



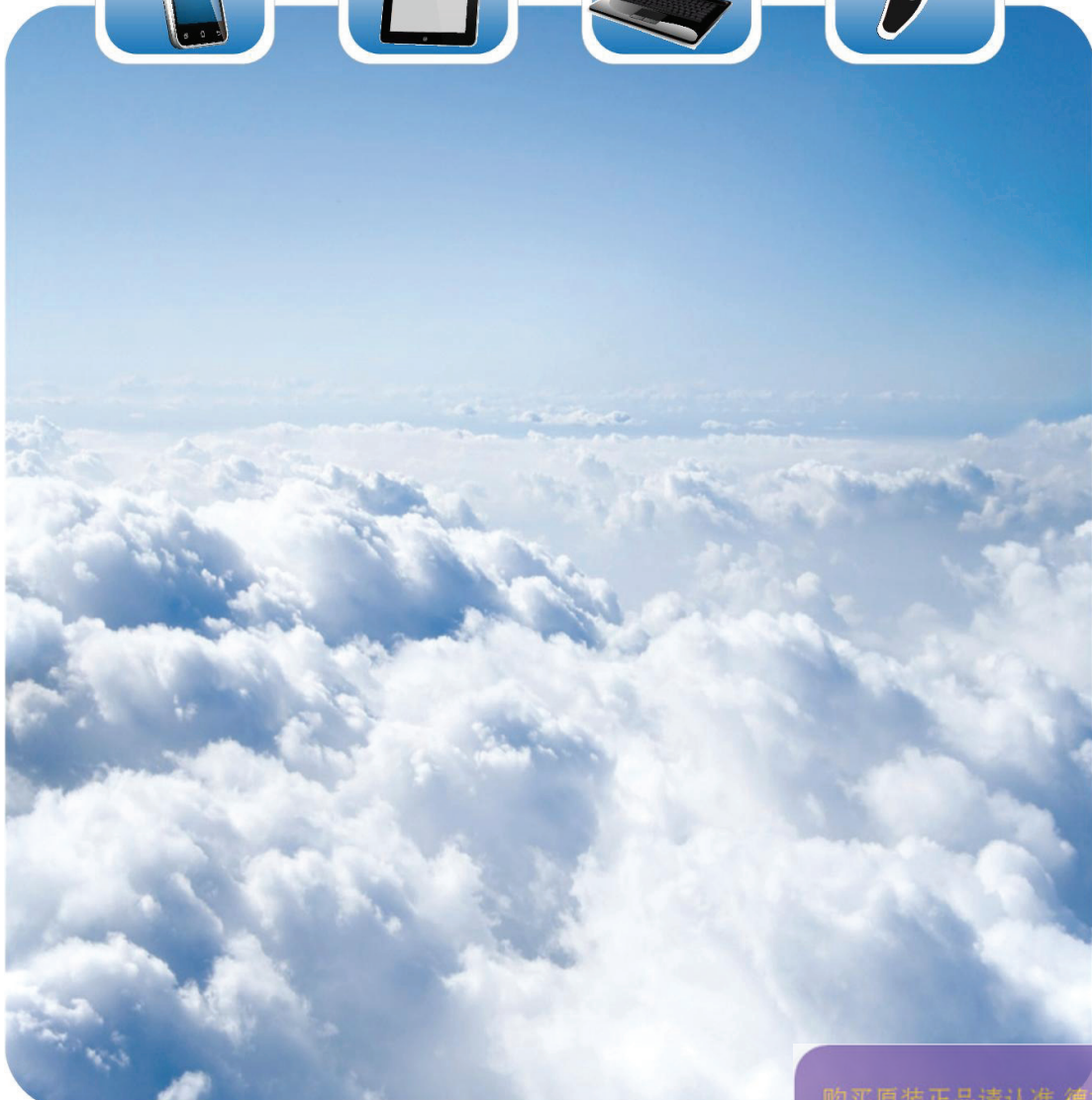
苏州敏芯微电子技术有限公司
MEMSensing Microsystems Co., Ltd

Data Sheet

V 1.1 / Feb. 2015

MSM261S4030H0

I²S digital output MEMS microphone with Multi-modes



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MSM261S4030H0

I²S digital output MEMS microphone



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GENERAL DESCRIPTION

MSM26S4030H0 is an omnidirectional, bottom-ported, I²S digital output MEMS microphone. It has high performance and reliability.

MSM26S4030H0 is available in a 4 mm × 3 mm × 1.0 mm metal cap LGA package. It is SMT compatible with no sensitivity degradation.

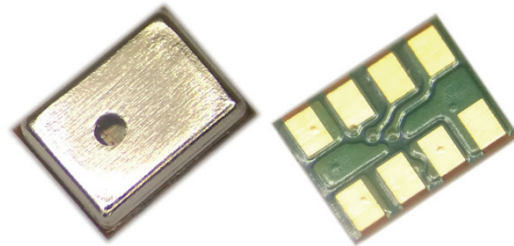
APPLICATIONS

- ✧ Mobile Phone
- ✧ Laptop
- ✧ Tablet computer
- ✧ Bluetooth headset
- ✧ Earphone
- ✧ Wearable intelligent equipment

FEATURES

- ✧ Cost effective
- ✧ Low Power mode
- ✧ Digital I²S output
- ✧ Compatible with Sn/Pb and Pb-free solder processes
- ✧ RoHS/Halogen free compliant
- ✧ Sensitivity Matching within +/-1dB

PRODUCT VIEW



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ABSOLUTE MAXIMUM RATINGS

Parameter	Maximum value	Unit
Supply Voltage	-0.3 to 4.0	V
Sound Pressure Level	140	dB SPL
Mechanical Shock	10,000	g
Temperature Range	-40 to 100	°C
Electrostatic discharge protection	2 (HBM)	kV

SPECIFICATIONS

All data taken at 25°C, Relative Humidity 45±5% L/R pin grounded unless otherwise specified
V_{dd}=1.8V, clock frequency=3.072MHz

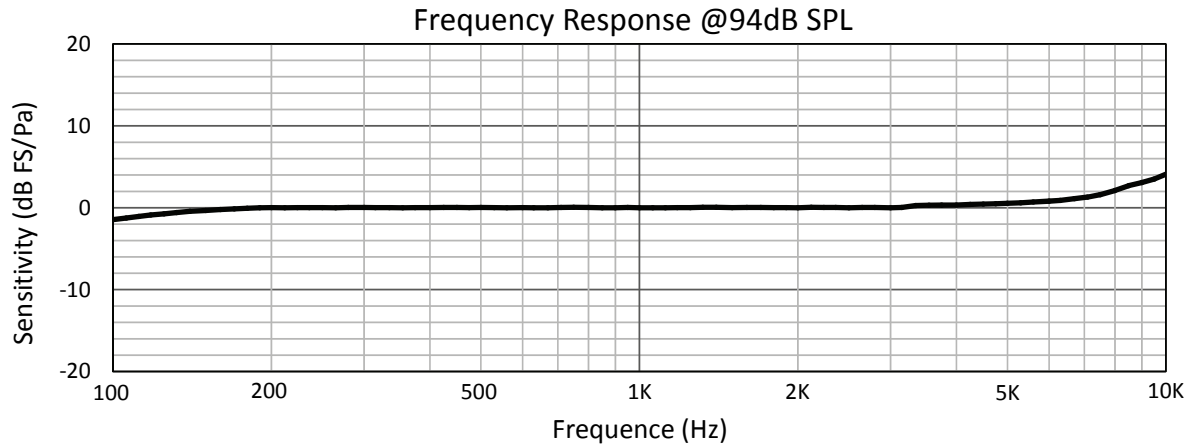
	Limits			unit	condition
	Min.	Nom.	Max.		
Directivity	Omni directional				
Sensitivity	-27	-26	-25	dB	dBFS @1kHz 1Pa
Operation voltage	1.6		3.6	V	
Freq. range	Refer to the frequency response			Hz	
Sensitivity loss across supply voltage	No change across the voltage range			dB	
Signal to noise ratio	-	57	-	dB	20 kHz bandwidth, A-weighted
THD	-	-	1%		100dB SPL @1kHz
	-	-	10%		120dB SPL @1kHz
PSR		-72		dBFS(A)	
Current consumption	-	750	1000	μA	Normal mode
	-	400	-	μA	Low power mode
Clock frequency	1.0	3	4.0	MHz	Normal mode
	150	-	600	KHz	Low power mode
Operating temperature	-40	-	100	°C	
Storage temperature	-40	-	100	°C	

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TYPICAL FREQUENCY RESPONSE



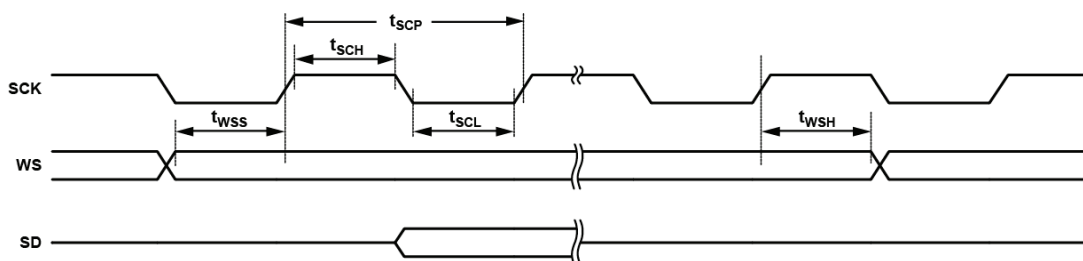
LOGIC TABLE

	Parameter	Symbol	Min	Max	Unit
Digital Input	Low Voltage Input(L/R, WS, SCK)	VIL	0	$0.25 \times VDD$	V
	High Voltage Input(L/R, WS, SCK)	VIH	$0.7 \times VDD$	VDD	V
SD	Voltage Output Low	VOL		$0.1 \times VDD$	V
	Voltage Output Low	VOL		$0.3 \times VDD$	V
Digital Output	Voltage Output High	VOH	$0.7 \times VDD$		V
	Voltage Output High	VOH	$0.9 \times VDD$		V
Output	Voltage Output Low	VOL		$0.1 \times VDD$	V
	Voltage Output Low	VOL		$0.3 \times VDD$	V
	Voltage Output High	VOH	$0.7 \times VDD$		V
	Voltage Output High	VOH	$0.9 \times VDD$		V



TIMING DIAGRAM

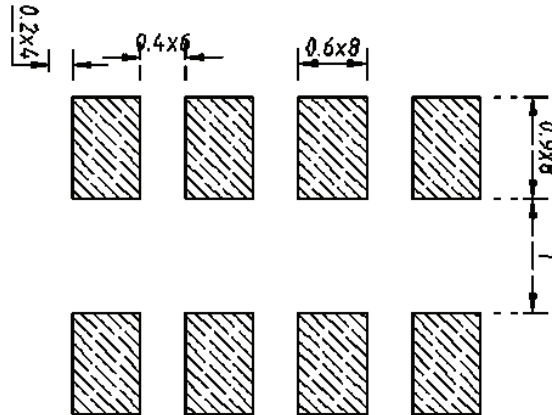
Parameter	Description	Min.	Norm.	Max.	Unit
tSCH	SCK High	—	50	—	ns
tSCL	SCK Low	—	50	—	ns
tSCP	SCK Period	—	325	—	ns
fSCK	SCK Frequency	—	3.072	—	MHz
tWSS	WS Setup	—	0	—	ns
tWSH	WS Hold	—	20	—	ns
fWS	WS Frequency	—	7.8	—	kHz





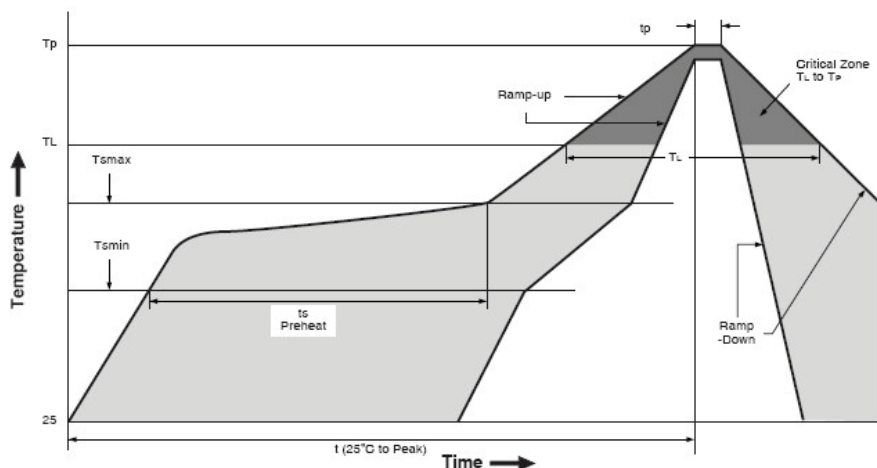
SMT Parameters:

1. Recommend PCB land pattern layout and stencil pattern: (unit: mm)





2. Recommend reflow profile:



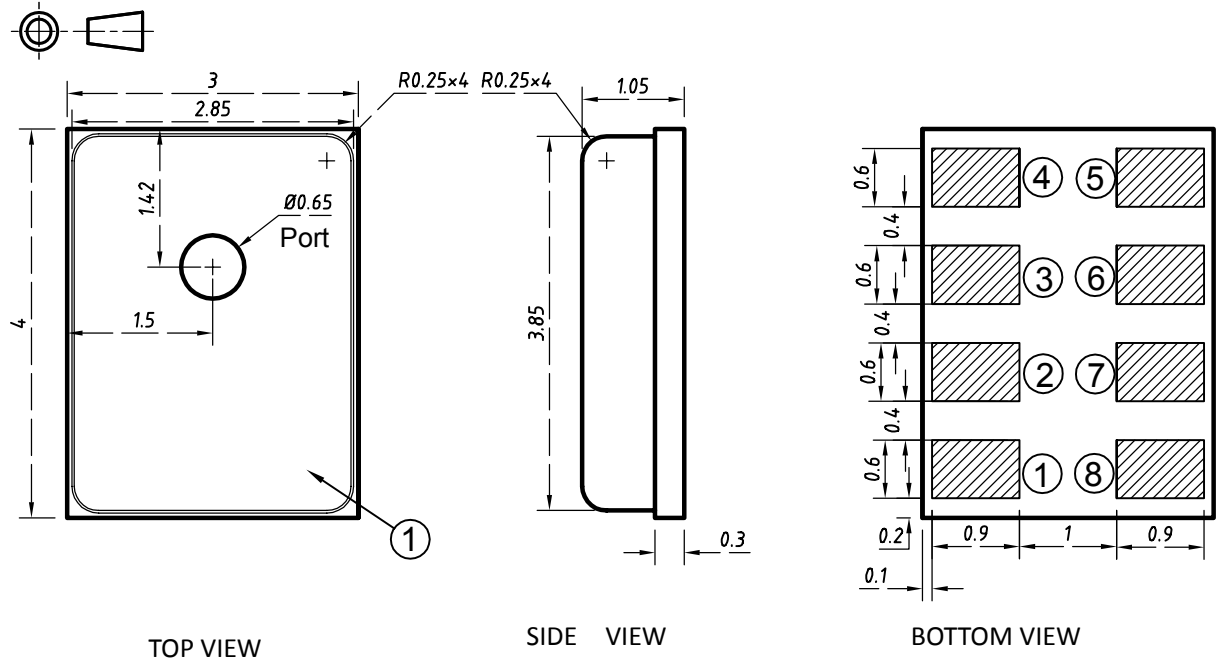
Description	Parameter	Pb free
Average ramp rate	T_L to T_P	3 °C/sec max
Preheat		
Minimum temperature	T_{SMIN}	150 °C
Maximum temperature	T_{SMAX}	200 °C
Time(T_{SMIN} to T_{SMAX})	t_s	60 sec to 120 sec
Ramp-up rate	T_{SMAX} to T_L	1.25 °C/sec
Time maintained above liquidous temperature	t_L	60 sec to 150 sec
Liquidous temperature	T_L	217 °C
Peak temperature	T_P	260 °C
Time within 5°C of actual peak temperature	t_p	20 sec to 40 sec
Ramp-down rate	T_P to T_{smax}	6 °C/sec max
Time 25 °C ($t_{25 °C}$) to peak temperature	t	8 minutes max

3. note:

When washing the PCB, ensure that water does not make contact with the microphone port.
Do not use blow-off procedures or ultrasonic cleaning.



OUTLINE DIMENSIONS AND PIN DEFINITION:



Pin No.	Symbol	Function	Description
1	GND	Ground	Connect to ground on the PCB.
2	N/C	—	Do not connect
3	WS	Input	Serial Data-Word Select for I ² S Interface.
4	CHIPEN	Input	Microphone Enable. When set low (ground), the microphone is disabled and put in power-down mode. When set high (VDD), the microphone is enabled.
5	L/R	Input	Left/Right Channel Select. When set low, the microphone outputs its signal in the left channel of the I ² S frame; when set high, the microphone outputs its signal in the right channel.
6	SCK	Input	Serial Data Clock for I ² S Interface.
7	SD	Output	Serial Data Output for I ² S Interface. This pin tristates when not actively driving the appropriate output channel. The SD trace should have a 100 kΩ pull-down resistor to discharge the line during the time that all microphones on the bus have tristated their outputs.
8	VDD	Power	1.8 to 3.3 V. This pin should be decoupled to Pin 6 with a 0.1 μF capacitor.

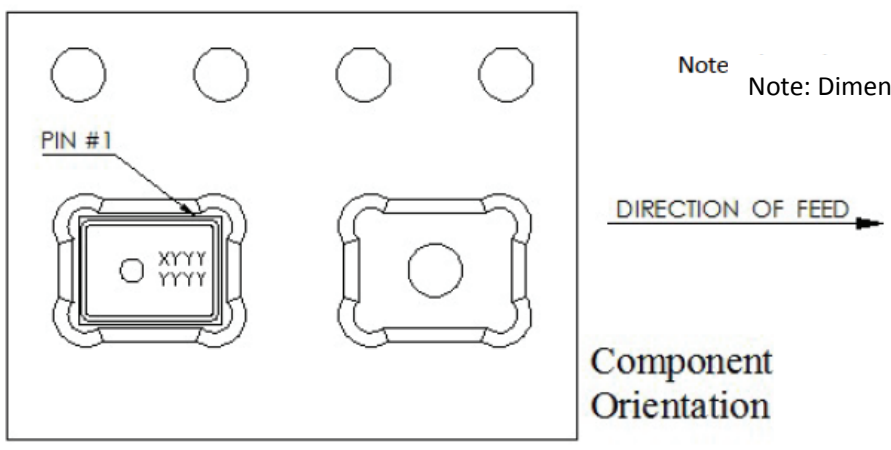
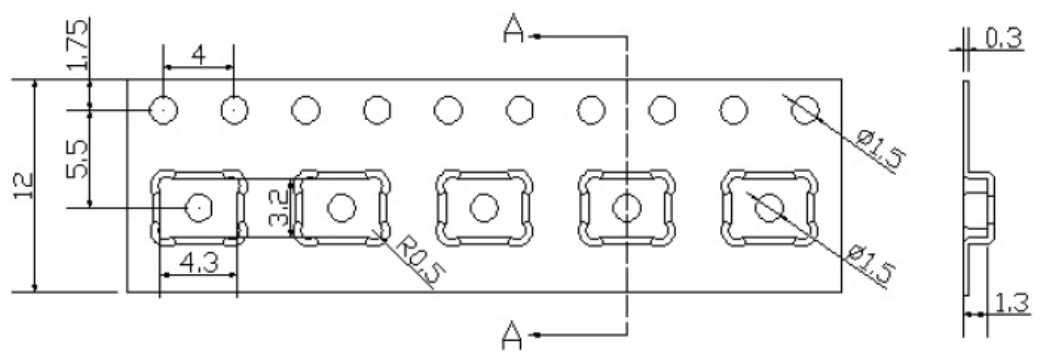
Item	Dimension	Tolerance
Length (L)	4.0	±0.10
Width (W)	3.0	±0.10
Height (H)	1.05	±0.10
Acoustic Port (AP)	∅0.65	±0.10

Dimensions are in millimeters
Tolerance is ±0.1mm unless otherwise specified.

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PACKAGING & MARKING DETAIL:



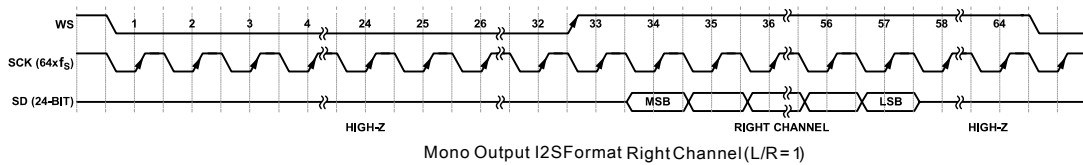
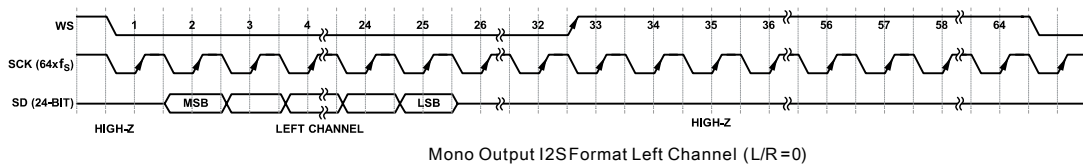
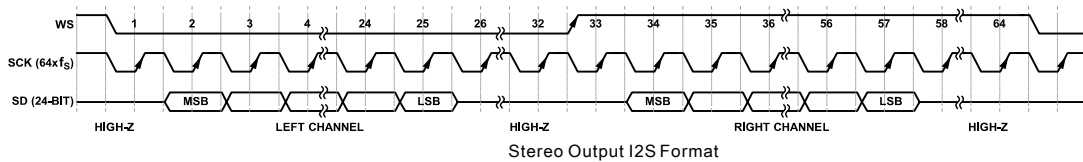
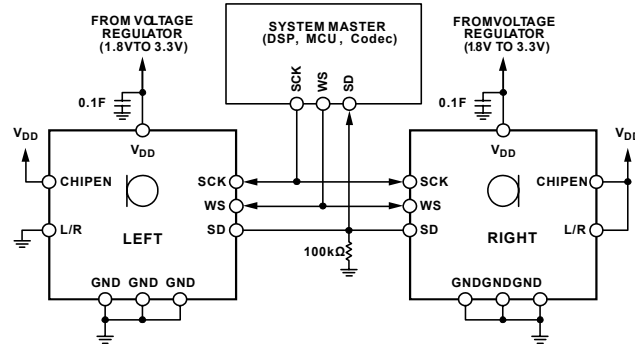
Note
Note: Dimensions are in mm.

Model Number	Reel Diameter	Quantity Per Reel
MSM26S4030H0	13 inch	5000

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RECOMMENDED INTERFACE CIRCUIT:



I²S DATA INTERFACE

The serial data is in slave mode I²S format, which has 24-bit depth in a 32 bit word. In a stereo frame there are 64 SCK cycles, or 32 SCK cycles per data-word. When L/R=0, the output data in the left channel, while L/R=Vdd, data in the right channel. The output data pin (SD) is tristated after the LSB is output so that another microphone can drive the common data line.

Data Word Length

The output data-word length is 24 bits per channel. The Mic must always have 64 clock cycles for every stereo data-word ($f_{SCK} = 64 \times f_{WS}$).

Data-Word Format

The default data format is I²S, MSB-first. In this format, the MSB of each word is delayed by one SCK cycle from the start of each half-frame.

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REVISION HISTORY:

Revision	Subjects (major changes since last revision)	Date
1.0	Initial release	2015-1
1.1	Modified the outline dimension	2015-02-12

公司销售、技术支持联系方式

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