

TP6902

USB Audio Controller

Data Sheet

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AMENDMENT HISTORY

Version	Date	Description
V1.0	April, 2005	New release
V1.1	July, 2005	Modify SOP, Skinny DIP to HSOP.
V1.2	Jan, 2008	Modify PIN DESCRIPTION in FEATURE section
V1.3	Mar, 2008	Omit the contents in ELECTRICAL PARAMETER about Maximum Audio Output Current per Channel @ 4ohm Load
V1.4	JAN,2012	Add Ordering Information table.

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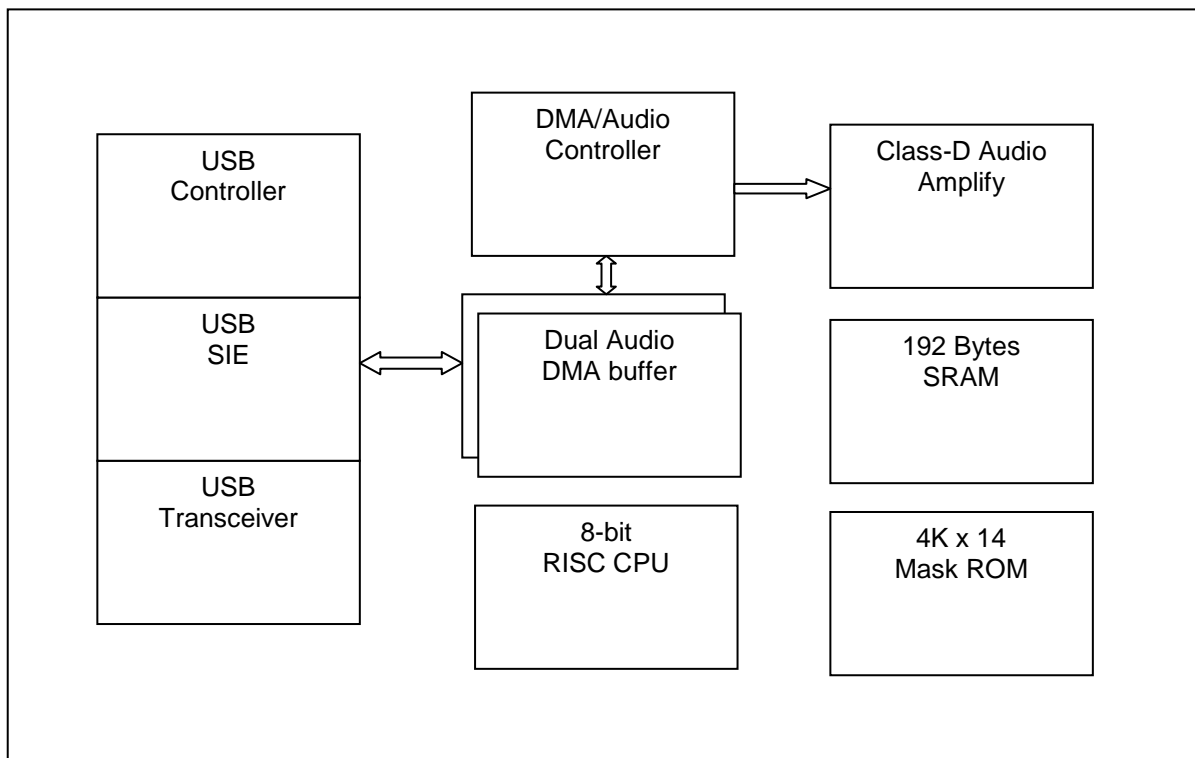
GENERAL DESCRIPTION

The TP6902 is an 8-bit micro-controller embedded device tailored to the USB audio application. It is able to play two channels PC audio through Full-Speed USB bus.

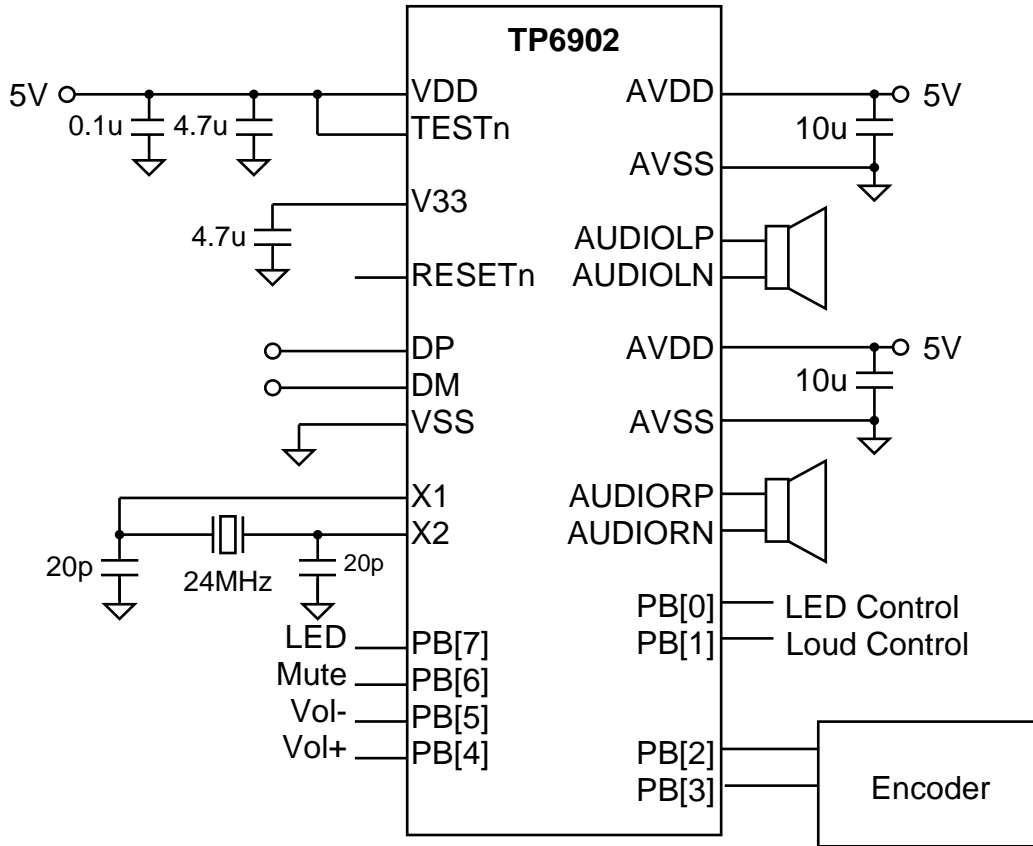
FEATURE

- Compliance with the Universal Serial Bus specification v2.0 Full-Speed
- Built-in USB Transceiver & 3.3V Regulator
- Isochronous transfer with adaptive synchronization
- High performance 48KHz sampling rate for audio playback
- Two channel audio Class-D Amplify for speaker driving
- Support USB Suspend function
- 24MHz crystal oscillation
- 28 pin package

BLOCK DIAGRAM



APPLICATION CIRCUIT



ABSOLUTE MAXIMUM RATINGS

GND = 0V

Name	Symbol	Range	Unit
Maximum Supply Voltage	VDD	-0.3 to 5.5	V
Maximum Input Voltage	Vin	-0.3 to VDD+0.3	V
Maximum output Voltage	Vout	-0.3 to VDD+0.3	V
Maximum Operating Temperature	Topg	-20 to +70	°C
Maximum Storage Temperature	Tstg	-25 to +125	°C

OPERATING CONDITION

at Ta = -20 °C to 70°C, GND= 0V

Name	Symb.	Min.	Typ.	Max.	Unit
Supply Voltage	VDD5	4.5		5.5	V
Input "H" Voltage	Vih	4.0		5.5	V
Input "L" Voltage	Vil	0		0.8	V
Crystal frequency	Fosc		24		MHz

ELECTRICAL PARAMETER

at Ta = -20 °C to 70°C, GND = 0V

Name	Symb.	Typ	Unit
Maximum Audio Output Current per Channel @ 8ohm Load	Iout	346	mA

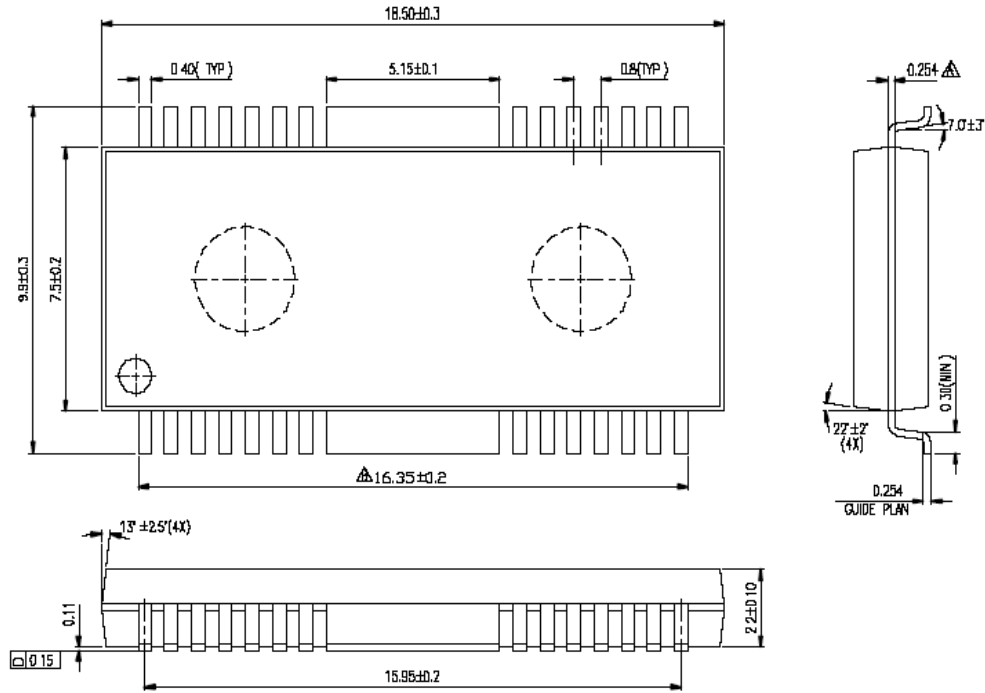
DC ELECTRICAL CHARACTERISTICS:

at Ta = -25 °C, VDD5 = 5.0V, VSS = 0V, Fosc = 24MHz

Name	Symb.	Min.	Typ.	Max.	Unit	Condition	Note
Operating current	Icc		40		mA	Fosc=24MHz	Audio playing
Suspend current	Isus		300		uA		
PB Output High Voltage	Vboh1		4.5		V	Ioh=4mA	Only one clock time
	Vboh2		4.0		V	Ioh=40uA	
PB Output Low Voltage	Vbol		0.4		V	Iol=10mA	
Audio Output High Voltage		4.0			V	Ioh=200mA	Max. scale volume
Audio Output Low Voltage				0.8	V	Iol=200mA	Max. scale volume
V33 output voltage	V3o	3.2		3.4	V	VDD5=5V	

PACKAGE INFORMATION

- HSOP 300mil



△*NOTES : DIMENSION "D" DOES NOT INCLUDE MOLD FLASH , PROTRUSIONS OR GATE BURRS. MOLD FLASH , PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED 0.15 MM PER SIDE

TITLE HSOP 28L PACKAGE OUTLINE BODY WIDTH : 300 MIL		UNIT	MM	QTY	
DESIGNED	SANDY CHEN 97.12.05	CHECKED	C.C. CHO 97.12.06	APPROVED	C.C. CHO 00.01.20
FILE NAME :	P4F028P1				
ANGULAR	± 1°	ROUGHNESS	✓	SCALE	1D 1

Ordering Information

The ordering information:

Ordering number	Package
TP6902-201-54-X	HSOP 28-pin (300 mil)

Note: "-X" represents the package material:

- Package material: Pb-free Code: W
- Package material: Green Package Code: G