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EV-MWT90DBZ MeasureWare 3-Wire Universal RTD Daughter Board

FEATURES

Daughter board for 3-wire universal RTD sensors
Plug and play connection to the MeasureWare Pro Kit (EV-ProMW1001ARDZ)
Compliant with MeasureWare Designer and MeasureWare Lab

APPLICATIONS

Environmental sensing
Smart agriculture
Laboratory sensing

EVALUATION KIT CONTENTS

EV-MWT90DBZ

EQUIPMENT NEEDED

EV-ProMW1001ARDZ companion evaluation board
Host processor, Arduino header compatible, for EV-ProMW1001ARDZ
3-wire RTD sensor as suggested by MeasureWare Designer

SOFTWARE NEEDED

MeasureWare Lab

DOCUMENTS NEEDED

ADMW1001 data sheet
EV-ProMW1001ARDZ user guide

GENERAL DESCRIPTION

The EV-MWT90DBZ is the MeasureWare® 3-wire universal resistance temperature detector (RTD) daughter board that connects high precision 3-wire RTD probes to the MeasureWare Prototyping Kit (Pro Kit) (EV-ProMW1001ARDZ), available on the MeasureWare website.

The 3-wire RTD daughterboard can be selected as one of the options in the MeasureWare Designer when a user selects temperature as the measurement type. The EV-MWT90DBZ is connected to an analog connector on the EV-ProMW1001ARDZ kit.

Alternatively, the EV-MWT90DBZ board can be found on the MeasureWare website.

Table 1. Companion Evaluation Board

Companion Board	Compatible Ports
EV-ProMW1001ARDZ	Analog-1, Analog-2

EV-MWT90DBZ PHOTOGRAPH

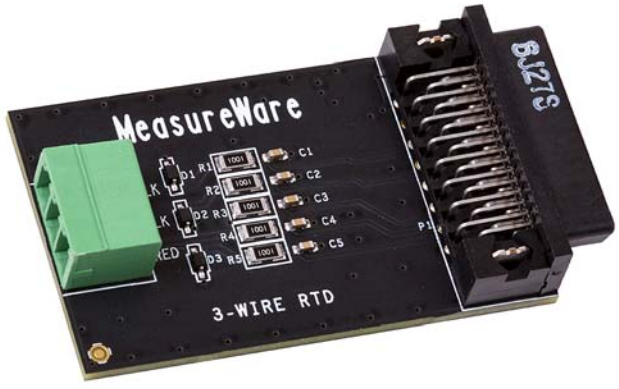

Figure 1.

TABLE OF CONTENTS

REVISION HISTORY

7/2019—Revision 0: Initial Version

CONNECTIONS AND CONFIGURATIONS

The following sections describe how to select a desired sensor in the MeasureWare Designer and how to connect the supplied sensor board to the EV-ProMW1001ARDZ kit.

MEASUREWARE DESIGNER CONFIGURATION

Each sensor board in the MeasureWare evaluation system is tailored to meet a unique measurement type and performance level. Sensor board selection is made using the online MeasureWare Designer, and evaluation boards can be purchased through the MeasureWare website.

UNIVERSAL THERMOCOUPLE SENSOR DAUGHTER BOARD AND PRO KIT

To use the EV-ProMW1001ARDZ kit, a host processor evaluation board that is Arduino compatible is required. The host processor can be purchased through the MeasureWare website.

Figure 2 shows the EV-MWT90DBZ connected to a 3-wire RTD sensor.

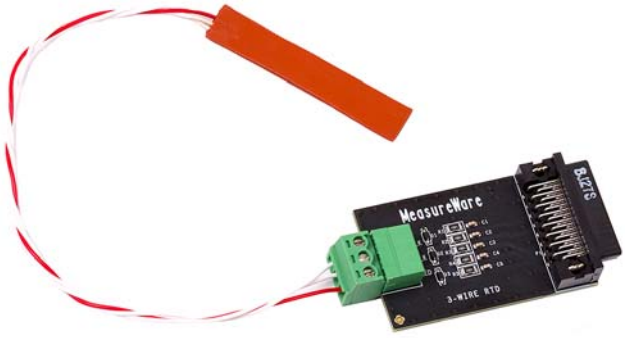

Figure 2. EV-MWT90DBZ Connected to a 3-Wire RTD Sensor

See the MeasureWare EngineerZone page for more details.

SCHEMATIC, BILL OF MATERIALS, AND LAYOUT

Figure 3 shows a basic schematic for the EV-MWT90DBZ daughter board with reference designators, and Table 2 lists the bill of materials.

Figure 4 and Figure 5 show the component layers of the EV-MWT90DBZ top and bottom, respectively.

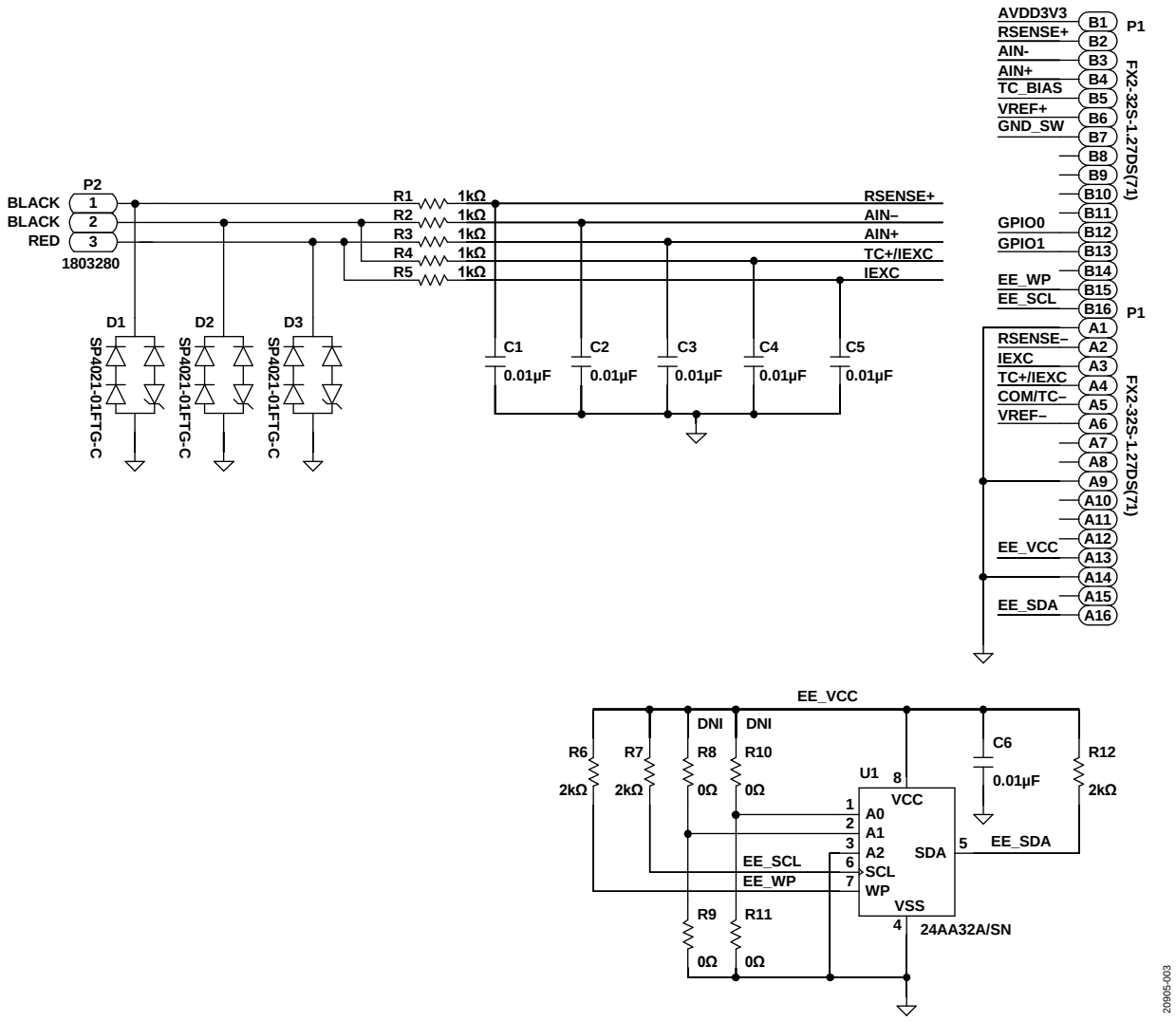

Figure 3. EV-MWT90DBZ Board Schematic

Table 2. Bill of Materials with Reference Designator and Value of Components

Reference Designator	Description	Manufacturer	Part Number
C1 to C6	0.01 µF ceramic capacitors, X7R, automotive grade	Murata	GCG188R71H103KA01D
D1, D2, D3	Transient voltage suppression (TVS) diodes, bidirectional, 2.5 pF, 30 A	Littelfuse, Inc.	SP4021-01FTG-C
P1	Connected printed circuit board (PCB) to board receptacle, right angle, 2.54 mm pitch	Hirose Electric Co.	FX2-32S-1.27DS(71)
P2	Connected PCB header, right angle, 3.81 mm pitch	Phoenix Contact	1803280
R1 to R5	1 kΩ resistors, surface-mounted devices (SMDs), 0.5%, 1 W, size 1206, automotive	Susumu Co., Ltd.	HRG3216P-1001-D-T1
R9, R11	0 Ω resistors, thick film chip, jumper, general-purpose	Yageo	RC0402JR-070RL
R6, R7, R12	2 kΩ resistors, metal thin film chip, high reliability	Panasonic	ERA-2AEB202X
U1	32 kb, serial electrically erasable programmable read only memory (EEPROM)	Microchip Technology	24AA32A/SN
R8, R10	0 Ω resistors, thick film chip, jumper, general-purpose, do not insert (DNI)	Yageo	RC0402JR-070RL

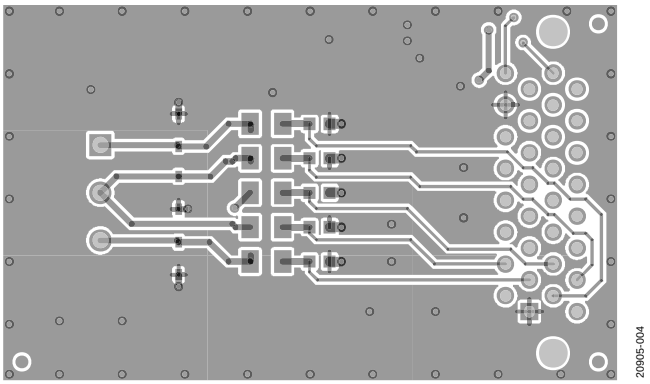

Figure 4. EV-MWT90DBZ Layout, Top

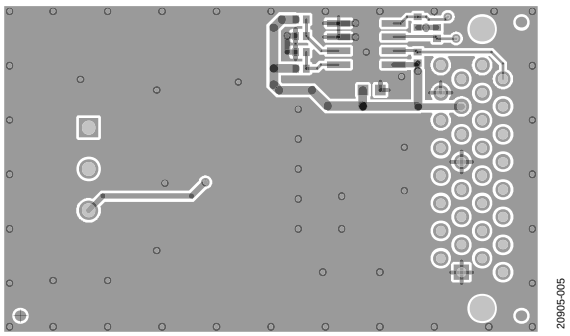

Figure 5. EV-MWT90DBZ Layout, Bottom

NOTES

ESD Caution

ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

UG20905-0-7/19(0)

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Analog Devices Inc.:

EV-MWT90DBZ