

BA3406AL BA3406AF

Dual-channel tape preamplifier, with mute circuit

The BA3406AL and BA3406AF ICs are two channel high-gain, low-noise preamplifiers that contain switch circuits for muting and time constant (for use with metal tape).

Features

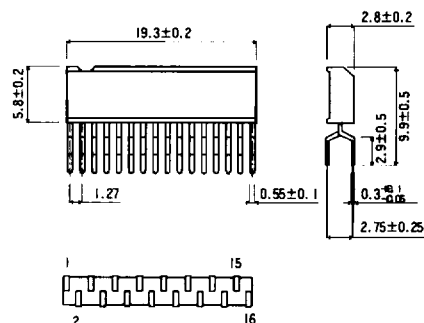
- available in ZIP16 and SOP16, packages
- wide power supply range (6 ~ 14 V)
- high open-loop gain (80 dB)
- good channel balance because of the 2-channels on a single chip
- built in bias circuit results in low pop noise when head switching
- emitter-follower output circuit ensures low output impedance
- low noise ($V_{NIN} = 1.0 \mu V_{rms}$)
- IC contains resistor to determine 70 μs response of metal tape. Set exact timing with external capacitor only.
- built-in switching circuit for metal tape
- mute circuit included
- preamplifier, metal switching, and mute circuits are independent allowing different applications to use the same chip
- output terminal has reverse current prevention diode to allow parallel connection to other circuits

Applications

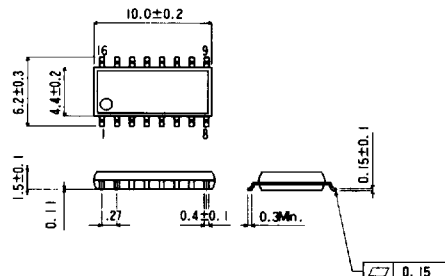
- car stereo player
- radio cassette tape recorder
- tape deck

Dimensions (Units : mm)

BA3406AL (ZIP16)



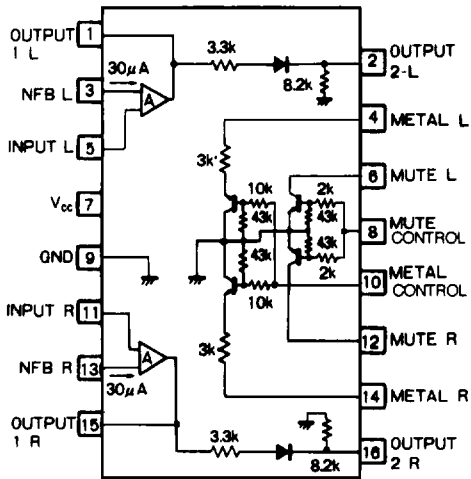
BA3406AF (SOP16)



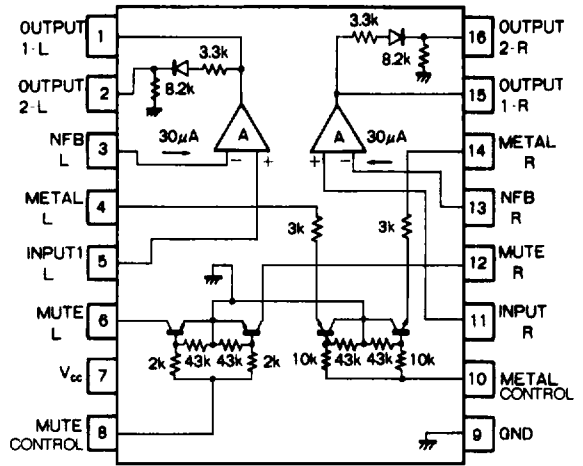
BA3406AL, BA3406AF Preamplifiers

Block diagram

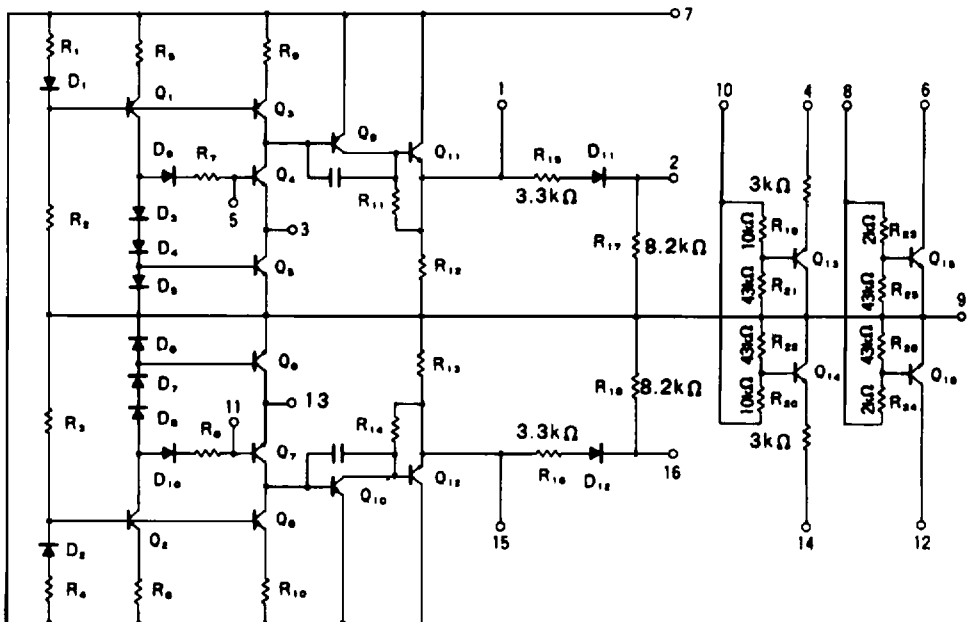
BA3406AL



BA3406AF



Circuit diagram (BA3406AL)



Absolute maximum ratings ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Limits	Unit	Conditions
Power supply voltage	V_{CC}	16	V	
Power dissipation	BA3406AL	400	mW	Reduce power by 4.0 mW for each degree above 25°C.
	BA3406AF	500		Reduce power by 5.0 mW for each degree above 25°C.
Operating temperature	T_{opr}	-25 ~ +75	°C	
Storage temperature	T_{stg}	-55 ~ +125	°C	

Recommended operating conditions ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Min	Typical	Max	Unit
Power supply voltage	V_{CC}	6	8	14	V

Electrical characteristics ($T_a = 25^\circ\text{C}$, $V_{CC} = 8\text{V}$)

Parameter	Symbol	Min	Typical	Max	Unit	Conditions
Quiescent current	I_Q		3.0	4.5	mA	$V_{IN} = 0 V_{rms}$
Open loop voltage gain	G_{VO}	75	80		dB	$V_{OUT} = 0.3 V_{rms}$, $f = 1 \text{ kHz}$
Maximum output voltage	V_{OM}	1.0	1.4		μV_{rms}	THD = 1%, $f = 1 \text{ kHz}$
Total harmonic distortion	THD		0.1	0.6	%	$V_{OUT} = 0.3 V_{rms}$
Input conversion noise voltage	V_{NIN}		1.0	2.0	μV_{rms}	$V_{IN} = 0 V_{rms}$, $R_g = 2.2 \text{ k}\Omega$
Input impedance	R_{IN}	50			$\text{k}\Omega$	
Crosstalk	CT	50	65		dB	$f = 1 \text{ kHz}$, $R_g = 2.2 \text{ k}\Omega$
Channel balance	CB		0	1.5	dB	$V_{OUT} = 0.3 V_{rms}$

Figure 1 Test circuit

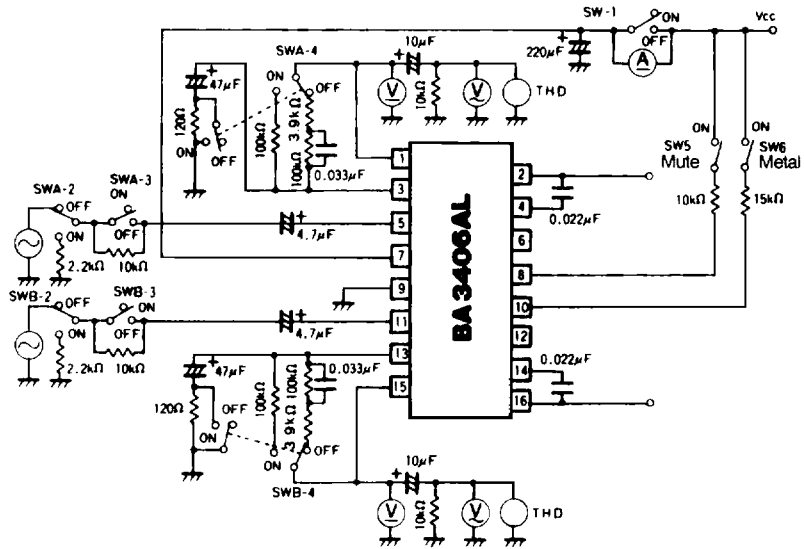
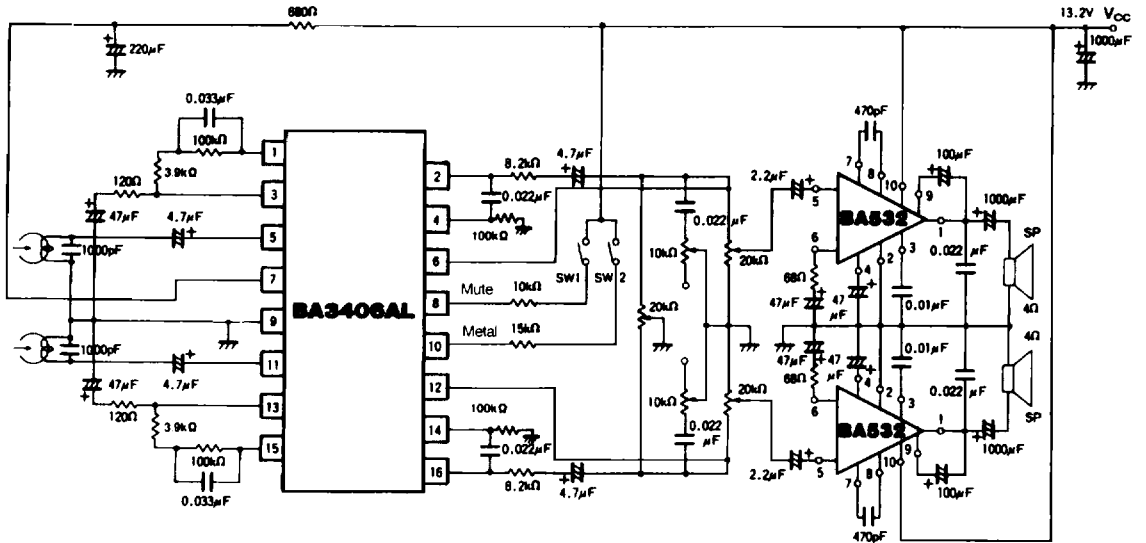


Figure 2 Application example



Electrical characteristic curves BA3408

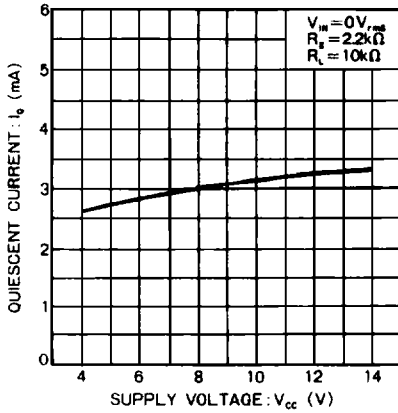


Figure 3

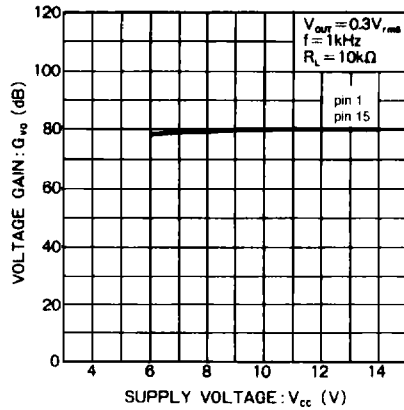


Figure 4

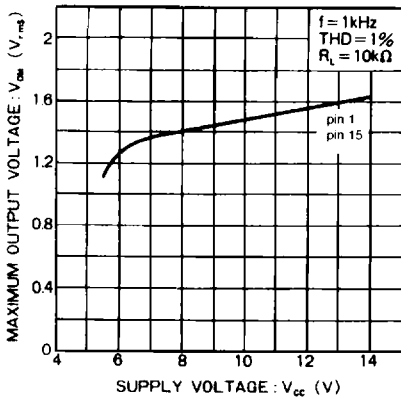


Figure 5

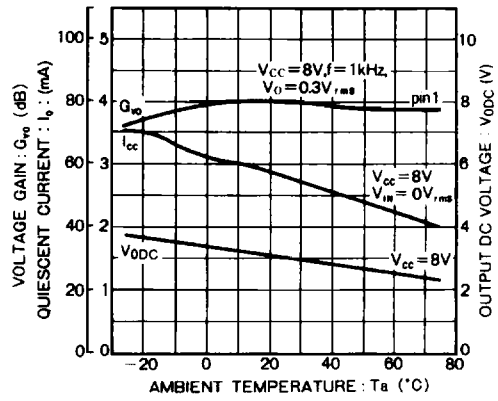


Figure 6

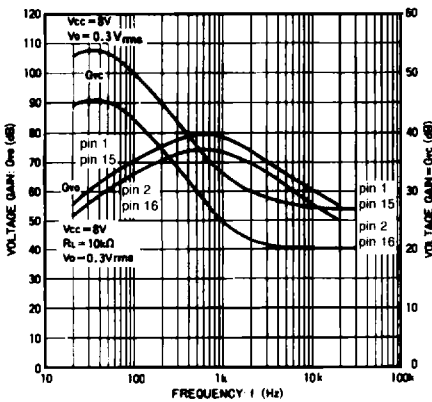


Figure 7

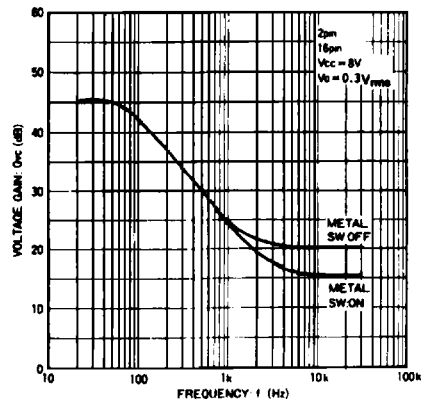


Figure 8

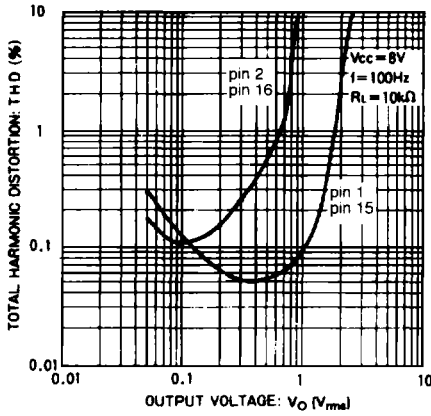


Figure 9

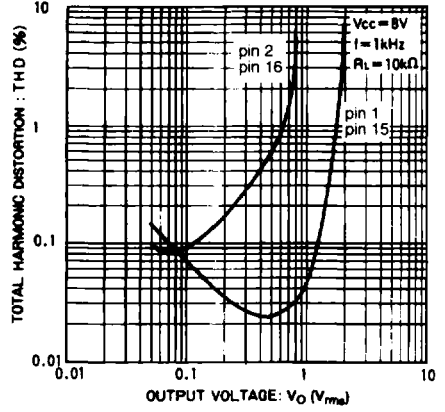


Figure 10

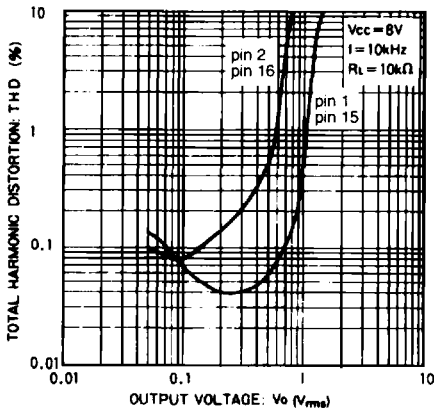


Figure 11

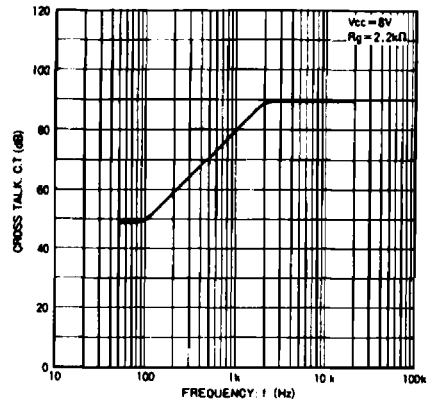


Figure 12

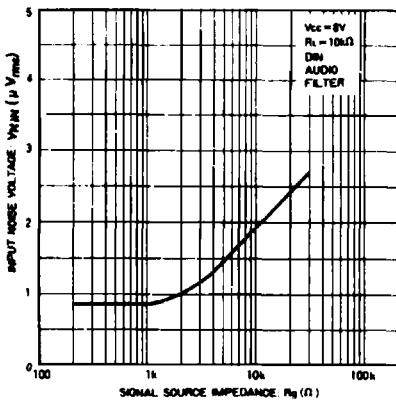


Figure 13

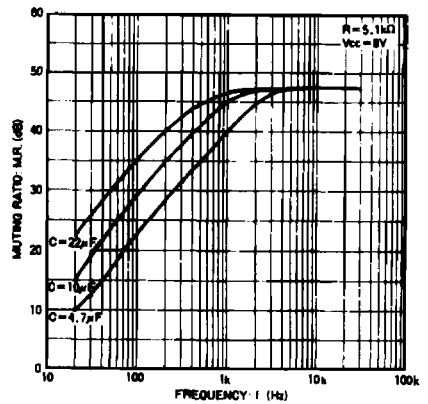


Figure 14

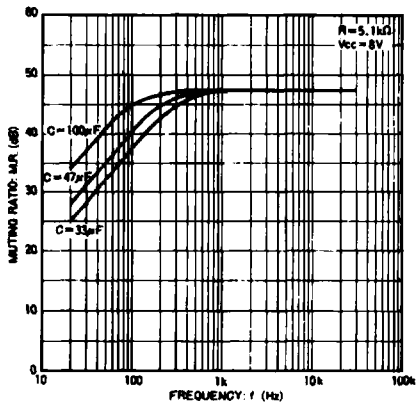


Figure 15

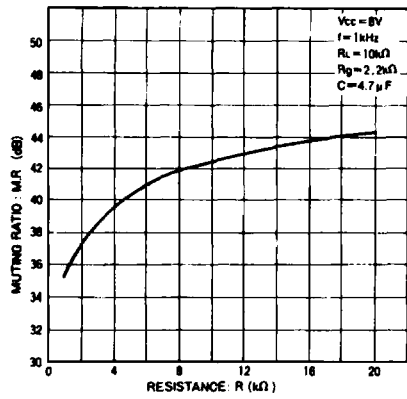


Figure 16