

### Features

- 2.75x1.85x0.90mm Bottom Port
- PDM digital Output
- SNR of 63dBA
- RF Shielded
- Standard SMD Reflow Thecnology
- RoHS Compliance & Halogen Free

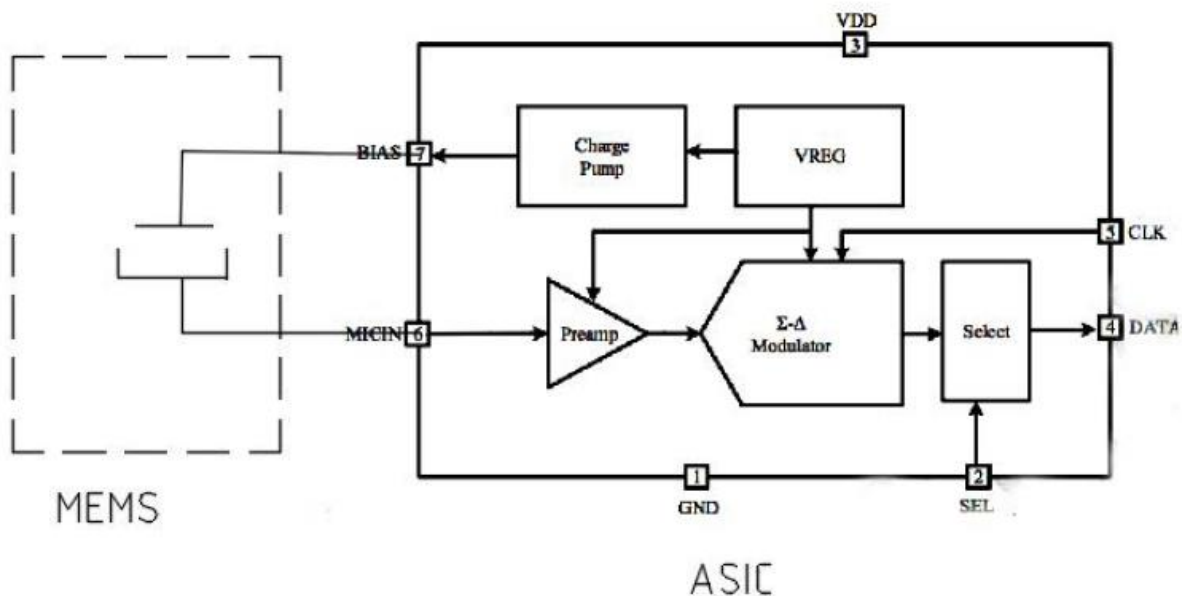
### Applications

- Smart Phones
- TWS Headsets
- Smart Speakers
- Wearable Electronics
- Portable Electronics
- Smart Home Electronics
- Laptop Computers



**Description:** RMIC-94-3.6-2718-RG-NS13 is a digital MEMS microphone. The MEMS Microphones are integrated with specialized Pre-amplification ASIC to provide high sensitivity, high SNR output from a capacitive audio sensor. It's packaged for surface mounting and high temperature re-flow assembly.

### BLOCK DIAGRAM



### ABSOLUTE MAXIMUM RATINGS

Parameters	Value			Unit
	min	typ	max	
Supply Voltage			3.6	V
Operation Temperature Range	-40		+85	°C
Storage Temperature Range	-40		+125	°C

Note : Stresses at the maximum ratings shown in Table 1 may cause permanent damage to the device. These are stress ratings only at which the device may not function when an operation at these or any other condition beyond those specified under "Electro-Acoustic Specifications".

### ELECTRICAL SPECIFICATIONS

**Normal Mode:** Vdd=1.6-3.6V, Fclk=2.4MHz, no load unless otherwise indicated values.

Parameters	Value			Unit	
	min	typ	max		
Directivity	Omni-Directional				
Clock Frequency (Fclk)	1		4.8	MHz	
Sensitivity (S)	94db SPL@ 1kHz	-27	-26	-25	dBFS
Current Consumption (I)	Vdd=1.8V Fclk=2.4MHz		750	1000	uA
S/N Ratio (SNR)	94dB SPL @1kHz, A-Weighted		63		dB
Total Harmonic Distortion (THD)	@ 94dB SPL @1kHz		0.1	0.5	%
Acoustic Overload Point (AOP)	@10% THD @1kHz		120		dB SPL
Power Supply Rejection (PSR)	@100mVpp Square wave, 217Hz, A-weighted		-89		dBFS

Note: Frequency response, sensitivity, phase and current consumption are tested by 100% on product line.

**Low Power Mode** Vdd=1.8V, Fclk=768kHz, Audio Bandwidth 20Hz to 8kHz

Parameters		Value			Unit
		min	typ	max	
Clock Frequency (Fc)		150	768	900	kHz
Sensitivity (S)	94db SPL@ 1kHz	-27	-26	-25	dBFS
Current Consumption (I)			300	400	uA
S/N Ratio (SNR)	94dB SPL @1kHz, A-Weighted		62		dBA
Total Harmonic Distortion (THD)	@94dB SPL @1kHz		0.1	0.5	%
Acoustic Overload Point (AOP)	@10% THD @1kHz		120		dB
Power Supply Rejection (PSR)	@100mVpp Square wave, 217Hz, A-weighted		-89		dB

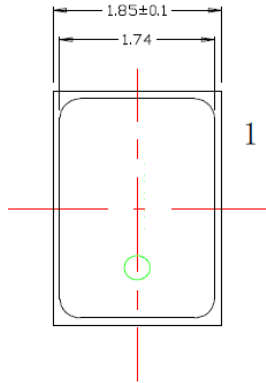
**Sleep Mode:** Vdd=1.8V, Fclk<50kHz

Parameters		Value			Unit
		min	typ	max	
Clock Frequency (Fc)				50	kHz
Current Consumption (I)	Fclk=0kHz vdd=1.8V		3		uA
Current Consumption (I)	Fclk=0kHz vdd=3.6		6		uA

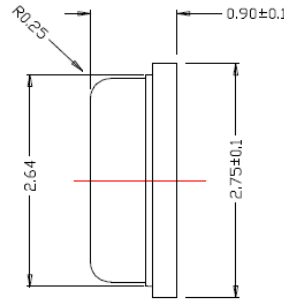
**General Microphone Specification**

Parameters		Value			Unit
		min	typ	max	
Directivity		Omni-directional			
Operating Voltage	Vdd	1.6	1.8	3.6	V
Data Format		½ Cycle PDM			
Clock Frequency (Fclk)		1.4		3.6	MHz
Clock Duty Cycle		40		60	%
Logic Low Input/Output Voltage		-0.35		0.35*Vdd	V
Logic High Input/Output Voltage		0.65xVdd		+0.3Vdd	V
Short Circuit Current (Isc)	Grounded Puput Pin	1		20	mA
Mode Change Time (Tmc)				50	ms

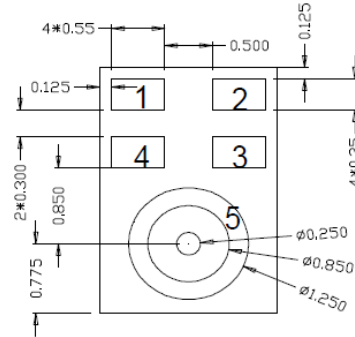
### DIMENSIONS



Top View



Side View



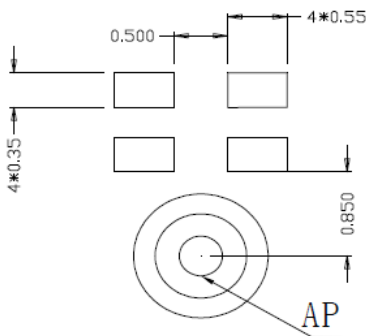
Bottom View

Item	Dimension	Tolerance(+/-)	Units
Length(L)	2.75	0.10	mm
Width(W)	1.85	0.10	mm
Height(H)	0.90	0.10	mm
Acoustic Port(AP)	Ø0.25	0.05	mm

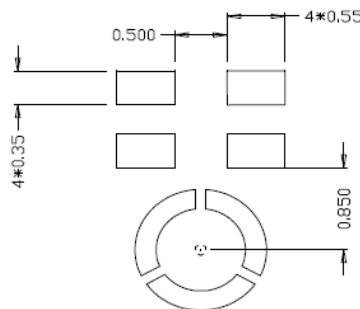
  

Pin No.	Pin Name	Type	Description
1	V <sub>DD</sub>	Power	Power Supply
2	Data	Digital output	PDM output
3	L/R	L/R Channel	Channel select
4	CLK	Clock	Clock input
5	GND	Ground	Ground

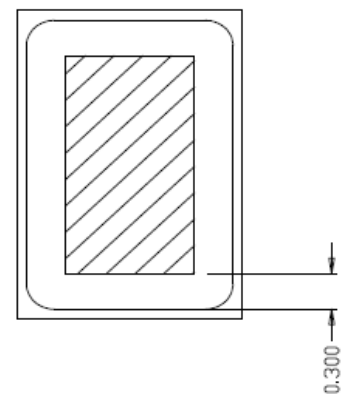
### PICKUP TOOL PICK LOCATION & PCB SOLDER PAD



PCB Land Pattern

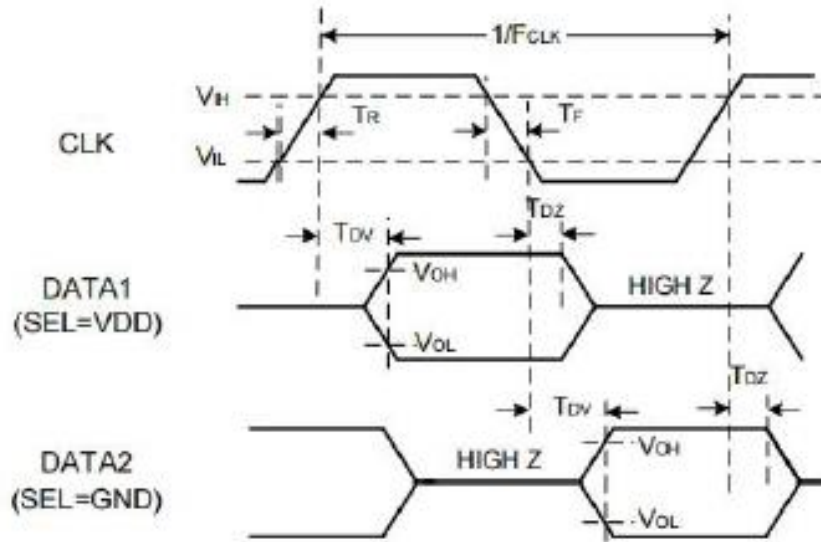


Solder stencil pattern

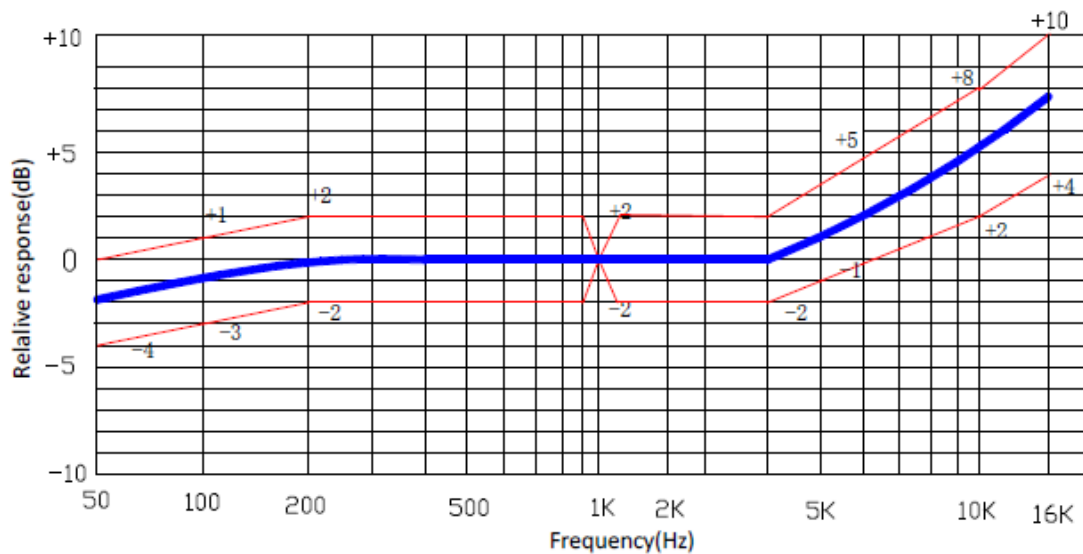


Pick up area

## DIGITAL INTERFACE TIMING SPECIFICATION

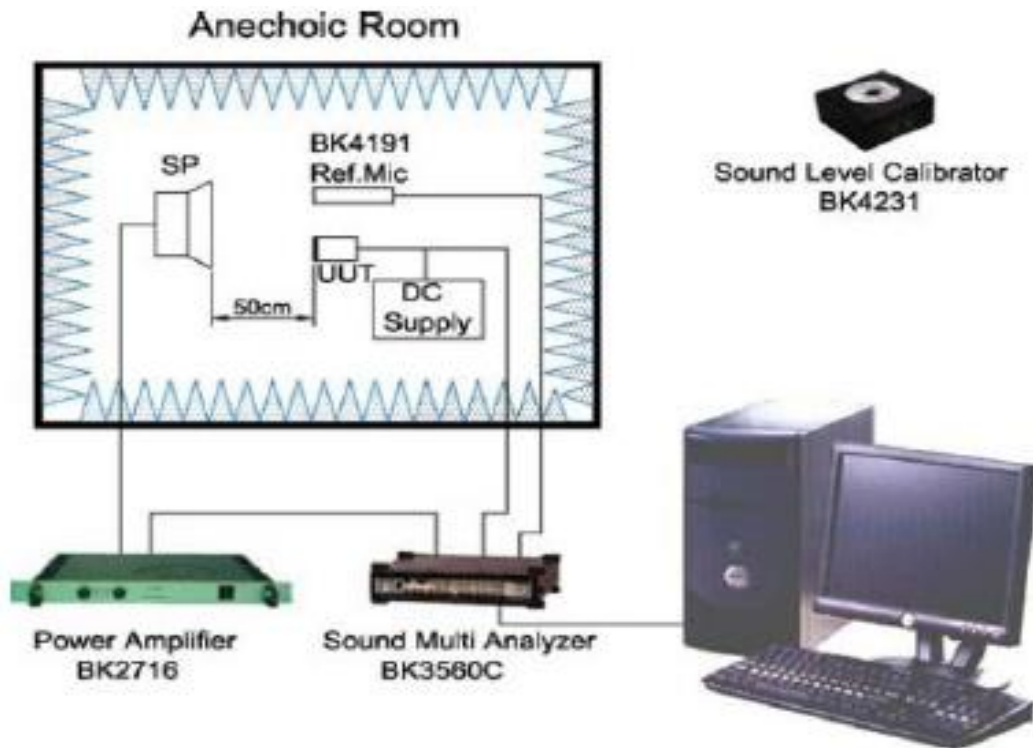


## FREQUENCY CHARACTERISTICS

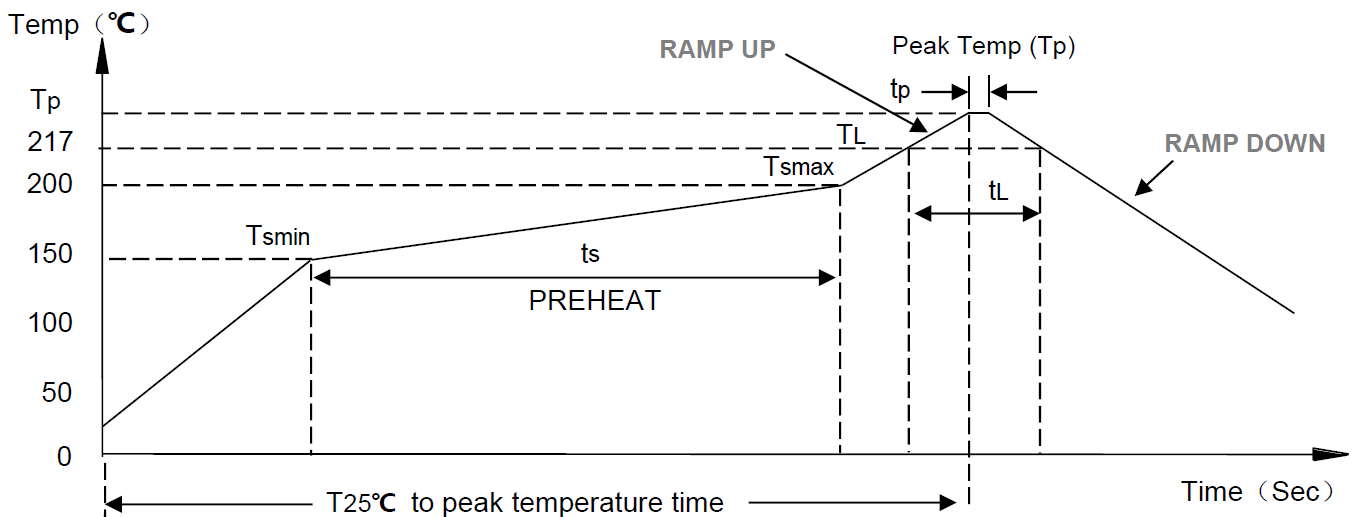


Frequency response curve normalized to 1kHz

### MEASUREMENT SYSTEM SETUP



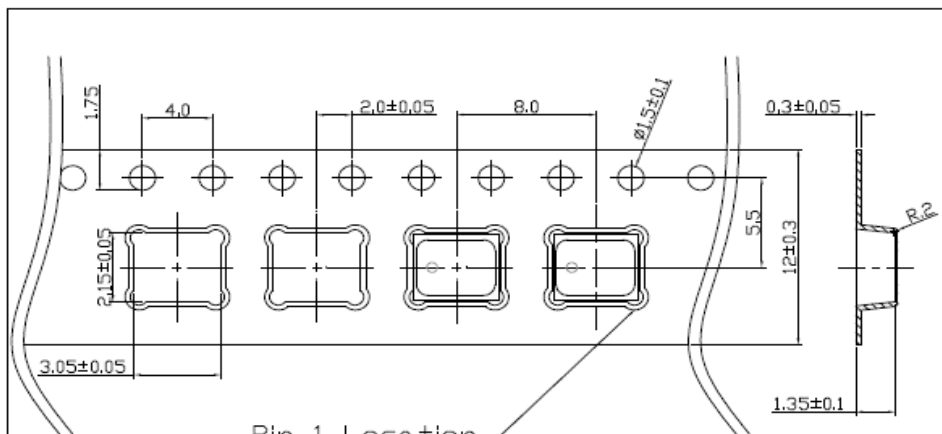
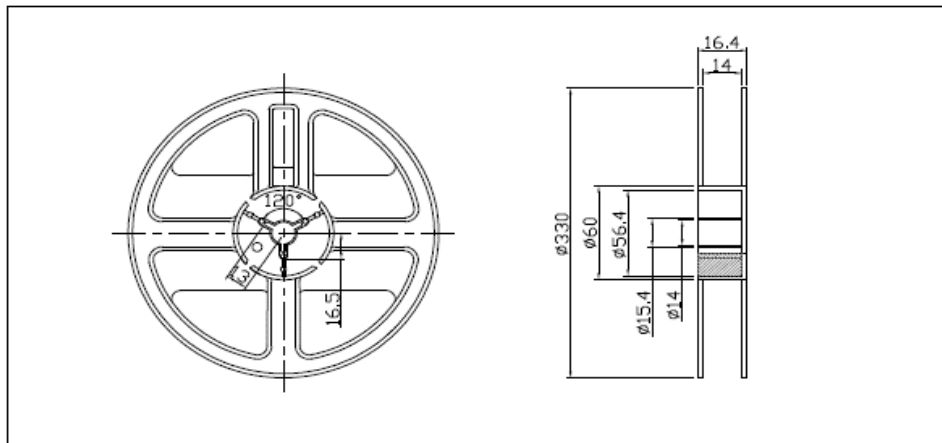
### REFLOW PROFILE



Parameter		Specification
Average temperature change rate (T <sub>S</sub> MAX to TP)		3°C /second max.
Preheat	Temperature min.(T <sub>S</sub> MIN)	150°C
	Temperature max.(T <sub>S</sub> MAX)	200°C
	Time T <sub>S</sub> MIN to T <sub>S</sub> MAX	60-180 Seconds
Time Maintained Above Liquidous		60-150 Seconds
Liquidous Temperature		217°C
Peak Temperature		260°C +0°C/-5°C
Time Within +5°C of Actual Peak Temperature		20 sec to 40 sec
Ramp-Down Rate		3°C/sec max
Time +25°C (t <sub>25</sub> °C) to Peak Temperature		8 min max

### PACKAGING

13" Reel drawing:



Pin 1 Location

### APPROVAL

DRAWN BY	JS, May 31, 2024
APPROVED BY	AR, May 31, 2024
REVISION	A, Initial Release

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