
Features

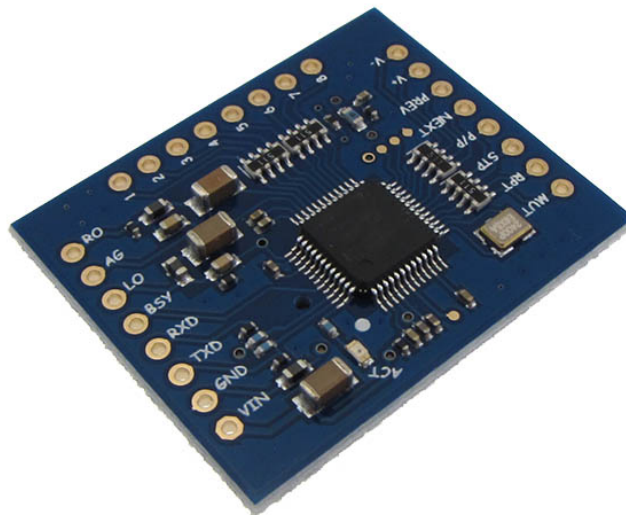
- High performance 32Bit CPU
- High quality on-chip stereo DAC
- Decodes MP3/WAV/APE audio format
- Supports bitrate from 32Kbps to 320Kbps
- Supports MicroSD/HC memory card up to 32GB
- Low-power operation
- Ultra-low background noise
- TTL serial interface
- Input voltage: 5VDC
- Compact design

General Description

The AU5016 is designed for use in embedded systems and in customer specific application. It is a fully integrated MicroSD/SDHC player module with the ability to decode MPEG Layer-3 (MP3) audio file and lossless WAV/APE file. It can be controlled via the TTL level UART interface. It contains a high-performance DSP process core and a high-quality stereo DAC that providing high sound quality output.

The AU5016 is also capable of driving a stereo earphone directly without the need of an amplifier.

Application: Automobile, home system, game machines, voice devices, communications equipment, industrial control, toys and so on



Characteristics & Specifications

Absolute Ratings

Parameter	Min	Max	Unit
Supply Voltage	4.6	5.5	V
TTL Voltage	3.3	5.0	V

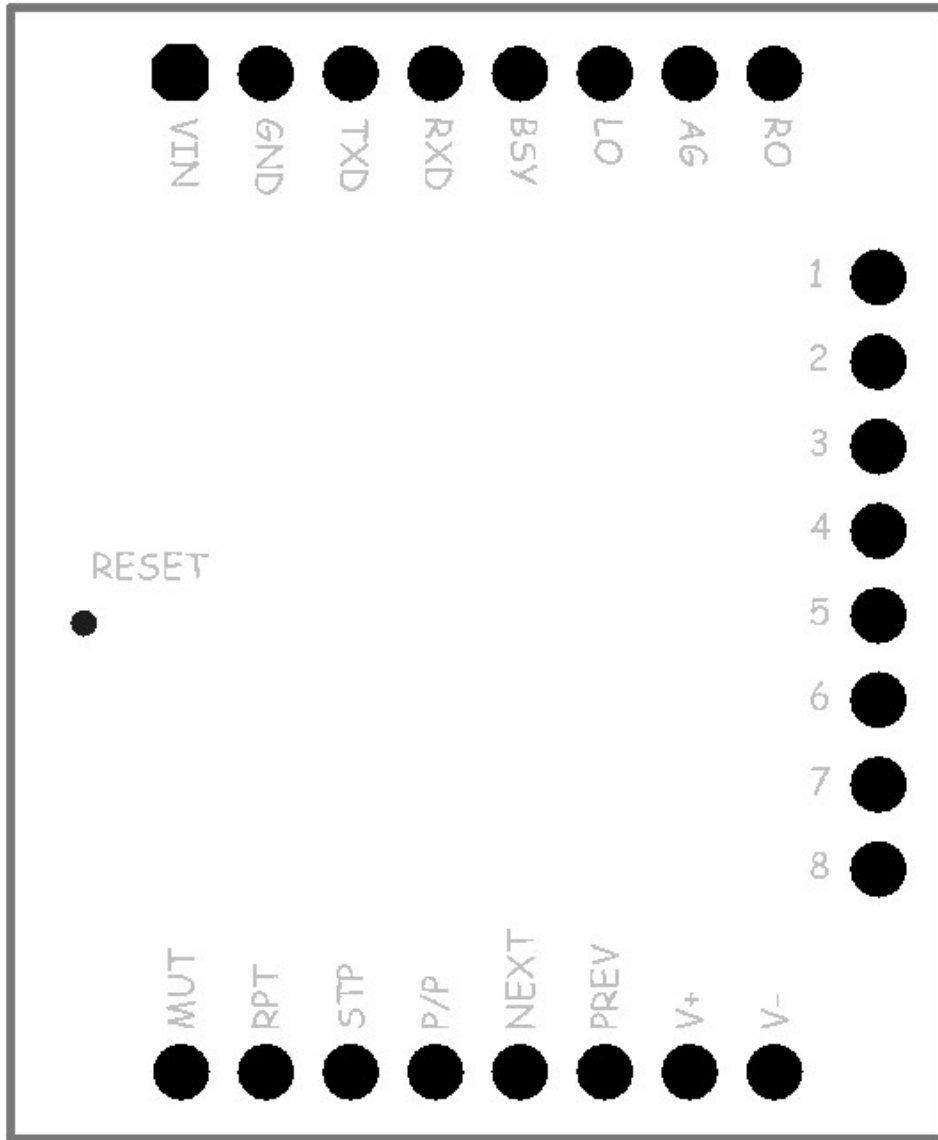
Recommended Operating Conditions

Parameter	Min	Type	Max	Unit
Operating Voltage	4.6	5	5.5	V
Current Rating	16		35	mA
TTL Voltage	3.3	3.3	5.0	V
Operating Temperature	-40		+80	°C

Electrical Characteristics

Parameter	Symbol	Typ	Unit
DAC Resolution		24	bits
Total Harmonic distortion	THD	0.1	%
Dynamic Range	IDR	>90	dB
S/N Ratio	SNR	80	dB
Frequency Response		-0.1-0.1	dB
Analog Output Load Resistance	AOLR	30	Ohm
Analog Output Load Capacitance		100	pF
Current Rating		20~30	mA

Pins Assignment



Top View

Pin Name	Function
VIN	Power input
GND	Ground
TXD	UART-TX
RXD	UART-RX
BSY**	Busy output
RO	Audio Right Channel output
AG	Audio Ground
LO	Audio Left Channel output
1*	Trigger Song#1
2*	Trigger Song#2
3*	Trigger Song#3
4*	Trigger Song#4
5*	Trigger Song#5
6*	Trigger Song#6
7*	Trigger Song#7
8*	Trigger Song#8
MUT*	Mute
RPT*	Repeat One or Repeat All
STP*	Stop
P/P*	Pause/Play
NEXT*	Play next song
PREV*	Play previous song
V+*	Volume +
V-*	Volume -

*All Control pins are active low.

**Output High or Low when a song is being played.

MP3/WAV/APE File Naming Rules

1 + (three digit) Song number

The AU5013 supports up to 200 mp3/wav/ape files. Song number range: 1~200



Serial Control interface

All control commands are in HEX format.

Baud Rate Format: baud rate + 8 data bits + parity of None + 1 stop bit (9600-8-N-1)

Control commands: (Hexadecimal format, one byte)

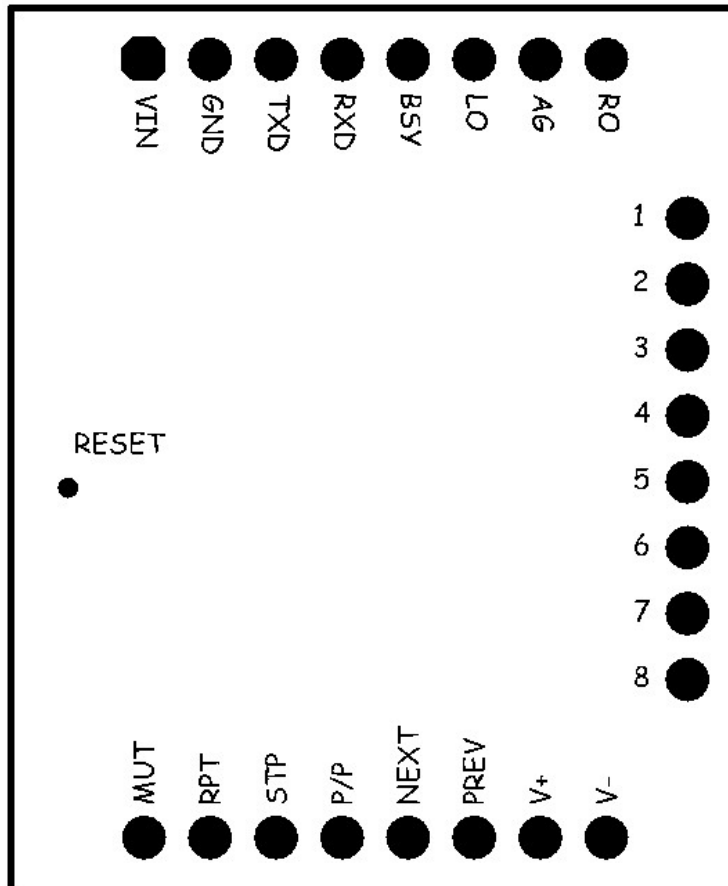
Command	Function	Return Code (HEX)
0x01~0xC8	Play track 1001.mp3 ~ 1200.mp3 (wav/ape or mix)	XX (one bytes) XX: Track number
0xD0*	Set baud rate to 4800	0x00
0xD1*	Set baud rate to 9600	0x01 (default)
0xD2*	Set baud rate to 14400	0x02
0xD3*	Set baud rate to 19200	0x03
0xD4*	Set baud rate to 28800	0x04
0xD5*	Set baud rate to 38400	0x05
0xD6*	Set baud rate to 57600	0x06
0xD7*	Set baud rate to 115200	0x07
0xE0	Repeat One or Repeat All	0x00: Repeat None 0x01: Repeat One 0x02: Repeat All
0xE1	Set current song to play after power on	0x00: Disable 0x01: Enable
0xE3	Return total number of audio files	0x00~0xC8
0xE4	Previous	0x01~0xC8 or 0xF0 (file not existed)
0xE5	Next	0x01~0xC8 or 0xF0 (file not existed)
0xE6	EQ	0x00: Normal 0x01: Rock 0x02: Pop 0x03: Classic 0x04: Jazz 0x05: Country
0xE7	Mute	
0xE8	Volume -	0x01~0x1E
0xE9	Volume +	0x01~0x1E

0xEA	Pause/Play	0x00: Play 0x01: Pause
0xEC	Return total track time of current track (Seconds)	0xXX 0xXX (two bytes) First byte: Low 8 bits Second byte: High 8 bits
0xED	Return current time of track (Seconds)	0xXX 0xXX (two bytes) First byte: Low 8 bits Second byte: High 8 bits
0xEE	Fast Forward	
0xEF	Fast Backward	
0xFA	Stop	
0xFB	Change BUSY pin output status	0x00: Output High when busy 0x01: Output low when busy
	MicroSD card is detected	0xAA
	No Memory card	0xAB
	Song end	0xFF
	Current file number does not exit	0xF1
	Module will be reset within 4s	0xF9

* After sending the 0xD0~0xD7 command code, please reset the module within 2 seconds.

Reset to default setting

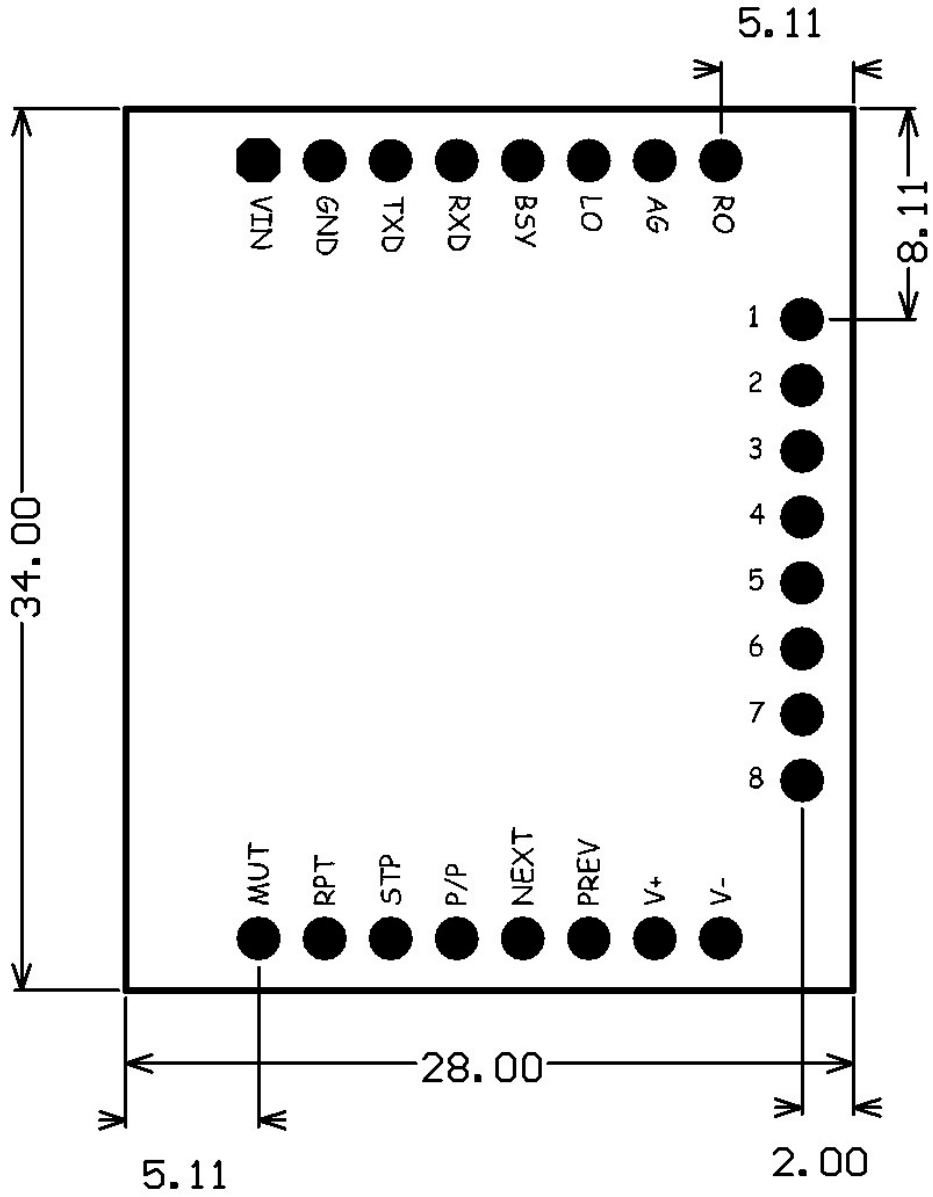
To reset the AU5016 to its default setting, simply short the RST pad to ground for about 3s. The ACT LED should flash all the time until module is reset.



Default Setting Value:

1. Baud Rate: 9600.
2. Disable Play_After_PowerOn.
3. Disable Repeat one or Repeat all.
4. Busy pin outputs high when playing.

Dimensions



Documentations

[1] Sample MP3 files #0~#9 (<http://www.mdply.com/content/downloads/boards/audio/0to9.rar>)

MDFLY

IMPORTANT NOTICE

MDFLY reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein.