Bipolar IC

Type	Ordering code	Package
TDA 4942	Q67000-A1926	DIP 16

The TDA 4942 contains a switchable matrix with tristate input to provide *L-R* information. The switch input is controlled by the immediately preceding pilot tone decoding IC TDA 4940. During dual operation the subsequent analog switch enables the selection of audio I or audio II. The LED driver displays the position of the analog switch, and/or stereo or mono operation. The analog switch controls the audio tape recorder output as well as the AF output. This output is equipped with a dc voltage regulated volume and balance control.

Features

- Switchable matrix
- Tape recorder output
- Volume and balance control
- All outputs are short-circuit resistant

Maximum ratings

Supply voltage (1 minute)	V_S	16.5	V
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−40 to 125	°C
Thermal resistance (system-air)	$R_{th\ SA}$	70	K/W

Operating range

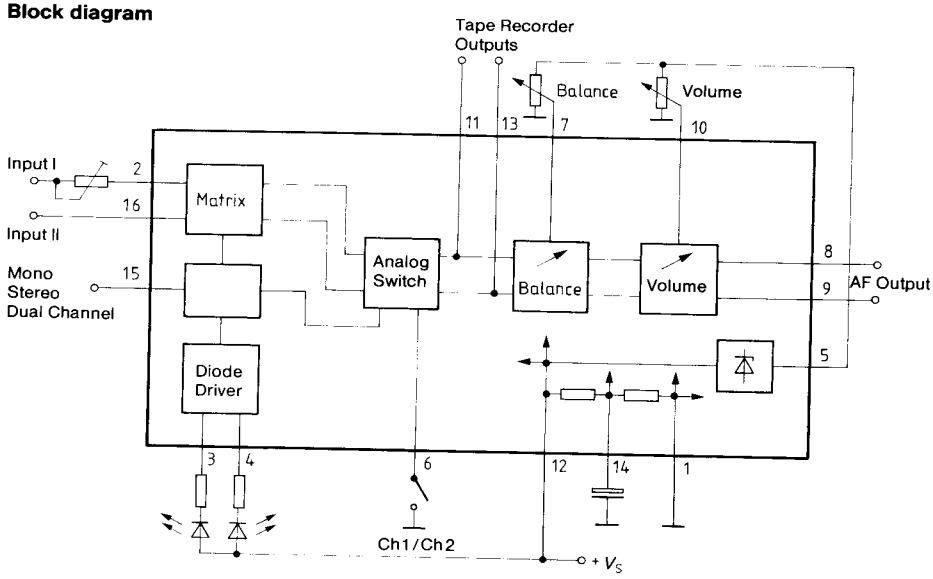
Supply voltage	V_S	10 to 15.8	V
Frequency (−1 dB)	f_i	20 to 20,000	Hz
Ambient temperature	T_A	0 to 70	°C

Characteristics

$V_S = 12$ V; $T_A = 25$ °C

		min	typ	max	
Total current consumption (without LED)	$I_{S\,12}$		15		mA
LED driver current (each LED)	$I_{LED\,3,4}$	10	15		mA
Reference voltage	$V_{REF\,5}$		4.8		V
Input resistance audio I	$R_{i\,2}$		15		kΩ
Input resistance audio II	$R_{i\,16}$		30		kΩ
Input current of the adjust. input	$I_{ad\,7,10}$		3.5		µA
Input current of the switch	$I_{sw\,6}$		20		µA
Input voltage audio I ($THD = 0.7\%$)	$V_{i\,2\,rms}$		150	600	mV
Input voltage audio II ($THD = 0.7\%$)	$V_{i\,16\,rms}$		300	1200	mV
Output voltage tape rec. output $V_{i\,2} = 150$ mV	$V_{q\,TR\,11,13\,rms}$		150		mV
Output voltage tape rec. output $V_{i\,16} = 300$ mV	$V_{q\,TR\,11,13\,rms}$		150		mV
AF output voltage $V_{i\,2} = 150$ mV	$V_{q\,AF\,8,9\,rms}$		300		mV
AF output voltage $V_{i\,16} = 300$ mV	$V_{q\,AF\,8,9\,rms}$		300		mV
AGC range balance $V_{bal} = 0 \ldots V_{REF}$	$G_{bal\,max}$		6		dB
AGC range balance $V_{bal} = 0 \ldots V_{REF}$	$G_{bal\,min}$		−12		dB
Voltage balance center $V_{right} = V_{left}$	$V_{bal\,7}$	0.48	0.5 V_{REF}	0.52	V
AGC range volume $V_{vol} = 0 \ldots V_{REF}$	ΔG_{vol}	85			dB
Output resistance AF output	$R_{q\,AF\,8,9}$		0.2		kΩ
Output resistance tape rec. output	$R_{q\,TR\,11,13}$		0.5		kΩ
Total harmonic distortion ($V_i = 0.5$ or 1 V)	$THD_{8,9,11,13}$			0.5	%
Channel separation	$a_{L/R\,8\text{-}9,\,11\text{-}13}$	60			dB
Channel deviation (volume = max)	$a_{L/R\,8\text{-}9}$			2	dB
Disturbance voltage spacing (volume = max; $f_i = 20$ Hz to 20 kHz)	$a_{S/N}$		70		dB
Noise voltage at the AF output volume = min; $f_i = 20$ Hz to 20 kHz	$V_{n\,AF\,8,9}$		10		µV
Switch input					
H input voltage ≙ audio I (or open)	$V_{6\,H}$	4		V_S	V
L input voltage ≙ audio II	$V_{6\,L}$	0		2.8	V
Control voltage balance $V_{qr} = \max$; $V_{ql} = \min$	$V_{bal\,7}$		0		V
Control voltage balance $V_{ql} = \max$; $V_{qr} = \min$	$V_{bal\,7}$		V_{REF}		V
Switch voltage matrix					
dual audio	$V_{sw\,15}$	0		1/6 V_S	V
mono	$V_{sw\,15}$	1/3 V_S		2/3 V_S	V
stereo	$V_{sw\,15}$	5/6 V_S		V_S	V

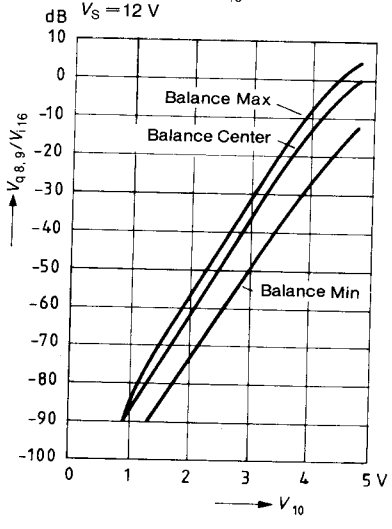
Block diagram



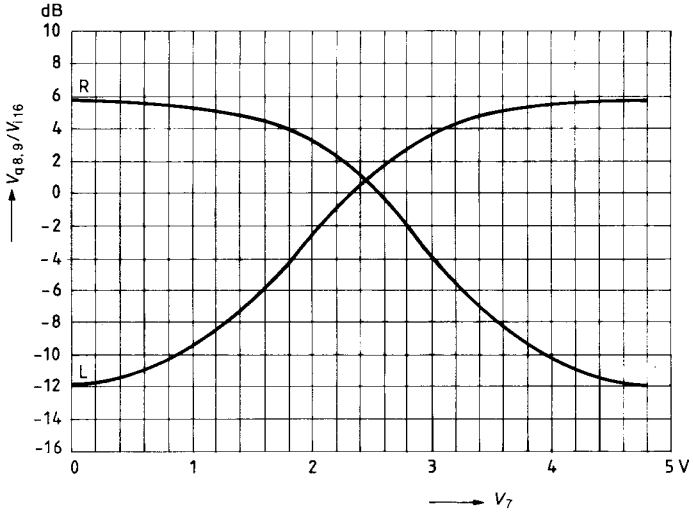
Truth table

Pin 6	Pin 15	Pin 4	Pin 3
S1/AF	Tristate input	LED 1	LED 2
Any	Stereo = V_S	ON	ON
Any	Mono = $V_S/2$	OFF	OFF
Open H	2 tone = 0 V	ON	OFF
Ground L	2 tone = 0 V	OFF	ON

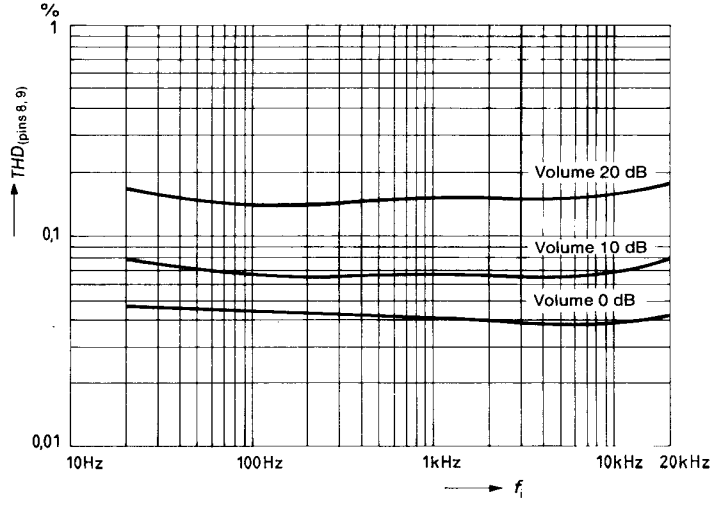
Volume versus V_{10}
V_S = 12 V



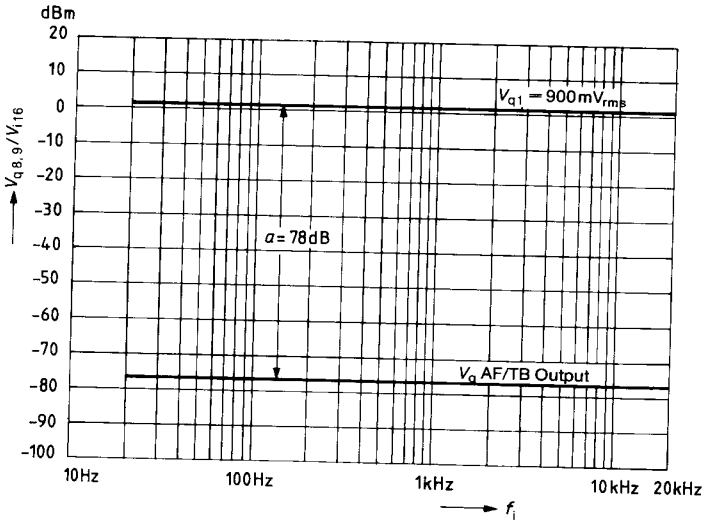
Balance versus V_7
$V_S = 12$ V; $V_{i\,16\,rms} = 500$ mV



Total harmonic distortion versus input frequency
$V_S = 12$ V; $V_{irms} = 300$ mV

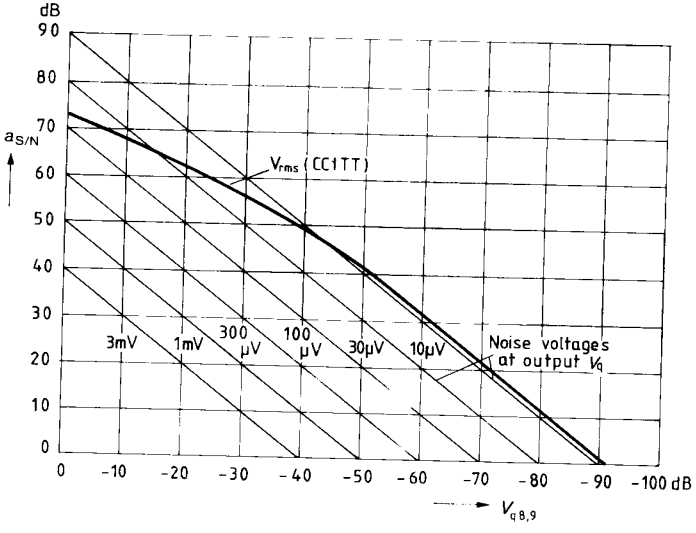


Cross-talk rejection
Dual tone operation versus input frequency

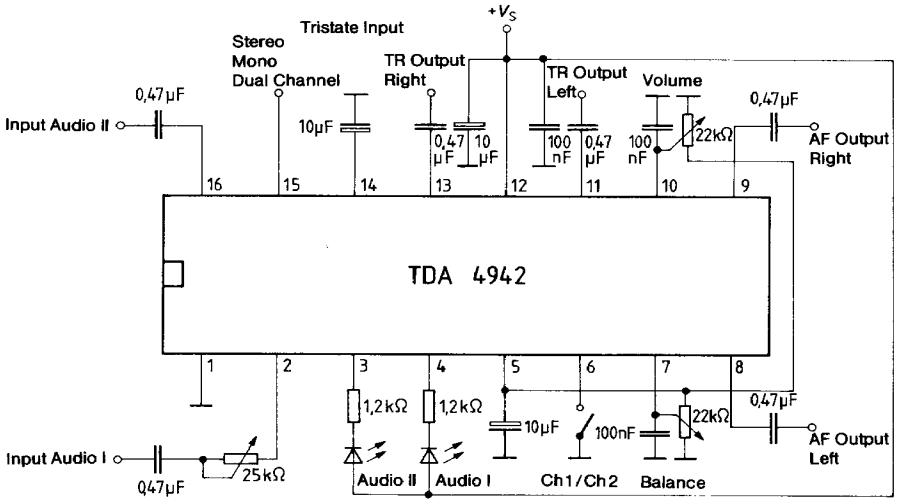


* TB = Tape recorder

Disturbance voltage spacing versus attenuation
$V_S = 12$ V; $V_{irms} = 300$ mV; $f_i = 1$ kHz



Application circuit



Application circuit