

### Features

- Single power supply voltage: 3V~5V
- Low power consumption
- Low distortion
- Low clock jitter sensitivity
- High SNR ratio and dynamic range
- Low harmonic distortion
- Wide temperature range
- Control feature for click and Pops
- On-chip digital de-emphasis for 32, 44.1 and 48kHz
- 16-pin NSOP package

### Applications

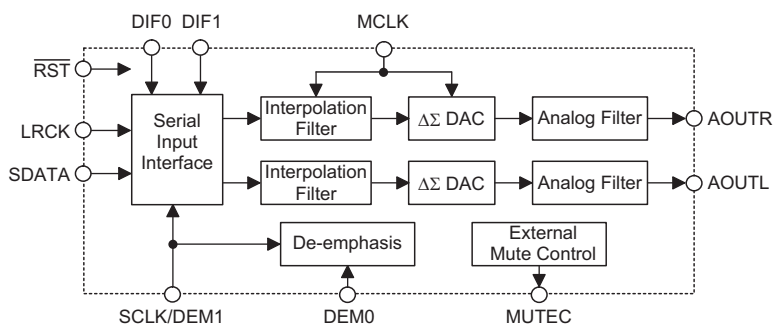
- DVD players
- Home theater systems
- Digital TV
- Digital set top boxes
- MP3 players
- CD players
- Automotive systems

### General Description

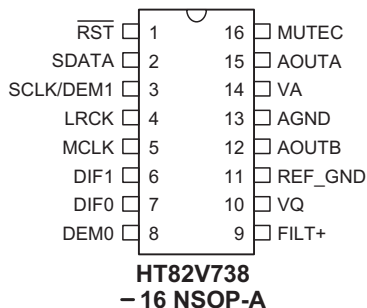
The HT82V738 is a high performance audio DAC converter. It provides digital de-emphasis (32, 44.1 and 48kHz), external mute control and adjustment for serial data and clock. The HT82V738 accepts data at audio rates up to 96kHz. It performs within a wide dynamic

range, high SNR ratio and has low clock jitter sensitivity. HT82V738 is an ideal DAC for DVD players, MP3 players and set-top box systems. It is also pin-compatible with CS4340.

### Block Diagram



### Pin Assignment



**Pin Description**

Pin No.	Pin Name	I/O	Description																																																				
1	RST	I	Reset																																																				
2	SDATA	I	Serial data																																																				
3	SCLK/DEM1	I	Serial clock/de-emphasis																																																				
4	LRCK	I	Left/right clock																																																				
5	MCLK	I	Master clock																																																				
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10	VQ	I	Quiescent voltage																																																				
11	REF_GND	I	Reference ground																																																				
12	AOUTB	O	Analog output B																																																				
13	AGND	I	Analog ground																																																				
14	VA	I	Analog power																																																				
15	AOUTA	O	Analog output A																																																				
16	MUTEC	O	Mute control																																																				

**Absolute Maximum Ratings**

Supply Voltage .....	$V_{SS}-0.3V$ to $V_{SS}+6.0V$	Storage Temperature .....	$-50^{\circ}C$ to $125^{\circ}C$
Input Voltage .....	$V_{SS}-0.3V$ to $V_{DD}+0.3V$	Operating Temperature .....	$-10^{\circ}C$ to $70^{\circ}C$

Note: These are stress ratings only. Stresses exceeding the range specified under "Absolute Maximum Ratings" may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

**Electrical Characteristics**
**Analog Characteristics**
 $T_a = -10^{\circ}C$  to  $70^{\circ}C$ 

Symbol	Parameter	Test Conditions		Base-rate Mode			High-rate Mode			Unit
		$V_{DD}$	Conditions	Min.	Typ.	Max.	Min.	Typ.	Max.	
<b>Dynamic Performance</b>										
	Dynamic Range (18~24-bit)	5V	Unweighted	—	93	—	—	92	—	dB
			A-weighted	—	95	—	—	95	—	
	Dynamic Range (16-bit)		Unweighted	—	91	—	—	88	—	
			A-weighted	—	94	—	—	94	—	
THD+N	Total Harmonic Distortion+Noise (18~24-bit)	5V	—	—	-88	—	—	-88	—	dB
	Total Harmonic Distortion+Noise (16-bit)		—	—	-86	—	—	-86	—	
	Interchannel Isolation	5V	—	—	90	—	—	90	—	dB
<b>Dynamic Performance</b>										
	Dynamic Range (18~24-bit)	3V	Unweighted	—	91	—	—	90	—	dB
			A-weighted	—	94	—	—	91	—	
	Dynamic Range (16-bit)		Unweighted	—	90	—	—	88	—	
			A-weighted	—	92	—	—	90	—	
THD+N	Total Harmonic Distortion+Noise (18~24-bit)	3V	—	—	-88	—	—	-88	—	dB
	Total Harmonic Distortion+Noise (16-bit)		—	—	-86	—	—	-86	—	
	Interchannel Isolation	3V	—	—	90	—	—	90	—	dB

**Analog Characteristics**

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		$V_{DD}$	Conditions				
<b>Analog Output</b>							
	Full Scale Output Voltage	—	—	—	0.7VA	—	$V_{PP}$
$V_Q$	Quiescent Voltage	—	—	—	0.5VA	—	VDC
	Interchannel Gain Mismatch	—	—	—	0.1	—	dB
	Gain Drift	—	—	—	100	—	ppm/ $^{\circ}C$
$R_L$	AC-load Resistance	—	—	3	—	—	k $\Omega$
$C_L$	Load Capacitance	—	—	—	—	100	pF

**Digital Characteristics**

Ta=-10°C to 70°C

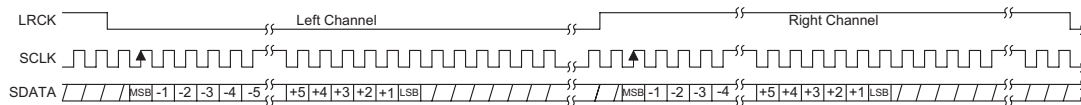
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		V <sub>DD</sub>	Conditions				
V <sub>IH</sub>	High-level Input Voltage	5V	—	2.0	—	—	V
		3V	—	2.0	—	—	V
V <sub>IL</sub>	Low-level Input Voltage	5V	—	—	—	0.8	V
		3V	—	—	—	—	V
I <sub>IN</sub>	Input Leakage Current	—	—	—	—	±10	μA
	Input Capacitance	—	—	—	8	—	pF
<b>Power Ratio</b>							
V <sub>A</sub>	DC Power Supply	—	—	2.7	5.0	5.5	V
V <sub>IND</sub>	Digital Input Voltage	—	—	-0.3	—	V <sub>A</sub> +0.4	mA

**Power Characteristics**

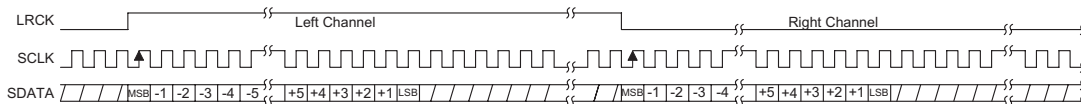
Symbol	Parameter	Test Conditions		Base-rate Mode			High-rate Mode			Unit
		V <sub>DD</sub>	Conditions	Min.	Typ.	Max.	Min.	Typ.	Max.	
I <sub>A</sub>	Power Supply Current	3V	Normal	—	10	—	—	10	—	mA
			Power-down	—	30	—	—	30	—	μA
		5V	Normal	—	15	—	—	15	—	mA
			Power-down	—	60	—	—	60	—	μA
I <sub>A</sub>	Power Dissipation	3V	Normal	—	30	—	—	30	—	mW
			Power-down	—	0.09	—	—	0.09	—	
		5V	Normal	—	75	—	—	75	—	mW
			Power-down	—	0.3	—	—	0.3	—	

**Timing Diagrams**
**I<sup>2</sup>S Mode**

- 16-bit data and INT SCLK=32Fs, MCLK/LRCK=512, 256 or 128
- Up to 24-bit data and SCLK=48Fs, MCLK/LRCK=384 or 192

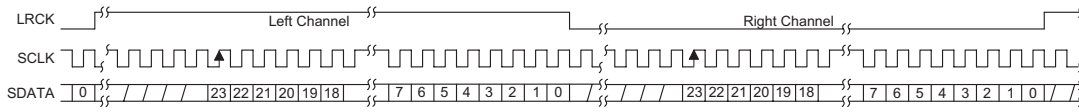

**Left Justified 24-Bit Mode**

- INT SCLK=64Fs, MCLK/LRCK=512, 256 or 128
- INT SCLK=48Fs, MCLK/LRCK=384 or 192



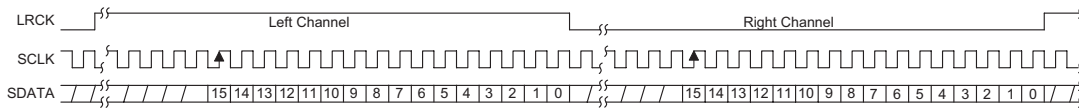
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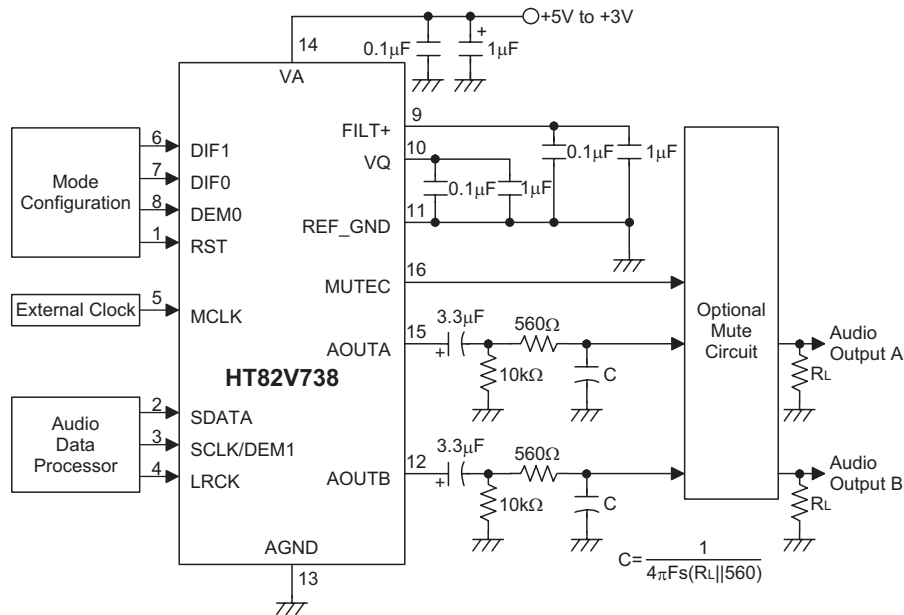


**Right Justified 16-Bit Mode**

- INT SCLK=32Fs, MCLK/LRCK=512, 256 or 128
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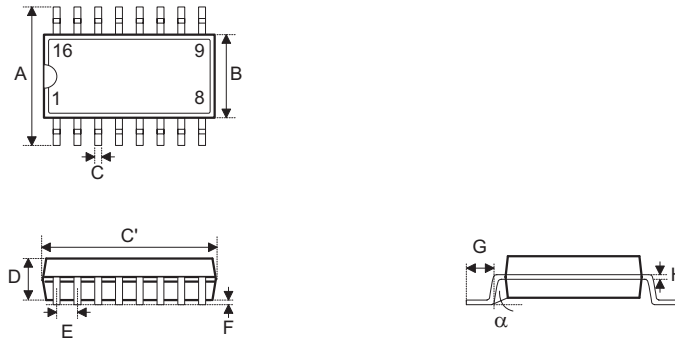


**Application Circuits**



**Package Information**

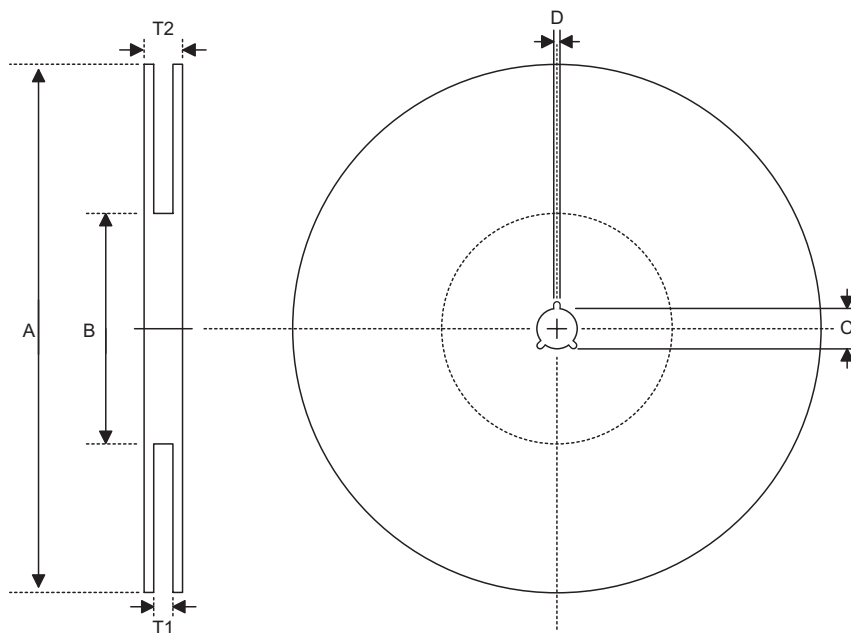
**16-pin NSOP (150mil) Outline Dimensions**



Symbol	Dimensions in mil		
	Min.	Nom.	Max.
A	228	—	244
B	149	—	157
C	14	—	20
C'	386	—	394
D	53	—	69
E	—	50	—
F	4	—	10
G	22	—	28
H	4	—	12
$\alpha$	0°	—	10°

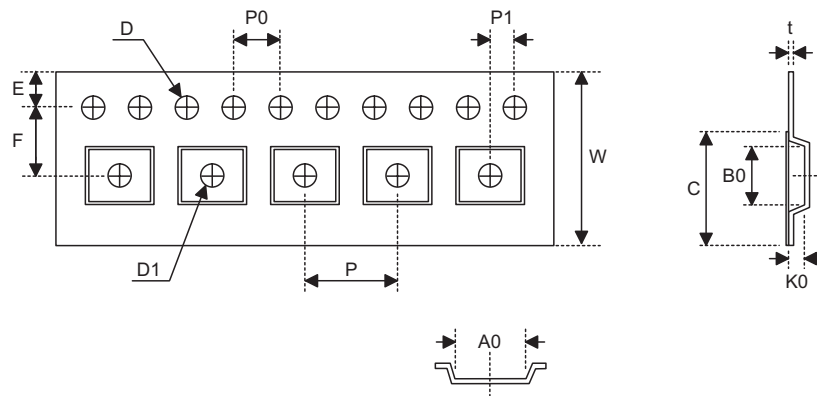
**Product Tape and Reel Specifications**

**Reel Dimensions**



SOP 16N (150mil)

Symbol	Description	Dimensions in mm
A	Reel Outer Diameter	330±1.0
B	Reel Inner Diameter	62±1.5
C	Spindle Hole Diameter	13.0+0.5 -0.2
D	Key Slit Width	2.0±0.5
T1	Space Between Flange	16.8+0.3 -0.2
T2	Reel Thickness	22.2±0.2

**Carrier Tape Dimensions**

**SOP 16N (150mil)**

Symbol	Description	Dimensions in mm
W	Carrier Tape Width	16.0±0.3
P	Cavity Pitch	8.0±0.1
E	Perforation Position	1.75±0.1
F	Cavity to Perforation (Width Direction)	7.5±0.1
D	Perforation Diameter	1.55±0.1
D1	Cavity Hole Diameter	1.5±0.25
P0	Perforation Pitch	4.0±0.1
P1	Cavity to Perforation (Length Direction)	2.0±0.1
A0	Cavity Length	6.5±0.1
B0	Cavity Width	10.3±0.1
K0	Cavity Depth	2.1±0.1
t	Carrier Tape Thickness	0.3±0.05
C	Cover Tape Width	13.3



**Holtek Semiconductor Inc. (Headquarters)**

No.3, Creation Rd. II, Science-based Industrial Park, Hsinchu, Taiwan  
Tel: 886-3-563-1999  
Fax: 886-3-563-1189  
<http://www.holtek.com.tw>

**Holtek Semiconductor Inc. (Sales Office)**

4F-2, No. 3-2, YuanQu St., Nankang Software Park, Taipei 115, Taiwan  
Tel: 886-2-2655-7070  
Fax: 886-2-2655-7373  
Fax: 886-2-2655-7383 (International sales hotline)

**Holtek Semiconductor (Shanghai) Inc.**

7th Floor, Building 2, No.889, Yi Shan Rd., Shanghai, China  
Tel: 021-6485-5560  
Fax: 021-6485-0313  
<http://www.holtek.com.cn>

**Holtek Semiconductor (Hong Kong) Ltd.**

Block A, 3/F, Tin On Industrial Building, 777-779 Cheung Sha Wan Rd., Kowloon, Hong Kong  
Tel: 852-2-745-8288  
Fax: 852-2-742-8657

**Holmate Semiconductor, Inc.**

46712 Fremont Blvd., Fremont, CA 94538  
Tel: 510-252-9880  
Fax: 510-252-9885  
<http://www.holmate.com>

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