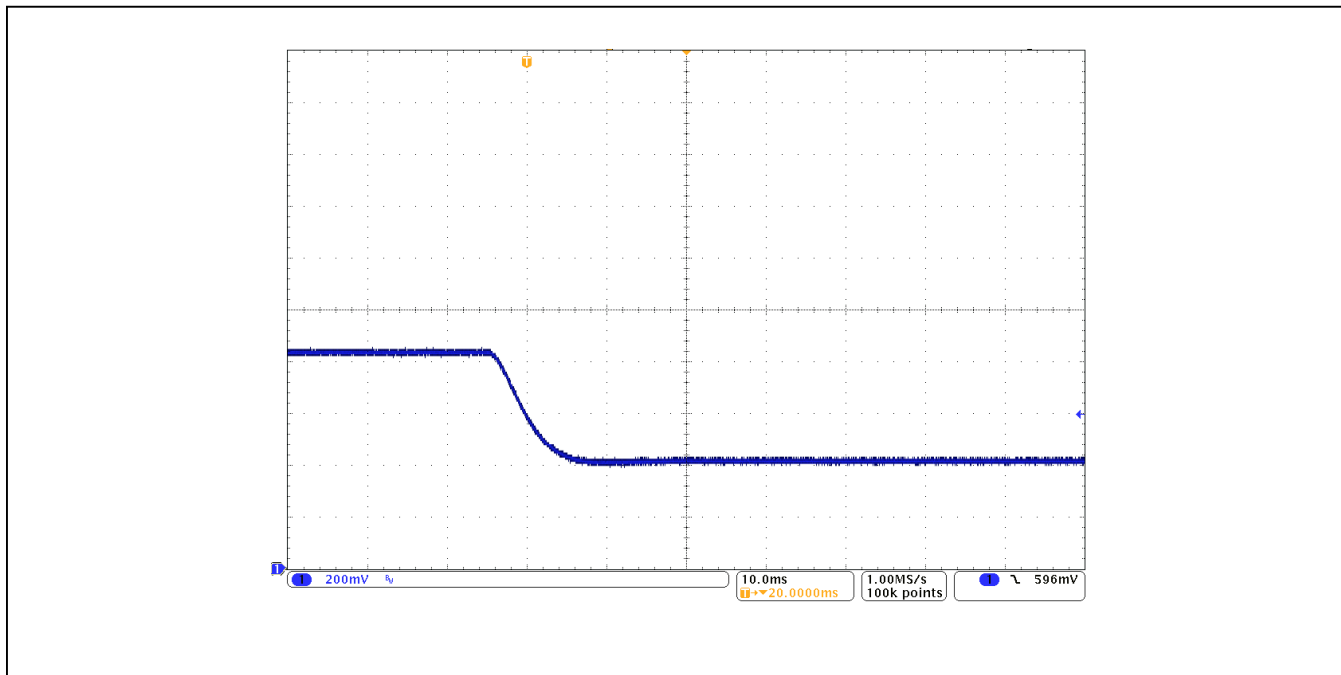*Figure 9. 4mA to 8mA Transition*
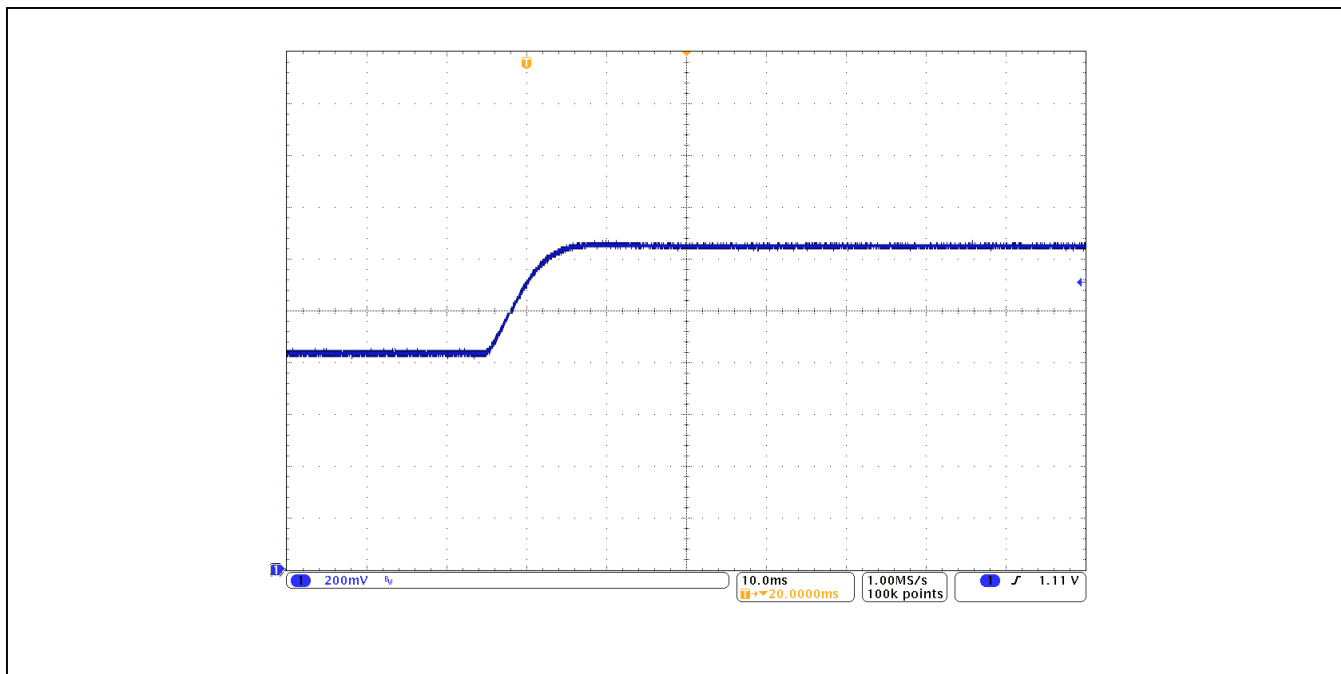

Figure 10. 8mA to 4mA Transition
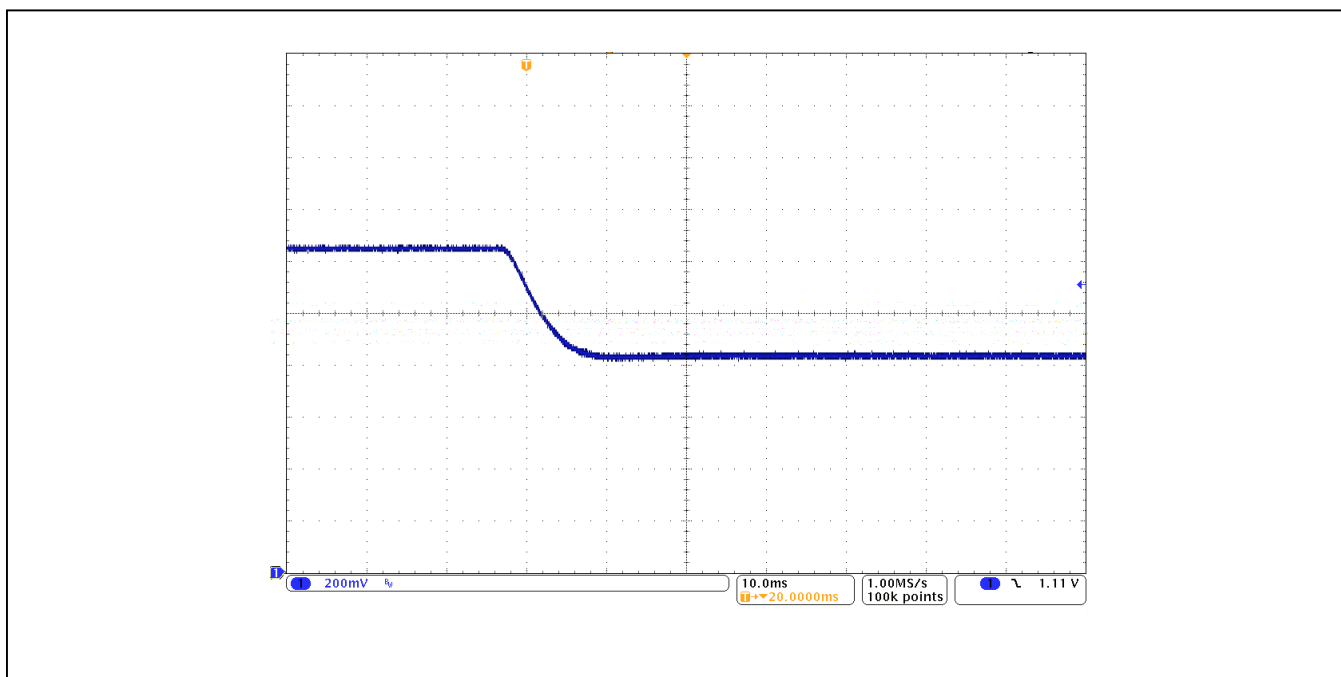
Figure 11. 8mA to 12mA Transition

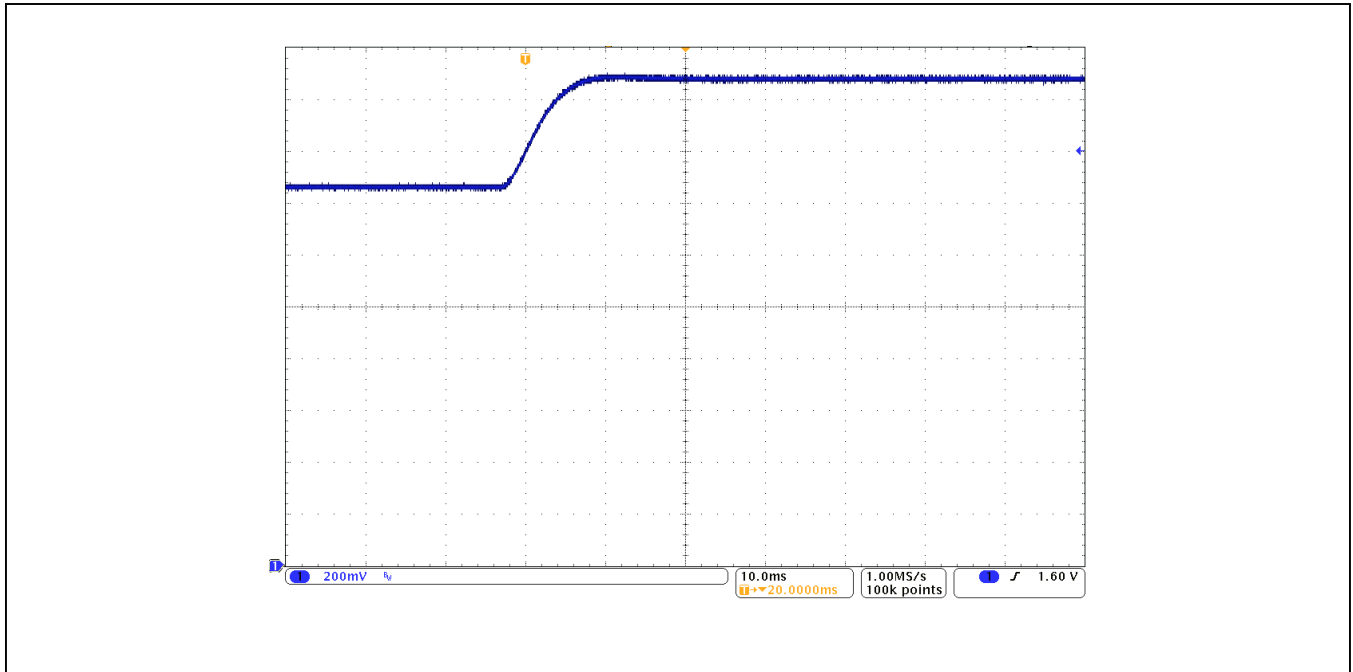*Figure 12. 12mA to 8mA Transition*

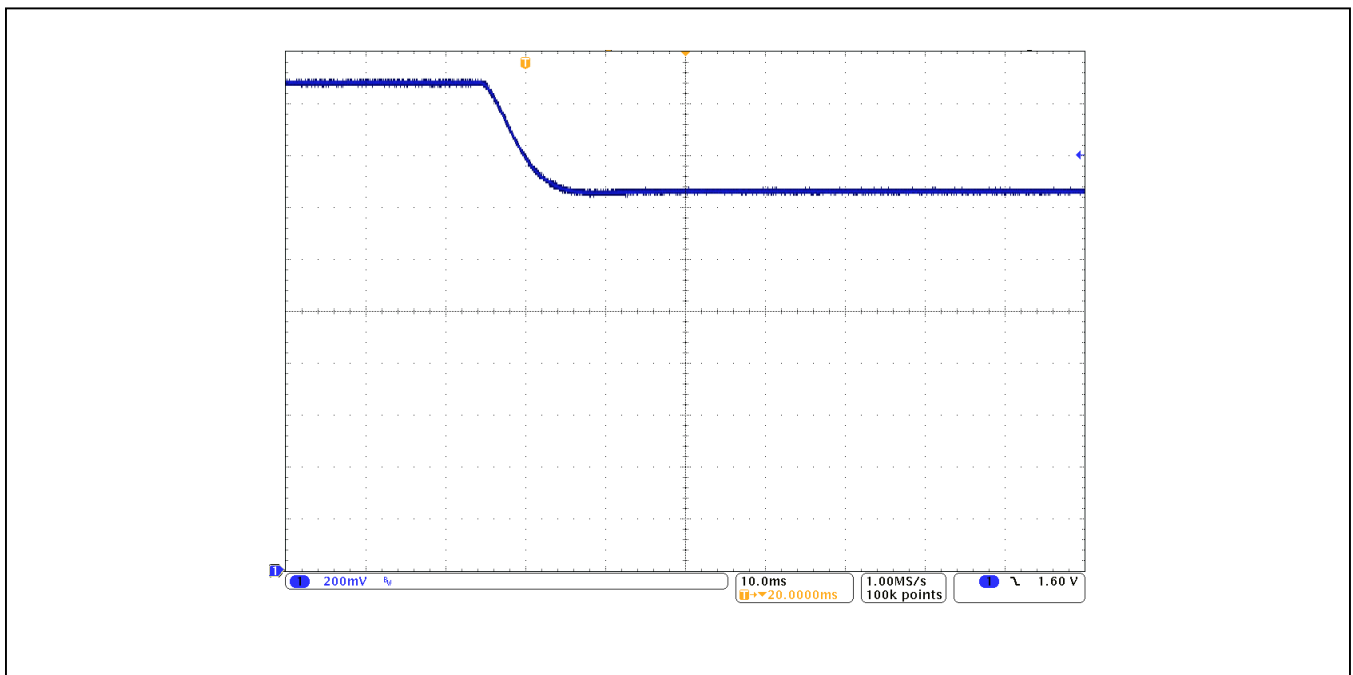*Figure 13. 14mA to 18mA Transition*
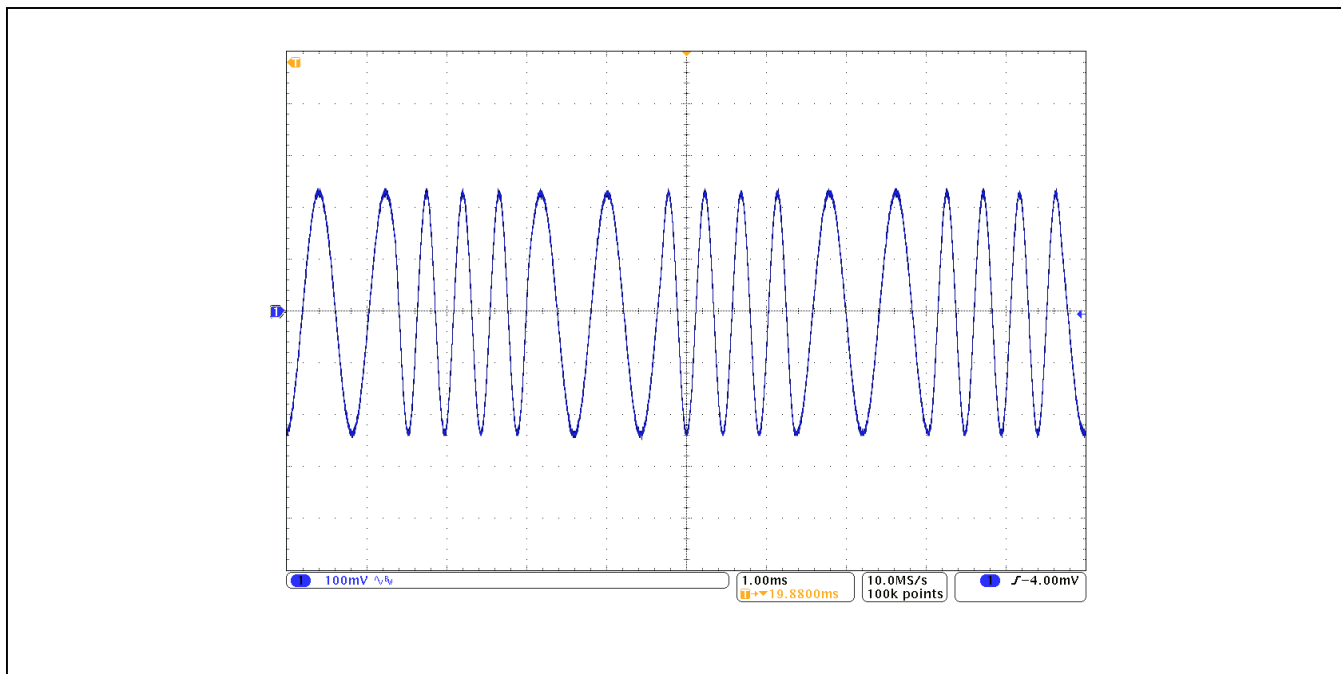

Figure 14. 18mA to 14mA Transition

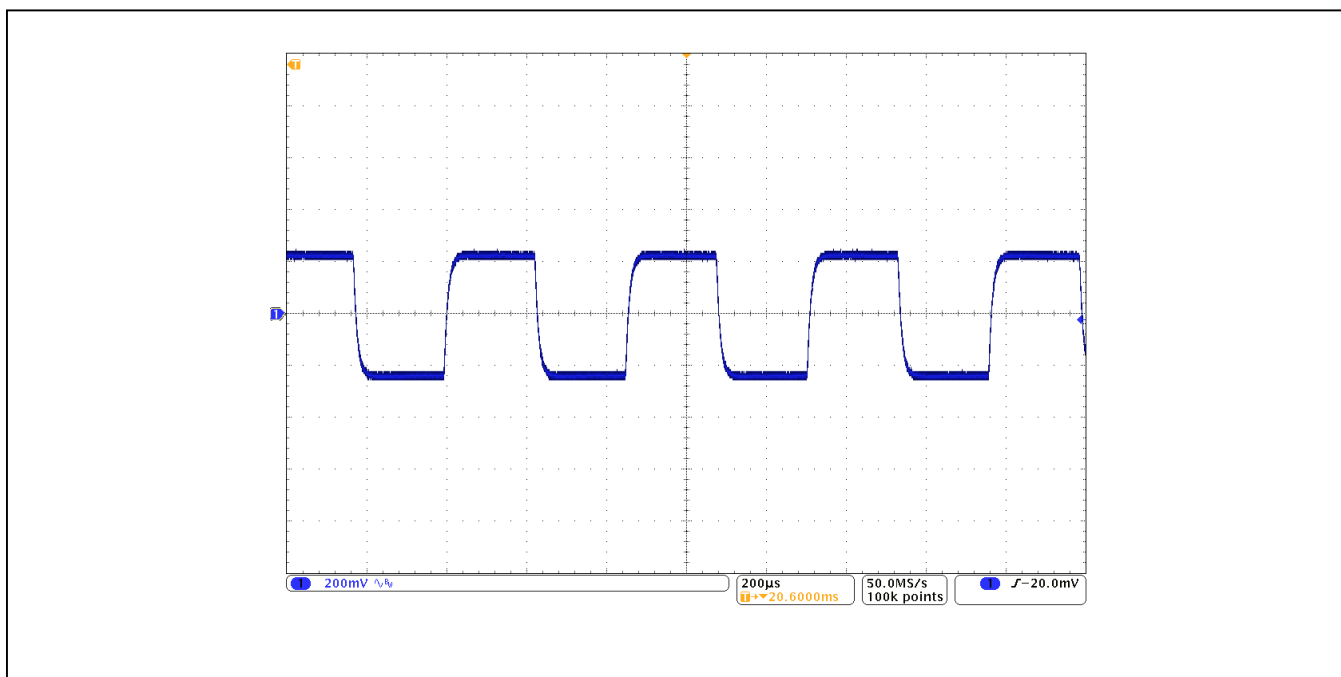*Figure 15. HART Modulation at 4mA Loop Current*

Figure 16. 2.2kHz Square Wave Over 4mA–20mA Current Loop

MAX12900 EV Kit Bill of Materials

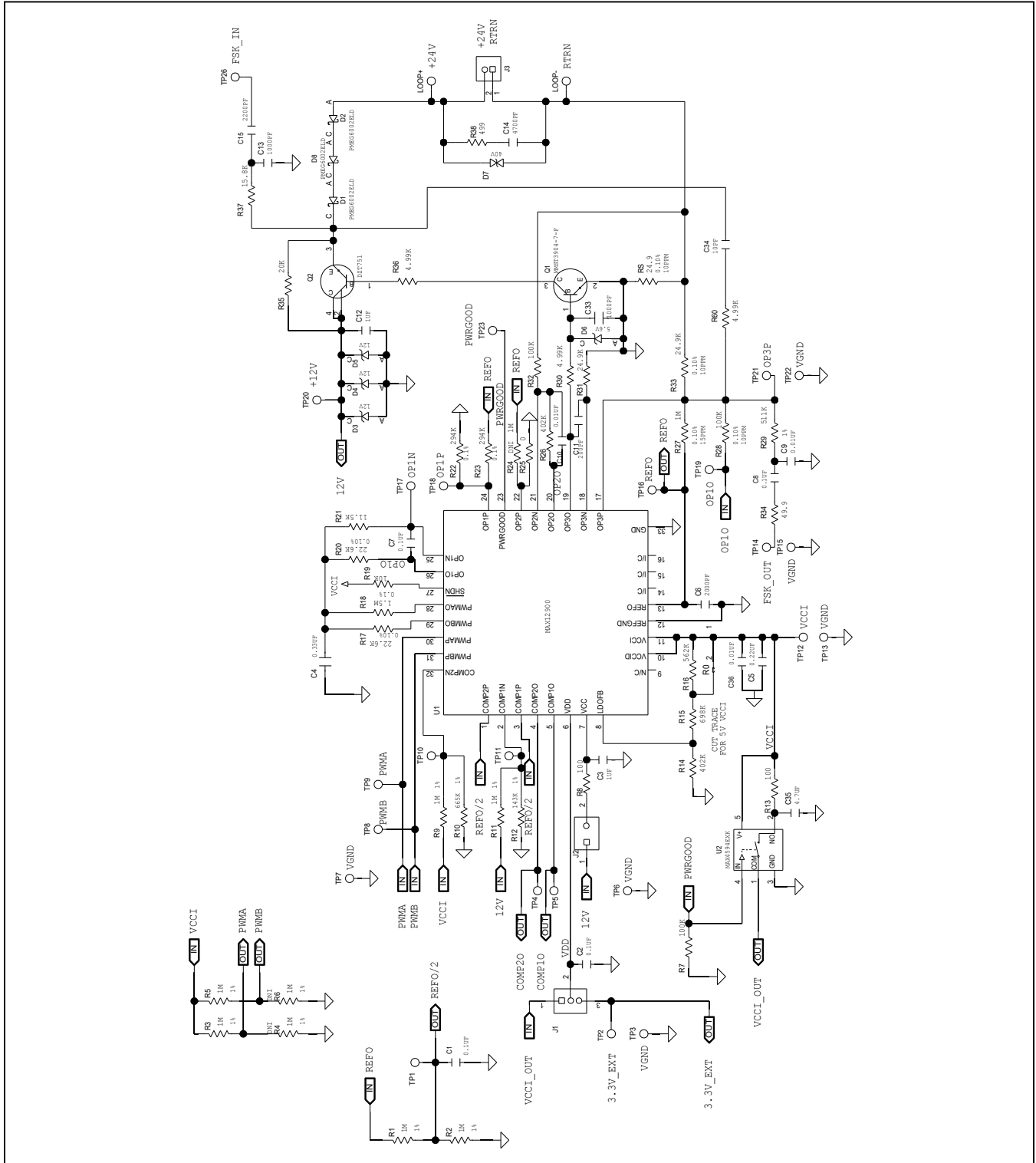| ITEM	REF_DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION	COMMENTS
1	C1, C2, C7, C8, C18-C20, C25-C27, C29, C31, C32	-	13	GRM188R72A104KA35; CC0603KRX7R0BB104	MURATA; TDK	0.1UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 0.1UF; 100V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7R	
2	C3, C12	-	2	C2012X7S2A105K125; GRJ21BC72A105KE11	TDK/MURATA	1UF	CAPACITOR; SMT (0805); CERAMIC CHIP; 1UF; 100V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7S	
3	C4	-	1	C1608X7R1H334K;C0603C334K5RAC	AVX/KEMET	0.33UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 0.33UF; 50V; TOL=10%; MODEL=; TG=-55 DEGC TO +125 DEGC; TC=X7R	
4	C5	-	1	C0603C224K3RAC; GMC10X7R224K25; GRM188R71E224KA88; C1608X7R1E224K08	KEMET; MURATA; TDK	0.22UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 0.22UF; 25V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7R	
5	C6	-	1	GRM1885C1H202JA01	MURATA	2000PF	CAPACITOR; SMT (0603); CERAMIC CHIP; 2000PF; 50V; TOL=5%; MODEL=; TG=-55 DEGC TO +125 DEGC; TC=C0G	
6	C9, C16, C30, C36	-	4	C1608C0G1E103J	TDK	0.01UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 0.01UF; 25V; TOL=5%; MODEL=; TG=-55 DEGC TO +125 DEGC; TC=C0G	
7	C10	-	1	C0402C103K5RAC;GRM155R71H103KA88	KEMET/MURATA	0.01UF	CAPACITOR; SMT (0402); CERAMIC CHIP; 0.01UF; 50V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7R	
8	C11	-	1	C0402C201J5GAC; GRM1555C1H201JA01	KEMET/MURATA	200PF	CAPACITOR; SMT (0402); CERAMIC CHIP; 200PF; 50V; TOL=5%; MODEL=; TG=-55 DEGC TO +125 DEGC; TC=C0G	
9	C13, C33	-	2	C0402C102K5GAC	KEMET	1000PF	CAPACITOR; SMT (0402); CERAMIC CHIP; 1000PF; 50V; TOL=10%; MODEL=; TG=-55 DEGC TO +125 DEGC; TC=C0G	
10	C14	-	1	C0603X472J1GAC	KEMET	4700PF	CAPACITOR; SMT (0603); CERAMIC CHIP; 4700PF; 100V; TOL=5%; MODEL=FT-CAP; TG=-55 DEGC TO +125 DEGC; TC=C0G	
11	C15	-	1	GRM155R72A222KA01	MURATA	2200PF	CAPACITOR; SMT (0402); CERAMIC; 2200PF; 100V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7R	
12	C17, C35	-	2	GRM188C71A475KE11; C1608X7S1A475K080AC	MURATA; TDK	4.7UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 4.7UF; 10V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7S	
13	C21, C22, C28	-	3	C0603C105K4RAC; GRM188R71C105KA12; C1608X7R1C105K; EMK107B7105KA	KEMET/MURATA/TDK/ TAIYO YUDEN	1UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 1UF; 16V; TOL=10%; MODEL=; TG=-55 DEGC TO +125 DEGC; TC=X7R	
14	C23, C24	-	2	C0402C200J5GAC	KEMET	20PF	CAPACITOR; SMT (0402); CERAMIC CHIP; 20PF; 50V; TOL=5%; MODEL=; TG=-55 DEGC TO +125 DEGC; TC=C0G	
15	C34	-	1	C0603C100K1GAC	KEMET	10PF	CAPACITOR; SMT (0603); CERAMIC CHIP; 10PF; 100V; TOL=10%; MODEL=C0G; TG=-55 DEGC TO +125 DEGC; TC=+/	
16	D1, D2, D8	-	3	PMEG6002ELD	NEXPERIA	PMEG6002ELD	DIODE; SCH; SMT (DFN1006D-2); PIV=60V; IF=0.2A	
17	D3-D5	-	3	BZX384-B12	NXP	12V	DIODE; ZNR; SOD-323; VZ=12V; IZ=0.005A	
18	D6	-	1	BZX384-C5V6	NXP	5.6V	DIODE; ZNR; SMT (SOD-323); Vz=5.6V; Izm=0.000001A; -65 DEGC TO +150 DEGC	
19	D7	-	1	SMBJ40CA	BOURNS	40V	DIODE; TVS; SMB (DO-214AA); VRM=40V; IPP=9.3A	
20	J1	-	1	PCC03SAAN	SULLINS	PCC03SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT THROUGH; 3PINS; -65 DEGC TO +125 DEGC	
21	J2, J5, J6	-	3	PCC02SAAN	SULLINS	PCC02SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT THROUGH; 2PINS; -65 DEGC TO +125 DEGC	
22	J3	-	1	ED555/2DS	ON-SHORE TECHNOLOGY INC	ED555/2DS	CONNECTOR; FEMALE; THROUGH HOLE; TERMINAL BLOCK; RIGHT ANGLE; 2PINS	
23	J4	-	1	ZX62RD-AB-5P8	HIROSE ELECTRIC CO LTD.	ZX62RD-AB-5P8	CONNECTOR; MALE; SMT; MICRO-USB CONNECTOR MEETING REQUIREMENTS OF USB 2.0 STANDARD; RIGHT ANGLE; 5PINS	
24	J7	-	1	PBC06SAAN	SULLINS ELECTRONICS CORP.	PBC06SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 6PINS; -65 DEGC TO +125 DEGC	
25	J8-J11	-	4	EVKIT_STANDOFF_4-40_3/8	?	EVKIT_STANDOFF_ 4-40_3/8	KIT; ASSY-STANDOFF 3/8IN; 1PC. STANDOFF/FEM/HEX/4-40IN/ (3/8IN)/NYLON; 1PC. SCREW/SLOT/PAN/4-40IN/(3/8IN)/NYLON	
26	L1	-	1	BLM18AG601SN1	MURATA	600	INDUCTOR; SMT (0603); FERRITE-BEAD; 600; TOL=+/-; 0.5A	
27	LOOP+	-	1	5010	KEYSTONE	N/A	TESTPOINT WITH 1.80MM HOLE DIA, RED, MULTIPURPOSE;	
28	LOOP-	-	1	5011	KEYSTONE	N/A	TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.445IN; BOARD HOLE=0.063IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;	
29	Q1	-	1	MMST3904-7-F	DIODES INCORPORATED	MMST3904-7-F	TRAN; 60V NPN SMALL SIGNAL TRANSISTOR; NPN; SOT-323; PD-(0.2W); I-(0.2A); V-(40V)	
30	Q2	-	1	DZT751	DIODES INCORPORATED	DZT751	TRAN; LOW VCESAT PNP SURFACE MOUNT TRANSISTOR; PNP; SOT-223; PD-(1W); I-(-3A); V-(-60V)	
31	R1-R3, R5, R9, R11	-	6	CRCW06031M00FK; MCR03EZPFX1004	VISHAY DALE/ROHM	1M	RESISTOR, 0603, 1M OHM, 1%, 100PPM, 0.10W, THICK FILM	
32	R7, R32	-	2	CRCW0402100KFK; RC0402FR-07100KL	VISHAY DALE; YAGEO PHICOMP	100K	RESISTOR; 0402; 100K; 1%; 100PPM; 0.0625W; THICK FILM	
33	R8	-	1	CRCW0603100RFK; ERJ-3EKF1000	VISHAY DALE/PANASONIC	100	RESISTOR; 0603; 100 OHM; 1%; 100PPM; 0.10W; THICK FILM	
34	R10	-	1	ERJ-3EKF6653; CRCW0603665KFK	PANASONIC; VISHAY DALE	665K	RESISTOR; 0603; 665K OHM; 1%; 100PPM; 0.1W; THICK FILM	665K
35	R12	-	1	ERJ-3EKF1433V	PANASONIC	143K	RESISTOR; 0603; 143K OHM; 1%; 100PPM; 0.10W; THICK FILM	143K
36	R13	-	1	CRCW0402100RFK; 9C04021A1000FL; RC0402FR-07100RL	VISHAY DALE; PANASONIC; YAGEO PHYCOMP	100	RESISTOR; 0402; 100 OHM; 1%; 100PPM; 0.063W; THICK FILM	
37	R14, R26	-	2	CRCW0402402KFK	VISHAY DALE	402K	RESISTOR; 0402; 402K OHM; 1%; 100PPM; 0.063W; METAL FILM	

MAX12900 EV Kit Bill of Materials (continued)

ITEM	REF_DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION	COMMENTS
38	R15	-	1	ERJ-2RKF6983	PANASONIC	698K	RESISTOR; 0402; 698K OHM; 1%; 100PPM; 0.1W; THICK FILM	
39	R16	-	1	CRCW0402562KFK	VISHAY DALE	562K	RESISTOR; 0402; 562K OHM; 1%; 100PPM; 0.063W; THICK FILM	
40	R17, R20	-	2	1676258; RN73C2A22K6B	TE CONNECTIVITY	22.6K	RESISTOR; 0805; 22.6K OHM; 0.1%; 10PPM; 0.1W; THIN FILM	
41	R18	-	1	CPF0805B1M5E; 1-1614959-1	TE CONNECTIVITY	1.5M	RESISTOR; 0805; 1.5M OHM; 0.1%; 25PPM; 0.1W; THIN FILM	
42	R19, R41, R45, R48	-	4	CRCW040210K0FK; RC0402FR-0710K	VISHAY DALE; YAGEO PHICOMP	10K	RESISTOR; 0402; 10K; 1%; 100PPM; 0.0625W; THICK FILM	
43	R21	-	1	RC0603FR-0711K5L	YAGEO PHYCOMP	11.5K	RESISTOR; 0603; 11.5K OHM; 1%; 100PPM; 0.10W; THICK FILM	
44	R22, R23	-	2	TNPW0603294KBE	VISHAY DALE	294K	RESISTOR; 0603; 294K OHM; 0.1%; 25PPM; 0.1W; THIN FILM	
45	R25, R46, R47	-	3	ERJ-2GE0R00X	PANASONIC	0	RESISTOR; 0402; 0 OHM; 0%; JUMPER; 0.10W; THICK FILM	
46	R27	-	1	RP73D2A1M0BTDF; TNPW08051M00BE	TE CONNECTIVITY/VISHAY DALE	1M	RESISTOR; 0805; 1M OHM; 0.1%; 15PPM; 0.125W; THICK FILM	15PPM
47	R28	-	1	TNPW0805100KBE; ERA-6ARB104V; RN73C2A100KBTDF	VISHAY DALE/PANASONIC/ TE CONNECTIVITY	100K	RESISTOR; 0805; 100K; 0.1%; 10PPM; 0.125W; THIN FILM	10PPM
48	R29	-	1	ERJ-3EKF5113	PANASONIC	511K	RESISTOR; 0603; 511K OHM; 1%; 100PPM; 0.1W; THICK FILM	
49	R30, R36, R60	-	3	ERJ-2RKF4991X	PANASONIC	4.99K	RESISTOR; 0402; 4.99K OHM; 1%; 100PPM; 0.10W; THICK FILM	
50	R31	-	1	CRCW060324K9FK	VISHAY DALE	24.9K	RESISTOR; 0603; 24.9K OHM; 1%; 100PPM; 0.10W; THICK FILM	
51	R33	-	1	1676266-2; RN73C2A24K9BTDF	TE CONNECTIVITY	24.9K	RESISTOR; 0805; 24.9K OHM; 0.1%; 10PPM; 0.10W; THIN FILM	10PPM
52	R34, R49, R50, R52, R53	-	5	CRCW040249R9FK; RK73H1ETTP49R9F	VISHAY DALE/KOA SPEER	49.9	RESISTOR; 0402; 49.9 OHM; 1%; 100PPM; 0.0625W; THICK FILM	
53	R35	-	1	MCR03EZPFX2002; ERJ-3EKF2002	ROHM; PANASONIC	20K	RESISTOR; 0603; 20K OHM; 1%; 100PPM; 0.10W; THICK FILM	
54	R37	-	1	ERJ-2RKF1582	PANASONIC	15.8K	RESISTOR; 0402; 15.8K OHM; 1%; 100PPM; 0.1W; THICK FILM	
55	R38	-	1	CRCW0603499RFK; RK73H1J4990FT; ERJ-3EKF4990V; RC1608F4990	KOA; VISHAY; PANASONIC; SAMSUNG	499	RESISTOR; 0603; 499 OHM; 1%; 100PPM; 0.10W; THICK FILM	
56	R39, R40, R42-R44, R54-R59	-	11	ERJ-2RKF27R0X; RC0402FR-0727RL	PANASONIC; YAGEO PHICOMP	27	RESISTOR, 0402, 27 OHM, 1%, 100PPM, 0.0625W, THICK FILM	
57	R51	-	1	CRCW06031001FK; ERJ-3EKF1001V	VISHAY DALE; PANASONIC	1K	RESISTOR; 0603; 1K; 1%; 100PPM; 0.10W; THICK FILM	
58	RS	-	1	RN73C2A24R9BTG; PFC-W0805LF-03-24R9-B	TE CONNECTIVITY/TT ELECTRONICS	24.9	RESISTOR; 0805; 24.9 OHM; 0.1%; 10PPM; 0.25W; THIN FILM	10PPM
59	SU1-SU4	-	4	SX1100-B	KYCON	SX1100-B	TEST POINT; JUMPER; STR; TOTAL LENGTH=0.24IN; BLACK; INSULATION=PBT;PHOSPHOR BRONZE CONTACT=GOLD PLATED	
60	TP1, TP4, TP5, TP10, TP11, TP14, TP16-TP19, TP21, TP23, TP26	-	13	5009	KEYSTONE	N/A	TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.35IN; BOARD HOLE=0.063IN; YELLOW; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;	
61	TP2, TP8, TP9, TP12	-	4	5008	KEYSTONE	N/A	TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.35IN; BOARD HOLE=0.063IN; ORANGE; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;	
62	TP3, TP6, TP7, TP13, TP15, TP22	-	6	5006	KEYSTONE	N/A	TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.35IN; BOARD HOLE=0.063IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;	
63	TP20	-	1	5005	KEYSTONE	N/A	TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.35IN; BOARD HOLE=0.063IN; RED; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;	
64	U1	-	1	MAX12900ATJ+	MAXIM	MAX12900ATJ+	EVKIT PART - IC; SNR; LOOP-POWER 4-20MA SENSOR TRANSMITTER BACK END; TQFN32-EP	
65	U2	-	1	MAX4594EXK	MAXIM	MAX4594EXK	IC; ASW,Low-Voltage, Single-Supply SPST (NO) , SC70-5	
66	U3	-	1	FT234XD	FUTURE TECHNOLOGY DEVICES INTL LTD	FT234XD	IC; INFC; USB TO BASIC UART; DFN12-EP	
67	U4	-	1	MAX12931BASA+	MAXIM	MAX12931BASA+	EVKIT PART - IC; DISO; 1/1 CHANNEL; 25MBPS; DEFAULT HIGH; 3.75KVRMS DIGITAL ISOLATOR; NSOIC8	
68	U5	-	1	STM32L071CBT6	ST MICROELECTRONICS	STM32L071CBT6	IC; UCON; ACCESS LINE ULTRA-LOW-POWER; 32-BIT MCU ARM-BASED CORTEX-M0+ WITH 128KB FLASH; 20KB SRAM; 6KB EEPROM; ADC; LQFP48	
69	Y1	-	1	ECS-120-20-33-CKM	ECS INC	12MHZ	CRYSTAL; SMT 3.2X2.5; 20PF; 12MHZ; +/-10PPM; +/-10PPM	
70	PCB	-	1	MAX12900	MAXIM	PCB	PCB:MAX12900	-
71	MISC1	DNI	1	AK67421-1-R	ASSMANN	AK67421-1-R	CONNECTOR; MALE; USB; USB2.0 MICRO CONNECTION CABLE; USB B MICRO MALE TO USB A MALE; STRAIGHT; 5PINS-4PINS	
72	R4, R6	DNP	0	CRCW06031M00FK; MCR03EZPFX1004	VISHAY DALE/ROHM	1M	RESISTOR; 0603; 1M OHM; 1%; 100PPM; 0.10W; THICK FILM	DNI
73	R24	DNP	0	CRCW04021M00FK	VISHAY DALE	1M	RESISTOR; 0402; 1M; 1%; 100PPM; 0.0625W; THICK FILM	DNI
74	TP27	DNP	0	5008	KEYSTONE	N/A	TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.35IN; BOARD HOLE=0.063IN; ORANGE; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;	DNI
TOTAL			154					

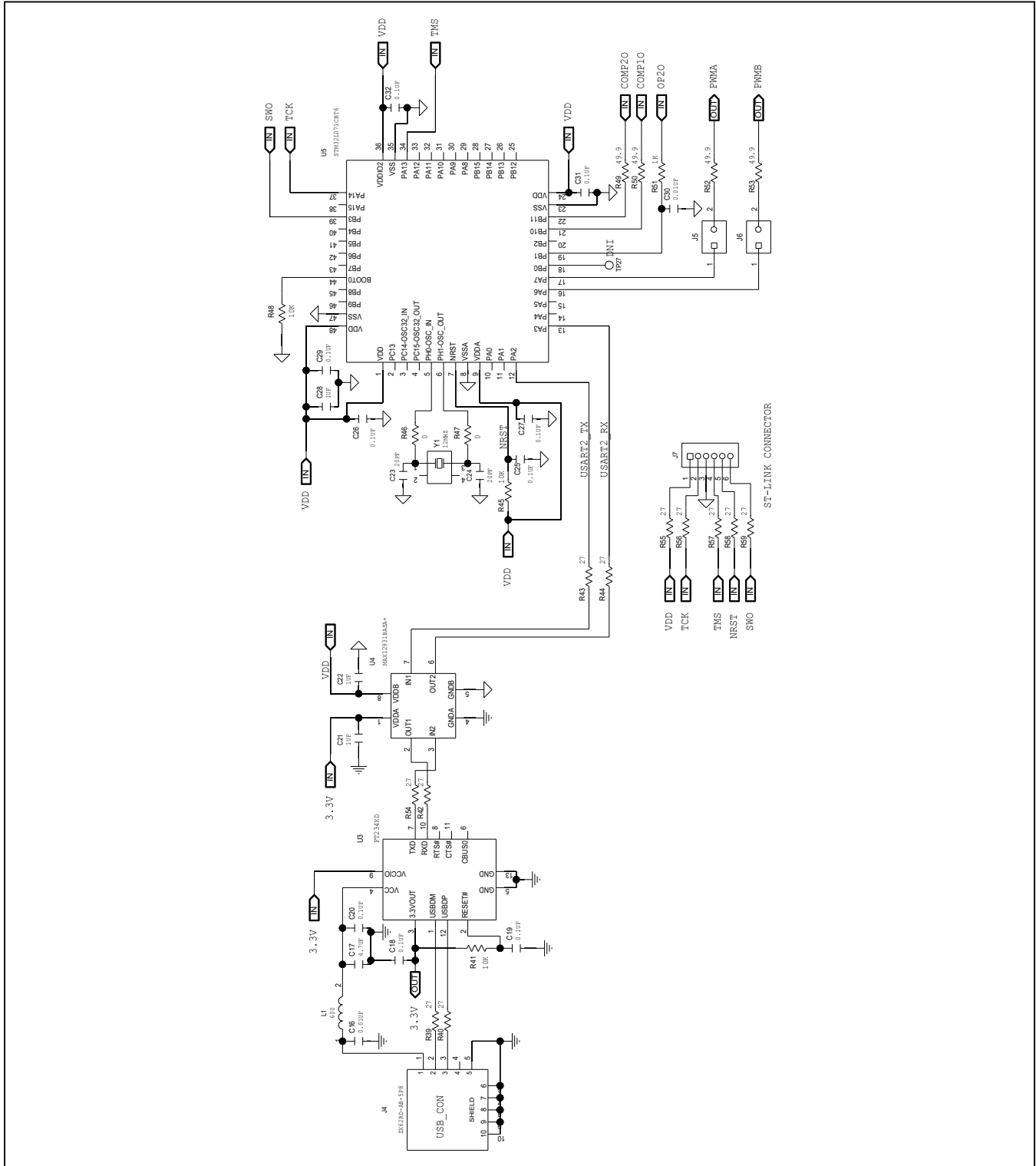## Ordering Information

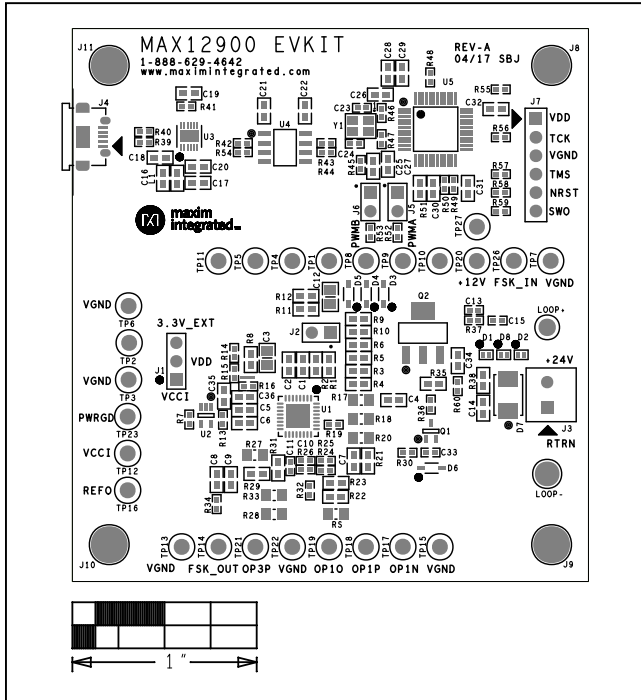| PART	TYPE
MAX12900EVKIT#	EV Kit

#Denotes RoHS compliant.
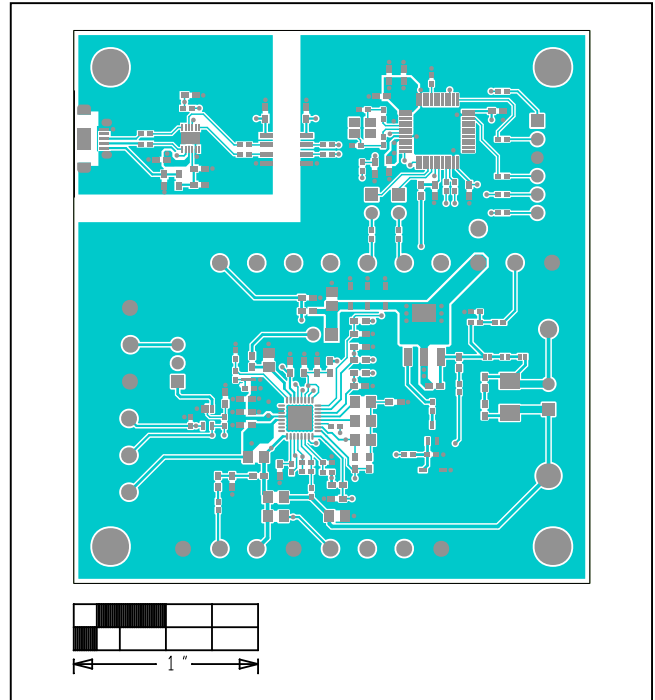
MAX12900 EV Kit Schematic

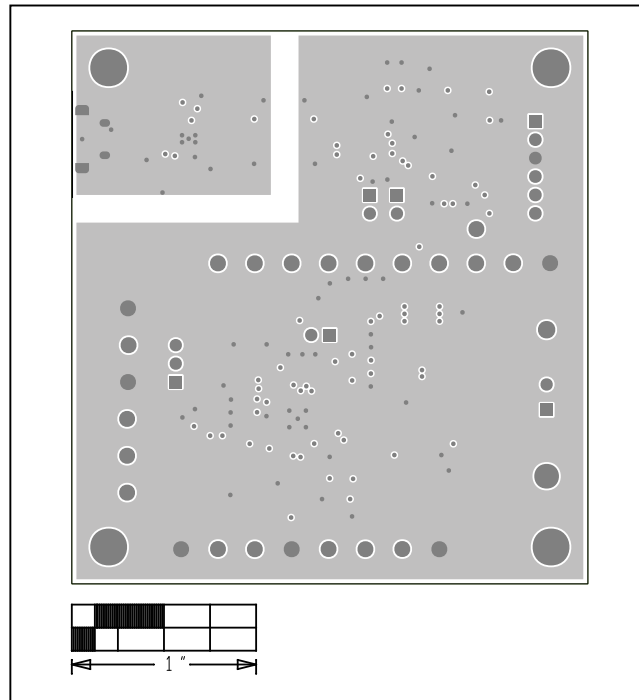## MAX12900 EV Kit Schematic (continued)

MAX12900 EV Kit PCB Layout Diagrams
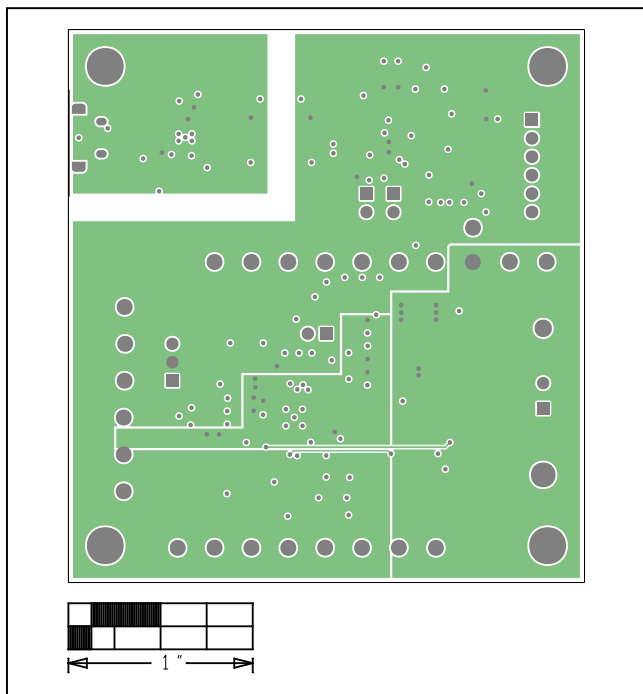

MAX12900 EV Kit—Top Silkscreen
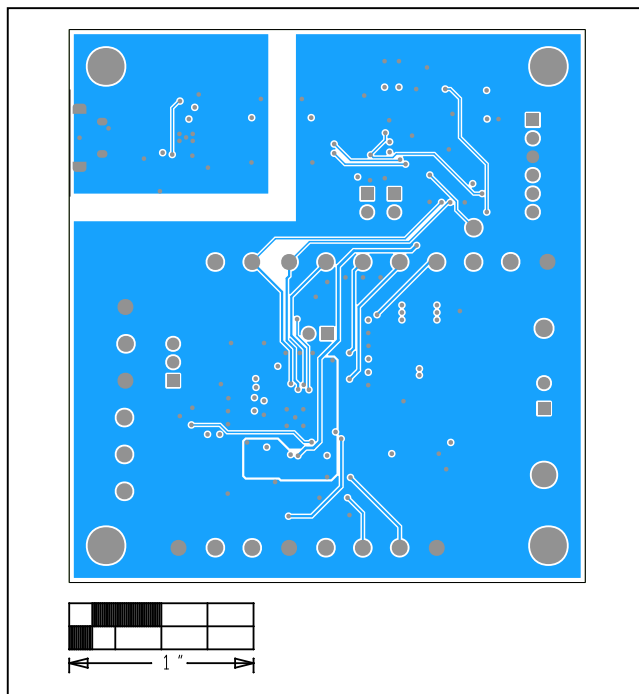

MAX12900 EV Kit—Top

MAX12900 EV Kit—Internal 2

MAX12900 EV Kit PCB Layout Diagrams (continued)

MAX12900 EV Kit—Internal 3

MAX12900 EV Kit—Bottom

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	11/17	Initial release	—
1	11/17	Removed Component Supplier table	16