

# FAN7021

## CMOS Power Amplifier

### Features

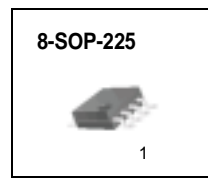
- Continuous Average Power is 1.0W (8Ω)
- Low THD: Under 0.2% (5V)
- Do not Need Output Coupling Capacitor or Bootstrap Capacitor
- Low Shutdown Current: 0.01μA
- Shutdown: High Active
- Built in Reduction Circuit for Popping noise
- Built in TSD Circuit

### Typical Applications

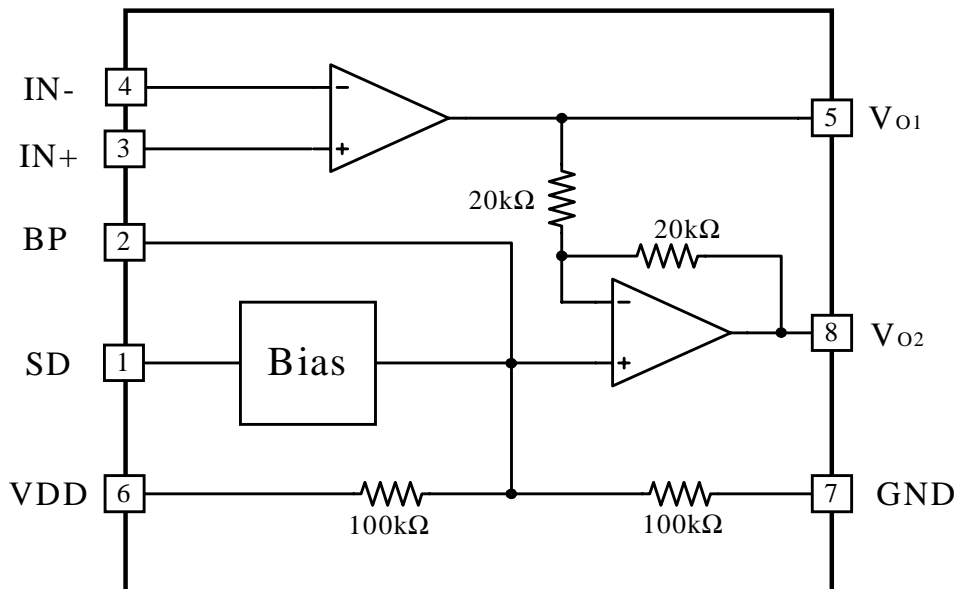
- Cellular Phone
- Portable Computer
- Audio Systems

### Description

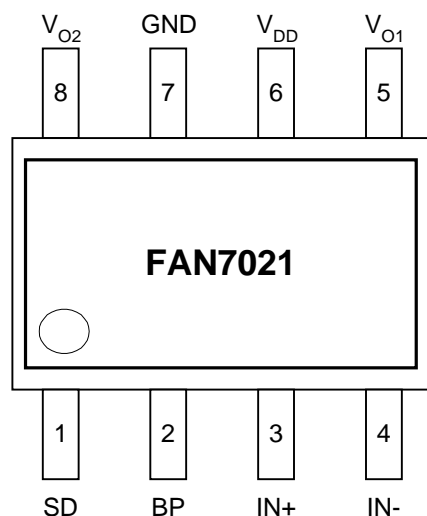
The FAN7021 is a bridge connected audio power amplifier capable of delivering 1W of continuous average power to an 8Ω load with less than 0.2%(THD) from a 5V power supply. The FAN7021 require few external components and operate on low supply voltage from 2.0V to 5.5V. Since the FAN7021 does not require output coupling capacitor, bootstrap capacitors, or snubber networks, it is ideally suited for low power portable systems that require minimum volume and weight. The FAN7021 feqtures an externally controlled, low power consumption shutdown mode (0.01 uA,typ). Additional FAN7021 features include thermal shutdown protection, unity gain stability, and external gain set.



### Internal Block Diagram



## Pin Assignments



## Pin Definitions

Pin Number	Pin Name	Pin Function Description
1	SD	Shutdown
2	BP	Bypass
3	IN+	Input +
4	IN-	Input -
5	VO1	Power AMP Output 1
6	VDD	Supply Voltage
7	GND	Ground
8	VO2	Power AMP Output 2

## Absolute Maximum Ratings (Ta = 25°C)

Parameter	Symbol	Value	Unit	Remark
Maximum Supply Voltage	VDD	6.0	V	Maximum Supply Voltage
Power Dissipation	PD	-	W	-
Operating Temperature	TOPR	-40 ~ +85	°C	Operating Temperature
Storage Temperature	TSTG	-65 ~ +150	°C	Storage Temperature
Thermal Resistance	θJA	180	°C/W	Thermal Resistance

## Recommended Operating Conditions (Ta = 25°C)

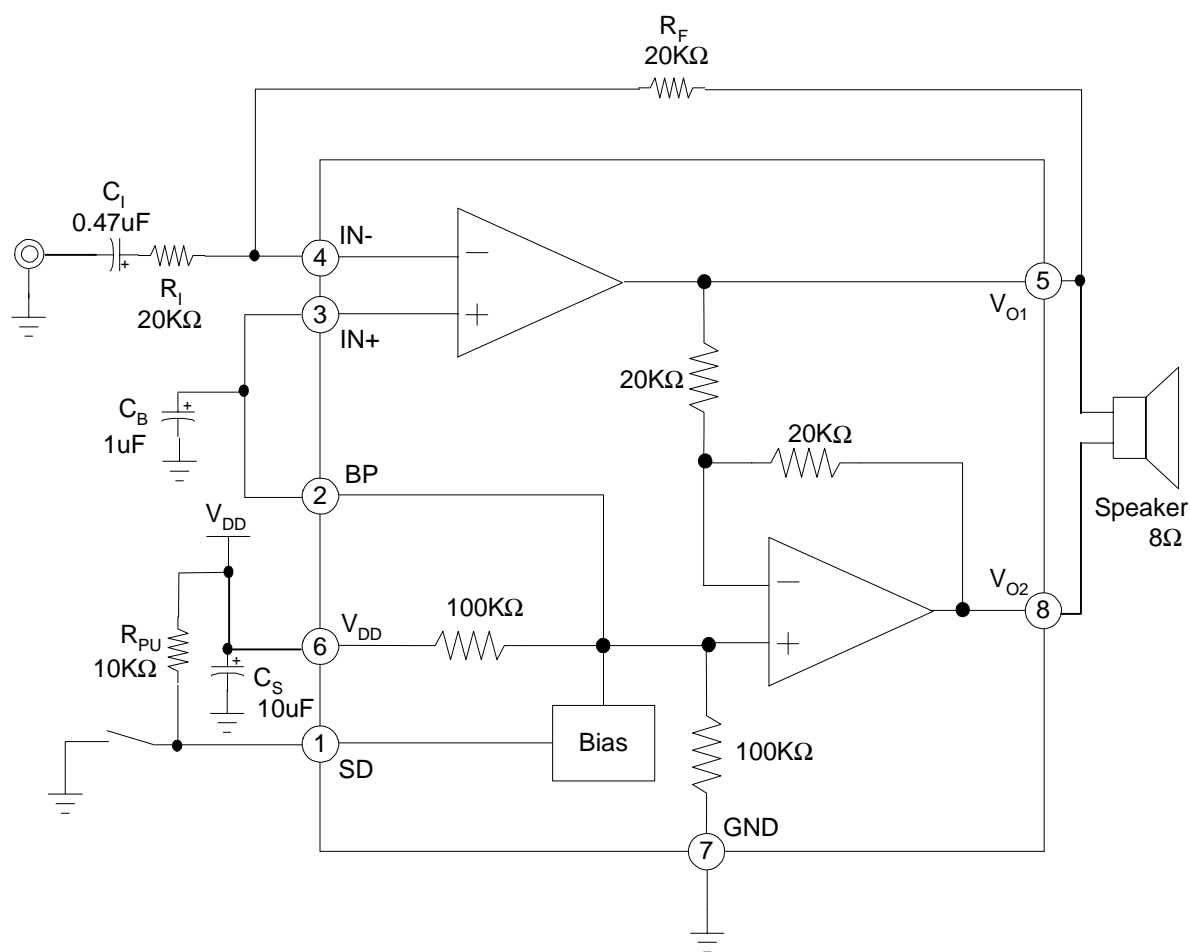
Parameter	Symbol	Min.	Typ.	Max.	Unit
Operating Supply Voltage	VDD	2.0	-	5.5	V

## Electrical Characteristics

( $R_L = 8\Omega$ ,  $T_a = 25^\circ\text{C}$ , Unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>V<sub>DD</sub> = 5.0V, UNLESS OTHERWISE SPECIFIED</b>						
Quiescent Power Supply Current	I <sub>DD</sub>	V <sub>IN</sub> =0V, I <sub>O</sub> =0A	-	4.0	7.0	mA
Shutdown Current	I <sub>SD</sub>	V <sub>SD</sub> =V <sub>DD</sub>	-	0.01	2.0	μA
Output Offset Voltage	V <sub>OS</sub>	V <sub>IN</sub> =0V	-	5	50	mV
Output Power	P <sub>O</sub>	THD=0.2% (Max.); f=1KHz	-	1	-	W
Total Harmonic Distortion+noise	THD+N	P <sub>O</sub> =0.25W <sub>rms</sub> , A <sub>V</sub> D=2				
		f=1KHz	-	0.1	-	%
		f=20KHz	-	0.4	-	%
Power Supply Rejection Ratio	PSRR	V <sub>DD</sub> =4.9V to 5.1V	-	65	-	dB
<b>V<sub>DD</sub> = 3.3V, UNLESS OTHERWISE SPECIFIED</b>						
Quiescent Power Supply Current	I <sub>DD</sub>	V <sub>IN</sub> =0V, I <sub>O</sub> =0A	-	3.0	-	mA
Shutdown Current	I <sub>SD</sub>	V <sub>SD</sub> =V <sub>DD</sub>	-	0.01	-	μA
Output Offset Voltage	V <sub>OS</sub>	V <sub>IN</sub> =0V	-	5	-	mV
Output Power	P <sub>O</sub>	THD=1% (Max.); f=1KHz	-	0.5	-	W
Total Harmonic Distortion+noise	THD+N	P <sub>O</sub> =0.25W <sub>rms</sub> , A <sub>V</sub> D=2				
		f=1KHz	-	0.15	-	%
		f=20KHz	-	0.45	-	%
Power Supply Rejection Ratio	PSRR	V <sub>DD</sub> =3.2V to 3.4V	-	65	-	dB
<b>V<sub>DD</sub> = 2.6V, UNLESS OTHERWISE SPECIFIED</b>						
Quiescent Power Supply Current	I <sub>DD</sub>	V <sub>IN</sub> =0V, I <sub>O</sub> =0A	-	2.5	-	mA
Shutdown Current	I <sub>SD</sub>	V <sub>SD</sub> =V <sub>DD</sub>	-	0.01	-	μA
Output Offset Voltage	V <sub>OS</sub>	V <sub>IN</sub> =0V	-	5	-	mV
Output Power	P <sub>O</sub>	THD=0.3% (Max.); f=1KHz	-	0.25	-	W
Total Harmonic Distortion+Noise	THD+N	P <sub>O</sub> =0.25W <sub>rms</sub> , A <sub>V</sub> D=2				
		f=1KHz	-	0.25	-	%
		f=20KHz	-	0.5	-	%
Power Supply Rejection Ratio	PSRR	V <sub>DD</sub> =2.5V to 2.7V	-	65	-	dB

## Typical Application Circuits



## Performance Characteristics

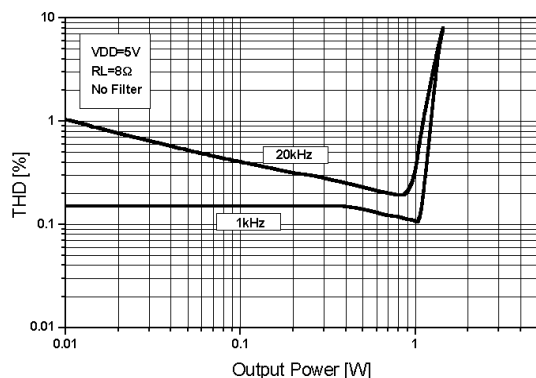


Figure 1. THD+N versus output power

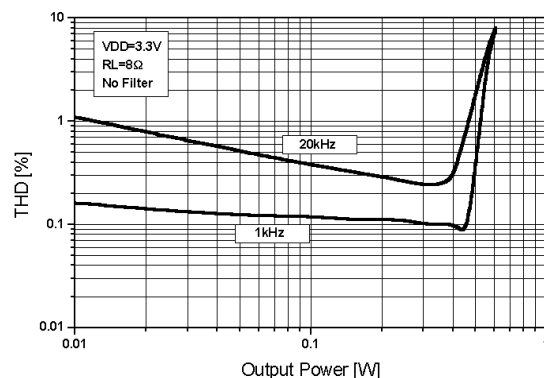


Figure 2. THD+N versus output power

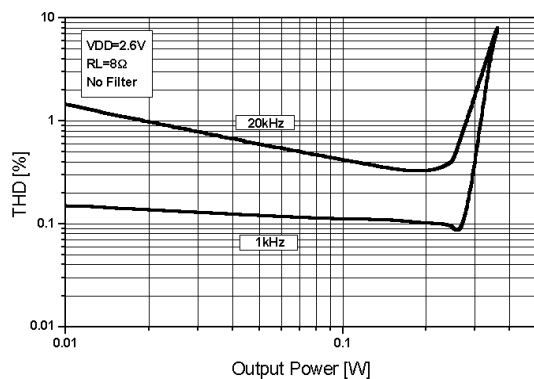


Figure 3. THD+N versus output power

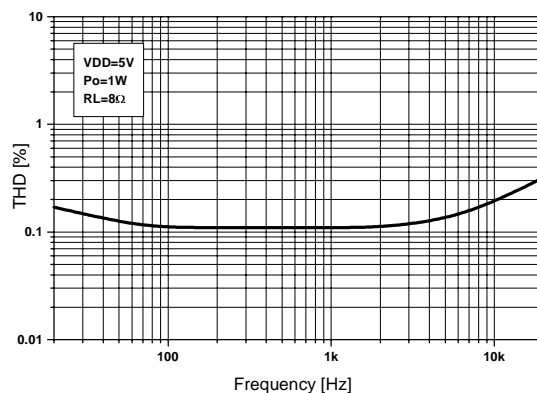


Figure 4. THD+N versus Frequency

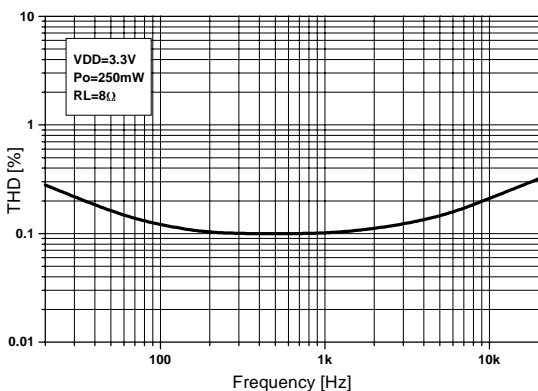


Figure 5. THD+N versus Frequency

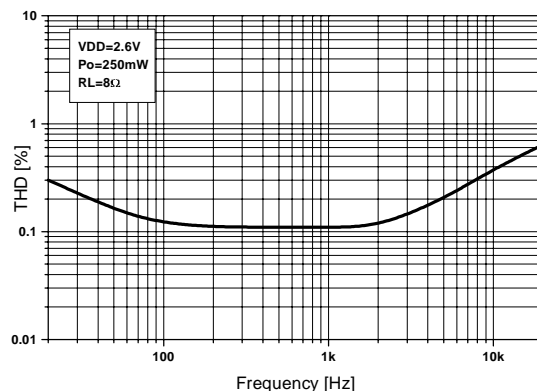


Figure 6. THD+N versus Frequency

Performance Characteristics (Continued)

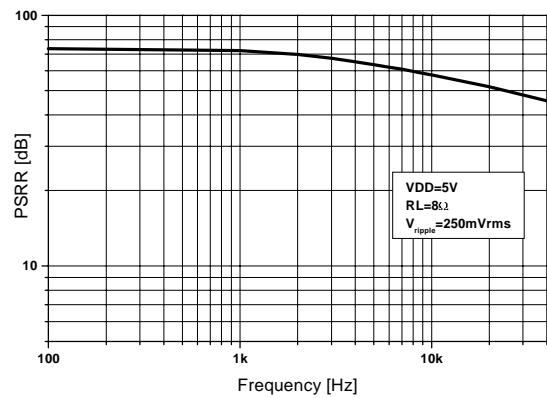


Figure 7. Power supply rejection ration

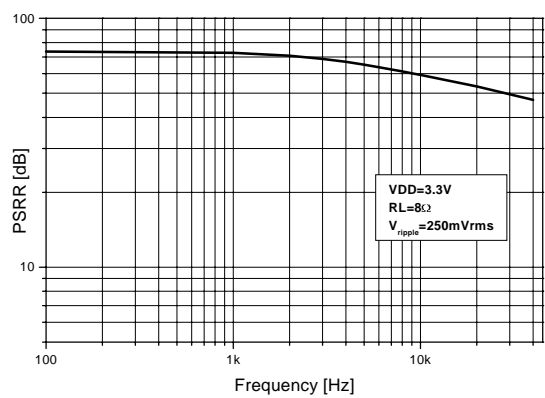


Figure 8. Power supply rejection ration

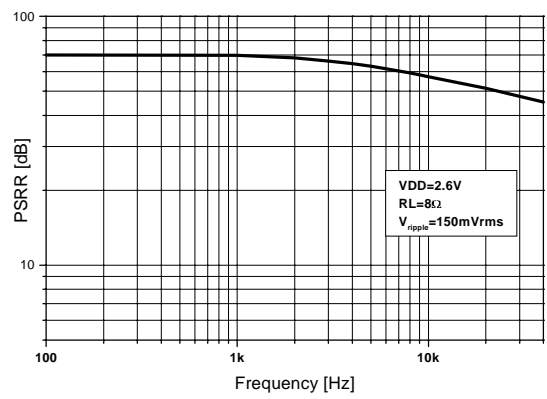


Figure 9. Power supply rejection ration

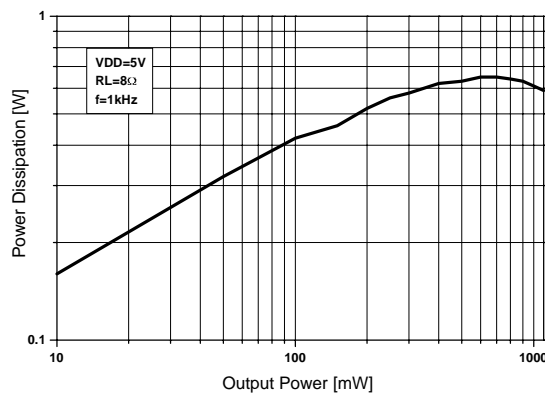


Figure 10. Power Dissipation versus output power

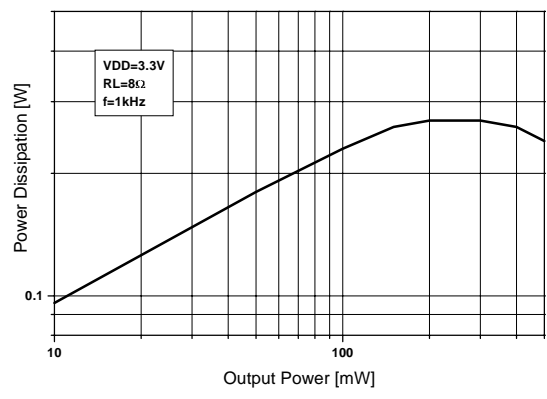


Figure 11. Power Dissipation versus output power

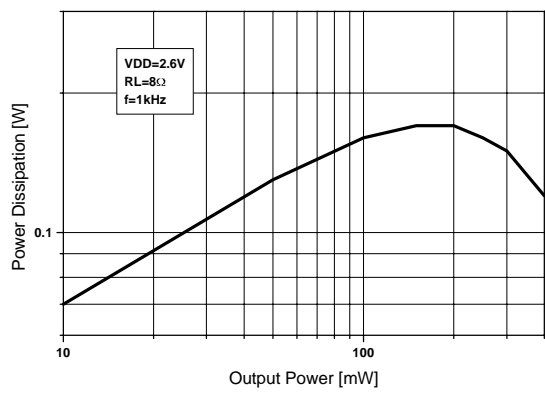


Figure 12. Power Dissipation versus output power

## Performance Characteristics (Continued)

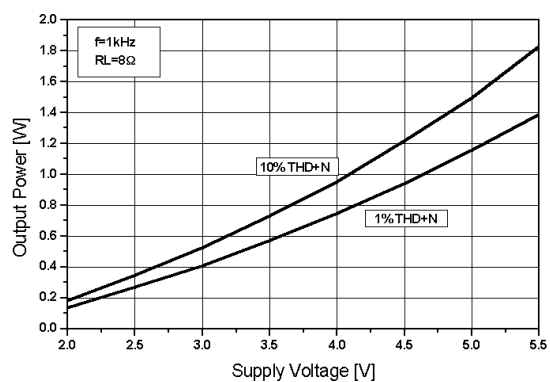


Figure 13. Output power versus supply voltage

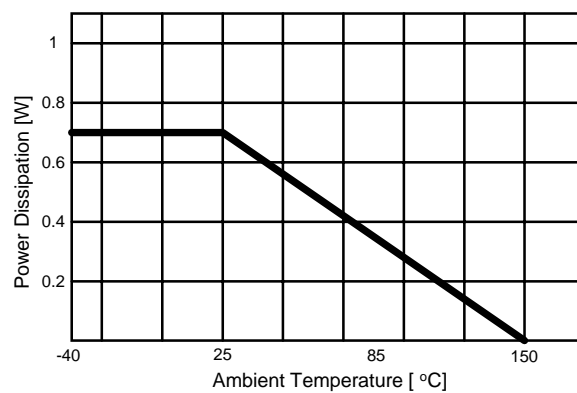


Figure 14. Power derating curve





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## Ordering Information

Device	Package	Operating Temp.
FAN7021M	8-SOP-225	−40°C ~ +85°C

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