

# AC1279A 芯片规格书

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## AC12N Features

### High performance Core

- Enhanced 8051 CPU
- Single cycle instruction
- Support 16-bit extended instruction
- Maximum frequency @80MHz
- Inside 8K OTP and 4K SRAM
- Support 16 interrupt source
- Support 4 level programmable interrupt priority

### Flexible I/O

- 25 GPIO pins
- All GPIO pins can be programmable as input or output individually
- All GPIO pins are internal pull-up/pull-down selectable individually
- CMOS/TTL level Schmitt triggered input
- Support IO wake up/interrupt

### Digital Peripheral Feature

- One audio sample rate converter
- One IIS controller, support single stereo channel
- One full-duplex basic UART without DMA
- One transmit only UART with DMA
- One IIC interface supports host and device mode
- One 8-bit TIMER
- Two 16-bit multi-function TIMERS, support capture and PWM mode
- One comparator controller, support Hall sensor simulation
- Watchdog

### Analog Peripheral Features

- RC, internal RC Oscillator, ~6.5MHz
- HTC, internal low Temperature drift RC Oscillator, ~5MHz
- 10-bit high-precision 16-channel ADC (mainly as ADC Key, etc)
- 12-bit high-precision ADC (mainly as a recording)
- 16-bit high-precision DAC
- Full Speed USB PHY
- A capless XOSC, clock oscillation circuit, support 12MHz/24MHz
- LVD, support power-down protection
- LDO, 5V-3.3V、5V-3.0V、5V-1.7V
- MIC amplifier circuit
- 3-channel Rail-to-Rail COMPARATOR
- General IO, support pull-up / pull-down, strong / weak output,
- Input, high resistance etc.

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- Single PLL, the center frequency is 480MHz
- Power on reset

### Power Supply

- LDOIN is 3.3V to 5.0V

### Packages

- LQFP48
- DIE form

### Temperature

- Operating temperature: -40°C to +85°C
- Storage temperature: -65°C to +150°C

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## 一、引脚定义

### 1.1 引脚分配

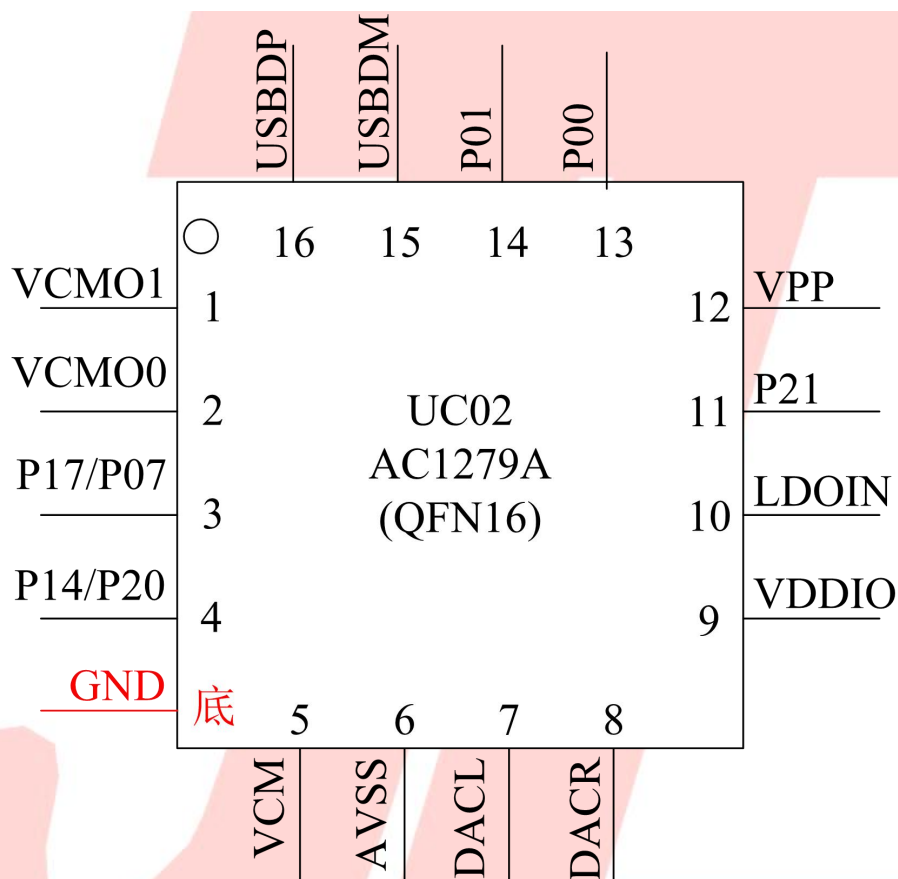


图 1-1 AC1279A\_QFN16 引脚分配图

## 1.2 引脚描述

表 1-1 AC1279A\_QFN16 引脚描述

PIN NO.	Name	I/O Type	Funtion	Other Funtion
1	VCMO0	P	DAC Reference Out	ADC10:ADC Input Channel 10
2	VCMO1	P	DAC Reference Out	ADC10:ADC Input Channel 10
3	P07	I/O	GPIO	ADC5:ADC Input Channel 5 PPM_DAT:Power protocol master control
3	P17	I/O	GPIO	MIC0:MIC input channel 0 TMR1_PWM2:Timer1 PWM2 Output
4	P14	I/O	GPIO	ADC8:ADC Input Channel 8 WAKEUP3:Port Interrupt /Wakeup3 TMR1_CAP:Timer1 Capture
4	P20	I/O	GPIO	MIC1:MIC input channel 1
5	VCM	P	DAC Reference	
6	AVSSHP	P	DAC Ground	
7	DACL	O	DAC Left Channel	ADC11:ADC Input Channel 11
8	DACR	O	DAC Right Channel	ADC12:ADC Input Channel 12
9	AVDDHP	P	Headphone Power 3.3V	
9	VDDIO	P	IO Power 3.3V	
10	LDOIN	P	LDO Power Input	
11	P21	I/O	GPIO	PPS_DAT: Power protocol slave control
12	P30	I/O	GPIO	VPP
13	P00	I/O	GPIO	ADC0:ADC Input Channel 0 ISP_CLK IIC_SCL
14	P01	I/O	GPIO	ADC1:ADC Input Channel 1 ISP_DIN IIC_SDA
15	USBDM	I/O	GPIO	
16	USBDP	I/O	GPIO	WAKEUP2:Port Interrupt/Wakeup2
0	VSS	P	IO Ground	Substrate Pad

(★说明: 1、P----Power Supply 2、I----Input 3、O----Output 4、I/O----Bi-direction )

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## 二、电气特性

### 2.1 LDO 电压、电流特性

表 2-1

符号	参数	最小	典型	最大	单位	测试条件
LDO5V	Voltage Input	3.3	4.2	5.5	V	-
VDDIO	Voltage output	3.0	3.3	3.4	V	LDOIN = 5V, 120mA loading
I <sub>VDDIO</sub>	Loading current	-	-	100	mA	LDOIN = 5V
AVDDHP	Headphone Amplifier Voltage	2.4	3.0	3.3	V	LDOIN = 5V
VDD	Digital Voltage output	1.56	1.7	1.90	V	LDOIN = 5V

### 2.2 IO 输入、输出高低逻辑特性

表 2-2

IO 输入特性						
符号	参数	最小	典型	最大	单位	测试条件
V <sub>IL</sub>	Low-Level Input Voltage	-0.3	-	0.3* VDDIO	V	VDDIO = 3.3V
V <sub>IH</sub>	High-Level Input Voltage	0.7* VDDIO	-	VDDIO+0.3	V	VDDIO = 3.3V
IO 输出特性						
V <sub>OL</sub>	Low-Level Output Voltage	-	-	0.33	V	VDDIO = 3.3V
V <sub>OH</sub>	High-Level Output Voltage	2.7	-	-	V	VDDIO = 3.3V

### 2.3 IO 输出能力、上下拉电阻特性

表 2-3

Port 口	普通输出	强输出	上拉电阻	下拉电阻	默认设置	备注
P00~P06 P10~P17 P20~P27	8mA	24mA	10K	60K	P00 pull_up P01 pull_up	内部上下拉电阻因工艺波动差异,可能存在±20%的偏差
P07	8mA	24mA	1.5K	60K		
P21、P30	8mA	-	10K	10K		
USBDP		-	1.5K	15K	pull_down	
USBDM		-	192K	15K	pull_down	

## 2.4 DAC 特性

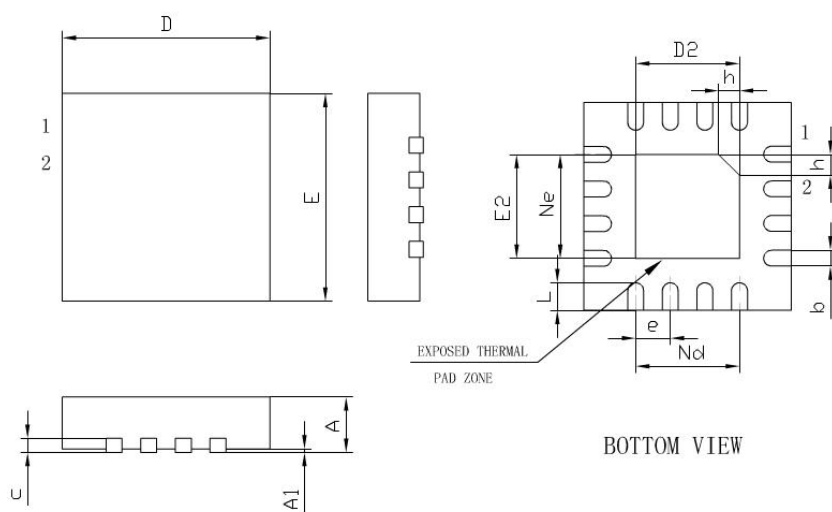
参数	最小	典型	最大	单位	测试条件
Frequency Response	20	–	200000	Hz	1KHz/0dB 10Kohm loading With A-Weighted Filter
THD+N	–	-72	–	dB	
S/N	–	85	–	dB	
Crosstalk	–	-83	–	dB	
Output Swing	–	1.03	–	Vrms	
Dynamic Range	–	82	–	dB	1KHz/-60dB 10Kohm loading With A-Weighted Filter
DAC Output Power	–	>11	–	mW	32ohm loading

## 2.5 ADC 特性

参数	最小	典型	最大	单位	测试条件
Dynamic Range	–	82	–	dB	1KHz/-60dB 10Kohm loading With A-Weighted Filter
S/N	–	77	–	dB	1KHz/-60dB 10Kohm loading With A-Weighted Filter
THD+N	–	-69	–	dB	

### 三、封装

#### 3.1 QFN16-3X3mm



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	—	0.02	0.05
b	0.18	0.25	0.30
c	0.18	0.20	0.25
D	2.90	3.00	3.10
D2	1.40	1.50	1.60
e	0.50BSC		
Ne	1.50BSC		
Nd	1.50BSC		
E	2.90	3.00	3.10
E2	1.40	1.50	1.60
L	0.35	0.40	0.45
h	0.25	0.30	0.35
L/F载体尺寸 (mil)	75X75		

图 3-1 AC1279A\_QFN16 封装图



#### 四、版本信息

日期	版本号	描述
2017.09.19	V1.0	原始版本