

# Double-deck playback/record IC (DDPR)

TDA1602A

## FEATURES

- Two stereo playback preamplifiers
- Stereo playback amplifier
- High speed dubbing headswitch for channel A
- Record/playback headswitch for channel B
- Dubbing switch
- Stereo record amplifier
- Automatic level control
- Erase and bias oscillator
- Tape selector
- Reference voltage source ( $1/2 V_p$ )
- Logic part

## GENERAL DESCRIPTION

The TDA1602A is a Dolby B compatible recorder IC, which has been designed for use in double-deck recorders for Ferro/Chrome with high speed dubbing. The device performs all the basic recorder functions and needs only a very simple peripheral circuit of a few components. The DDPR may also be used in applications with automatic reverse.

All functions of the DDPR are selected by externally applied DC voltage levels. The circuit is designed for use with a mains-fed asymmetrical power supply but can also be used with a symmetrical power supply (because of its own  $1/2 V_p$  reference voltage source).

## ORDERING INFORMATION

| EXTENDED<br>TYPE<br>NUMBER | PACKAGE |              |          |        |
|----------------------------|---------|--------------|----------|--------|
|                            | PINS    | PIN POSITION | MATERIAL | CODE   |
| TDA1602A                   | 40      | DIL          | plastic  | SOT129 |

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**QUICK REFERENCE DATA**

All voltages referenced to pin 12, all currents positive into the IC

| SYMBOL                         | PARAMETER                            | CONDITIONS                              | MIN. | TYP.      | MAX. | UNIT          |
|--------------------------------|--------------------------------------|---|------|-----------|------|---------------|
| $V_p$                          | supply voltage range                 |   | 7.0  | –         | 18.0 | V             |
| <b>Playback amplifier</b>      |                                      |   |      |           |      |               |
| G                              | gain                                 | $f = 315 \text{ Hz}$                    | –    | 57        | –    | dB            |
| S/N                            | signal-to-noise ratio                |   | –    | 53        | –    | dB            |
| THD                            | total harmonic distortion            | $V_o = 150 \text{ mV}$                  | –    | 0.1       | –    | %             |
| <b>Headswitch</b>              |                                      |   |      |           |      |               |
| $V_{ON(p-p)}$                  | maximum voltage (peak-to-peak value) | record mode                             | –    | –         | 90   | V             |
| <b>Record amplifier</b>        |                                      |   |      |           |      |               |
| G                              | gain                                 | $f = 315 \text{ Hz}$                    | –    | 14        | –    | dB            |
| S/N                            | signal-to-noise ratio                |   | –    | 65        | –    | dB            |
| THD                            | total harmonic distortion            | $V_{O\text{record}} = 1.5 \text{ mV}$   | –    | 0.3       | –    | %             |
| <b>Automatic level control</b> |                                      |   |      |           |      |               |
| $\Delta V_o$                   | output voltage variation             | $\Delta V_{\text{ine}} = 20 \text{ dB}$ | –    | 1         | –    | dB            |
| <b>Oscillator</b>              |                                      |   |      |           |      |               |
| $f_{\text{OSC}}$               | frequency range                      |   | 60   | –         | 120  | kHz           |
| $I_{O(\text{peak})}$           | output current (peak value)          |   | 140  | –         | –    | mA            |
| $V_{O(p-p)}$                   | output voltage (peak-to-peak value)  |   | –    | –         | 36   | V             |
| <b>Reference voltage</b>       |                                      |   |      |           |      |               |
| $V_{\text{ref}}$               | output voltage                       |   | –    | $1/2 V_p$ | –    | V             |
| <b>Logic part</b>              |                                      |   |      |           |      |               |
| $I_i$                          | input current                        |   | –    | 100       | –    | $\mu\text{A}$ |
|                                | pins 8 and 10                        |   | –    | –         | 900  | $\mu\text{A}$ |
|                                | pins 7 and 9                         |   | –    | –         | 900  | $\mu\text{A}$ |

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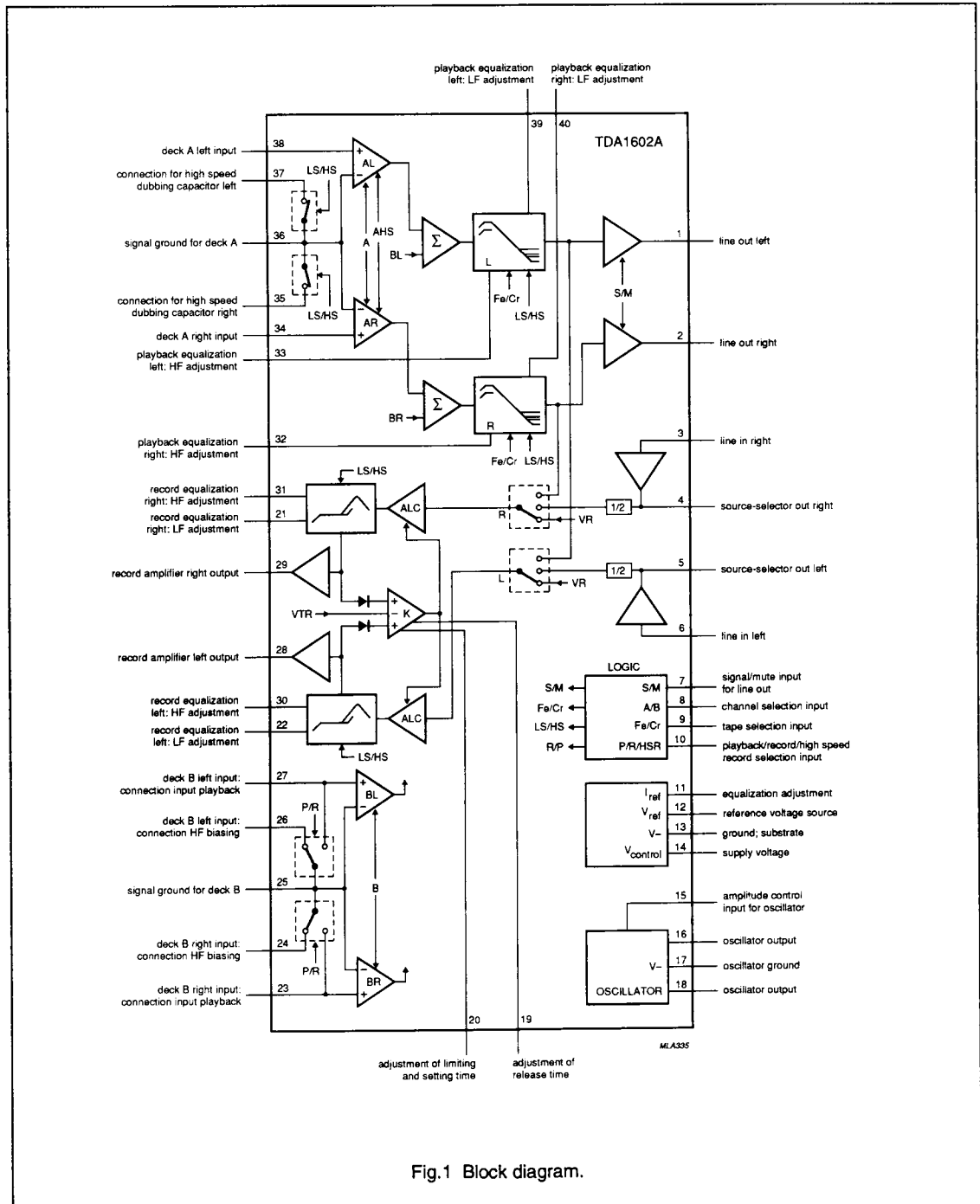


Fig.1 Block diagram.

# Double-deck playback/record IC (DDPR)

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## PINNING

| SYMBOL           | PIN | DESCRIPTION                                       |
|------------------|-----|---|
| LOL              | 1   | line out left                                     |
| LOR              | 2   | line out right                                    |
| LIR              | 3   | line in right                                     |
| SOR              | 4   | source-selector out right                         |
| SOL              | 5   | source-selector out left                          |
| LIL              | 6   | line in left                                      |
| S/M              | 7   | signal/mute input for line out                    |
| A/B              | 8   | channel selection input                           |
| TS               | 9   | tape selection input                              |
| P/R/HSR          | 10  | playback/record/high-speed record selection input |
| EQUADJ           | 11  | equalization adjustment                           |
| V <sub>ref</sub> | 12  | reference voltage source                          |
| GND              | 13  | ground; substrate                                 |
| V <sub>p</sub>   | 14  | supply voltage                                    |
| OSCCON           | 15  | amplitude control input for oscillator            |
| OSCO1            | 16  | oscillator output 1                               |
| OSCGND           | 17  | oscillator ground                                 |
| OSCO2            | 18  | oscillator output 2                               |
| ADJRT            | 19  | adjustment of release time                        |
| ADJLST           | 20  | adjustment of limiting and setting time           |
| RECELF           | 21  | record equalization right: LF adjustment          |
| RECELLF          | 22  | record equalization left: LF adjustment           |
| BRIP             | 23  | deck B right input: connection input playback     |
| BRIBHF           | 24  | deck B right input: connection HF biasing         |
| SGNDB            | 25  | signal ground for deck B                          |
| BLIBHF           | 26  | deck B left input: connection HF biasing          |
| BLIP             | 27  | deck B left input: connection input playback      |
| RECOL            | 28  | record amplifier left output                      |
| RECOR            | 29  | record amplifier right output                     |
| RECELHF          | 30  | record equalization left: HF adjustment           |
| RECERHF          | 31  | record equalization right: HF adjustment          |
| PERHF            | 32  | playback equalization right: HF adjustment        |
| PELHF            | 33  | playback equalization left: HF adjustment         |
| ARI              | 34  | deck A right input                                |
| HSDR             | 35  | connection for high speed dubbing capacitor right |
| SGNDA            | 36  | signal ground for deck A                          |
| HSDL             | 37  | connection for high speed dubbing capacitor left  |
| ALI              | 38  | deck A left input                                 |

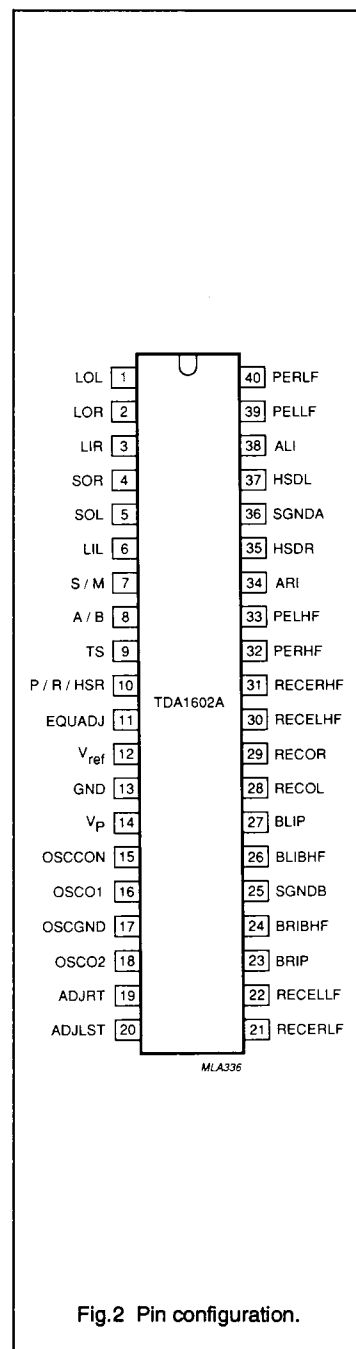


Fig.2 Pin configuration.

# Double-deck playback/record IC (DDPR)

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| SYMBOL | PIN | DESCRIPTION                                |
|--------|-----|--|
| PELLF  | 39  | playback equalization left: LF adjustment  |
| PERLF  | 40  | playback equalization right: LF adjustment |

## FUNCTIONAL DESCRIPTION

### Playback pre-amplifier

The playback preamplifier is a linear low-noise amplifier with an internal fixed gain of 26.4 dB. The relevant preamplifier for playback of channel A or B can be selected externally.

### Playback amplifier

The frequency response of the playback amplifier is determined by two external capacitors (Right: C6 and C21, Left: C5 and C20). The different equalization curves for Ferro and Chrome (with time constants of 120  $\mu$ s and 70  $\mu$ s respectively) are controlled by the logic part of the circuit.

### High speed dubbing headswitch

This electronic switch is used to connect, or disconnect, an extra external capacitor (Right: C4, Left: C1) in parallel with the gap-loss correction capacitor.

### Record/playback headswitch

This is a two position electronic switch which switches the relevant side of the head to the signal ground.

### RECORD POSITION

In the record mode the input of the playback amplifier is switched to the signal ground. In this way the bias and audio signal current can be applied to the head.

### PLAYBACK POSITION

In the playback mode the biasing side of the head is switched to the signal ground.

### Record amplifier

The frequency response of the record amplifier is determined by means of two external capacitors (Right: C11 and C12; Left: C17 and C18).

By omitting these capacitors a flat frequency response is obtained for Dolby application.

### Automatic level control

The automatic level control (ALC) has a control range of 20 dB. The variation in the output voltage is less than 2 dB (see Fig.5). The attack and recovery time of the ALC can be adjusted externally.

### Erase and bias oscillator

The erase and bias oscillator provides the following:

A high frequency bias current to enable a linear magnetic recording process on the tape.

A sinusoidal voltage, the amplitude of which is determined by the applied voltage at pin 15 (see also Fig.6).

The necessary current for erasing the tape which is only activated when the circuit is switched to the record mode.

### Reference voltage source

This circuit delivers an output voltage which is half the supply voltage. The output voltage can be taken as signal ground. In this way a symmetrical power supply is available for the total recorder application.

### Logic part

The logic part converts the incoming information from the logic input into the necessary switching signals, used in the analog parts of the circuit. The conversion is determined by the level of the input signal (see Fig.7). The logic inputs (pins 8 and 10) are independent of signal rise and fall times. The inputs at pins 7 and 9 enable smooth switching between signal/mute and Ferro/Chrome respectively.

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## LIMITING VALUES

In accordance with the Absolute Maximum System (IEC 134). All voltages referenced to pin 12; all currents positive into the IC

| SYMBOL      | PARAMETER                                  | CONDITIONS                | MIN. | MAX.  | UNIT |
|-------------|--|---------------------------|------|-------|------|
| $V_P$       | positive supply voltage                    |                           | –    | 18    | V    |
| $V_{7-10}$  | logic input voltage (pins 7 to 10)         |                           | 0    | $V_P$ | V    |
| $V_{15}$    | control input voltage (pin 15)             |                           | 0    | $V_P$ | V    |
| $V_{16,18}$ | oscillator output voltage (pins 16 and 18) |                           | 0    | 36    | V    |
| $V_{28,30}$ | headswitch voltage (pins 28 and 30)        |                           | –45  | +45   | V    |
| $T_{stg}$   | storage temperature range                  |                           | –55  | +150  | °C   |
| $T_j$       | junction temperature                       |                           | –    | +150  | °C   |
| $P_{tot}$   | total power dissipation                    | $T_{amb} = +60\text{ °C}$ | –    | 1.8   | W    |

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## DC CHARACTERISTICS

All voltages referenced to pin 12; all currents positive into the IC; All parameters are measured in the test circuit (Fig.11) at nominal supply voltage ( $V_P = 15$  V);  $f = 315$  Hz; tape selectors at Fe02 position; normal speed; non-Dolby application;  $T_{amb} = 25$  °C; unless otherwise specified

| SYMBOL                                | PARAMETER  | CONDITIONS                                 | MIN.  | TYP.  | MAX.  | UNIT       |
|---------------------------------------|--|--|-------|-------|-------|------------|
| <b>Supplies</b>                       |  |  |       |       |       |            |
| $V_P$                                 | supply voltage range   |  | 7.0   | –     | 18.0  | V          |
| $I_P$                                 | supply current   | note 1                                     |       |       |       |            |
|                                       |  | playback mode                              | 35    | 39    | 43    | mA         |
|                                       |  | record mode                                | 39    | 43    | 47    | mA         |
| <b>Playback amplifier (Fe02/Cr02)</b> |  |  |       |       |       |            |
| G                                     | gain at normal speed   | $f = 315$ Hz                               | 55    | 57    | 59    | dB         |
| B                                     | frequency response with respect to gain                                      | $f = 30$ Hz                                | 10    | 12    | 14    | dB         |
|                                       |  | Cr02, $f = 10$ kHz                         | –18   | –17   | –16   | dB         |
|                                       |  | Fe02, $f = 10$ kHz                         | –13.5 | –12.5 | –11.5 | dB         |
|                                       | left/right balance   |  | –1    | 0     | +1    | dB         |
|                                       | A/B balance  |  | –1    | 0     | +1    | dB         |
| G                                     | gain at double speed   | $f = 630$ Hz                               | 49    | 51    | 53    | dB         |
| B                                     | frequency response with respect to gain                                      | $f = 60$ Hz                                | 10    | 12    | 14    | dB         |
|                                       |  | Cr02; $f = 20$ kHz                         | –18   | –17   | –16   | dB         |
|                                       |  | Fe02; $f = 20$ kHz                         | –13.5 | –12.5 | –11.5 | dB         |
|                                       | left/right balance   |  | –1    | 0     | +1    | dB         |
| $V_O$                                 | nominal output voltage   | note 2; $V_I = 200$ $\mu$ V                | –     | 150   | –     | mV         |
| THD                                   | total harmonic distortion  | $V_I = 200$ $\mu$ V                        | –     | 0.1   | 0.3   | %          |
|                                       |  | $V_I = 280$ $\mu$ V                        | –     | –     | 1     | %          |
| S/N                                   | signal-to-noise ratio  | note 3; weighted curve;<br>20 Hz to 20 kHz | 51    | 53    | –     | dB         |
|                                       |  | weighted curve<br>A(IEC179)                | –     | 60    | –     | dB         |
|                                       | left/right separation  | $V_O = 150$ mV                             | 40    | 50    | –     | dB         |
| SVRR                                  | supply voltage ripple rejection  | $V_{ripple} = 100$ mV;<br>$f = 100$ Hz     | –     | 25    | –     | dB         |
| $ Z_i $                               | input impedance  |  | 100   | –     | –     | k $\Omega$ |
| $I_{bias}$                            | input bias current   |  | –     | 0.5   | –     | $\mu$ A    |
| $V_O$                                 | DC output voltage with respect to $V_{ref}$<br>( $V_{1-12}$ and $V_{2-12}$ ) |  | –30   | 0     | +30   | mV         |
|                                       | A/B separation   | note 4                                     | –     | 340   | –     | $\mu$ V    |
|                                       |  | note 5                                     | –     | tbf   | –     | mV         |
|                                       | suppression of output signal<br>(channel A and B)                            | $V_7 = V_P$                                | –     | 90    | –     | dB         |

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| SYMBOL                            | PARAMETER                               | CONDITIONS  | MIN.    | TYP.     | MAX.    | UNIT          |
|-----------------------------------|---|---|---------|----------|---------|---------------|
| <b>Record/playback headswitch</b> |   |   |         |          |         |               |
| $ Z_{ON} $                        | impedance ON<br>playback mode           | between pins 26 and 25<br>and pins 24 and 25;<br>$I = 100 \mu\text{A(RMS)}$                       | -       | 35       | 100     | $\Omega$      |
|                                   | record mode                             | between pins 27 and 25<br>and pins 23 and 25;<br>$I = 1.5 \text{ mA(RMS)}$                        | -       | 25       | 50      | $\Omega$      |
| $I_{IL}$                          | OFF-state leakage current               | voltage on pins 24 and<br>26 of $V_{DC} = \pm 45 \text{ V}$ with<br>respect to $V_{ref}$ (pin 12) | -       | 1.0      | 2.5     | $\mu\text{A}$ |
| $ Z_{ON} $                        | high-speed dubbing headswitch           | normal speed, between<br>pins 35 and 36 and pins<br>36 and 37;<br>$I = 100 \mu\text{A(RMS)}$      | -       | 100      | 1000    | $\Omega$      |
| <b>Record amplifier (ALC off)</b> |   |   |         |          |         |               |
| G                                 | gain at normal speed                    | $f = 315 \text{ Hz}$  | 13      | 14       | 15      | dB            |
|                                   |   | note 6<br>note 7  | -       | 20       | -       | dB            |
| B                                 | frequency response with respect to gain | $f = 10 \text{ kHz}$  | 8.5     | 10.0     | 11.5    | dB            |
|                                   |   | Dolby; $f = 10 \text{ kHz}$<br>note 6<br>note 7   | 13<br>- | 14<br>20 | 15<br>- | dB<br>dB      |
|                                   | left/right balance                      |   | -1      | 0        | +1      | dB            |
| G                                 | gain at double speed                    | note 7; $f = 630 \text{ Hz}$  | 19      | 20       | 21      | dB            |
| B                                 | frequency response with respect to gain | $f = 20 \text{ kHz}$  | 8       | 10       | 12      | dB            |
|                                   |   | left/right balance  | -1      | 0        | +1      | dB            |
| $V_o$                             | maximum output voltage                  | $V_{Osel} = 800 \text{ mV};$<br>$f = 1 \text{ kHz}; \text{THD} = 3\%$                             | -       | 4.0      | -       | V             |
| THD                               | total harmonic distortion               | ALC switch ON; $f = 1 \text{ kHz}$  | -       | -        | 0.7     | %             |
|                                   |   | $V_{Osel} = 1 \text{ V}$  | -       | 0.5      | -       | %             |
|                                   |   | $V_{Osel} = 3 \text{ V}$  | -       | -        | -       | -             |
| S/N                               | signal-to-noise ratio                   | note 8; weighted curve<br>20 Hz to 20 kHz   | -       | 60       | -       | dB            |
|                                   |   | weighted curve<br>A(IEC179)   | -       | 65       | -       | dB            |
|                                   |   | Dolby; weighted curve<br>20 Hz to 20 kHz  | 70      | 73       | -       | dB            |
|                                   | left/right separation                   | $V_{Osel} = 300 \text{ mV}$   | 40      | 50       | -       | dB            |
| SVRR                              | supply voltage ripple rejection         | $V_{ripple} = 100 \text{ mV};$<br>$f = 100 \text{ Hz}$  | -       | 30       | -       | dB            |
| $ Z_i $                           | input impedance                         |   | 100     | -        | -       | k $\Omega$    |



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| SYMBOL  | PARAMETER  | CONDITIONS  | MIN. | TYP. | MAX. | UNIT       |
|---|--|---|------|------|------|------------|
| <b>Record amplifier (ALC off)</b>               |  |   |      |      |      |            |
| $V_o$   | DC output voltage with respect to $V_{ref}$                            | normal speed record,<br>$V_{28-12}$ and $V_{29-12}$               | -30  | 0    | 30   | mV         |
| $R_L$   | load impedance on the output   |   | 10   | -    | -    | k $\Omega$ |
| $ Z_o $   | output impedance   | note 9  | -    | tbf  | -    | $\Omega$   |
|   | suppression of line input  | dubbing mode;<br>$V_{Osel} = 300$ mV                              | -    | tbf  | -    | dB         |
|   |  | deck B in playback;<br>$V_{Osel} = 300$ mV                        | -    | tbf  | -    | dB         |
| <b>Source-selector</b>                          |  |   |      |      |      |            |
| $I_{bias}$                                      | input bias current   |   | -    | 15   | -    | nA         |
| S/N   | signal-to-noise ratio  | note 10; weighted curve<br>20 Hz to 20 kHz                        | 77   | 90   | -    | dB         |
|   |  | weighted curve<br>A(IEC179)                                       | -    | 96   | -    | dB         |
| <b>Automatic Level Control (ALC); see Fig.5</b> |  |   |      |      |      |            |
| $V_{ref}$                                       | input reference voltage for ALC start operation                        |   | -    | 300  | -    | mV         |
| $V_{Oref}$                                      | output reference voltage   | ALC switched ON;<br>$V_{Osel} = 300$ mV                           | 1.35 | 1.5  | 1.65 | V          |
| $\Delta V$                                      | output voltage variation   | $V_{Osel} = 330$ mV   | -    | 0.2  | 1    | dB         |
|   |  | $\Delta V_{Osel} = 10$ dB   | -    | 1    | -    | dB         |
|   |  | $\Delta V_{Osel} = 20$ dB   | -    | 1    | -    | dB         |
| $t_l$   | limiting time  | $\Delta V_{Osel} = 10$ dB   | -    | 1    | -    | ms         |
| $t_s$   | setting time   |   | -    | 2    | -    | ms         |
| $t_r$   | release time   |   | -    | 10   | -    | s          |
| <b>Erase and bias oscillator</b>                |  |   |      |      |      |            |
| $f_{osc}$                                       | oscillator frequency   | note 11   | -    | 80   | -    | kHz        |
| $I_{O(p-p)}$                                    | maximum output current pins 16 and 18<br>(peak-to-peak value)          |   | 140  | -    | -    | mA         |
| $V_{osc}$                                       | output voltage pins 16 to 17 and pins 17 to 18<br>(peak-to-peak value) | $V_p = 18$ V  | -    | -    | 36   | V          |
| $V_{15}$  | voltage control range  | note 12   | 2.0  | -    | 13.0 | V          |
| $V_{osc}$                                       | peak output voltage  | see Fig.6;<br>$V_{control} = V_p - 8$ V<br>between pins 16 and 18 | -    | 8.0  | -    | V          |
| $I_i$   | input current of control inputs  |   | -    | 0.1  | -    | $\mu$ A    |
| THD   | total harmonic distortion between pins 16 and 18                       | $I_o = 80$ mA   | -    | 0.5  | -    | %          |

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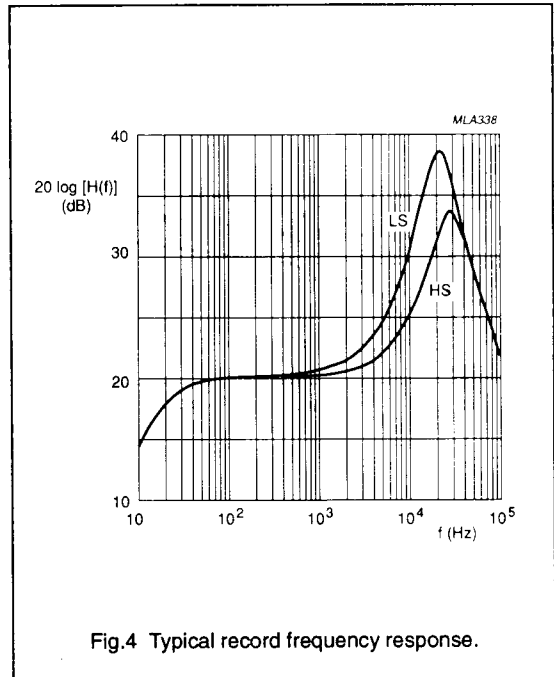
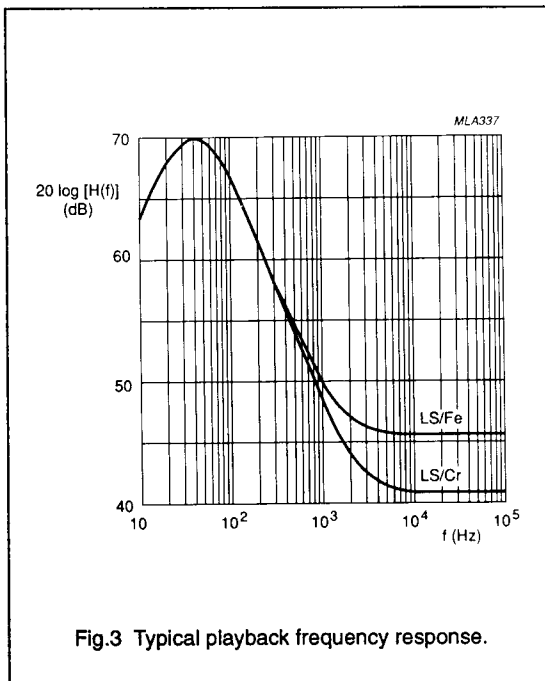
| SYMBOL   | PARAMETER                               | CONDITIONS                              | MIN. | TYP. | MAX. | UNIT          |
|--|---|---|------|------|------|---------------|
| <b>Reference voltage source</b>                          |   |   |      |      |      |               |
| $V_{12}$   | output voltage                          | note 13; no external load               | 7.25 | 7.5  | 7.75 | V             |
| $\Delta V_{12}$  | output voltage deviation                | $\Delta I_{ref} = 1 \text{ mA}$         | -100 | -    | +100 | mV            |
| <b>Logics inputs (pins 7 to 10); see Figs 7, 8 and 9</b> |   |   |      |      |      |               |
| $I_7$  | signal/mute input current               | $V_7 = V_P$                             | -    | -    | 900  | $\mu\text{A}$ |
| $V_7$  | signal/mute input voltage               | signal                                  | 0    | -    | 0.3  | V             |
|  |   | mute                                    | 6.0  | -    | 15.0 | V             |
| $I_8$  | input current for channel A/B selection | $V_8 = V_P$                             | -    | 100  | 150  | $\mu\text{A}$ |
|  |   | input voltage for channel A/B selection |      |      |      |               |
|  |   | deck A                                  | 0    | -    | 3.0  | V             |
|  | mute                                    | 5.0                                     | -    | 10.0 | V    |               |
|  | deck B                                  | 12.0                                    | -    | 15.0 | V    |               |
| $I_9$  | input current for tape selection        | $V_9 = V_P$                             | -    | -    | 900  | $\mu\text{A}$ |
| $V_9$  | input voltage for tape selection        | Cr02                                    | 0    | -    | 0.3  | V             |
|  |   | Fe02                                    | 6.0  | -    | 15.0 | V             |
| $I_{10}$   | input current for mode selection        | $V_{10} = V_P$                          | -    | 100  | 150  | $\mu\text{A}$ |
| $V_{10}$   | input voltage for mode selection        | playback                                | 0    | -    | 4.0  | V             |
|  |   | record                                  | 6.0  | -    | 9.0  | V             |
|  |   | high-speed record                       | 11.0 | -    | 15.0 | V             |

## Notes to the characteristics

- The supply current is measured in the test circuit without an additional load of the  $1/2 V_P$  reference voltage source. In the record mode the tape selector is at position Cr02; the oscillator is OFF.
- The output impedance of the output buffer is typical  $Z_O = 1 \text{ k}\Omega$ .
- The signal-to-noise ratio is related to an output signal  $V_O = 150 \text{ mV}$  with  $R_S = 1 \text{ k}\Omega$ . The circuit is switched at normal speed and the tape selector is at position Cr02.
- Channel A is switched in the playback mode, at deck B a signal of  $V_I = 200 \mu\text{V}$  ( $f = 315 \text{ Hz}$ ) is applied. The output voltage at the playback amplifier is not measured selectively (bandwidth = 20 Hz to 20 kHz).
- Deck B is switched in the record mode, at pins 24 and 26 a signal of  $I_I = 1 \text{ mA}$  ( $f = 80 \text{ kHz}$ ) is applied.
- Line input selected, measured relative to source selector output.
- Switched in dubbing mode, measured relative to line output.
- The signal-to-noise ratio is related to an output signal  $V_O = 1.5 \text{ V}$ . The circuit is switched at normal speed.
- Measured with  $f = 80 \text{ kHz}$  and  $I_I = 1 \text{ mA}$ .
- The signal-to-noise ratio is related to an output signal  $V_O = 300 \text{ mV}$ .
- The oscillator frequency is determined by  $L_L$  and  $C_L$  and may be adjusted between 60 kHz and 120 kHz.
- For stable oscillator operation the control voltage must be greater than 1 V.
- The output voltage is independent of the operating mode (playback/record).

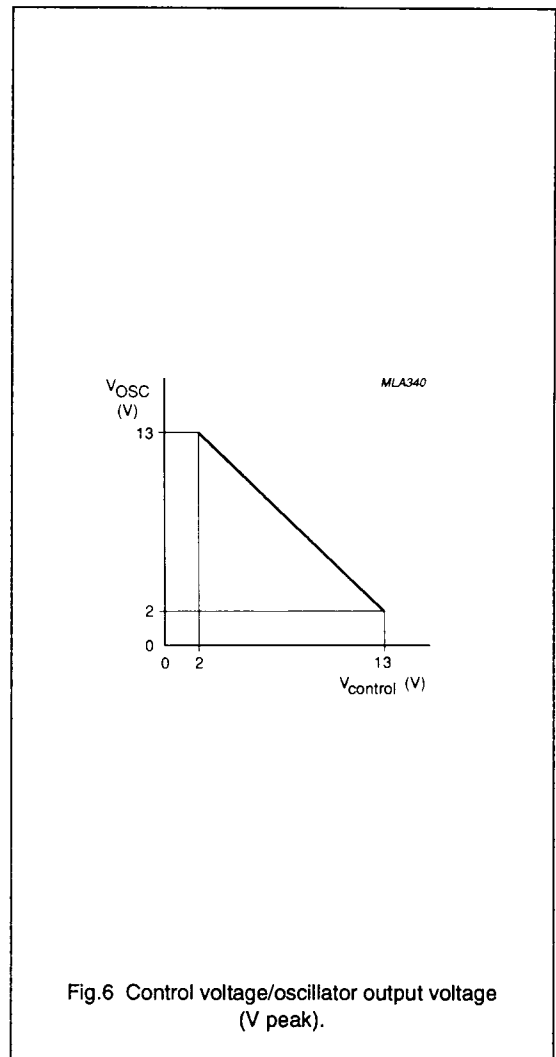
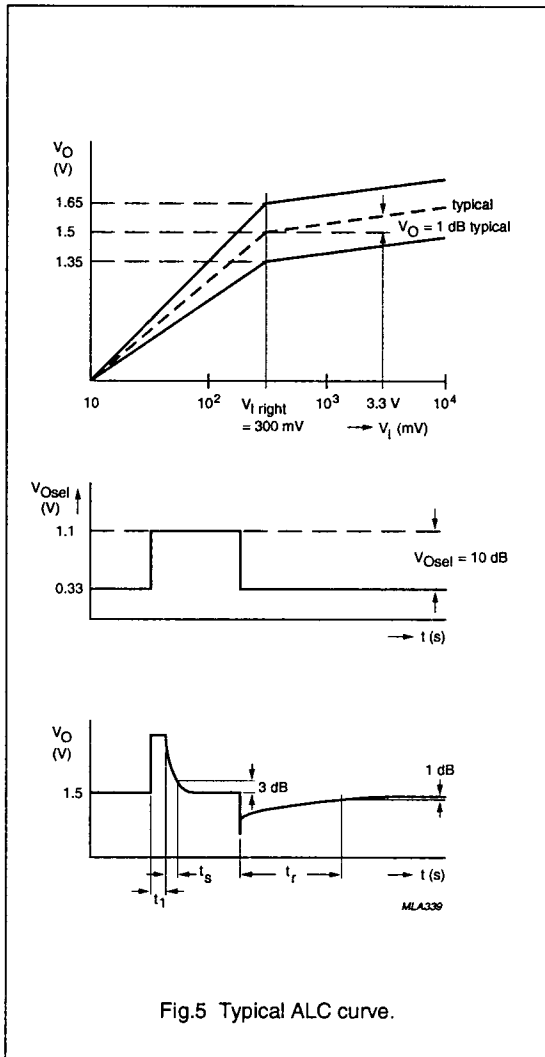
# Double-deck playback/record IC (DDPR)

TDA1602A



Double-deck playback/record IC  
(DDPR)

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Double-deck playback/record IC  
(DDPR)

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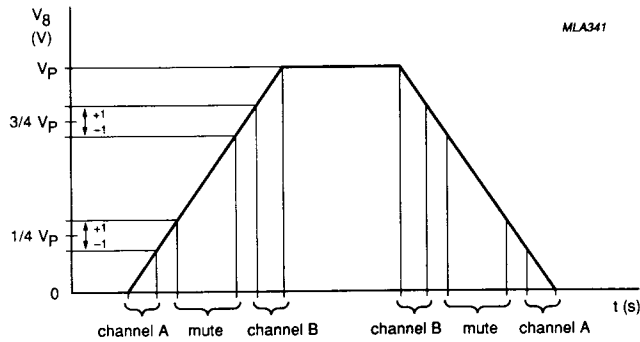


Fig.7 Channel selection input.

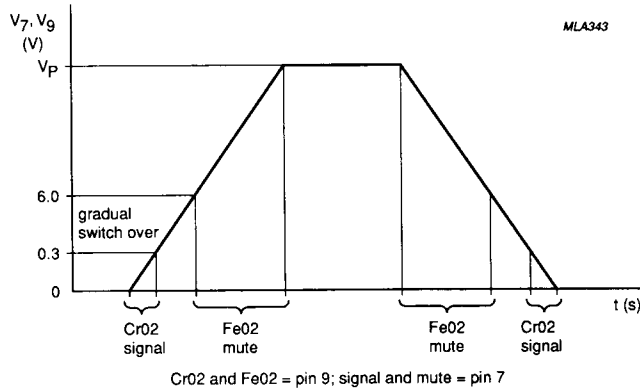


Fig.8 Tape selection input and signal/mute input.

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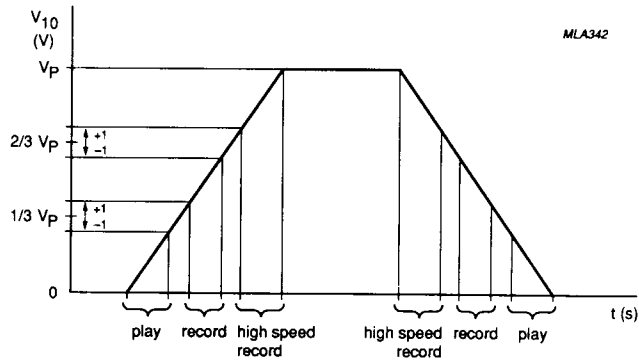


Fig.9 Playback/record/high-speed record selection input.

# Double-deck playback/record IC (DDPR)

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Table 1 Logic DDPR (S/M input not included)

| LOGIC INPUTS             |        | CHANNEL | R/P    | HS     | Fe/Cr | PB   | DUB.    | REC. | ALC | BIAS |
|--------------------------|--------|---------|--------|--------|-------|------|---------|------|-----|------|
| A/B                      | Fe/CrA | SELECT  | SWITCH | SWITCH | PB    | AMP. | SWITCH  | AMP. | OP. | OSC. |
| <b>Playback</b>          |        |         |        |        |       |      |         |      |     |      |
| A                        | Fe     | A       | P      | ON     | Fe    | ON   | mute    | OFF  | OFF | OFF  |
| A                        | Cr     | A       | P      | ON     | Cr    | ON   | mute    | OFF  | OFF | OFF  |
| B                        | Fe     | B       | P      | ON     | Fe    | ON   | mute    | OFF  | OFF | OFF  |
| B                        | Cr     | B       | P      | ON     | Cr    | ON   | mute    | OFF  | OFF | OFF  |
| <b>Record</b>            |        |         |        |        |       |      |         |      |     |      |
| A                        | Fe     | A       | R      | ON     | Fe    | ON   | dubbing | ON   | OFF | ON   |
| A                        | Cr     | A       | R      | ON     | Cr    | ON   | dubbing | ON   | OFF | ON   |
| B                        | Fe     | A       | R      | ON     | Fe    | ON   | line    | ON   | ON  | ON   |
| B                        | Cr     | A       | R      | ON     | Cr    | ON   | line    | ON   | ON  | ON   |
| <b>High speed record</b> |        |         |        |        |       |      |         |      |     |      |
| A                        | Fe     | AHS     | R      | OFF    | Fe    | ON   | dubbing | ON   | OFF | ON   |
| A                        | Cr     | AHS     | R      | OFF    | Cr    | ON   | dubbing | ON   | OFF | ON   |
| B                        | Fe     | A       | R      | ON     | Fe    | ON   | line    | ON   | ON  | ON   |
| B                        | Cr     | A       | R      | ON     | Cr    | ON   | line    | ON   | ON  | ON   |

Table 2 Double deck application

| DECK SELECT              |           | A/B        | S/M   | CHANNEL | HS     | PB      | DUB.    | ALC |
|--------------------------|-----------|------------|-------|---------|--------|---------|---------|-----|
| A(P)                     | B(R/P)    | INPUT      | INPUT | SELECT  | SWITCH | AMP.    | SWITCH  | OP. |
| <b>Playback</b>          |           |            |       |         |        |         |         |     |
| $\bar{A}$                | $\bar{B}$ | don't care | M     | A or B  | OFF    | OFF     | mute    | OFF |
| $\bar{A}$                | B         | B          | S     | B       | OFF    | ON      | mute    | OFF |
| A                        | $\bar{B}$ | A          | S     | A       | OFF    | ON      | mute    | OFF |
| <b>Record</b>            |           |            |       |         |        |         |         |     |
| $\bar{A}$                | B         | B          | M (1) | A       | OFF    | OFF (1) | line    | ON  |
| A                        | B         | A          | S     | A       | OFF    | ON      | dubbing | OFF |
| <b>High speed record</b> |           |            |       |         |        |         |         |     |
| $\bar{A}$                | B         | B          | M (1) | A       | OFF    | OFF (1) | line    | ON  |
| A                        | B         | A          | M (1) | AHS     | ON     | OFF (1) | dubbing | OFF |

**Notes to Table 2**

1. Fe/Cr selection not included.
2. S is also possible; play buffer = ON.

# Double-deck playback/record IC (DDPR)

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## APPLICATION INFORMATION

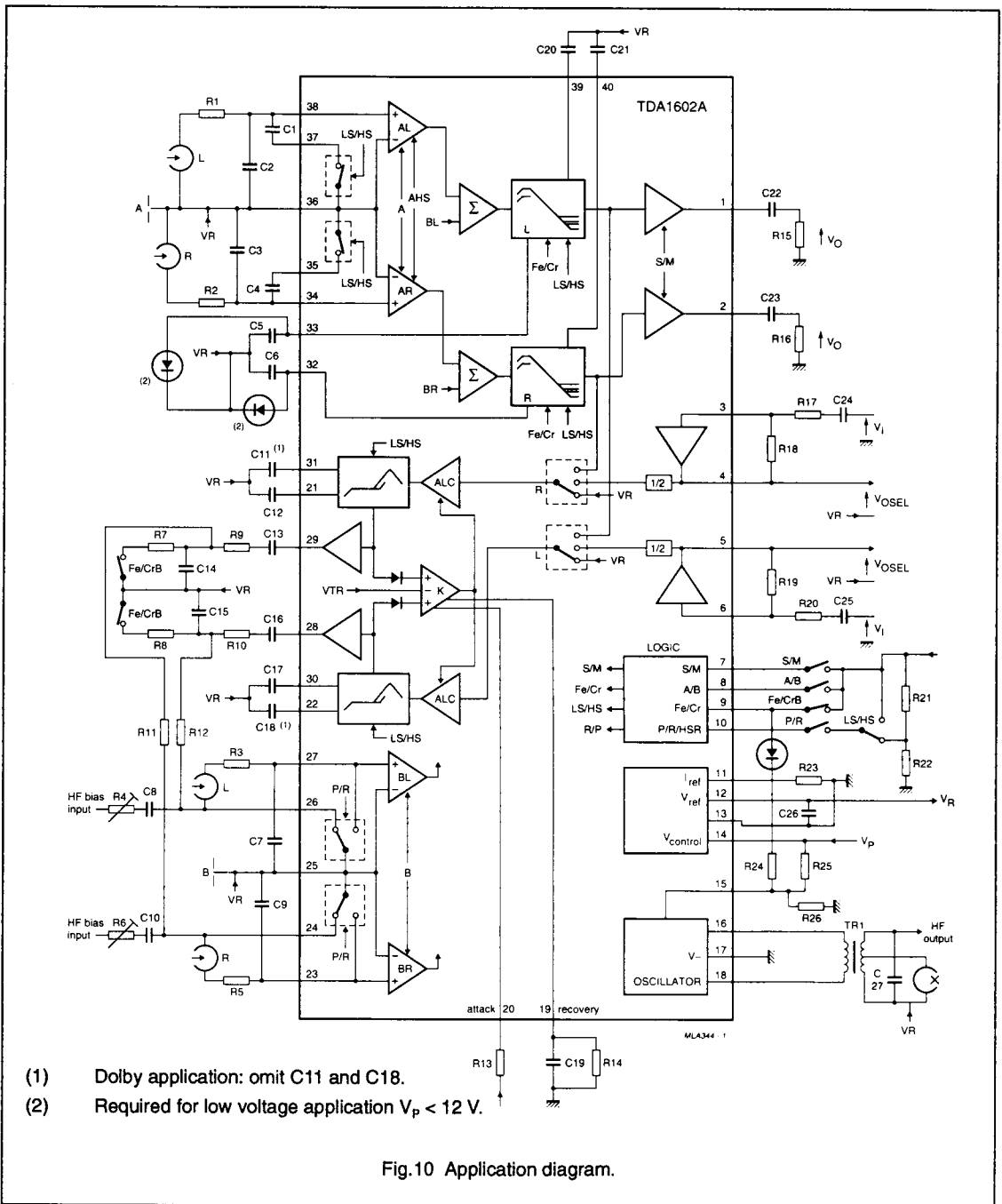


Fig.10 Application diagram.



# Double-deck playback/record IC (DDPR)

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## TEST INFORMATION

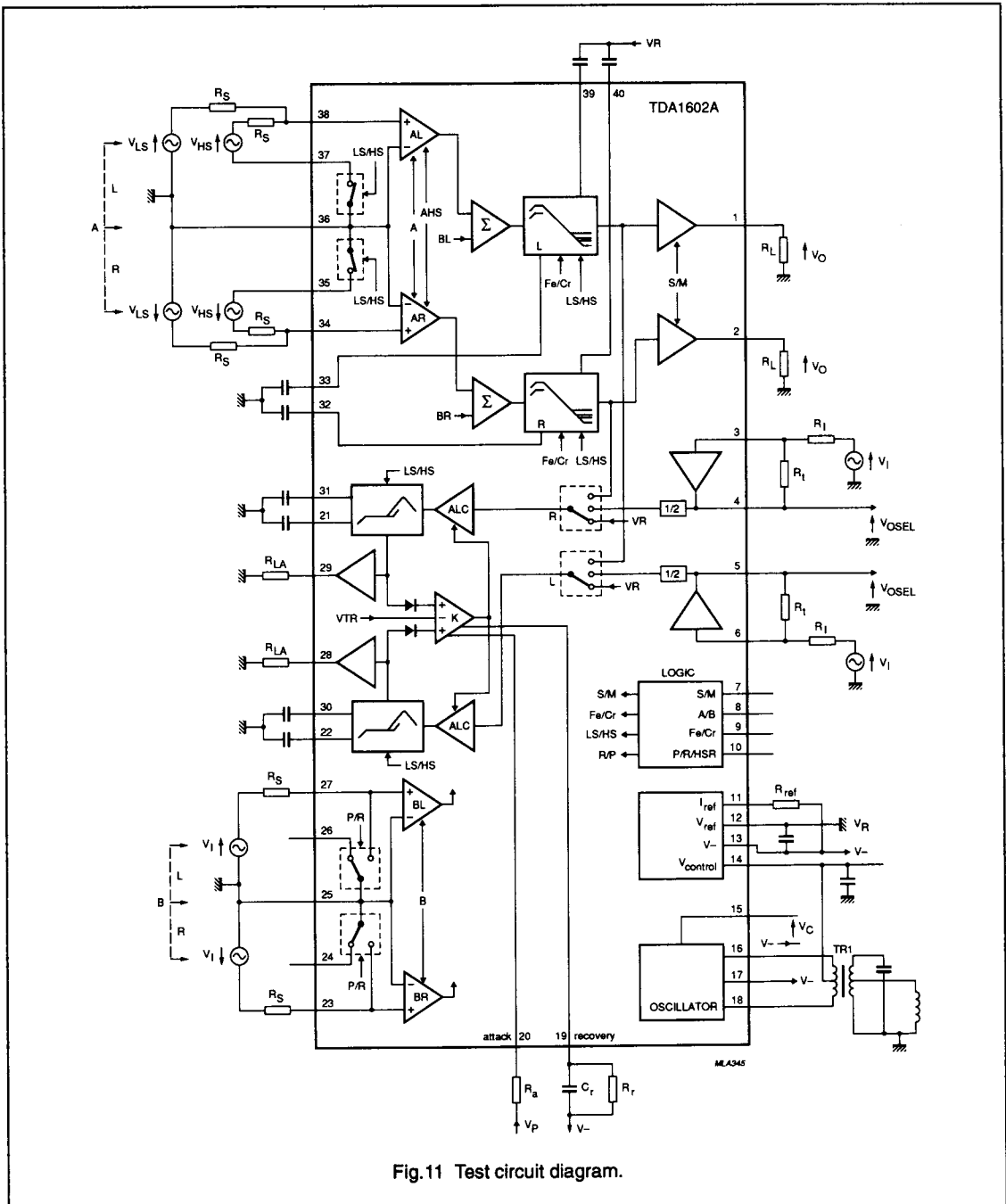


Fig. 11 Test circuit diagram.

# Double-deck playback/record IC (DDPR)

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**Table 3** Component values used in the application diagram

| COMPONENT         | CONDITION     | VALUE | UNIT       |
|-------------------|---------------|-------|------------|
| <b>Resistors</b>  |               |       |            |
| R1, R2            |               | 47    | $\Omega$   |
| R3, R5            |               | 47    | $\Omega$   |
| R4, R6            | potentiometer | 47    | k $\Omega$ |
| R7, R8            |               | tbf   |            |
| R9, R10           |               | 6.8   | k $\Omega$ |
| R11, R12          |               | 8.2   | k $\Omega$ |
| R13               |               | 100   | $\Omega$   |
| R14               |               | 1     | M $\Omega$ |
| R15, R16          |               | 100   | k $\Omega$ |
| R17, R20          |               | tbf   |            |
| R18, R19          |               | tbf   |            |
| R21, R22          |               | 10    | k $\Omega$ |
| R23               |               | 2     | k $\Omega$ |
| R24, R25, R26     |               | 5.1   | k $\Omega$ |
| <b>Capacitors</b> |               |       |            |
| C1, C4            |               | 330   | pF         |
| C2, C3            |               | 330   | pF         |
| C5, C6            |               | 47    | nF         |
| C7, C9            |               | 680   | pF         |
| C8, C10           |               | 820   | pF         |
| C11, C18          |               | 68    | nF         |
| C12, C17          |               | 100   | $\mu$ F    |
| C13, C16          |               | 4.7   | $\mu$ F    |
| C14, C15          |               | tbf   |            |
| C19               |               | 47    | $\mu$ F    |
| C20, C21          |               | 100   | nF         |
| C22, C23          |               | 4.7   | $\mu$ F    |
| C24, C25          |               | 4.7   | $\mu$ F    |
| C26               |               | 100   | $\mu$ F    |
| C27               |               | 3.9   | nF         |

# Double-deck playback/record IC (DDPR)

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**Table 4** Component values used in the test circuit

| COMPONENT         | CONDITION | VALUE | UNIT      |
|-------------------|-----------|-------|-----------|
| <b>Resistors</b>  |           |       |           |
| $R_S$             |           | 1     | $k\Omega$ |
| $R_L$             |           | 100   | $k\Omega$ |
| $R_{L_A}$         |           | 10    | $k\Omega$ |
| $R_1$             |           | 4.7   | $k\Omega$ |
| $R_t$             |           | 22.6  | $k\Omega$ |
| $R_{ref}$         |           | 2     | $k\Omega$ |
| $R_a$             |           | 1     | $k\Omega$ |
| $R_r$             |           | 3.3   | $M\Omega$ |
| <b>Capacitors</b> |           |       |           |
| $C_r$             |           | 1     | $\mu F$   |