

## BUS-CONTROLLED AUDIO MATRIX SWITCH

- 5 Stereo Inputs
- 4 Stereo Outputs
- Gain Control 0/2/4/6dB/Mute for each Output
- cascadable (2 different addresses)
- Serial Bus Controlled
- Very low Noise
- Very low Distortion

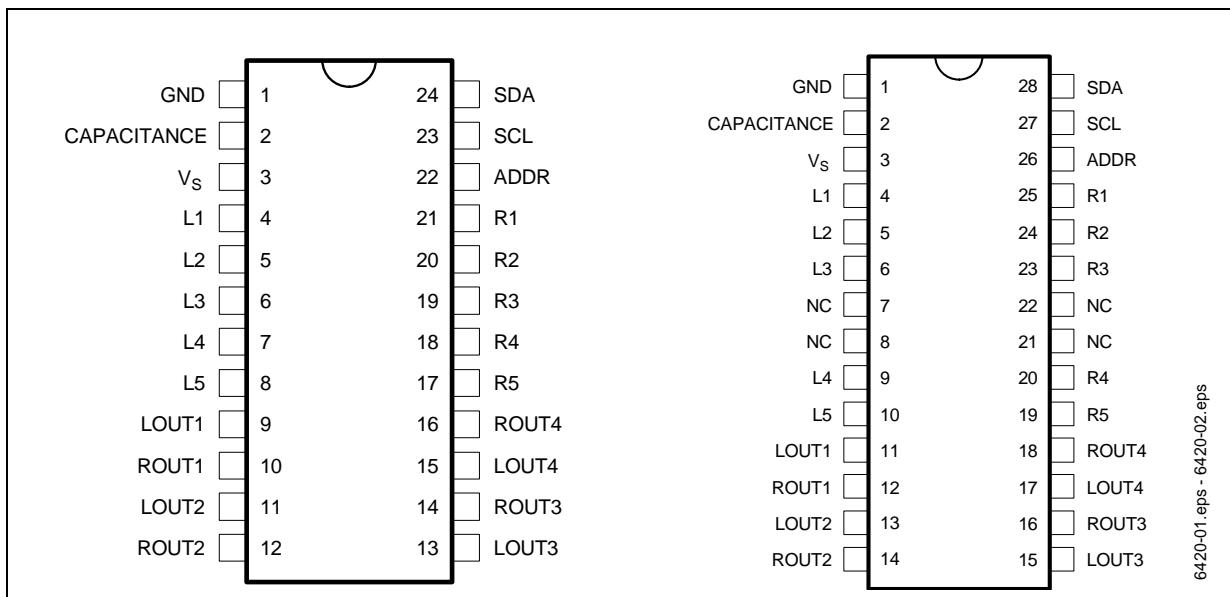
### DESCRIPTION

The TEA6420 switches 5 stereo audio inputs on 4 stereo outputs.

All the switching possibilities are changed through the I<sup>2</sup>C bus.

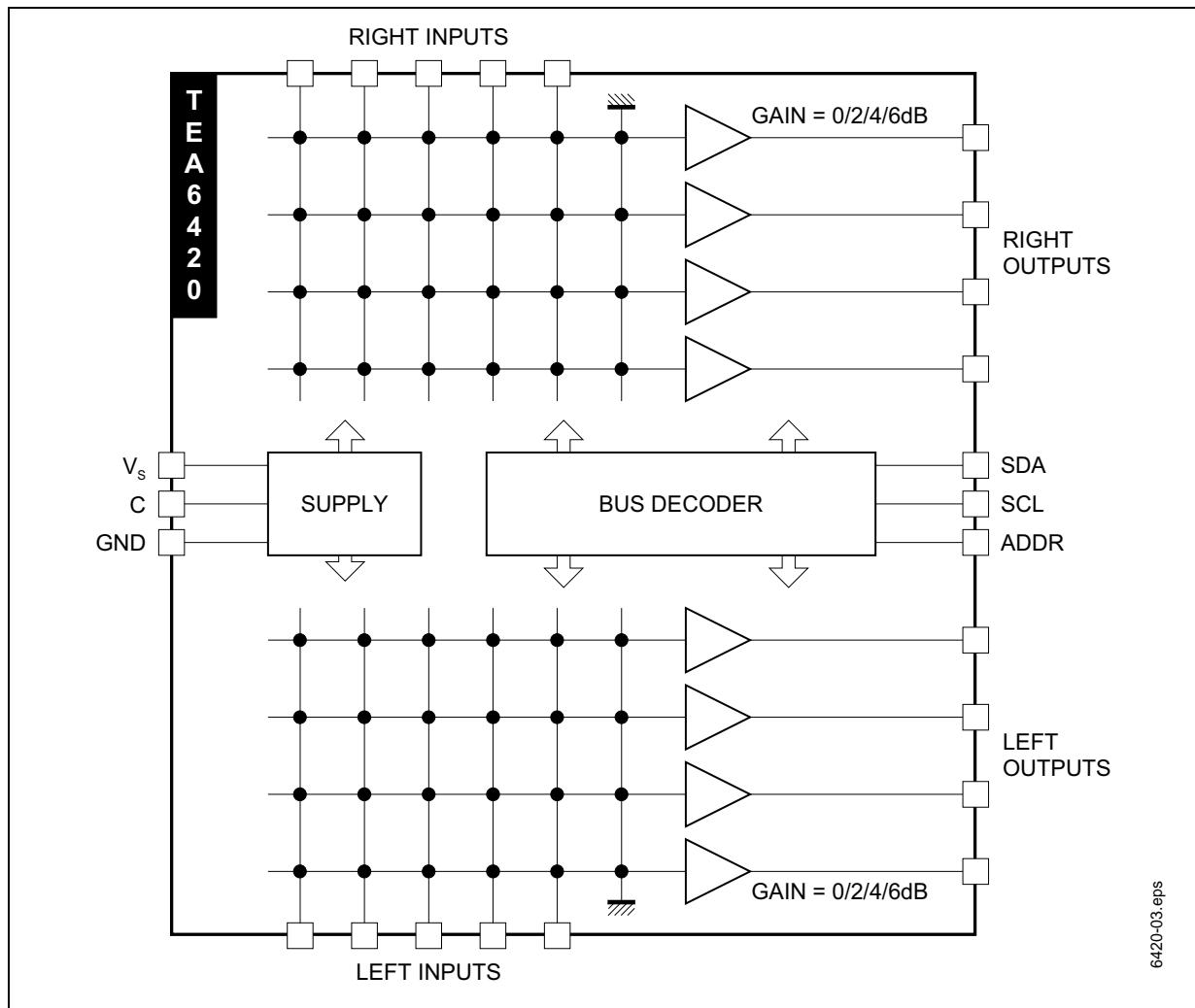


Figure 1. PIN CONNECTIONS



## TEA6420

Figure 2. BLOCK DIAGRAM



## ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CC}$	Supply Voltage (Pin 9)	12	V
$T_{OPER}$	Operating Ambient Temperature Range	0 to +70	°C
$T_{stg}$	Storage Temperature Range	-20 to +150	°C

## THERMAL DATA

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction-Ambient Thermal Resistance SDIP24 SO28	75 75	°C/W

## ELECTRICAL CHARACTERISTICS

$T_A = 25^\circ\text{C}$ ,  $V_S = 10\text{V}$ ,  $R_L = 10\text{k}\Omega$ ,  $R_G = 600\Omega$ ,  $f = 1\text{kHz}$  (unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
SUPPLY						
$V_S$	Supply Voltage		8	9	10.2	V
$I_S$	Supply Current			5	8	mA
SVR	Ripple Rejection	$V_{IN} = 500\text{mV}_{\text{RMS}}$ , BW = 20 - 20kHz	70	80		dB
MATRIX						
$V_{IN}$	Input DC Level		4.5	5	5.5	V
$R_I$	Input Resistance		30	50	100	kΩ
$C_S$	Channel Separation	$V_{IN} = 2V_{\text{RMS}}$ Gain = 0dB $f = 1\text{kHz}$ Gain = 6dB	80 70	90 82		dB dB
OUTPUT BUFFER						
$V_{OUT}$	Output DC Level		4.5	5	5.5	V
$R_{OUT}$	Output Resistance			70	200	W
$e_{NI}$	Input Noise	BW = 20 - 20kHz, flat		3		µV
S/N	Signal to Noise Ratio	$V_{IN} = V_{OUT} = 1V_{\text{RMS}}$		110		dB
$G_{min}$	Min. Gain		-1	0	+ 1	dB
$G_{max}$	Max. Gain		5	6	7	dB
$d$	Distortion	$V_{IN} = V_{OUT} = 1V_{\text{RMS}}$		0.01	0.05	%
$V_{CL}$	Clipping Level	$d = 0.3\%$	2	2.5		$V_{\text{RMS}}$
$R_L$	Output Load Resistance		2			kΩ
BUS INPUT						
$V_{IL}$	Input Low Voltage				1.5	V
$V_{IN}$	Input High Voltage		3			V
$I_I$	Input Current		- 10		10	µA
$V_O$	Output Voltage	$I_O = 3\text{mA}$ ; SDA Acknowledge pin			0.4	V
$R_{pu}$	ADDR Pullup Resistor	Note	40	50		kΩ

# TEA6420

## SOFTWARE SPECIFICATION

### 1. Chip address

Address	HEX	ADDR
1001 1000	98	0
1001 1010	9A	1

### 2. Data bytes

Output select								
X	Q <sub>1</sub>	Q <sub>0</sub>	G <sub>1</sub>	G <sub>0</sub>	I <sub>2</sub>	I <sub>1</sub>	I <sub>0</sub>	Output 1 Output 2 Output 3 Output 4
X	0	0	G <sub>1</sub>	G <sub>0</sub>	I <sub>2</sub>	I <sub>1</sub>	I <sub>0</sub>	Output 1 Output 2 Output 3 Output 4
0	0	1						
1	0	0						
1	1	1						
Input select								
X	Q <sub>1</sub>	Q <sub>0</sub>	G <sub>1</sub>	G <sub>0</sub>	0	0	0	Input 1 Input 2 Input 3 Input 4 Input 5 Mute
X	Q <sub>1</sub>	Q <sub>0</sub>	G <sub>1</sub>	G <sub>0</sub>	0	0	0	Input 1 Input 2 Input 3 Input 4 Input 5 Mute
					0	0	1	
					0	1	0	
					0	1	1	
					1	0	0	
					1	0	1	
Gain select								
X	Q <sub>1</sub>	Q <sub>0</sub>	0	0	I <sub>2</sub>	I <sub>1</sub>	I <sub>0</sub>	Gain = 6 dB Gain = 4 dB Gain = 2 dB Gain = 0 dB
X	Q <sub>1</sub>	Q <sub>0</sub>	0	0	I <sub>2</sub>	I <sub>1</sub>	I <sub>0</sub>	Gain = 6 dB Gain = 4 dB Gain = 2 dB Gain = 0 dB
			0	1				
			1	0				
			1	1				

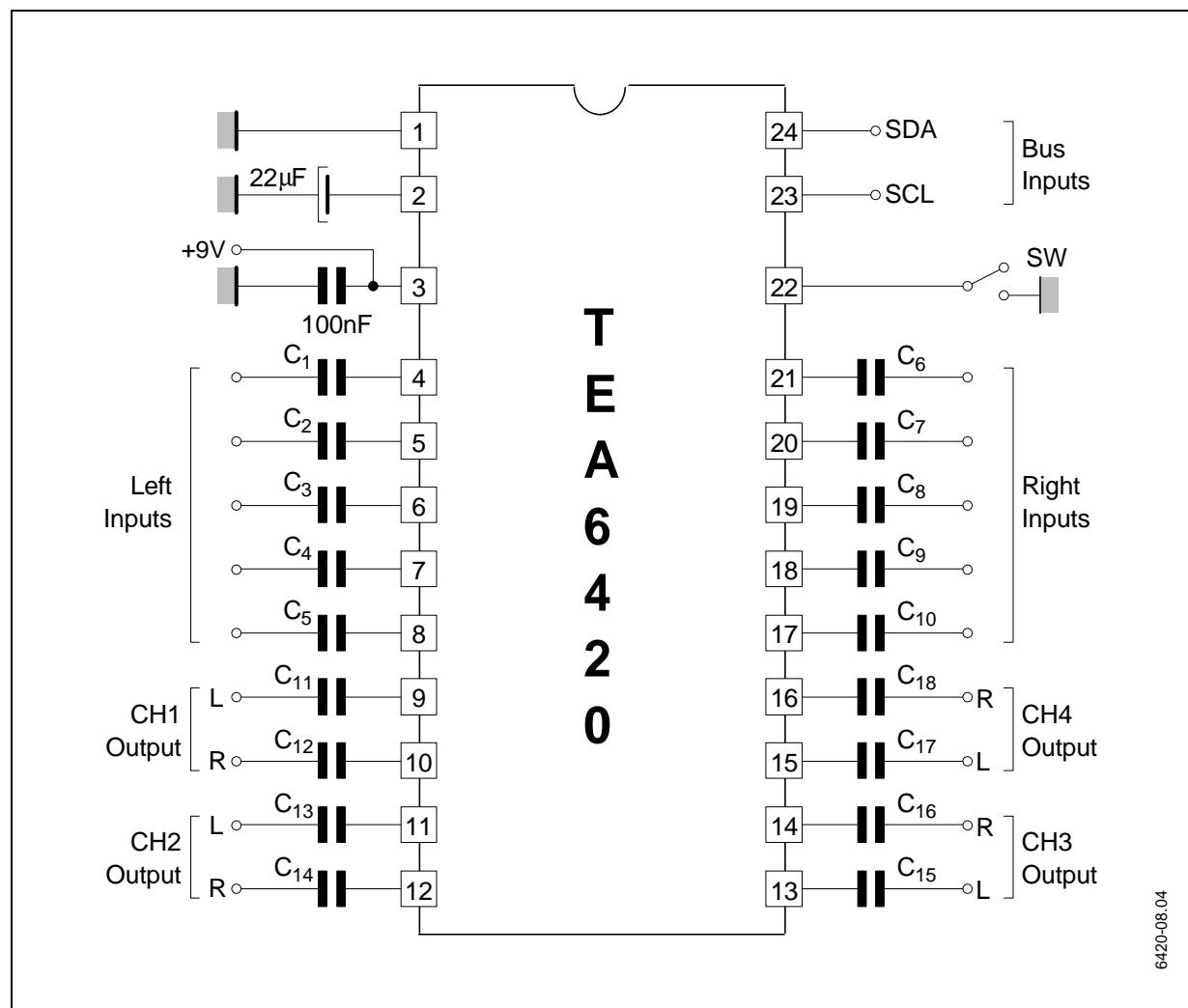
X = don't care - MSB is transmitted first

**Example :** X1001100 connects output 3 with input 5 at a gain of 4dB

The following are selected after power-on reset : input 5 selected for all outputs ; gain = 0dB.

## TYPICAL APPLICATION

Figure 3.

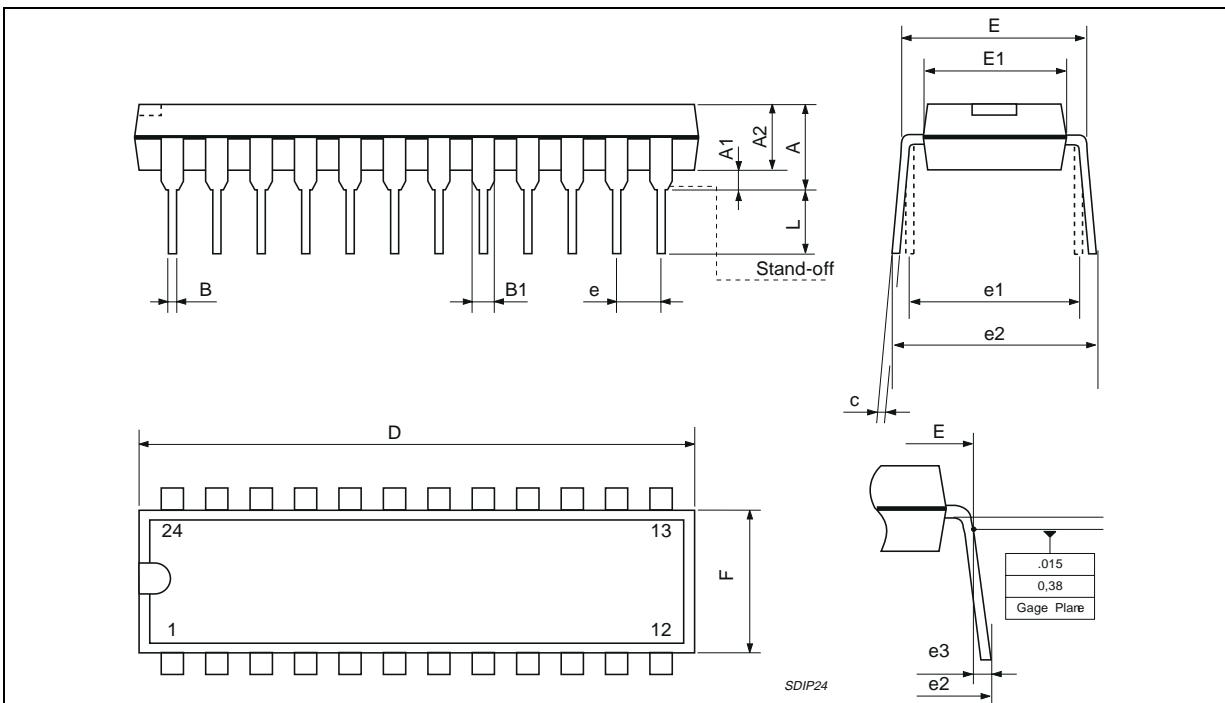


## TEA6420

### PACKAGE MECHANICAL DATA

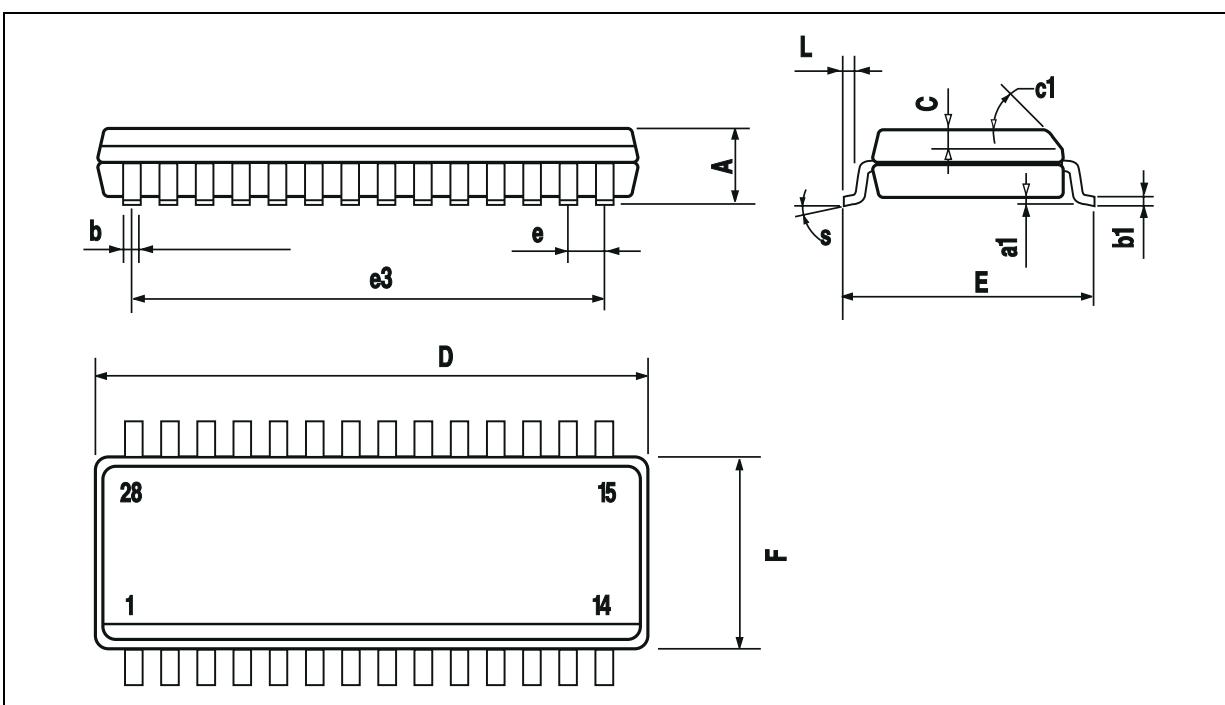
24 PINS - PLASTIC DIP

Figure 4. 24-Pin Package



28 PINS - PLASTIC SO

Figure 5. 28-Pin Package



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