



TEA6420

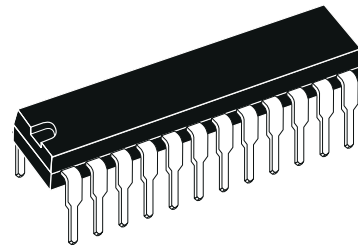
BUS-CONTROLLED AUDIO MATRIX SWITCH

- 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 Distorsion

DESCRIPTION

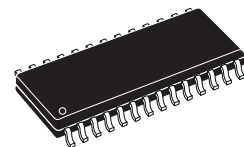
The TEA6420 switches 5 stereo audio inputs on 4 stereo outputs.

All the switching possibilities are changed through the I²C bus.



**SHRINK DIP 24
(Plastic Package)**

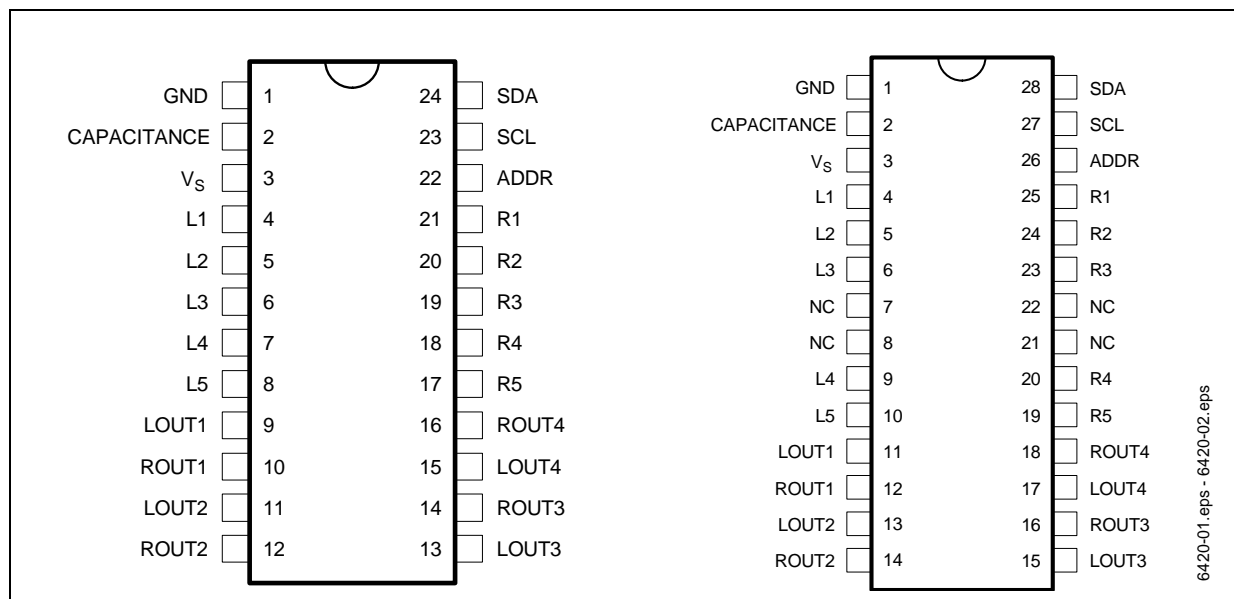
ORDER CODE: TEA6420



**SO28
(Plastic Micropackage)**

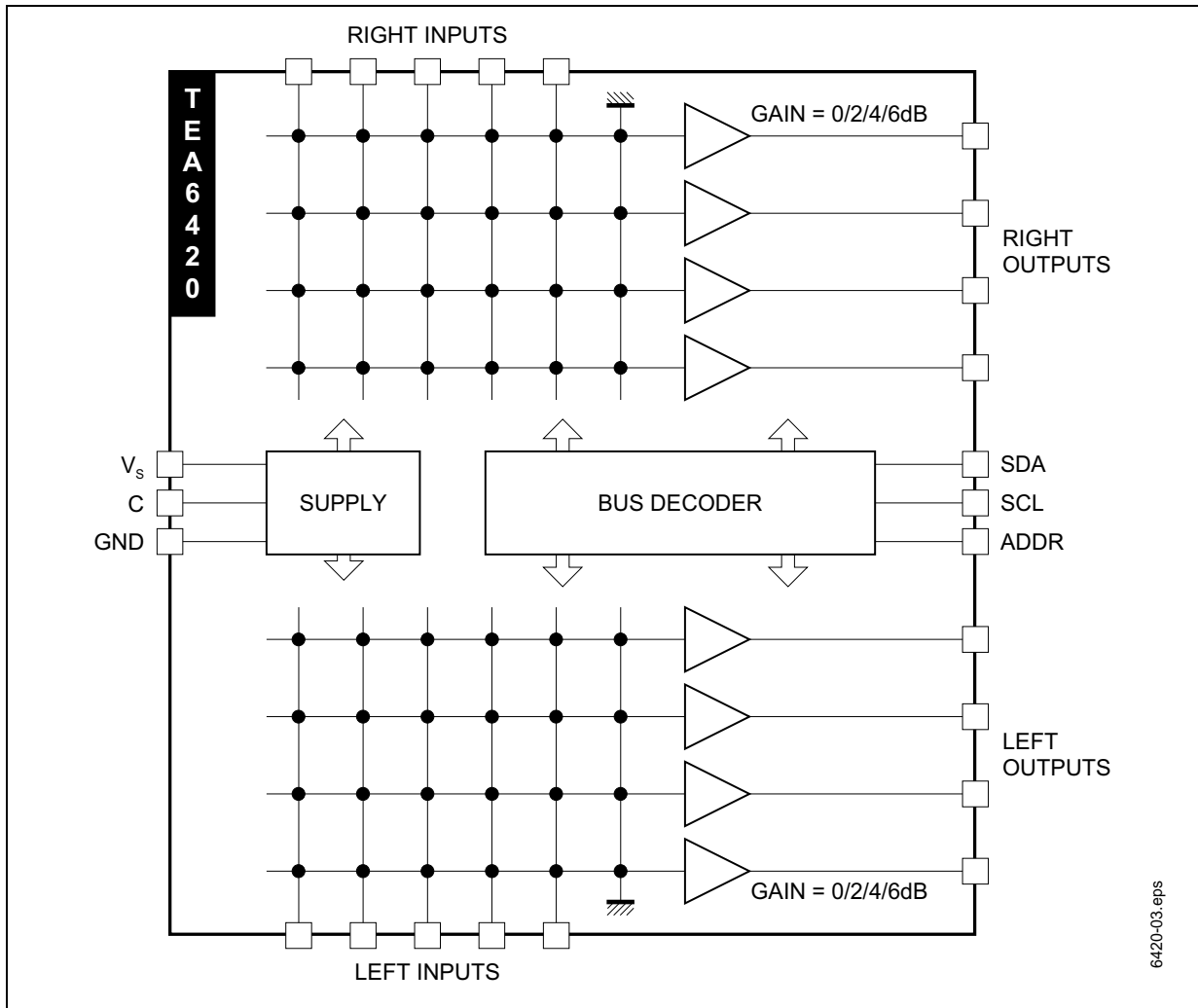
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Figure 1. PIN CONNECTIONS



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Figure 2. BLOCK DIAGRAM



6420-03.eps

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 75 SO28 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 | $V_{IN} = 500\text{mV}_{RMS}$, 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 | k Ω |
| C_S | Channel Separation | $V_{IN} = 2V_{RMS}$ 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 | $V_{IN} = V_{OUT} = 1V_{RMS}$ | | 110 | | dB |
| G_{min} | Min. Gain | | -1 | 0 | +1 | dB |
| G_{max} | Max. Gain | | 5 | 6 | 7 | dB |
| d | Distortion | $V_{IN} = V_{OUT} = 1V_{RMS}$ | | 0.01 | 0.05 | % |
| V_{CL} | Clipping Level | $d = 0.3\%$ | 2 | 2.5 | | V_{RMS} |
| R_L | Output Load Resistance | | 2 | | | k Ω |
| BUS INPUT | | | | | | |
| V_{IL} | Input Low Voltage | | | | 1.5 | V |
| V_{IH} | 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 | | k Ω |

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SOFTWARE SPECIFICATION

1. Chip address

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

2. Data bytes

| Output select | | | | | | | | |
|---------------|------------------|------------------|------------------|------------------|----------------------------|----------------------------|----------------------------|---|
| X | 0 0 1 1 | 0 1 0 1 | G ₁ | G ₀ | I ₂ | I ₁ | I ₀ | Output 1 Output 2 Output 3 Output 4 |
| Input select | | | | | | | | |
| X | Q ₁ | Q ₀ | G ₁ | G ₀ | 0 0 0 0 1 1 | 0 0 1 1 0 0 | 0 1 0 1 0 1 | Input 1 Input 2 Input 3 Input 4 Input 5 Mute |
| Gain select | | | | | | | | |
| X | Q ₁ | Q ₀ | 0 0 1 1 | 0 1 0 1 | I ₂ | I ₁ | I ₀ | Gain = 6 dB Gain = 4 dB Gain = 2 dB Gain = 0 dB |

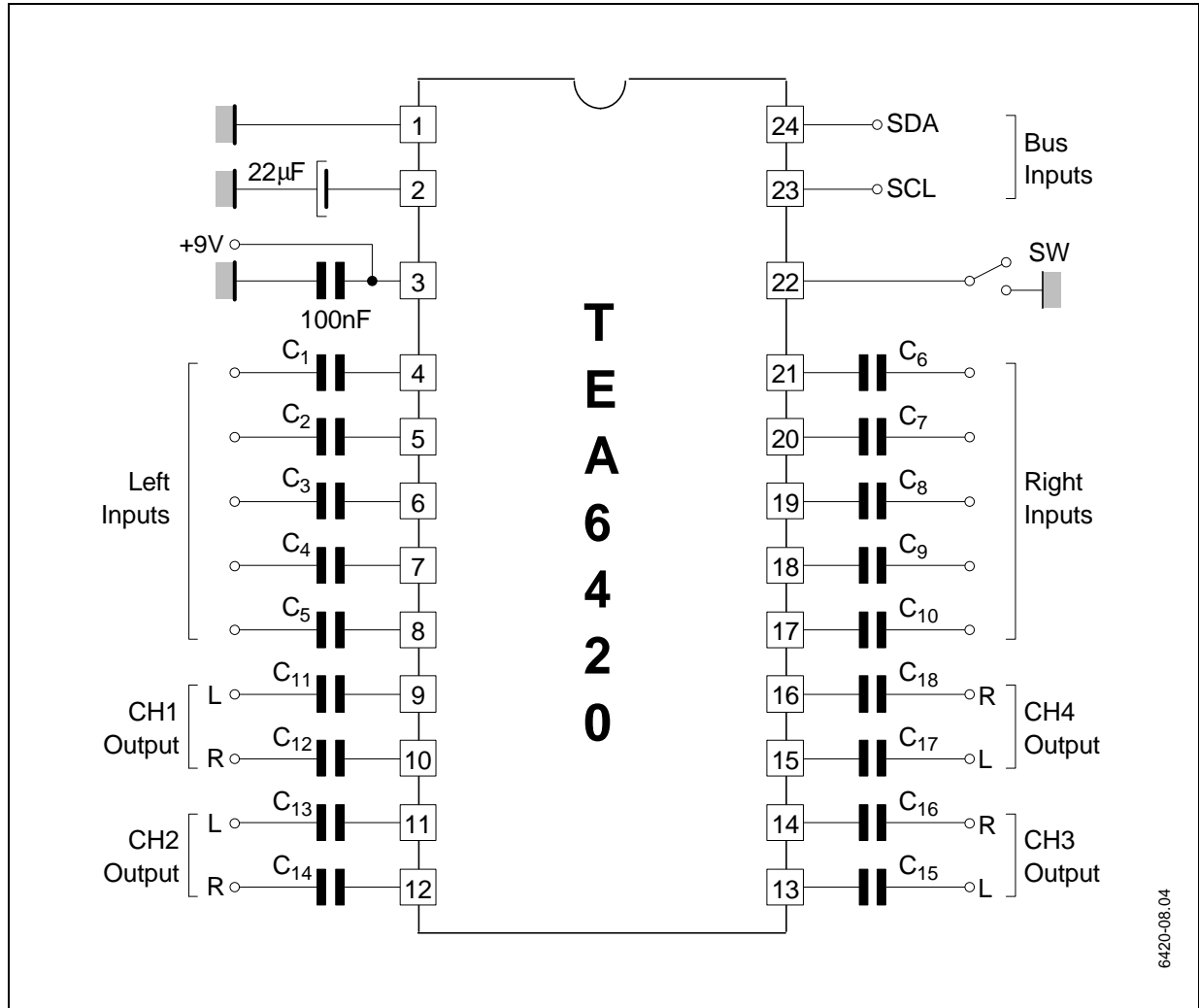
X = don't care - MSB is transmitted first

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.

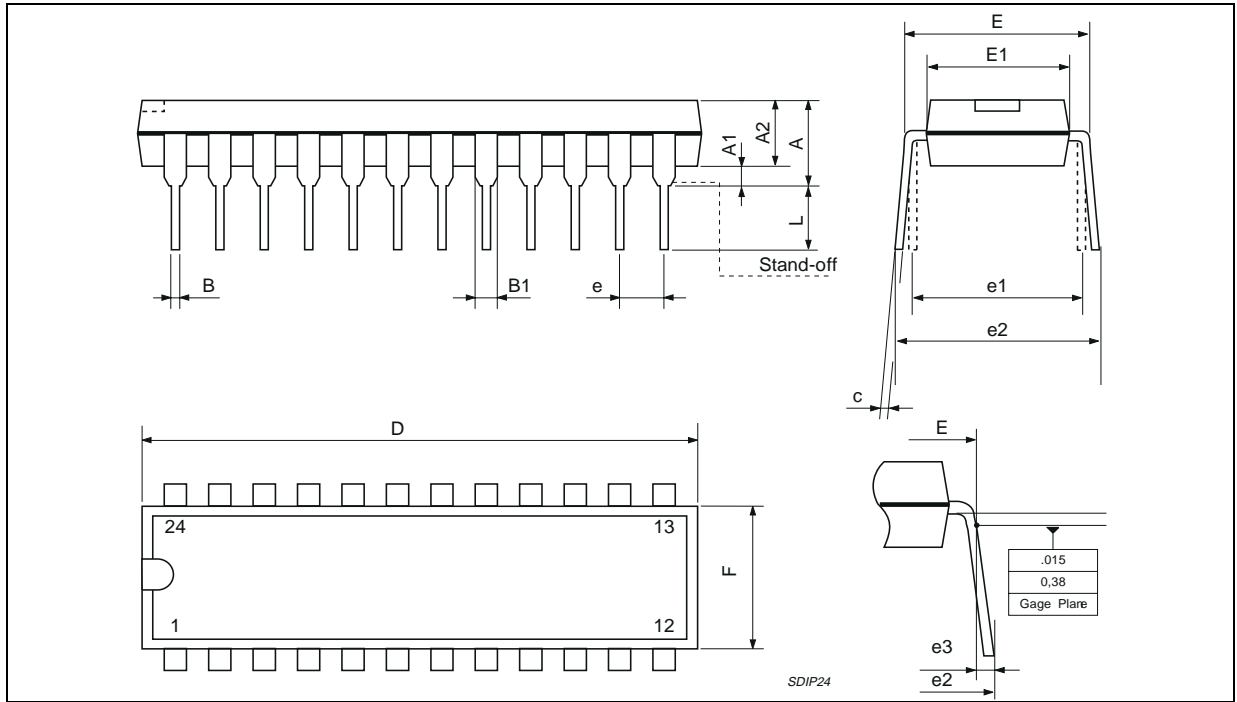


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PACKAGE MECHANICAL DATA

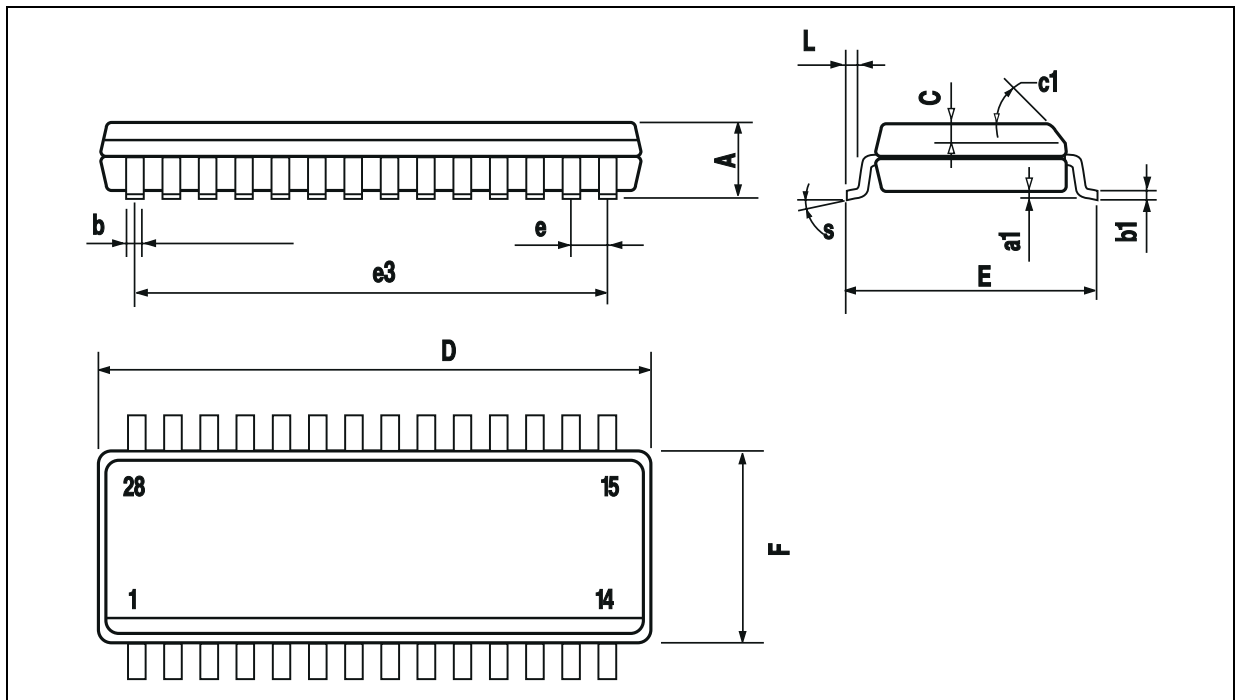
24 PINS - PLASTIC DIP

Figure 4. 24-Pin Package



28 PINS - PLASTIC SO

Figure 5. 28-Pin Package



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