

# UTC TEA2025A LINEAR INTEGRATED CIRCUIT

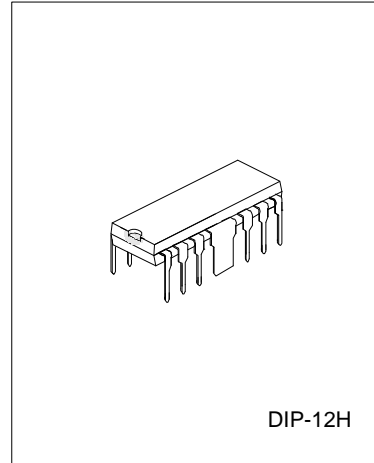
## 2.3W DUAL AUDIO POWER AMPLIFIER

### DESCRIPTION

The UTC TEA2025A is a monolithic integrated circuit, consisting of a 2-channel power amplifier. It is suitable for stereo and bridge amplifier application of radio cassette tape recorders.

### FEATURES

- \*High output power
  - Stereo:  $P_o=2.3W$  (Typ) at  $V_{cc}=9V$ ,  $R_L=4\Omega$
  - Bridge:  $P_o=4.7W$  (Typ) at  $V_{cc}=9V$ ,  $R_L=8\Omega$
- \*Low switching distortion at high frequency
- \*Small shock noise at the time of power on/off due to a built-in muting circuit
- \*Good ripple rejection due to a built-in ripple filter
- \*Good channel separation
- \*Soft tone at the time of output straiten
- \*Closed loop voltage gain fixed 45dB (Bridge: 51dB) but availability with external resistor added
- \*Minimum number of external parts required
- \*Easy to design radiator fin



### BLOCK DIAGRAM

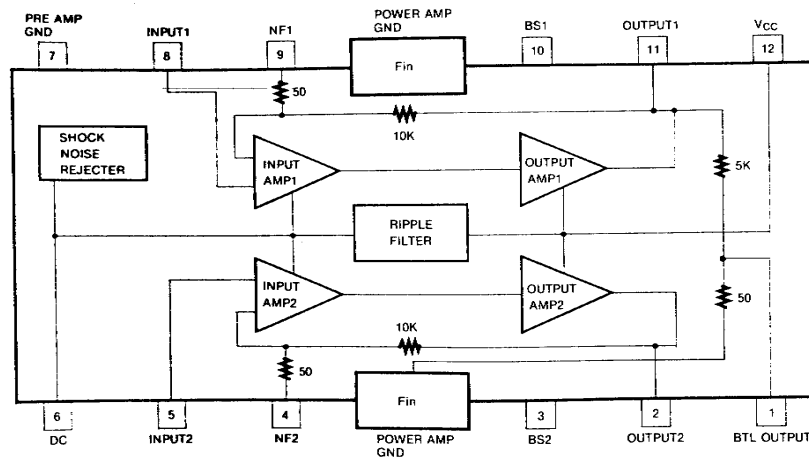


Fig. 1

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## ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	Vs	15	V
Power Dissipation	Pd	4*	W
Operating Temperature	Topr	-20 ~ +70	°C
Storage Temperature	Tstg	-40 ~ +150	°C

## ELECTRICAL CHARACTERISTICS (Ta=25°C, Vcc=9V, Rg=600Ω, Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Operating Supply Voltage	Vcc			9	11	V
Quiescent Current	Icc	Vi=0, Stereo		40	55	mA
Closed Loop Voltage Gain	Av	Stereo, Vi=-45dBm	43	45	47	dB
		Bridge, Vi=-45dBm	49	51	53	dB
Channel Balance	CB	Stereo	-1	0	+1	dB
Output Power	PO	Stereo, RL=4Ω, THD=10%	1.7	2.3		W
		Stereo, RL=8Ω, THD=10%		1.3		W
		Bridge, RL=8Ω, THD=10%		4.7		W
Total Harmonic Distortion	THD	Stereo, Po=250mW, RL=4Ω		0.3	1.5	%
		Bridge, Po=250mW, RL=4Ω		0.5		%
Input Resistance	Ri		21	30		kΩ
Ripple Rejection	RR	Stereo, Rg=0Ω, Vr=150mV, f=100Hz	40	46		dB
Output Noise Voltage	VNO	Stereo, Rg=0Ω		0.3	1	mV
		Stereo, Rg=10KΩ		0.5	2	mV
Cross-Talk	CT	Stereo, Rg=10KΩ, Vo=0dBm	40	55		dB

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APPLICATION CIRCUIT: Stereo Amplifier

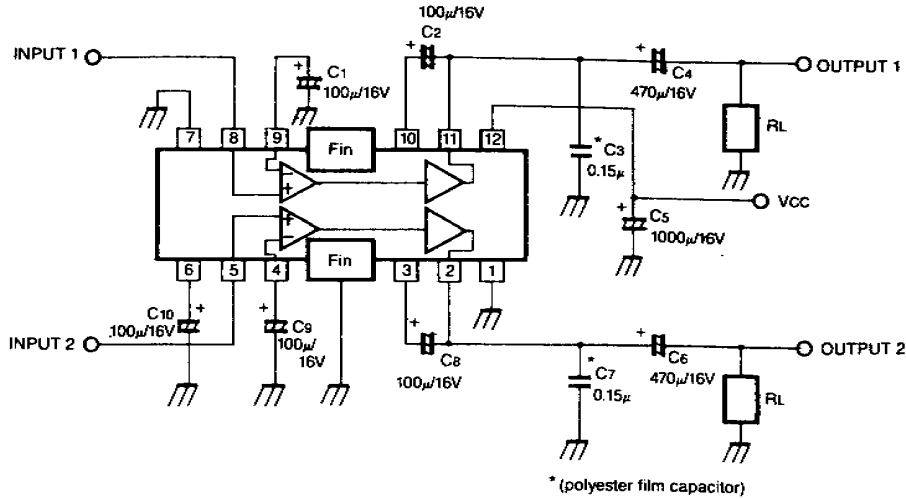


Fig. 2

APPLICATION CIRCUIT: Bridge Amplifier

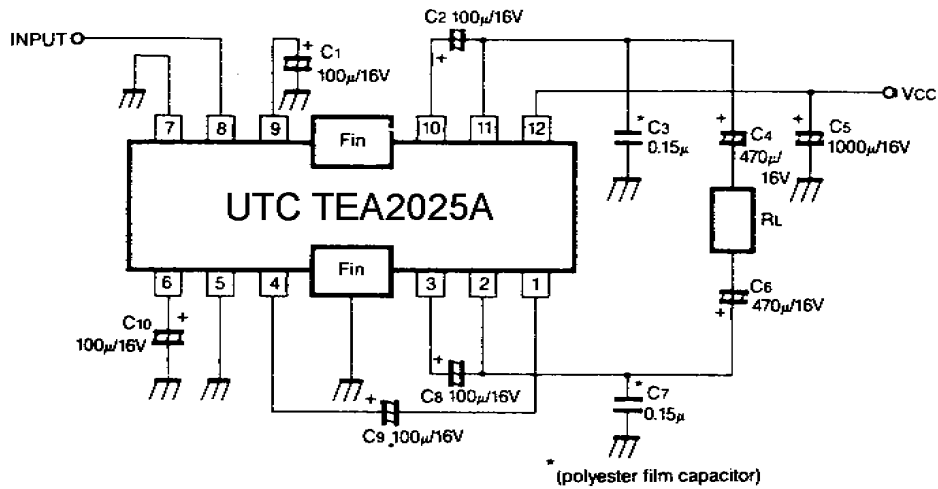


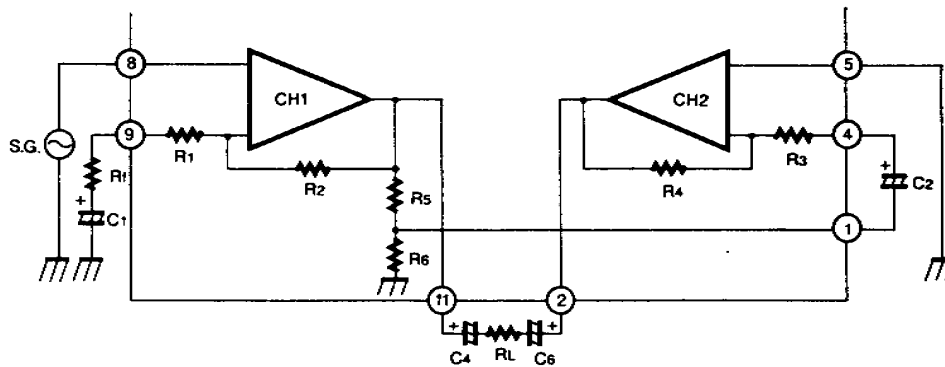
Fig. 3

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## VOLTAGE GAIN ADJUSTMENT

1. Stereo application

2. Bridge application



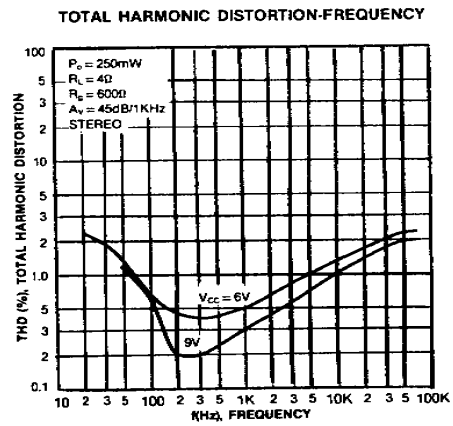
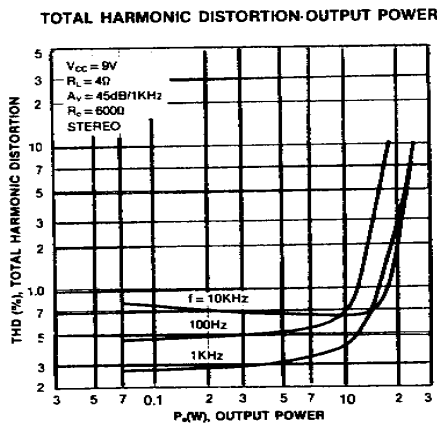
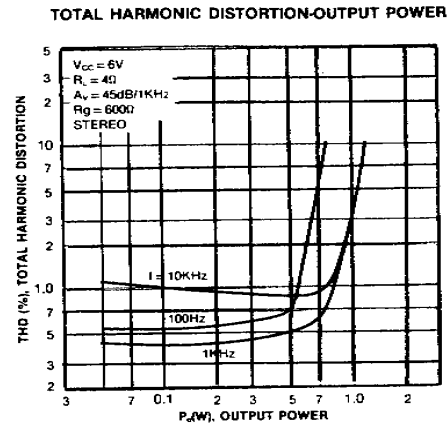
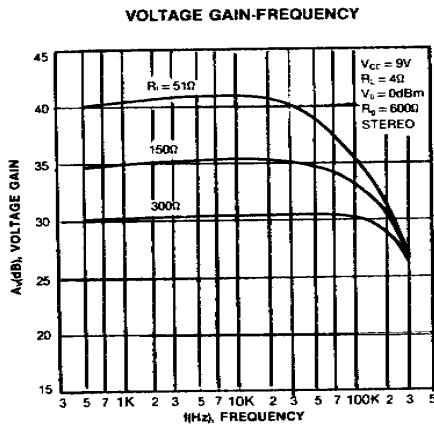
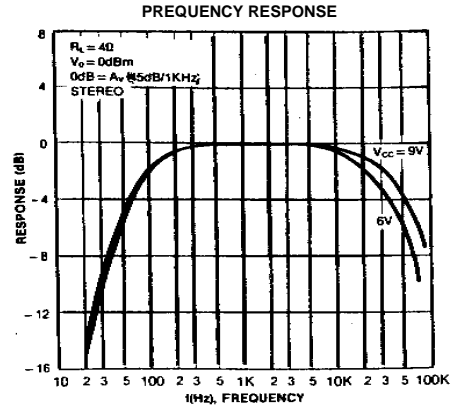
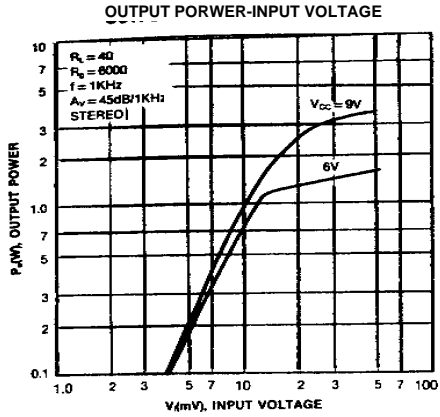
i) Fixed voltage gain (Pin 9 connected to GND directly)

$$A_v = 20 \log \frac{R_2}{R_1} + 6 \text{ (dB)}$$

ii) Variable voltage gain ( $R_f$  and  $C_1$  connected with pin 9)

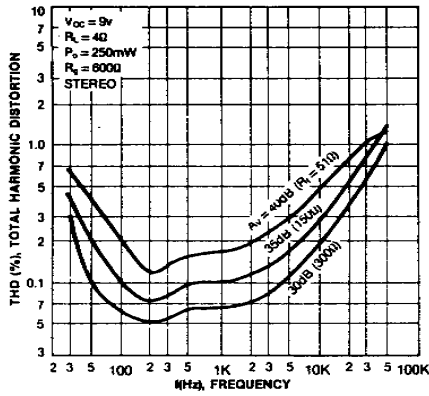
$$A_v = 20 \log \frac{R_2}{R_1 + R_f} + 6 \text{ (dB)}$$

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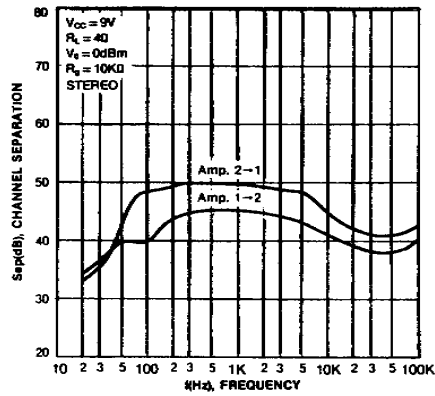


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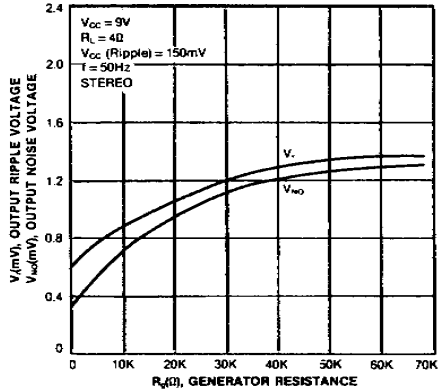
TOTAL HARMONIC DISTORTION-FREQUENCY



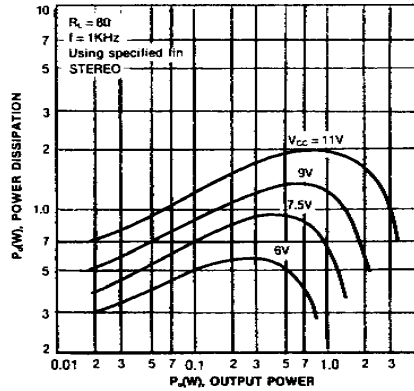
CHANNEL SEPARATION-FREQUENCY



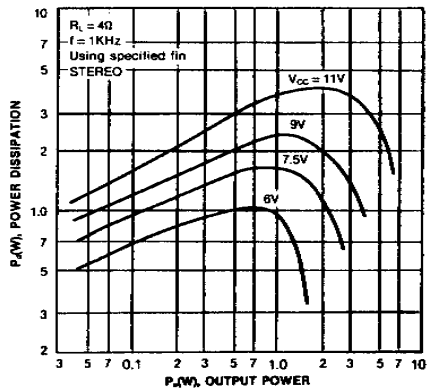
OUTPUT RIPPLE VOLTAGE-GENERATOR RESISTANCE  
OUTPUT NOISE VOLTAGE



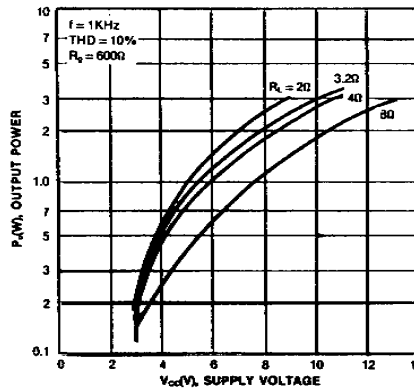
POWER DISSIPATION-OUTPUT POWER



POWER DISSIPATION -OUTPUT POWER

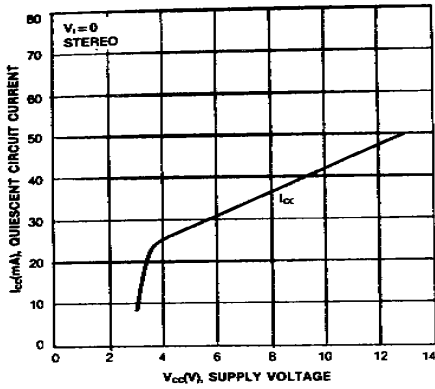


OUTPUT POWER-SUPPLY VOLTAGE

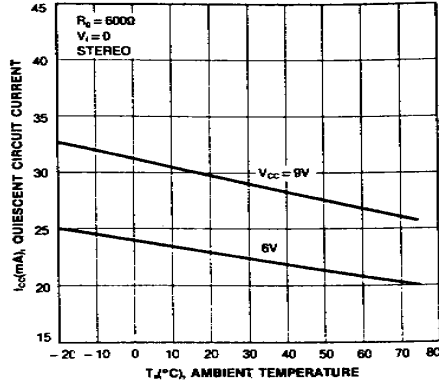


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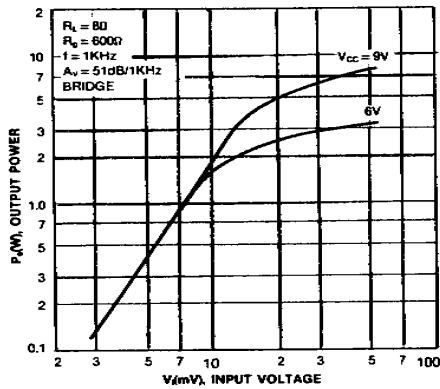
QUIESCENT CIRCUIT CURRENT SUPPLY VOLTAGE



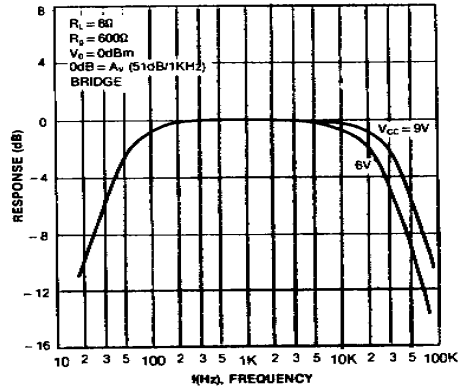
QUIESCENT CIRCUIT CURRENT AMBIENT TEMPERATURE



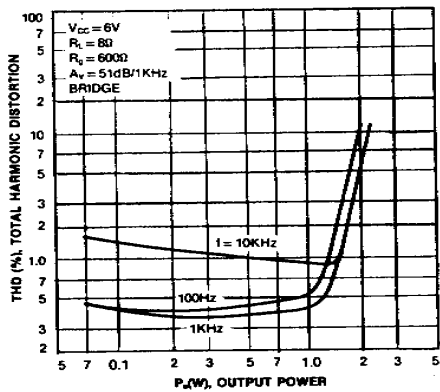
OUTPUT POWER-INPUT VOLTAGE



FREQUENCY RESPONSE



TOTAL HARMONIC DISTORTION-OUTPUT POWER



TOTAL HARMONIC DISTORTION-OUTPUT POWER

