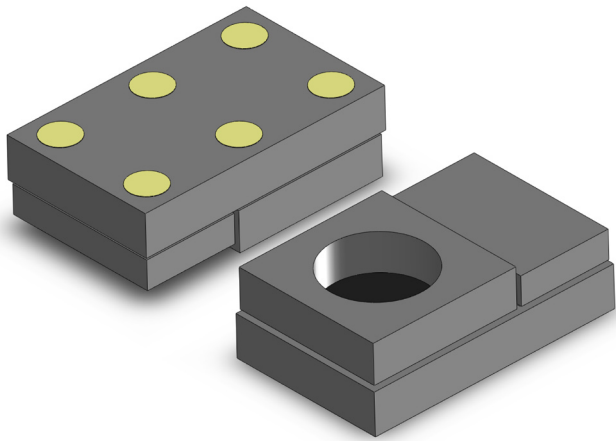


DigiSiMic™ Digital Silicon Microphone

Pulse Part Number: TC100E



Features

- Ultra-compact design 2.6mm x 1.6 mm x 0.9 mm
- SMD mountable
- Compatible with lead-free reflow
- Flat frequency and phase response from 50 Hz to 20 kHz
- Large suppression of EMI
- High SNR of 60 dBA
- Low build-in height
- Integrated analog to digital converter, PDM output
- Stereo on a single data wire
- Standby mode current 10 μ A
- RoHS compliant

Applications

- Mobile Phones
- Headsets
- Laptops
- Conference Systems
- Digital cameras
- Beam forming

DigiSiMic™ - TC100E

Typical performance.

Frequency Range [Hz]	Sensitivity [dBFS/Pa]	SNR [dB]	Supply Voltage [V]	Current Consumption [μ A]	Operating Temperature [°C]
20–20000	-26 $\pm$ 3	60	1.64–2.86	600	-30 to +70

DigiSiMic™ Digital Silicon Microphone

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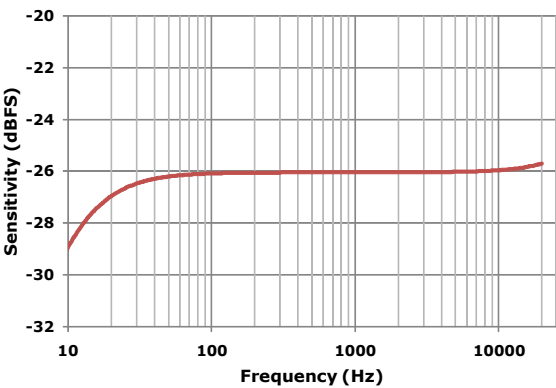
Electrical specifications

Electrical specifications are valid in the +5°C to +45°C temperature range.

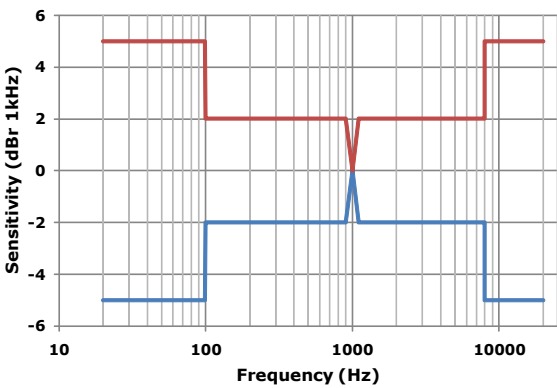
Measurement conditions: T = 25°C , V_{DD} = 1.8 V, f_{CLK} = 2.4 MHz

Parameter		Min	Typ	Max	Unit	Comment
Sensitivity	S	-29	-26	-23	dBFS/ Pa	@ 94 dB SPL (1 Pa)
Total Harmonic Distortion	THD			1 10	% %	@ 100 dB SPL @ 118 dB SPL
Signal-to-Noise Ratio	SNR	57	60		dB	@ 94 dB SPL, A-weighted 20 Hz - 20 kHz
Digital Noise Floor	NF		-86		dBFS	A-weighted 20 Hz - 20 kHz
Equivalent Acoustic Input Noise	EAIN		34		dBA SPL	A-weighted 20 Hz - 20 kHz
Supply Voltage	V _{DD}	1.64	1.8	2.86	V	
Current Consumption	I _{DD}		600		μA	
Standby Current Consumption	I _{STANDBY}			10	μA	
Power Supply Feedthrough	PSF			-70	dBFS	100 mVpp 217 Hz square wave

Typical Frequency Response



Frequency Response Mask



DigiSiMic™ Digital Silicon Microphone

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Pin Description

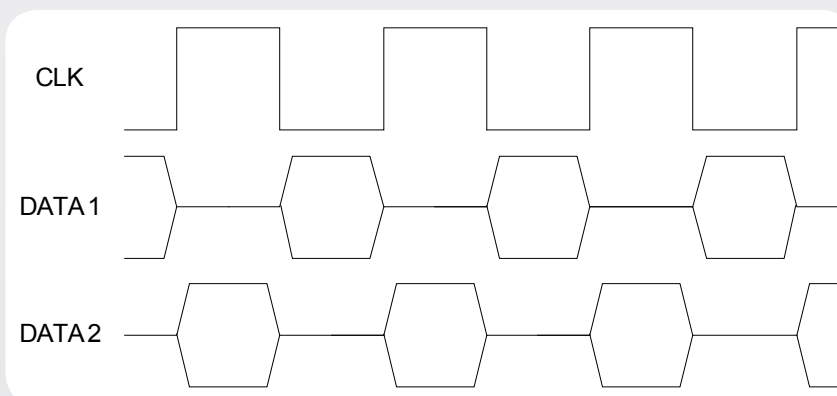
Pin	Description
VDD	Power supply
GND	Ground (2)
DATA	Data Output (PDM data from 4th order $\Sigma\Delta$ -modulator)
CLK	Clock signal
L/R	Selection of data output edge: Low: Data asserted on falling CLK edge (DATA1) High: Data asserted on rising CLK edge (DATA2)

Digital Interface

Parameter		Min	Typ	Max	Unit	Comment
Clock Frequency	f_{CLK}	1.0	2.4	3.25	MHz	
Duty Cycle	D_{CLK}	40	50	60	%	
High Level Voltage	V_{HI}	$0.65 \cdot V_{DD}$		$V_{DD} + 0.3$	V	L/R, CLK and DATA
Low Level Voltage	V_{LO}	-0.3		$0.35 \cdot V_{DD}$	V	L/R, CLK and DATA
Output Load Capacitance	C_L			100	pF	
Power supply rise time	t_{RISE}			1	ms	
Standby Frequency	$f_{standby}$	10			kHz	Below this frequency microphone will enter standby mode

Stereo Operation

The microphone is able to share the data wire with one more microphone. This makes it possible to operate two microphones on a total of four wires: VDD, GND, CLK and DATA. To use this feature the microphones must have different settings of the L/R pin (see pin description).



DigiSiMic™ Digital Silicon Microphone

Pulse Part Number: TC100E

Environmental Specifications

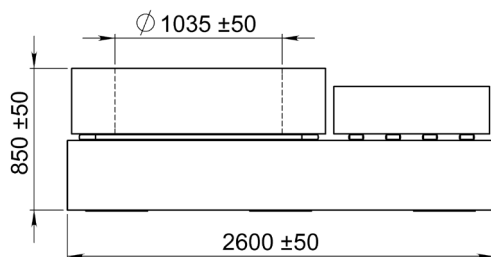
Parameter		Min	Typ	Max	Unit	Comment
Operating temperature		-30		70	°C	
Storage temperature		-40		85	°C	
Humidity		25		85	%RH	
Air pressure		860		1060	mBar	

DigiSiMic™ Digital Silicon Microphone

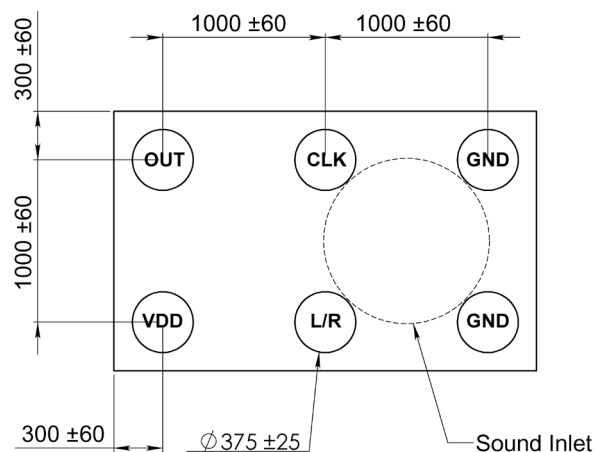
Pulse Part Number: TC100E

Mechanical Dimensions

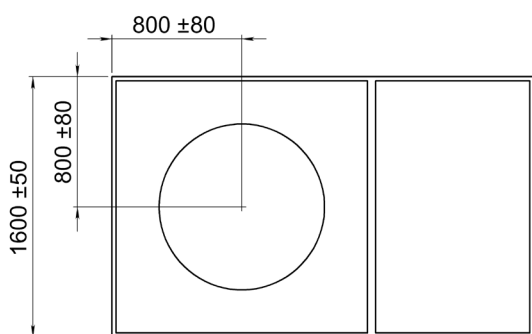
Side View



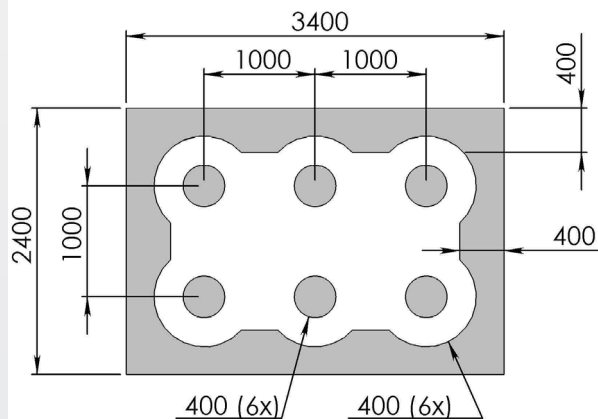
Bottom View



Top View



Recommended Land Pattern



DigiSiMic™ Digital Silicon Microphone

Pulse Part Number: TC100E

Packaging

