

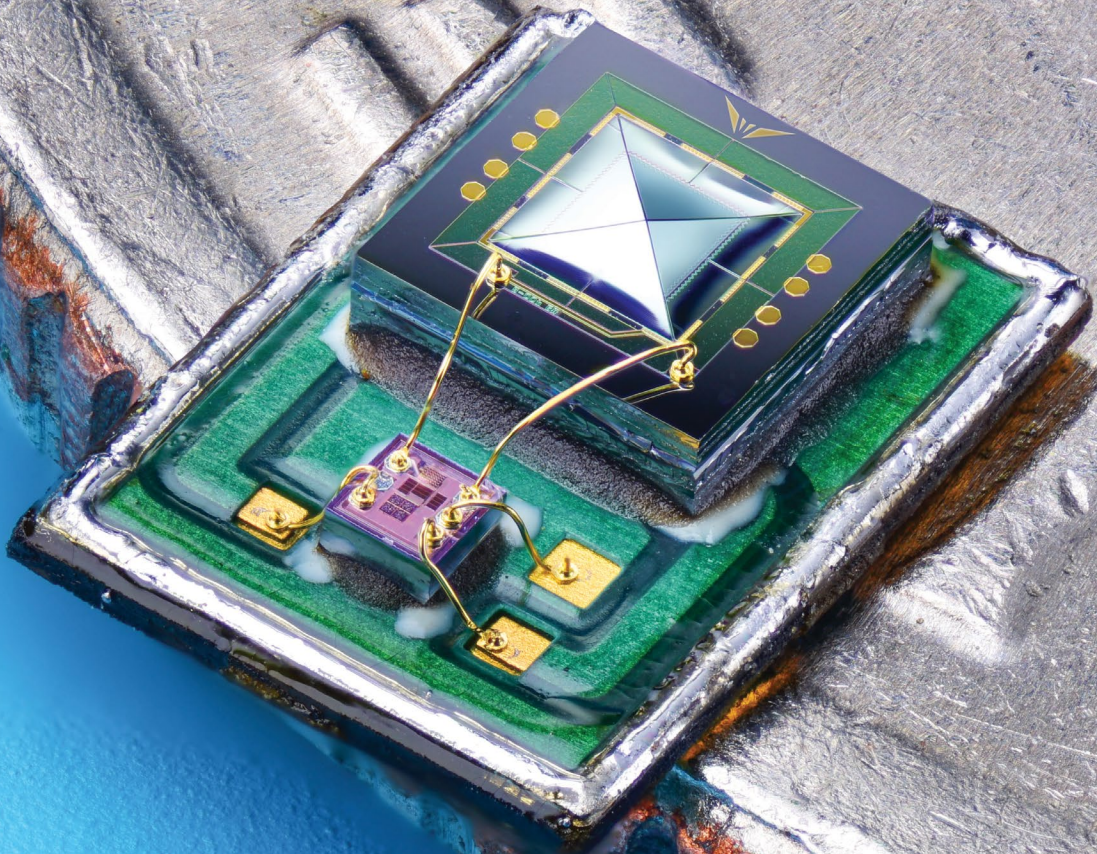
VM1000

Low-Noise Bottom Port Piezoelectric Mems Microphone

Vesper offers the world's first and only piezoelectric MEMS microphone. VM1000 provides superior performance and quality in all environments.



// VM1000 Data Sheet



技术 & 商务联系方式: 南频科技有限公司
陈小姐 业务工程师 156 2521 4151
rita.chen@dwintech.com www.dwintech.com
座机0755-82565851

VM1000

Vesper offers the world's first and only piezoelectric MEMS microphone. VM1000 provides superior performance and quality in all environments.

VM1000 is a low noise, low part-to-part variation, high dynamic range, single ended analog output piezoelectric MEMS microphone. This microphone consists of a piezoelectric sensor and circuitry to buffer and amplify the output. VM1000 is ideal for voice user interface, beamforming arrays, smartphones, smart home devices and other applications where low noise, high stability and durability are desired.

// Features

- Unique piezoelectric MEMS transducer
- Very-low noise floor
- Low part-to-part variation
- High dynamic range
- Flat frequency response
- Stable performance in all conditions

// Specifications

All specifications are at 25°C, VSupply = 1.8 V unless otherwise noted.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Acoustic Specifications						
Sensitivity		1 kHz, 94 dB SPL	-39	-38	-37	dBV
Signal-to-Noise Ratio	SNR	94 dB SPL at 1 kHz signal, Equalized, A-weighted Noise	TBD	64		dB(A)
Equivalent Input Noise	EIN	20 Hz – 20 kHz, A-weighted		30	TBD	dB(A)
Total Harmonic Distortion	THD	94 dB SPL			0.1	%
Acoustic Overload Point	AOP	10.0% THD	125			dB SPL
Roll Off Frequency		-3db at 1KHz		85		Hz
Directivity				Omni		
Electrical Specifications						
Supply Voltage			1.6	1.8	3.6	V
Supply Current		VSupply ≤ 3.6 V (TBR)		150		μA
Power Supply Rejection Ratio	PSRR	VDD = 1.8, 1kHz, 200mVPP Sine wave		-70		dB
Power Supply Rejection	PSR	VDD = 1.8, 217Hz, 100mVPP square wave, 20 Hz – 20kHz, A-weighted		-85		dB(A)
Output Impedance	ZOUT			200		Ω
Output DC Offset				0.7		V

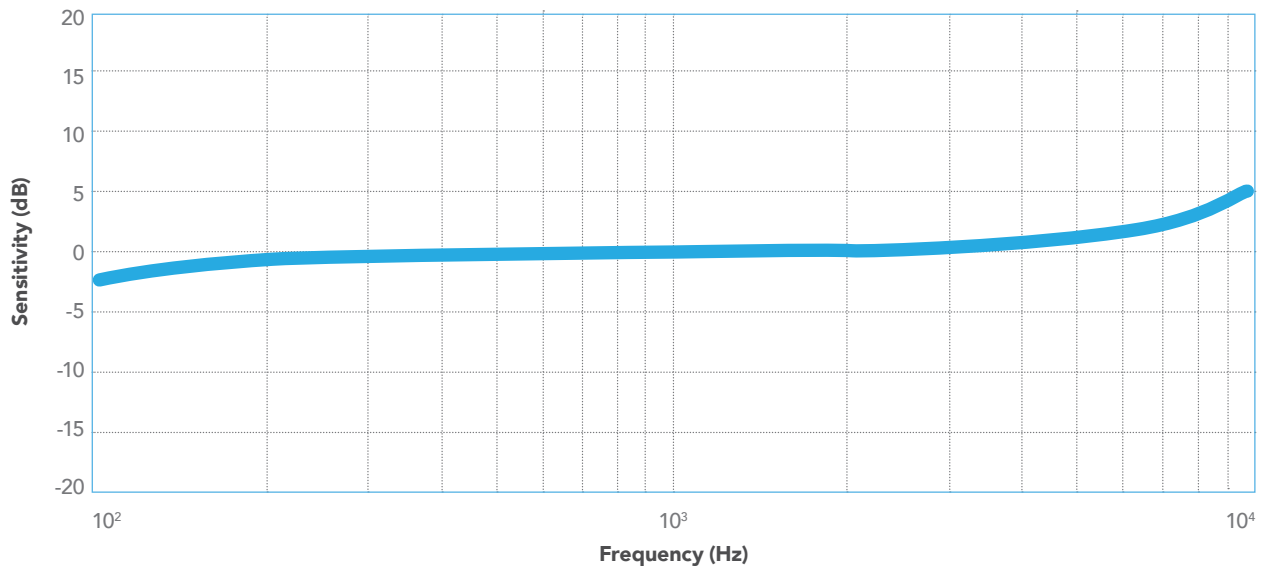
VM1000

VM1000 has a small 3.76 mm X 2.95 mm X 1.1 mm package. This microphone is reflow solder compatible with no sensitivity degradation.

// Absolute Maximum Ratings

Parameter	Maximum	Units
Supply Voltage	3.6	V
Sound Pressure Level	160	dB re 20 μ Pa
Temperature Range	-40 to +85	$^{\circ}$ C

// Frequency Response

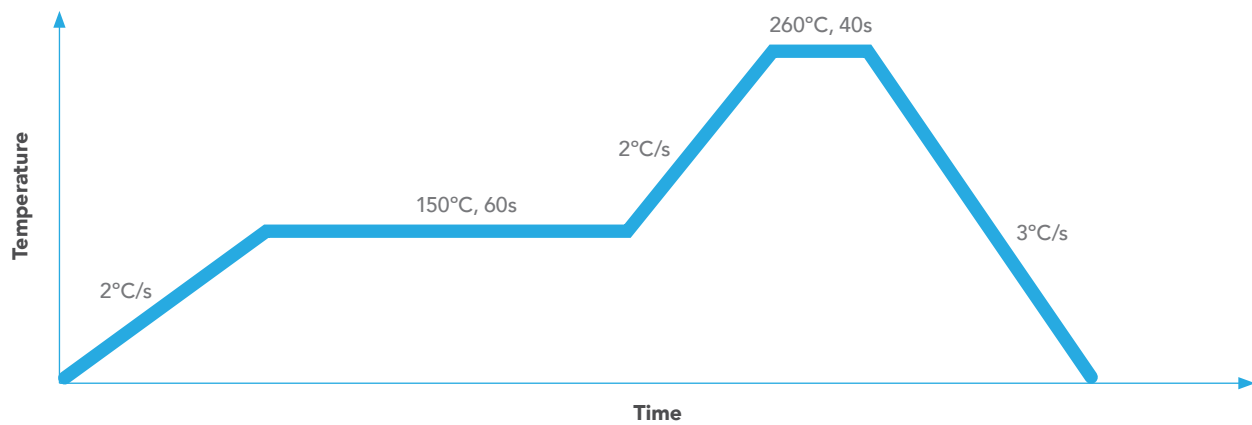


// Reliability Specifications

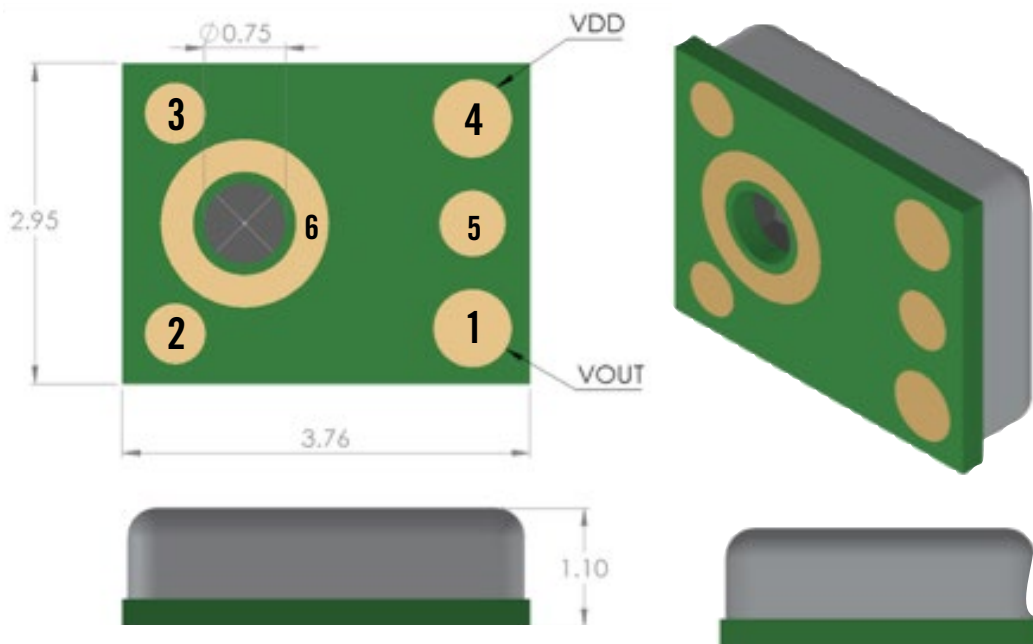
Stress Test	Description
Dust Resistance	IP6X dust immune
Water Immersion	IPX8; 15meters, 24 hours, tap, salt and soapy water

// Solder Reflow Profile

Typical Solder Reflow Profile



// Dimensions and Pin Layout



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Pin Number	Pin Name	Description
1	V _{OUT}	Analog Output Voltage
2	GND	Ground
3	GND	Ground
4	V _{DD}	Power Supply
5	GND	Ground
6	GND	Ground



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VesperMems.com 代理商联系方式:

电话:0755-82565851

邮件:dwin100@dwintech.com

手机:156-2521-4151

网址: <http://www.dwintech.com/VespermemsFlyer.htm>

深圳市南频科技有限公司