



SAW Components

SiMic MEMS microphone

Series/type:	C928A
Ordering code:	
Date:	September 27, 2013
Version:	1.1

SiMic MEMS microphone

Preliminary data

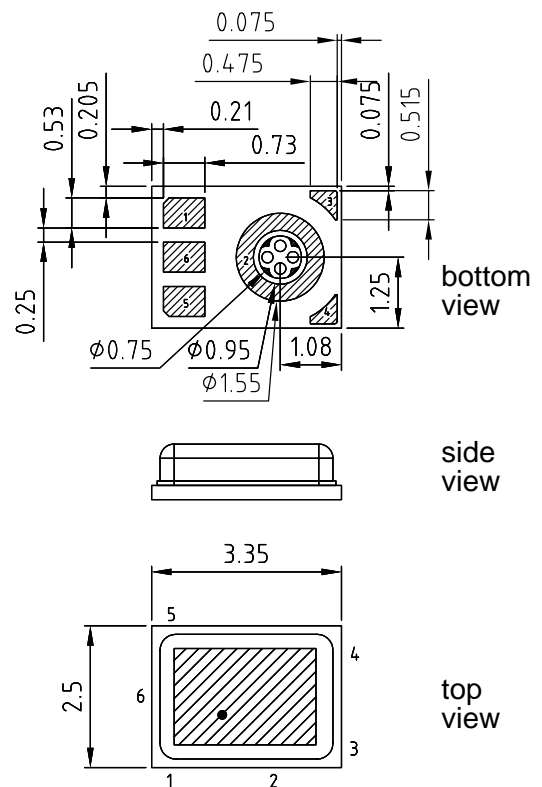


Applications

- Microphone designed for mobile phones, headsets, PDAs, notebooks and cameras

Features

- Surface Mounted Technology (SMT)
- Reflow soldering up to 260 °C
- RoHS compatible, Ni/Au-plated terminals suited for lead free soldering
- Size of 3.35 × 2.5 mm²
- Low height of typ. 1.07 mm (next version: 0.98 mm)
- Approximate weight of 16 mg
- Sound hole on bottom side
- High long-term temperature stability
- Balanced operation
- Very high signal to noise ratio of 66 dB(A)
- Wide dynamic range up to 135 dB SPL
- Positive polarity



Pin configuration

- 1 OUTP (balanced output +)
- 2 GND (ground)
- 3,4 KOA (keep out area, not connected, no structure on PCB recommended)
- 5 V_{DD} (power)
- 6 OUTN (balanced output -)

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Acoustical and electrical characteristics (output measured differentially)

 Ambient temperature of test conditions: $T_A = 25\text{ °C}$
 Output load: $Z_L = 200\text{ k}\Omega$
 Supply voltage: $V_{DD} = 2.75\text{ V}$

All voltages refer to ground

		Min.	Typ.	Max.	Unit	Note or test condition
Sensitivity 1 kHz	$S_{1\text{kHz}}$	-41	-38	-35	dBV/Pa	94 dB SPL
Signal to noise ratio	SNR	64	66	—	dB(A)	
Total harmonic distortion	THD	—	—	1	%	110 dB SPL, 1 kHz
		—	1	—	%	132 dB SPL, 1 kHz
		—	10	—	%	135 dB SPL, 1 kHz
Power supply rejection ratio	PSRR ¹⁾	—	67	—	dB	20 Hz to 20 kHz sine wave 100 mV _{pp}
		—	tbd	—	dB	1 MHz to 100 MHz sine wave 100 mV _{pp}
Current consumption	I_{CC}	—	135	—	μA	
Output impedance		—	450	—	Ω	OUTP to OUTN
		—	225	—	Ω	OUTP ac coupled to GND
		—	225	—	Ω	OUTN ac coupled to GND

$$1) \text{ PSRR} = 20 \cdot \log \frac{V_{\text{Disturb}}}{V_{\text{OUT}}}$$

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Start up behavior

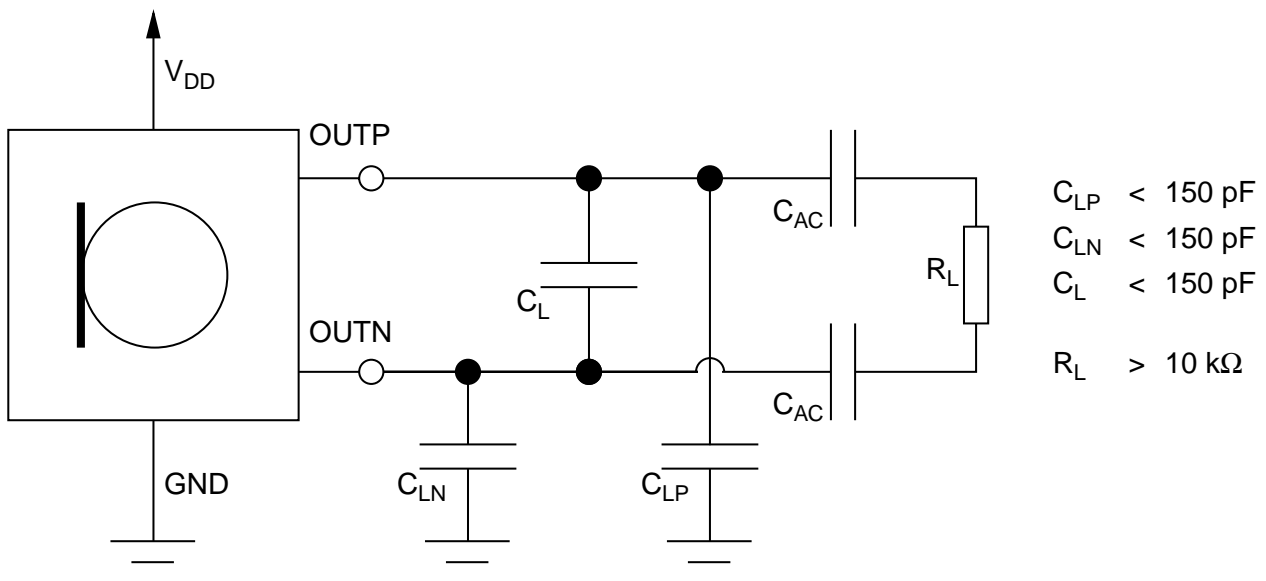
		Max.	Unit	Condition
Settling time after (re-) power on	t_s	50	ms	$ \Delta\text{Sens}_{\text{max}} < 0.5 \text{ dB}$
		500	ms	$ \Delta\text{Sens}_{\text{max}} < 0.2 \text{ dB}$

Maximum ratings

Operable temperature range	T_A	-40 ... +85	°C	
Storage temperature range	T_{STG}	-40 ... +125	°C	
Storage temperature range	T_{STGT}	0 ... +60	°C	stored in tape
Operable power supply voltage	V_{DD}	1.52 ... 3.60	V	
Power supply voltage	V_{DD}	0 ... 5.5	V	without risk of damage
ESD capability HBM	$V_{\text{ESD_HBM_EXT}}$	2000 ¹⁾	V	any pin
ESD capability MM	$V_{\text{ESD_MM_EXT}}$	200 ²⁾	V	any pin

1) according to JESD22-A115A

2) according to JESD22-A114E

Application example


Minimum output load impedance: 10 kΩ

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Cautions and warnings

- Vacuum on the bottom side of a device with a sound inlet hole has to be avoided
- Compressed air and liquid cleaners should not be used around the area of the sound inlet hole
- The sound inlet hole must not be covered with solder
- The maximum number of reflows should not exceed three

References

Type	C928A
Ordering code	
Marking and package	
Packaging	
Date codes	L_1126
Soldering profile	S_6001
Qualification test procedure	S_0308
RoHS compatible	RoHS-compatible means that products are compatible with the requirements according to Art. 4 (substance restrictions) of Directive 2011/65/EU of the European Parliament and of the Council of June 8 th , 2011, on the restriction of the use of certain hazardous substances in electrical and electronic equipment ("Directive") with due regard to the application of exemptions as per Annex III of the Directive in certain cases.

For further information please contact your local EPCOS sales office or visit our webpage at www.epcos.com.

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