
Features

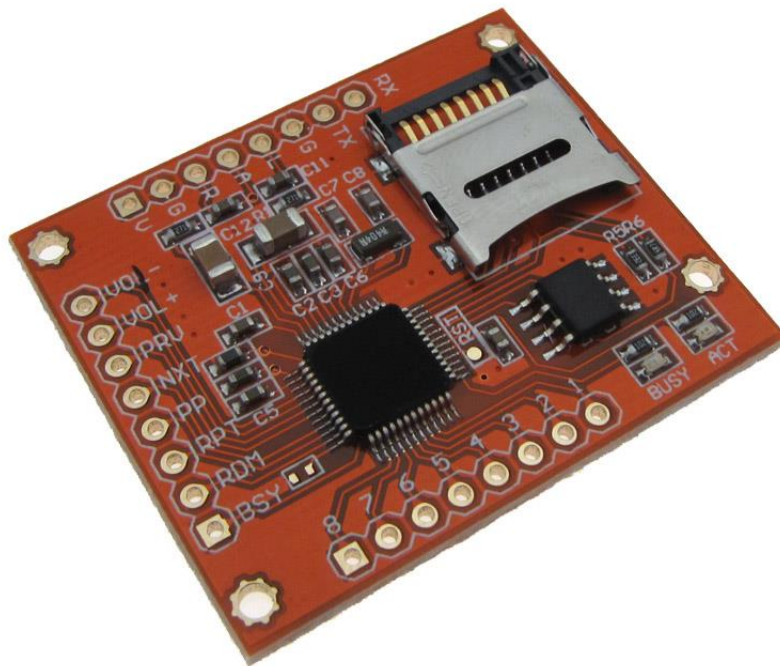
- High performance DSP process core
- High quality on-chip stereo DAC
- Decodes MP3/WAV audio format
- Supports bitrate from 32Kbps to 320Kbps
- Supports MicroSD/HC memory card up to 32GB
- Low-power operation
- Ultra-low background noise
- TTL serial interface and external IO control pins
- Input voltage: 3.3~5VDC
- Compact design

General Description

The AU5017 is designed for use in embedded systems and in customer specific application. It is a fully integrated MicroSD/HC MP3/WAV player module with the ability to decode MPEG Layer-3 (MP3) audio file and lossless WAV file. It can be controlled by buttons and digital inputs or via the TTL serial interface. It contains a high-performance DSP process core and a high-quality stereo DAC that providing high sound quality output.

The AU5017 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	3.15	5.5	V
TTL Voltage	3.2	3.4	V

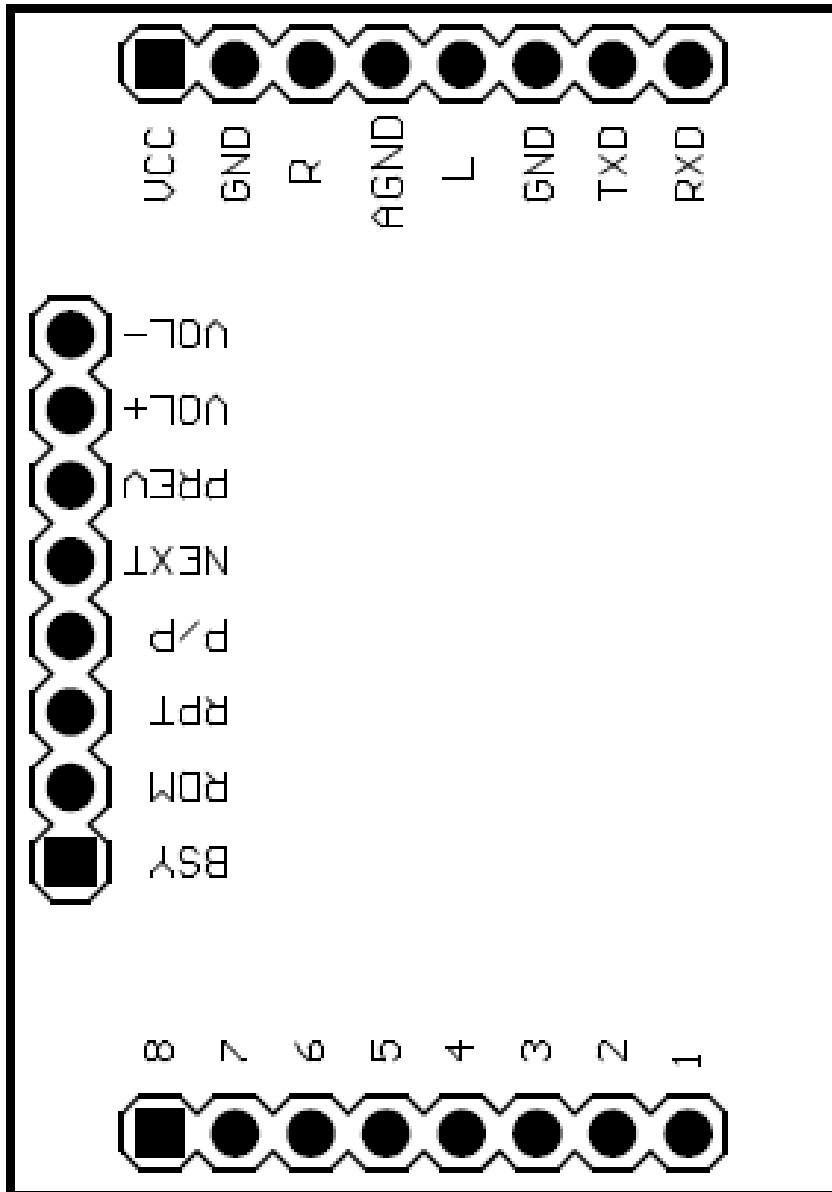
Recommended Operating Conditions

Parameter	Min	Type	Max	Unit
Operating Voltage	3.15	5	5.5	V
TTL Voltage		3.3		V
Operating Temperature	0		+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



Pin Name	Function
1*	Trigger Song#X001.mp3 (X is the index number 1-6, see details below)
2*	Trigger Song#X002.mp3
3*	Trigger Song# X003.mp3
4*	Trigger Song# X004.mp3
5*	Trigger Song# X005.mp3
6*	Trigger Song# X006.mp3
7*	Trigger Song# X007.mp3
8*	Trigger Song# X008.mp3
BUSY	BUSY output (active high)
RDM*	Random play
RPT*	Repeat One or Repeat All
P/P*	Pause/Play
NEXT*	Play next song
PREV*	Play previous song
VOL+*	Volume +
VOL-*	Volume -
VCC	Supply power input (3.3~5VDC)
GND	Power ground
R	Audio Right Channel output
AGND	Audio Ground
L	Audio Left Channel output
GND	Power ground
TXD	TTL TX
RXD	TTL RX

*All Control pins are active low.

MP3 File Naming Rules

(One bit) Index number + (three bit) Song number

The AU5017 supports up to 1200 (6x200) mp3 files. Index number range: 1~6. Song number range: 1~200

Each file stored in the MicroSD Card's memory MUST be named as follows: XSSS.MP3, where "X" is the 1-digit Index Number, "SSS" is the 3-digit Song Number.





6001



6002



6003



6004



6005



6200

Serial Control via TTL interface

K1 to K8 are used as input pins for triggering track X001.mp3 to X008.mp3. (X is index number, selected by serial command 0xF1~0xF6.) For instance: If current index number is set to 1, K1 will trigger 1001.mp3, K2 will trigger 1002.mp3 and K8 will trigger 1008.mp3.

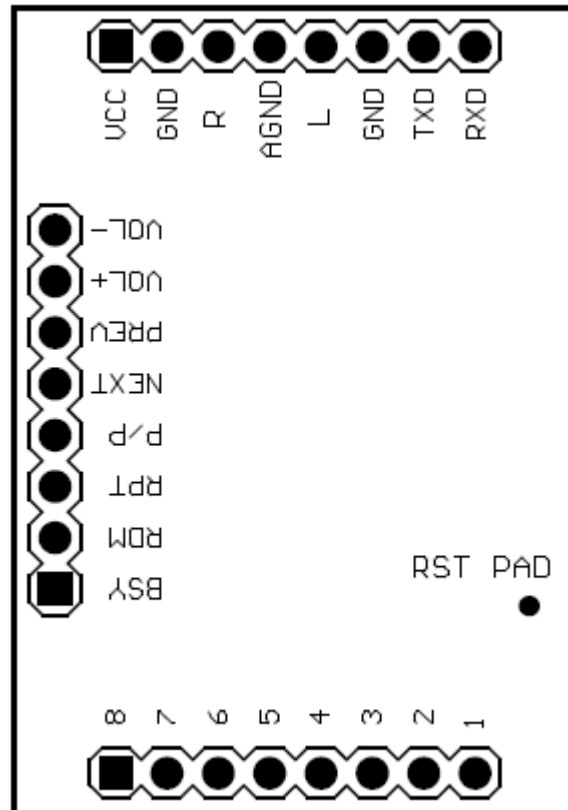
Baud Rate Format: baud rate + 8 data bits + parity of None + 1 stop bit (9600-8-N-1)
Control commands: (Hexadecimal format, one byte)

Command	Function	Return Code (HEX)
0x01~0xC8	Play track X001.mp3 ~ X200.mp3	0X XX (two bytes) 0X: Index number XX: Track number
0xD0	Set baud rate to 4800	0x00
0xD0	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 One 0x01: Repeat All
0xE1	After power on, it will play the 1001.mp3 automatically	0x00: Disable 0x01: Enable
0xE2	Continues to play	0x00: Disable 0x01: Enable
0xE3	Return total number of MP3 files	0x00~0xC8
0xE4	Previous	0x01~0xC8 or 0xFF (file not existed)
0xE5	Next	0x01~0xC8 or 0xFF (file not existed)
0xE6	EQ	
0xE7	Mute	
0xE8	Volume -	0x01~0x1E
0xE9	Volume +	0x01~0x1E

0xEA	Pause/Play	0x00: Pause 0x01: Play
0xEB	Random play	0x01~0xC8 or 0xFF (file not existed)
0xEC	Return total track time of current track	0xXX 0xXX (two bytes) First byte: Minute Second byte: Second
0xED	Return current time of track	0xXX 0xXX (two bytes) First byte: Minute Second byte: Second
0xEE	Fast Forward	
0xEF	Fast Backward	
0xFA	Stop	
0xFB	Change BUSY pin output status	0x00: Active high 0x01: Active low
0xF1	Select Index No. 1	0x01
0xF2	Select Index No. 2	0x02
0xF3	Select Index No. 3	0x03
0xF4	Select Index No. 4	0x04
0xF5	Select Index No. 5	0x05
0xF6	Select Index No. 6	0x06
0xFE	Save Current Index No. to Memory.	0x01~0x06

Reset to default setting

To reset the AU5017 to its default setting, simply short the RST pad to ground for 1s. The ACT LED and BUSY LED should flash alternately.



Default Setting Value:

1. Baud Rate: 9600
2. Disable Play_After_PowerOn
3. Disable Continues to play
4. Set index number to No. 1

Documentations

[1] Sample MP3 files #0~#9 (<http://mdfly.net/Download/Module/AU5016-SampleMus.rar>)

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