



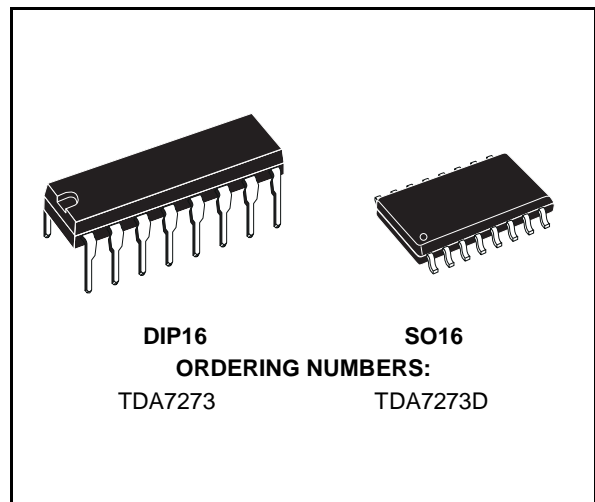
# TDA7273

## SINGLE CHIP STEREO CASSETTE PLAYBACK SYSTEM

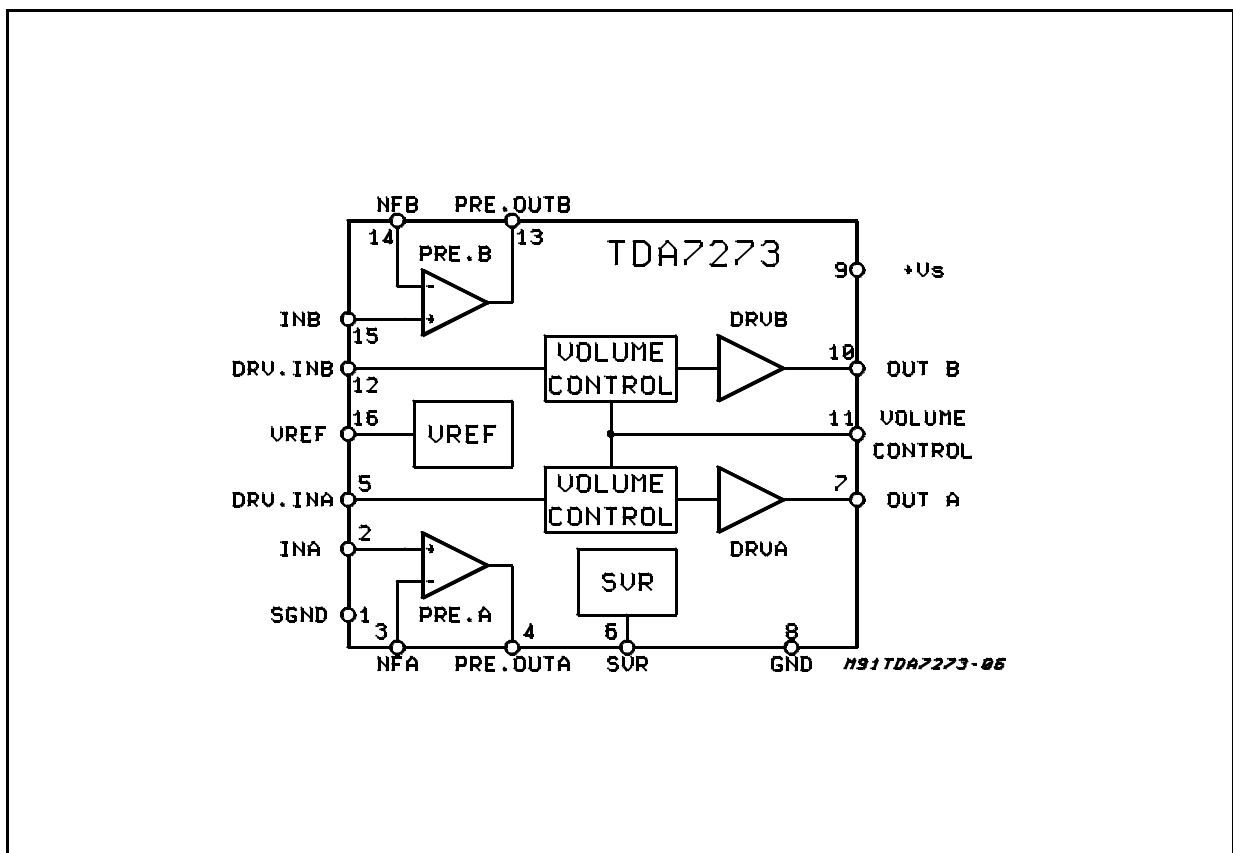
- WIDE OPERATING SUPPLY VOLTAGE (1.8V to 7V)
- INPUT COUPLING WITHOUT CAPACITORS
- BUILT-IN DC STEREO VOLUME CONTROL
- BUILT-IN RIPPLE FILTERS
- LOW QUIESCENT CURRENT
- NO EXTERNAL BOUCHEROT CELL
- MAX OUTPUT CURRENT 70mA PEAK

### DESCRIPTION

The TDA7273 is a monolithic integrated circuit designed for portable cassette players market. It comprises preamplifiers, DC volume control, and headphone drivers.



### BLOCK DIAGRAM



# TDA7273

## ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Test Conditions	Unit
$V_S$	Supply Voltage	9	V
$I_o$	Output Current (max)	70	mA
$T_{op}$	Operating Temperature Range	-20 to 70	°C
$T_{stg}, T_j$	Storage & Junction Temperature Range	-40 to +150	°C

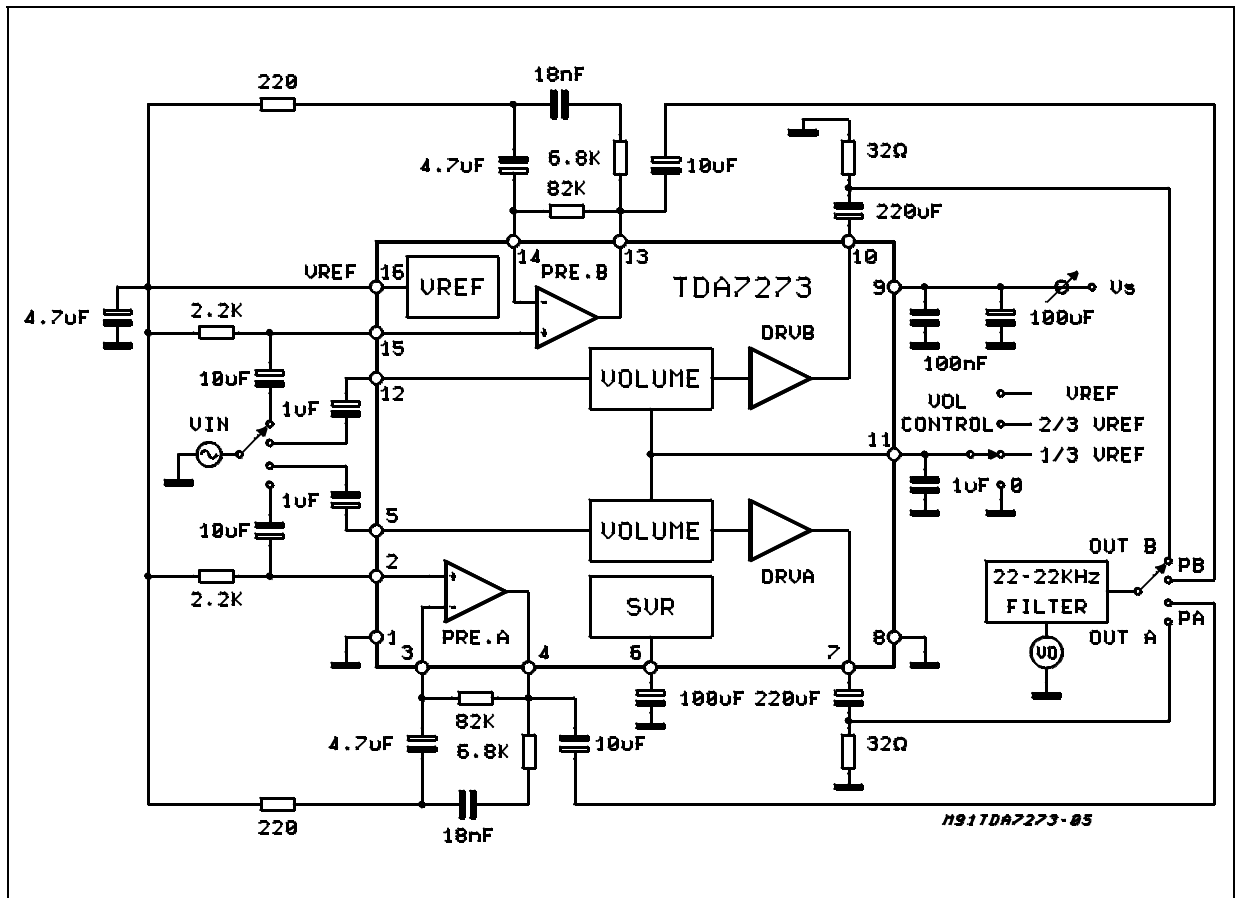
## THERMAL DATA

Symbol	Description	DIP-16	SO-16	Unit
$R_{thj-amb}$	Thermal Resistance Junction-ambient	100	200	°C/W

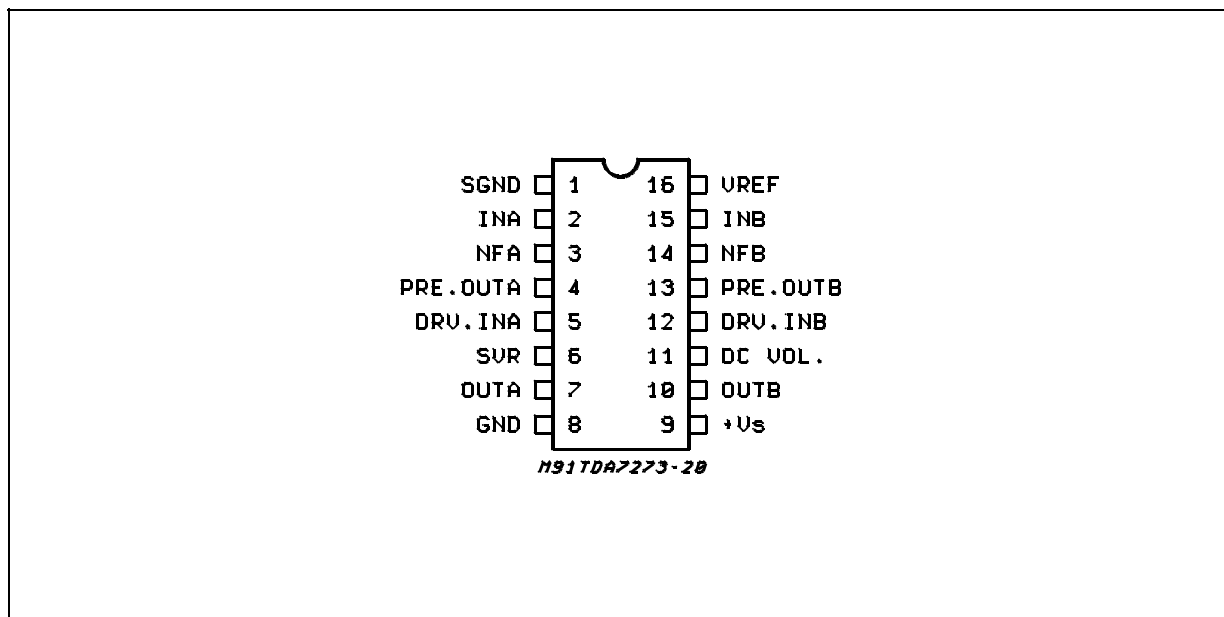
**DC CHARACTERISTICS:**  $T_{amb} = 25^{\circ}C$ ;  $V_S = 3V$ ;  $R_L = 10K\Omega$  (Preamplifier),  $R_L = 32\Omega$  (Headphone);  $V_{IN} = 0$ ;  $V_{OL} control = V_{ref}$

Terminal No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Terminal Voltage (V)	0	1.5	1.5	1.5	1.5	2.7	1.5	0	3	1.5	1.5	1.5	1.5	1.5	1.5	1.5

## TEST CIRCUIT



## PIN CONNECTION (Top view)



**ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25^{\circ}\text{C}$ ,  $V_S = 3\text{V}$ ,  $f = 1\text{KHz}$ ,  $R_L = 32\Omega$  Vol. control =  $2/3V_{ref}$  unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$V_S$	Supply Voltage		1.8		7	V
$I_d$	Quiescent Current			14	20	mA
$V_{ref}$	Reference Voltage		1.3	1.49	1.7	V

## PREAMPLIFIER SECTION

$G_{VO}$	Open Loop Gain			70		dB
$G_V$	Close Loop Gain		30	33	35	dB
$V_o$	Output Voltage	THD = 1%	600	850		mV
$I_b$	Bias Current			3		$\mu\text{A}$
THD	Total Harmonic Distortion	$V_o = 330\text{mVrms}$		0.05	0.25	%
$C_t$	Cross Talk	$R_g = 2.2\text{K}\Omega$ ; $V_o = 330\text{mVrms}$		74		dB
$E_N$	Output Noise	$R_g = 2.2\text{K}\Omega$ ; BW = 22Hz to 22KHz		100		$\mu\text{V}$
SVR	Ripple Rejection	$R_g = 2.2\text{K}\Omega$ $V_R = 100\text{mVrms}$ $f = 100\text{Hz}$ ; $C_{SVR} = 100\mu\text{F}$	40	50		dB

## HEADPHONE DRIVER

$V_{o(DC)}$	DC Output Voltage			1.50		V
$P_o$	Output Power	THD = 10%;	15	30		mW
$P_o$	Transient Output Power	THD = 10% $R_L = 16\Omega$		50		mW
$G_V$	Close Loop Gain	$P_o = 5\text{mW}$	28	31	34	dB
THD	Total Harmonic Distortion	$P_o = 5\text{mW}$		0.2	1	%
$C_t$	Cross Talk	$R_g = 10\text{K}\Omega$ ; $P_o = 5\text{mW}$	40	50		dB
SVR	Ripple Rejection	$V_r = 100\text{mVrms}$ , $f = 100\text{Hz}$ Vol. control = $1/3V_{ref}$ $C_{SVR} = 100\mu\text{F}$ ; $R_g = 600\Omega$		47		dB
	Volume Control Range		66	75		dB

TDA7273

Figure 1: Application Circuit

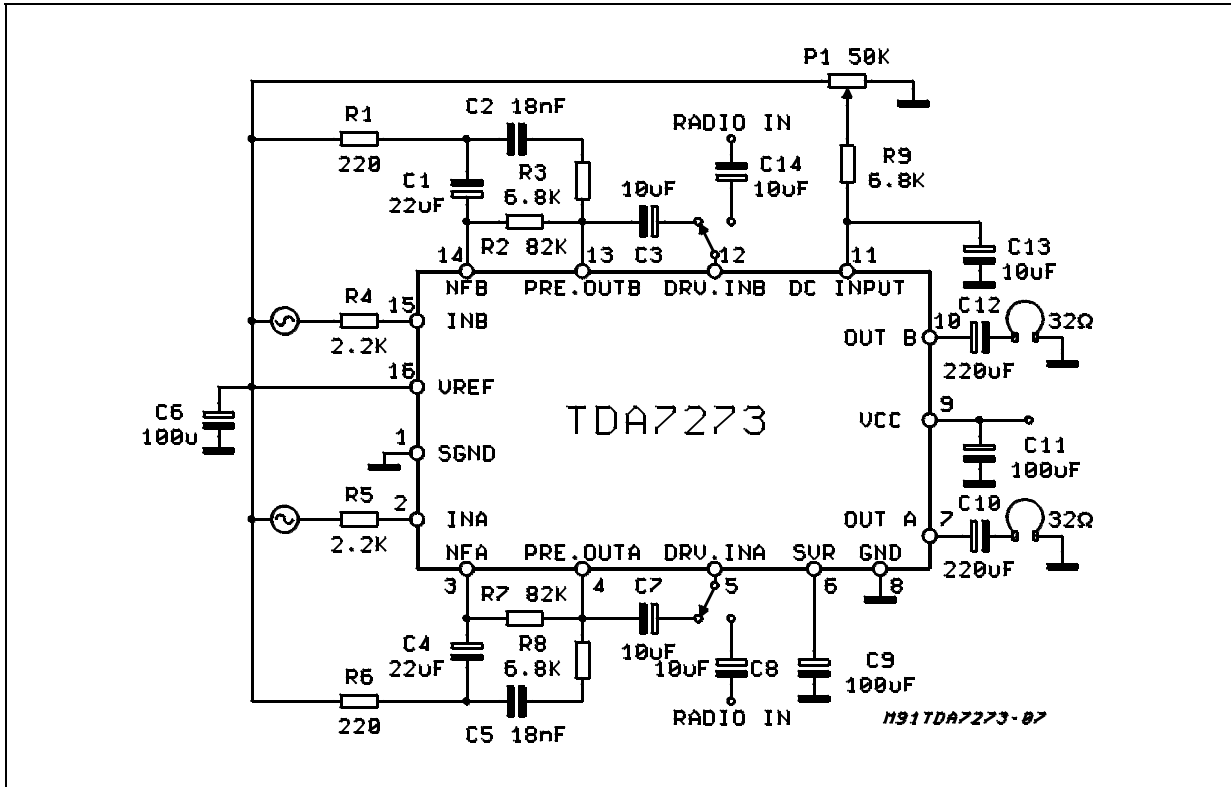
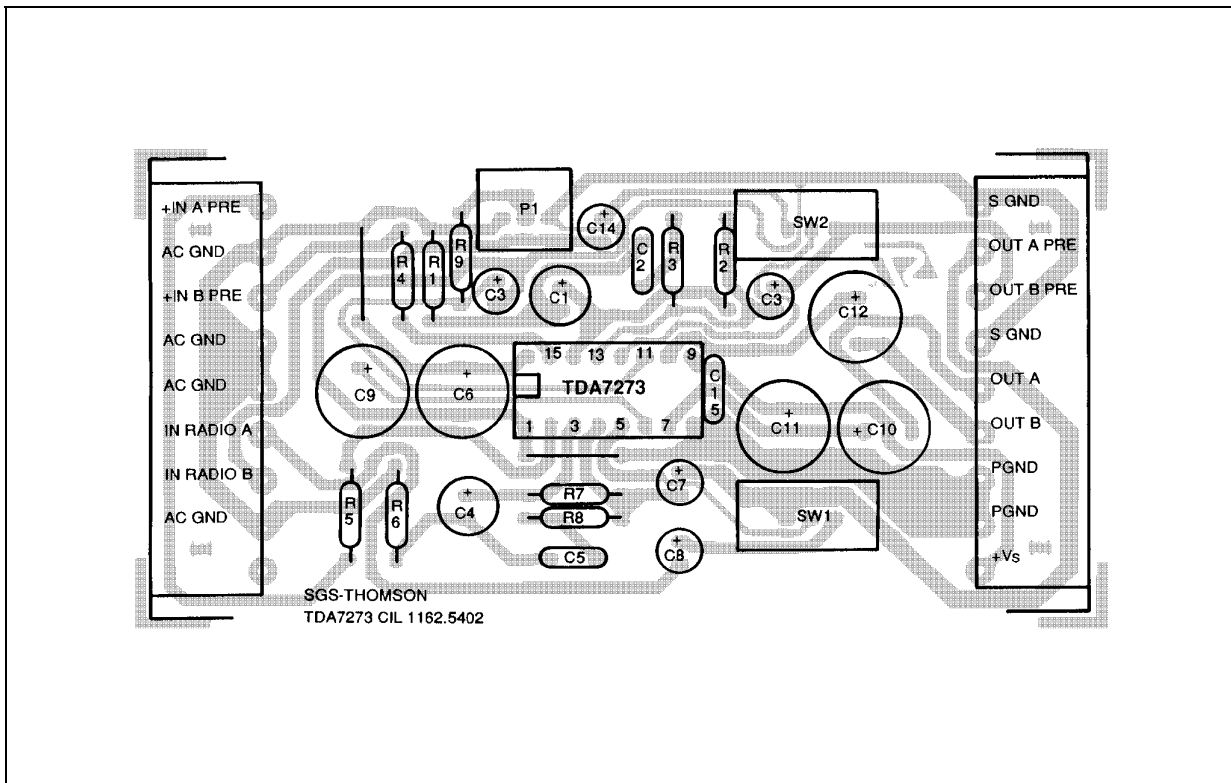
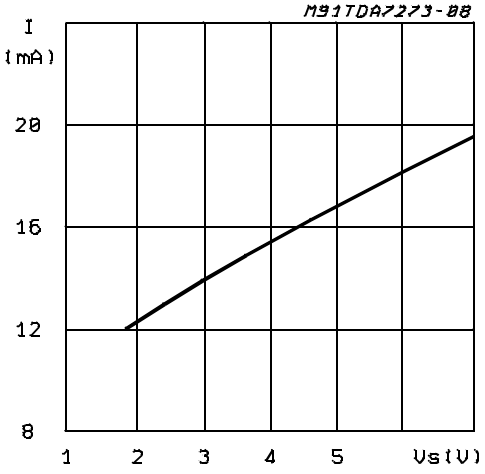


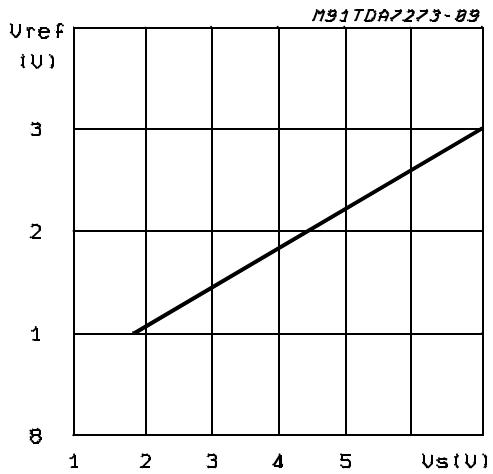
Figure 2: P.C. Board and Component Layout of the Circuit of Figure 1 (1:1 scale)



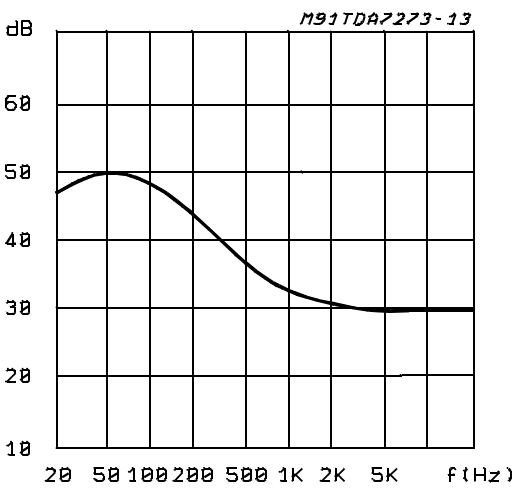
**Figure 3:** Supply Current vs. Supply Voltage (Preamplifier + Driver)



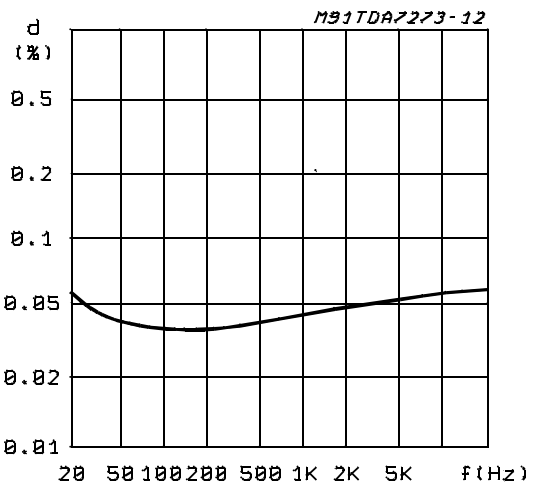
**Figure 4:**  $V_{ref}$  vs. Supply Voltage (pin 16)



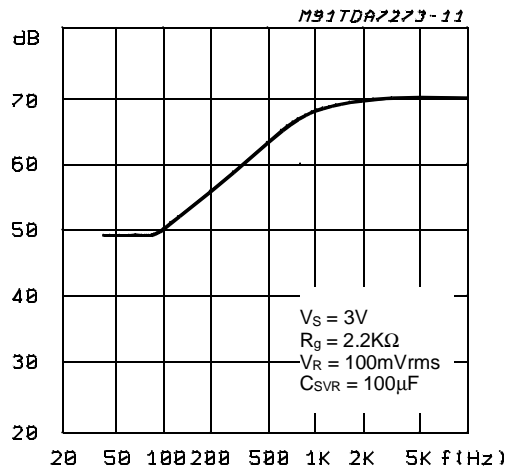
**Figure 5:** Closed Loop Gain vs. Frequency ( $V_S = 3V$ ) (PREAMPLIFIER)



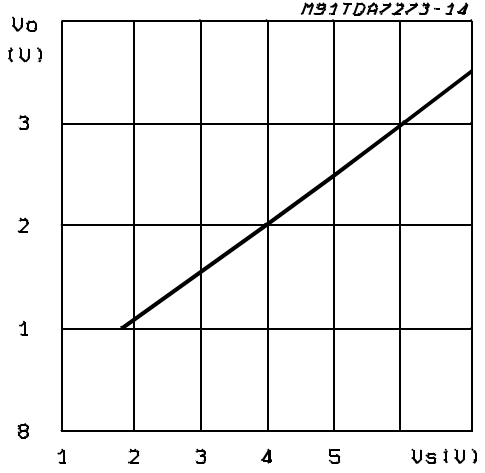
**Figure 6:** THD vs. Frequency ( $V_S = 3V$ ,  $V_O = 330mV_{rms}$ ,  $R_L = 10K\Omega$ ) (PREAMPLIFIER)



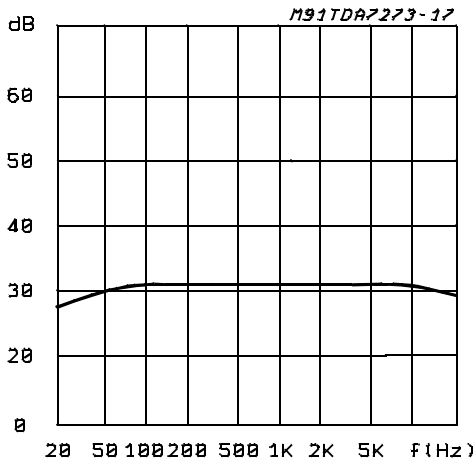
**Figure 7:** SVR vs. Frequency (PREAMPLIFIER)



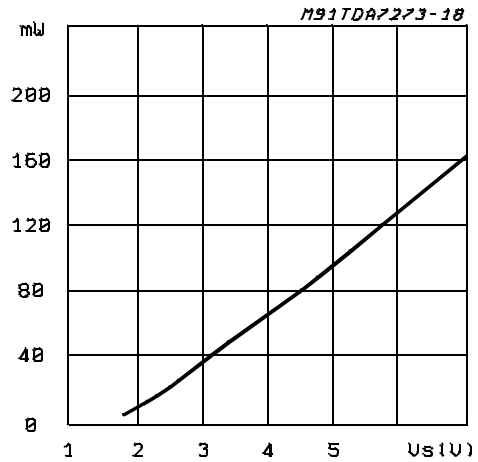
**Figure 8:** Quiescent Output Voltage vs. Supply Voltage (DRIVER)



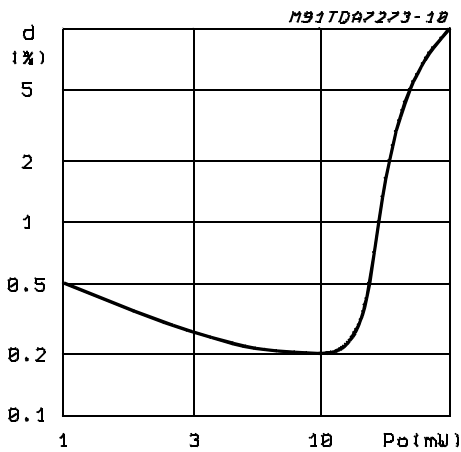
**Figure 9:** Closed Loop Gain vs Frequency ( $V_S = 3V$ ,  $R_L = 32\Omega$ ) (DRIVER)



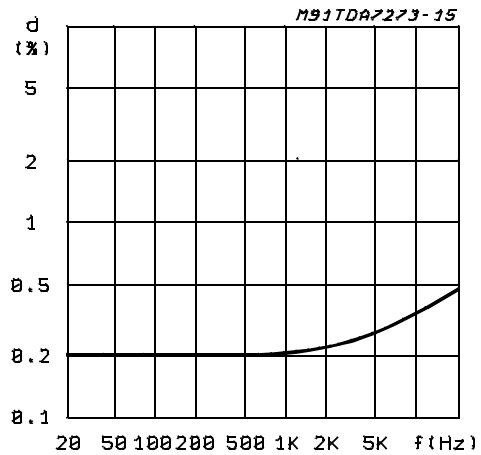
**Figure 10:** Output Power vs. Supply Voltage ( $V_{ol} = 2/3V_{ref}$ ,  $R_L = 32\Omega$ , THD = 10%,  $f = 1KHz$ ) (DRIVER)



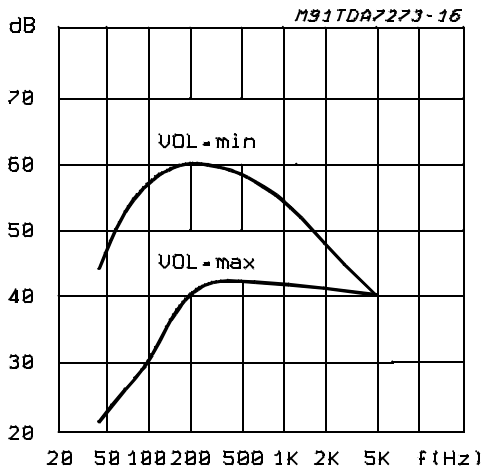
**Figure 11:** THD vs. Output Power ( $V_o = 2/3V_{ref}$ ,  $V_S = 3V$ ,  $R_L = 32\Omega$ ,  $f = 1KHz$ ) (DRIVER)



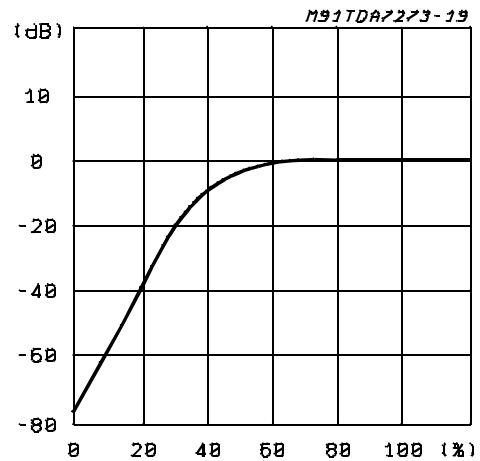
**Figure 12:** THD vs. Frequency ( $P_o = 5mW$ ,  $V_S = 3V$ ,  $R_L = 32\Omega$ ) (DRIVER)



**Figure 13:** SVR vs. Frequency ( $V_S = 3V$  ( $R_L = 32\Omega$ ,  $V_r = 100V_{rms}$ ,  $R_g = 600\Omega$ ,  $C_{SVR} = 100mV$ ) (DRIVER)

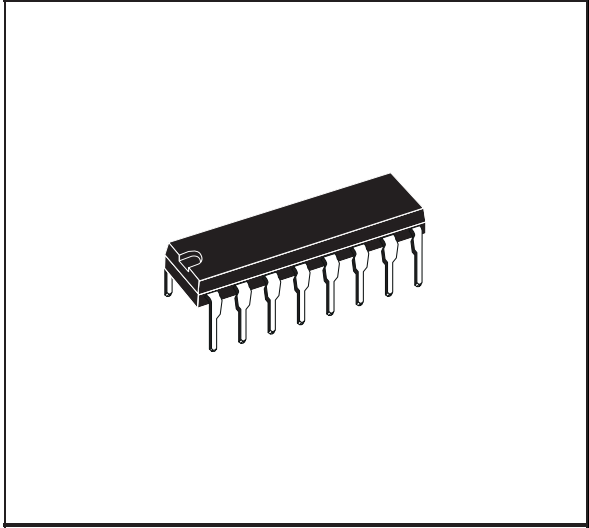


**Figure 14:** Volume Control (0dB = 10mW,  $V_S = 3V$ ,  $R_{vol} = 50K\Omega$ ,  $R_L = 32\Omega$ ,  $f = 1KHz$ ) vs. Volume Setting (DRIVER)

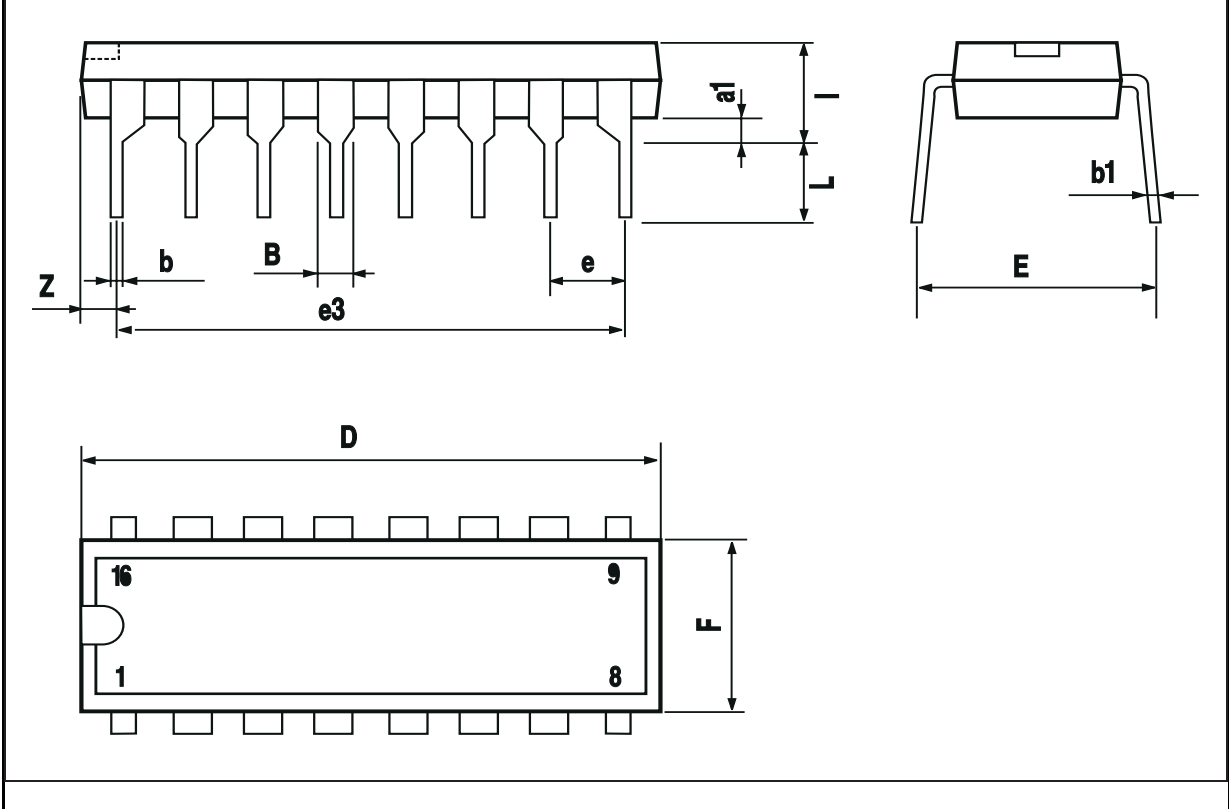


DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
a1	0.51			0.020		
B	0.77		1.65	0.030		0.065
b		0.5			0.020	
b1		0.25			0.010	
D			20			0.787
E		8.5			0.335	
e		2.54			0.100	
e3		17.78			0.700	
F			7.1			0.280
I			5.1			0.201
L		3.3			0.130	
Z			1.27			0.050

**OUTLINE AND MECHANICAL DATA**

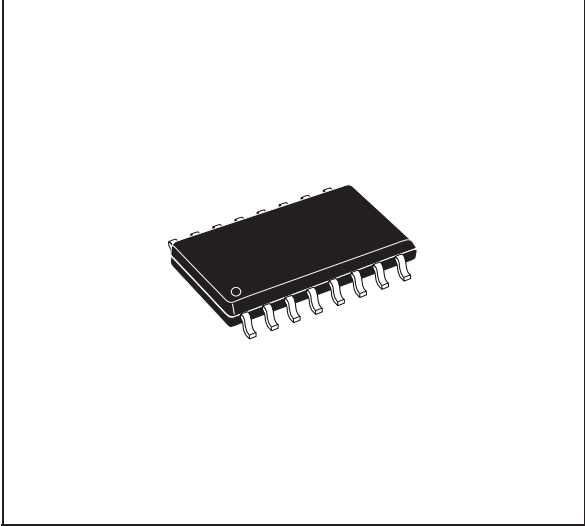


**DIP16**

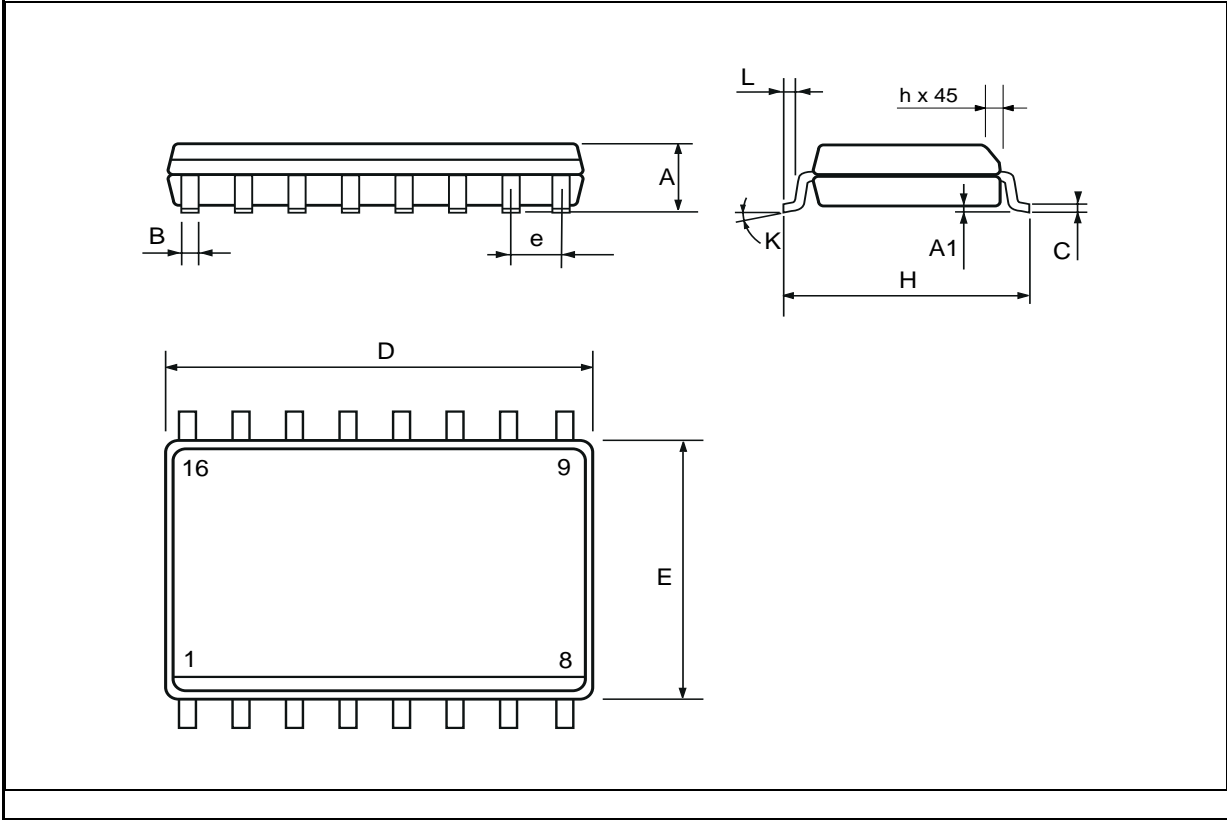


DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	2.35		2.65	0.093		0.104
A1	0.1		0.3	0.004		0.012
B	0.33		0.51	0.013		0.020
C	0.23		0.32	0.009		0.013
D	10.1		10.5	0.398		0.413
E	7.4		7.6	0.291		0.299
e		1.27			0.050	
H	10		10.65	0.394		0.419
h	0.25		0.75	0.010		0.030
L	0.4		1.27	0.016		0.050
K	0° (min.)8° (max.)					

**OUTLINE AND MECHANICAL DATA**



**SO16 Wide**





Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics.  
All other names are the property of their respective owners

© 2003 STMicroelectronics - All rights reserved

**STMicroelectronics GROUP OF COMPANIES**

Australia – Belgium - Brazil - Canada - China – Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan -  
Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States

[www.st.com](http://www.st.com)

