

### General Description

This document describes the S-VM1010-C Coupon PCB. The PCB provides the necessary circuitry to carry out evaluation of the VM1010 ZeroPower Listening™ (ZPL) microphone. The board consists of the VM1010 ZPL bottom port MEMS microphone, a configurable threshold resistor circuit, current sense chip and a 0.1uF power supply bypass capacitor along with an edge connector. The user can simply use a corresponding female connector (CW Industries CWR-170-10-0000) or solder wires to make good electrical contact to the power, mode and output pins of the mic and the current sense pin of the circuit.

### Pinout and Pin Descriptions

The board is shown in Figure 1 as follows and the corresponding pins in Table 1 have been labeled:

Top Side			Bottom Side		
Pin	Name	Description	Pin	Name	Description
T1	Dout	Digital output for ZPL Trigger	B1	GND	Ground
T2	GND	Ground	B2	Mode	Mode Control
T3	Vcurrentsense	Current Monitor voltage	B3	GND	Ground
T4	GND	Ground	B4	VDD	Power Supply (1.7 to 3.6V)
T5	Vout	Analog Output	B5	GND	Ground

Table 1: Pinout Configuration

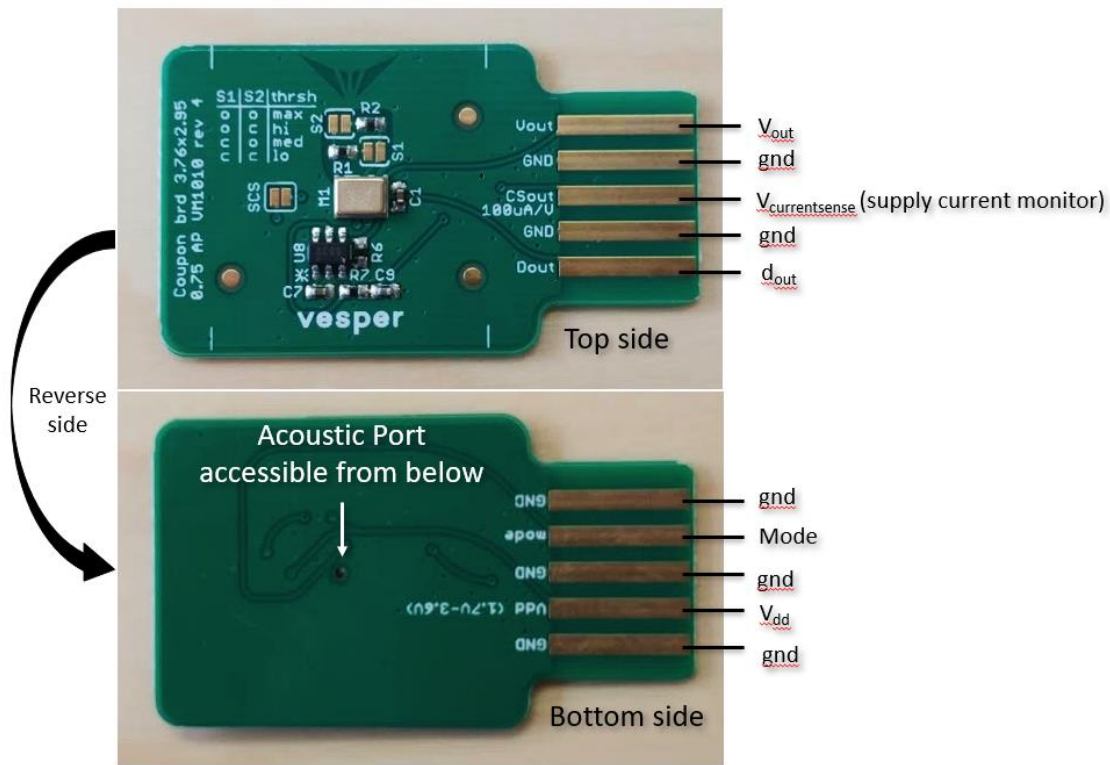


Figure 1. VM1010 Coupon PCB (Edge Connector recommendation is provided below)

## Edge Connector

VM1010 Coupon PCB can be used with an Edge connector from CW Industries with part number CWR-170-10-0000. Supply range for V<sub>dd</sub> is 1.6V – 3.6V

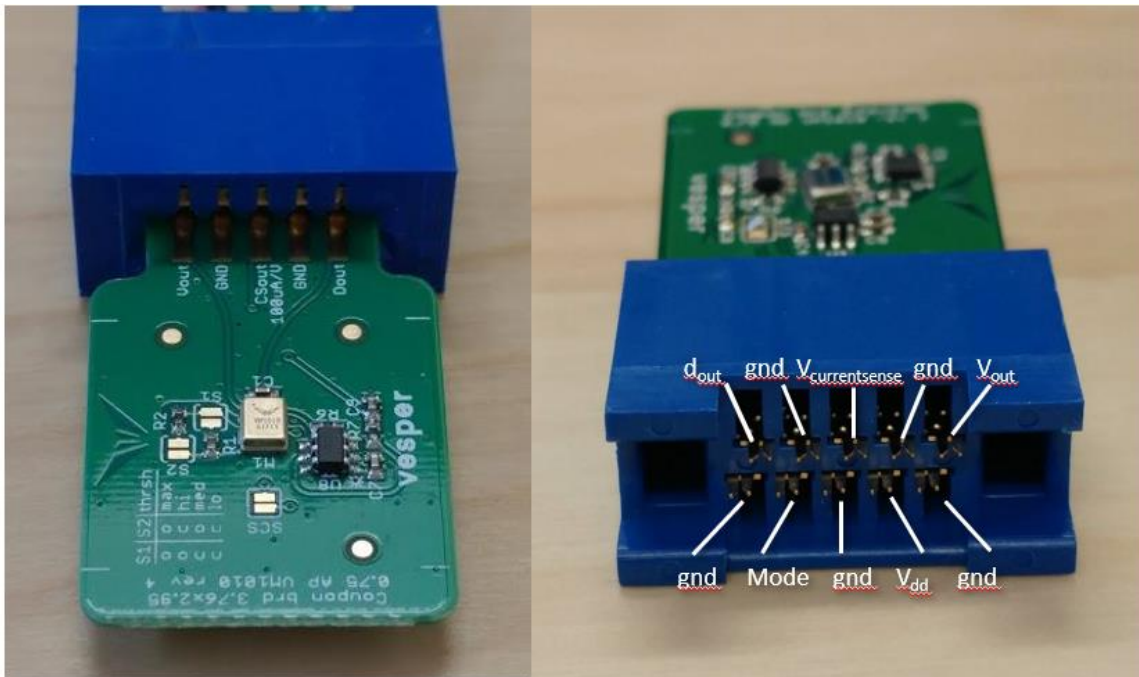


Figure 2: Connections on VM1010 Coupon PCB and Edge Connector CWR-170-10-0000

## ZeroPower Listening Threshold Adjust

The Coupon board has a resistor circuit to configure the  $R_g$  which in turn varies the ZeroPower Listening threshold. The solder jumper options S1 and S2 set the  $R_g$  value to the corresponding pre-set threshold levels as shown in table 2 below.

S1 State	S2 state	Rg External Resistance	GA1-GA2 Effective Impedance (331kΩ     Rg)	WoS threshold
Open	Open	Open	331 kΩ	89 dB SPL
Open	Closed	100 kΩ	77 kΩ	75 dB SPL
Closed	Open	26 kΩ	24 kΩ	67 dB SPL
Closed	Closed	20 kΩ	19 kΩ	65 dB SPL

Table 2. Threshold Adjustment Settings

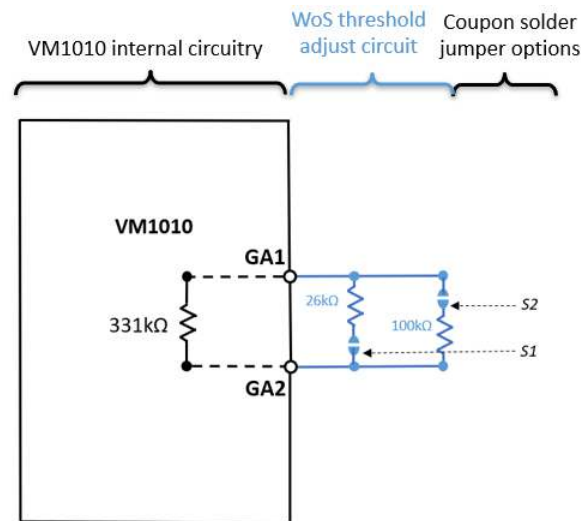


Figure 3. Rg feedback resistor circuitry

## Schematic

The schematic of the board is shown in Figure 3. The S-VM1010-C Eval PCB consists of the VM1010 microphone a configurable threshold resistor circuit, current sense chip and a 0.1uF power supply bypass capacitor along with an edge connector. There are solder jumper options for Rg Gain Adjust Circuit (S1, S2) and for Current Sense circuit enable (SCS).

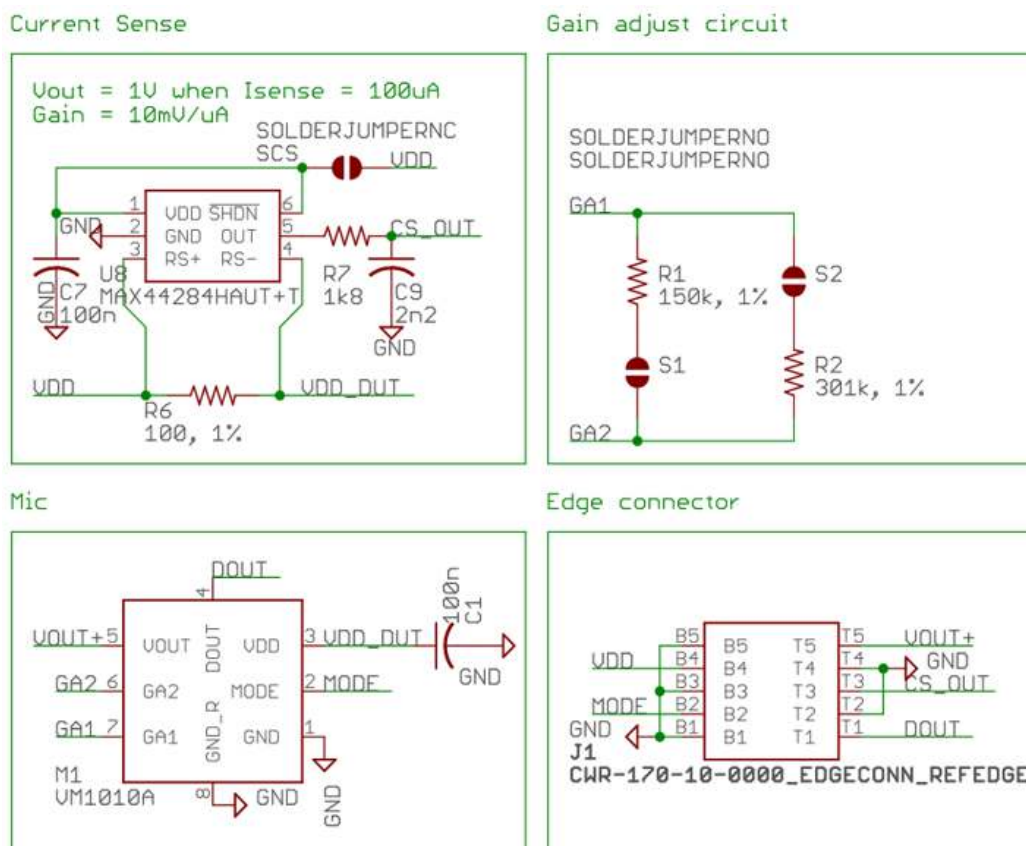


Figure 4: Schematic of S-VM1010-C Coupon PCB

## Other Information

The detailed specifications and description of the VM1010 microphone can be found in the product datasheet and application note. For convenience the basic parameters and absolute maximum ratings also shown in tables 3 and 4 below:

Parameter	Typical Value	Units
Supply Voltage	1.8	V
I <sub>dd</sub> ZPL Mode (Mode=high)	10	μA
I <sub>dd</sub> Normal Mode (Mode=low)	83	μA
Sensitivity @ 94dB SPL	-38.0	dBV
	12.59	mVrms
Output Impedance	1000	Ω
Output DC Offset	0.8	V

Table 3: Typical parameters for microphone operation

Parameter	Rating	Units
Supply Voltage	-0.3 to +3.6	V
Sound Pressure Level	160	dB re 20 $\mu$ Pa
Operating Temperature Range	-40 to +85	$^{\circ}$ C
Storage Temperature Range	-55 to +150	$^{\circ}$ C
Mechanical Shock	10,000g per IEC 60028-2-27:2008	
Vibration	Per MIL-STD 883E, 2007.2	

Table 4: Absolute Maximum Ratings

For additional information on Vesper’s latest roadmap of microphone products, contact [info@vespermems.com](mailto:info@vespermems.com).