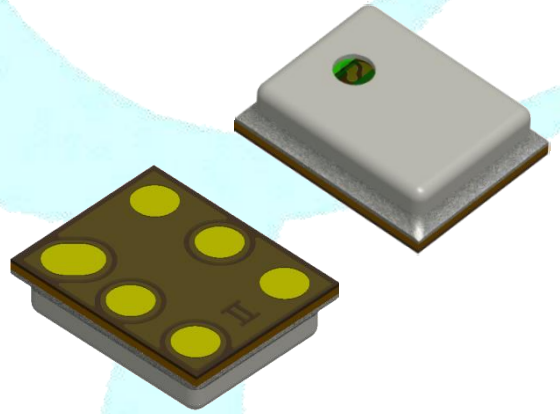


F2-(A)HCDMO-B125T26-6CP

High SNR
Mini

OMNI-DIRECTIONAL
TOP PORT



Best sound electronics

Value no1. Micro sound provider

Creative technology starts from respecting of life of the individuals

Creative technologies to respect human life



Best sound electronics

Value no1. Micro sound provider

We offer you happiness with our excellent technology beyond an ordinary sound what you expect

Superior technology to deliver happiness



Best sound electronics

Value no1. Micro sound provider

Keep basic fundamentals to fill sound with new innovations

Creative technologies to respect human life



1. INTRODUCTION

- Digital MEMS Microphone - ½ PDM 16bit, Full Scale=120dB SPL
- Top Port Type - Sensitivity is Typical -26dBFS
- **High Signal to Noise Ratio(SNR) – Typical 61.5dB (A-weighted, 20Hz~20kHz)**
- Omni-directional
- Dual Channel supported
- RF Shielded - with embedded Ground
- Compatible with Sn/Pb and Halogen-free solder process
- RoHS compliant
- SMD reflow temperature of up to 260°C for over 30 seconds

2. APPLICATIONS

- Smartphones
- Ear-sets, Bluetooth Headsets
- Tablet Computers
- Wearable Devices
- Electrical Appliances
- Voice Recognition Systems of Appliances

3. MODEL NO.

F2-(A)HCDMO-B125T26-6CP

4. GENERAL MICROPHONE SPECIFICATIONS

Test Condition : 23 ± 2°C, Room Humidity = 55 ± 20 %, VDD=1.8V, fclk = 2.4MHz, SELECT Pin is grounded, CLOAD = 1µF, unless otherwise noticed.

Parameter	Conditions	Min	Typ	Max	Units
Clock Frequency		1	-	3.25	MHz
Stand by Clock Frequency		-	-	1	kHz
Standby Current	fclk < 1kHz, Vdd=3.3V	-	-	1	µA
Fall-asleep Time	fclk = 2.4MHz	-	-	10	ms
Wake-up Time	fclk = 1kHz	-	-	10	ms

5. ELECTRO-ACOUSTIC CHARACTERISTICS

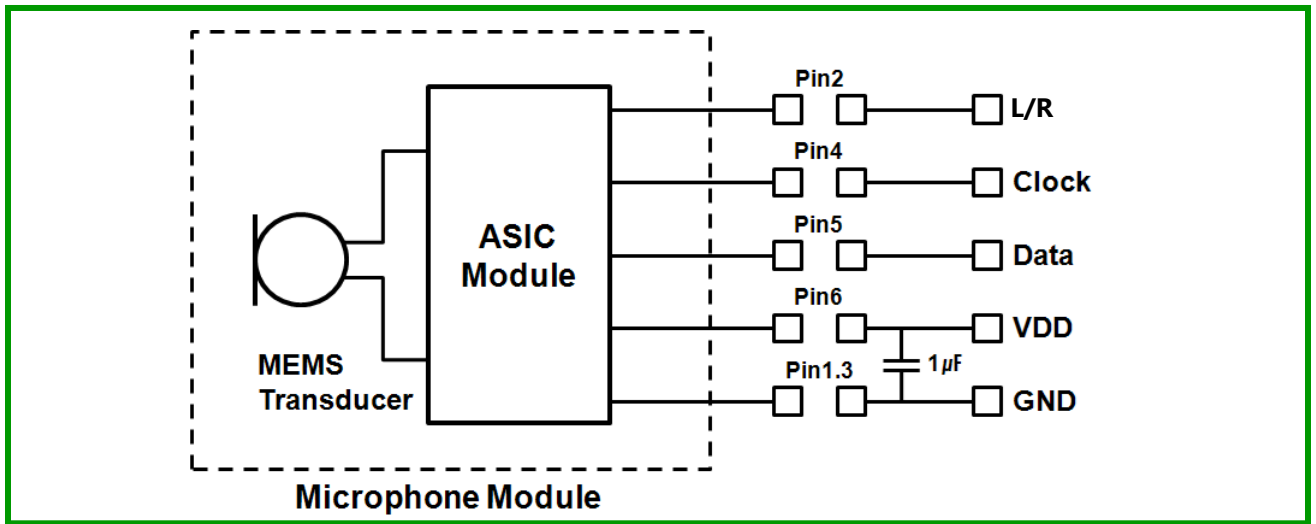
Test Condition : 23 ± 2°C, Room Humidity = 55 ± 20 %, VDD=1.8V, fclk = 2.4MHz, SELECT Pin is grounded, C_{LOAD} = 1μF, unless otherwise noticed.

Parameter	Conditions	Min	Typ	Max	Units
Directivity		Omni-directional			
Supply Voltage		1.64	-	3.6	V
Data Format		½ Cycle PDM 16bit			-
Full Scale Acoustic Level		120			dB SPL
Current Consumption	fclk = 2.4MHz, load on DATA output	800	-	1100	μA
Sensitivity	94dB SPL at 1kHz	-29	-26	-23	dBFS
Signal to Noise Ratio (SNR)	94dB SPL at 1kHz, A-weighted (20Hz~20kHz)	-	61.5	-	dB(A)
Equivalent Input Noise (EIN)	94dB SPL at 1kHz, A-weighted (20Hz~20kHz)	-	32.5	-	dB(A) SPL
Total Harmonic Distortion (THD)	94dB SPL at 1kHz	-	-	0.3	%
	101dB SPL at 1kHz	-	-	1.0	%
	108.5dB SPL at 1kHz	-	-	3.0	%
	116dB SPL at 1kHz	-	-	5.0	%
Acoustic Overload Point (AOP)	THD>10%, at 1kHz	122	123	-	dB SPL
Power Supply Rejection Ratio (PSRR)	Measured with 1kHz sine wave and broad band noise, both 200mVpp	-	41	-	dBV/FS
Power Supply Rejection (PSR)	Measured with 217Hz square wave and broad band noise, both 100mVpp, A-weighted	-	-75	-	dBFS(A)

6. INTERFACE PARAMETER

Parameter	Conditions	Min	Typ	Max	Units
Clock Frequency		1	-	3.25	MHz
Stand by Clock Frequency		-	-	1	kHz
Clock Duty Cycle	fclk ≤ 2.4MHz	40	-	60	%
Input Logic Low Level		-0.3	-	0.3 x V _{DD}	V
Input Logic High Level		0.65 x V _{DD}	-	V _{DD} + 0.3	V
Output Logic Low Level		-0.3	-	0.3 x V _{DD}	V
Output Logic High Level		0.65 x V _{DD}	-	V _{DD} + 0.3	V
Clock Rise / Fall Time	Vdd=3.3V, fclk=2.4MHz, Fduty=50%	-	-	10	ns
Delay Time for Data driven	Vdd=3.3V, fclk=2.4MHz, Fduty=50%	20	31	40	ns
Delay Time for High Z	Vdd=3.3V, fclk=2.4MHz, Fduty=50%	-	8	15	ns

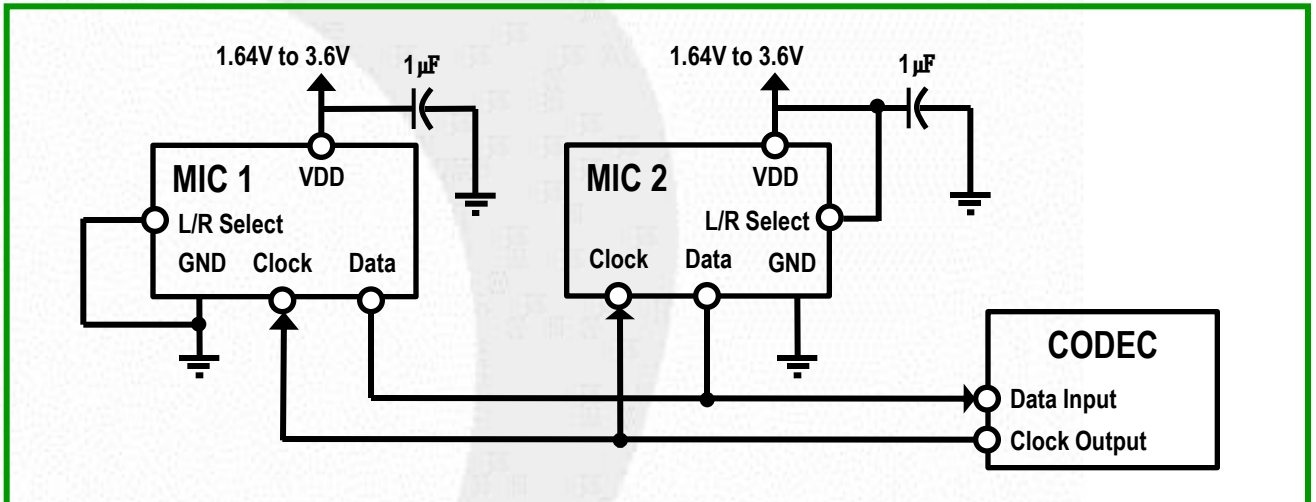
7. MEASUREMENT CIRCUIT



8. PIN DESCRIPTION

Pin Name	Description
VDD	Supply and IO voltage for the microphone
L/R Select	Left/Right (DATA2 / DATA1) Channel selection
CLOCK	Clock input to the microphone
DATA	PDM data output from the microphone
GND	Ground

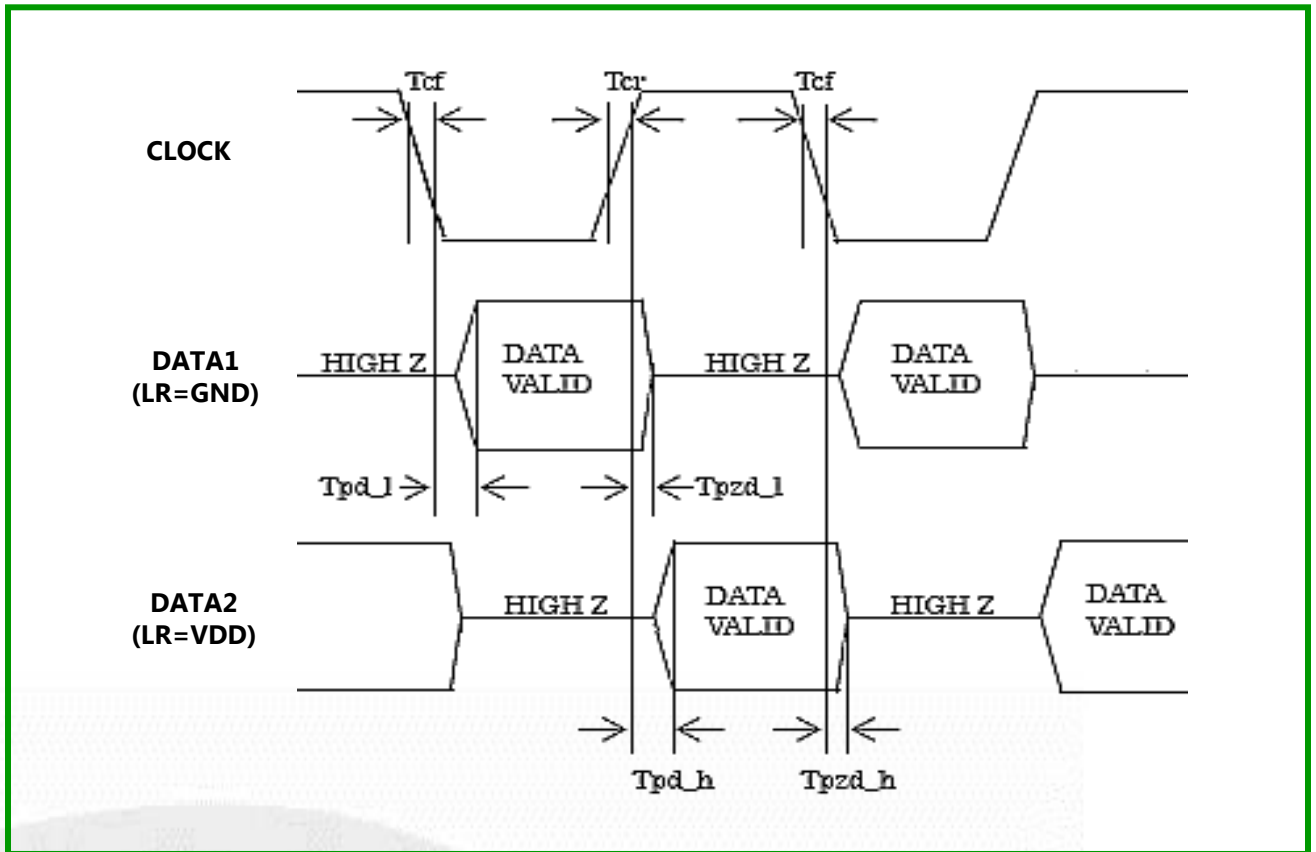
9. INTERFACE CIRCUIT & CHANNEL DATA CONFIGURATION



Data symbol in interface timing chart	L/R Select connected to	Data asserted at	Data sampled at
DATA1 [MIC1(Low)]	GND	Falling clock edge	Rising clock edge
DATA2 [MIC2(High)]	V _{DD}	Rising clock edge	Falling clock edge

Note : Stereo operation is accomplished by connecting the L/R Sel. pin either to VDD or GND on the phone PWB.
Bypass Capacitors near each MIC. on VDD are recommended to provide maximum SNR performance.

10. INTERFACE TIMING CHART



Test Conditions : Vdd=3.3V, fclk=2.4MHz, Fduty=50%

Parameter	Symbol	Min	Typ	Max	Unit
Clock rise time	T_{CR}	-	-	10	ns
Clock fall time	T_{CF}	-	-	10	ns
Output Data Delay	T_{pd_l}, T_{pd_h}	20	31	40	ns
Output HIGH Z Delay	T_{pzd_l}, T_{pzd_h}	0	8	15	ns

11. ENVIRONMENTAL CHARACTERISTICS AND STANDARD CONDITIONS

Item	Min	Typ	Max	Unit
Operating temperature range	-40	-	+100	°C
Storage temperature range	-40	-	+100	°C
Relative humidity	25	-	85	%
Air Pressure	860	-	1060	mBar
Standard temperature range	15	20	25	°C
Standard Relative humidity	40	-	60	%

12. TYPICAL FREQUENCY RESPONSE CURVE

Far Field Measurement Condition

Temperature : 23 ± 2 °C

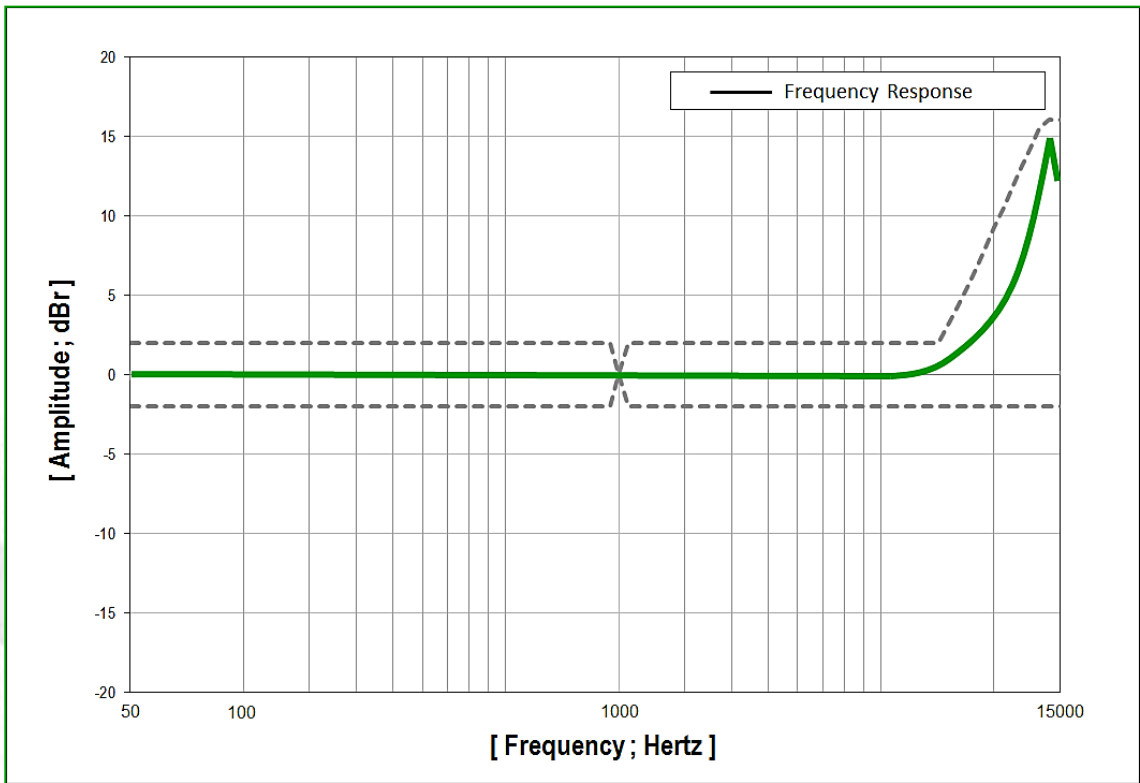
Supply Voltage : 1.8V

Clock Frequency : 2.4MHz

Acoustic stimulus : 1Pa (94dB SPL at 1kHz) at 50 cm from the loud-speaker.

The loud-speaker must be calibrated to make a flat frequency response input signal.

Position : The frequency response of microphone unit measured at 50cm from the loud-speaker



■ Frequency Mask Specification

Frequency [Hz]	Lower Limit [dBr]	Upper Limit [dBr]	Note
50 ~ 1000	-2	+2	0dBr = dBFS at 1kHz
1000	0	0	
1000 ~ 7000	-2	+2	
14000 ~ 15000	-2	+16	

Note : Band Frequency Range

1. Narrow Band : 300Hz ~ 3.4kHz

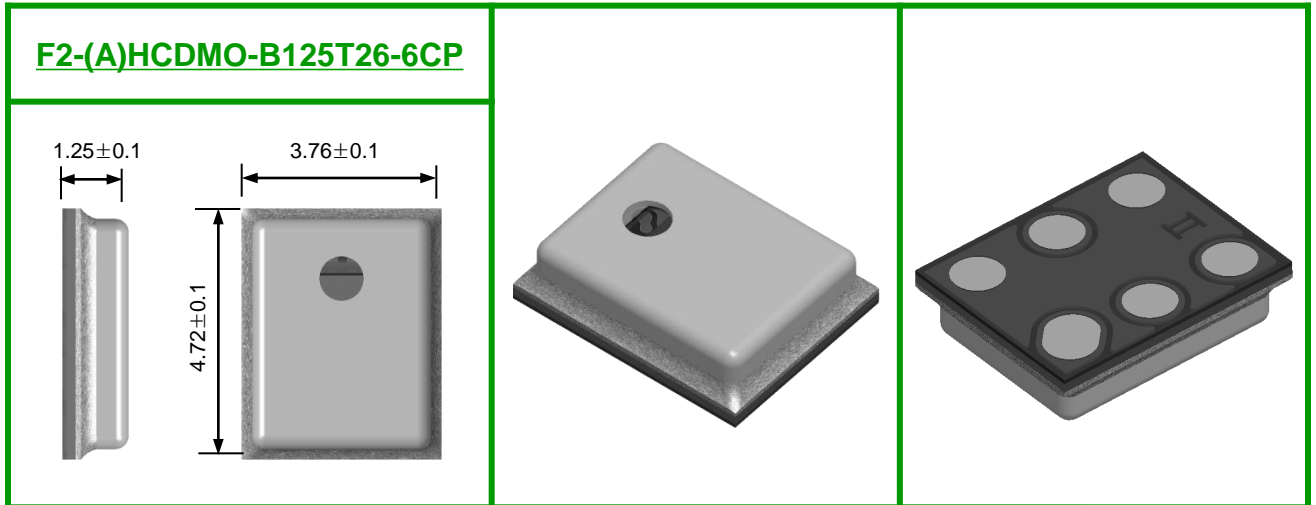
2. Wide Band : 100Hz ~ 7kHz

3. Super Wide Band : 50Hz ~ 14kHz

13. MECHANICAL CHARACTERISTICS

※ PCB design & Pin size can be changed by model No.

SMD Type



Lettering

