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

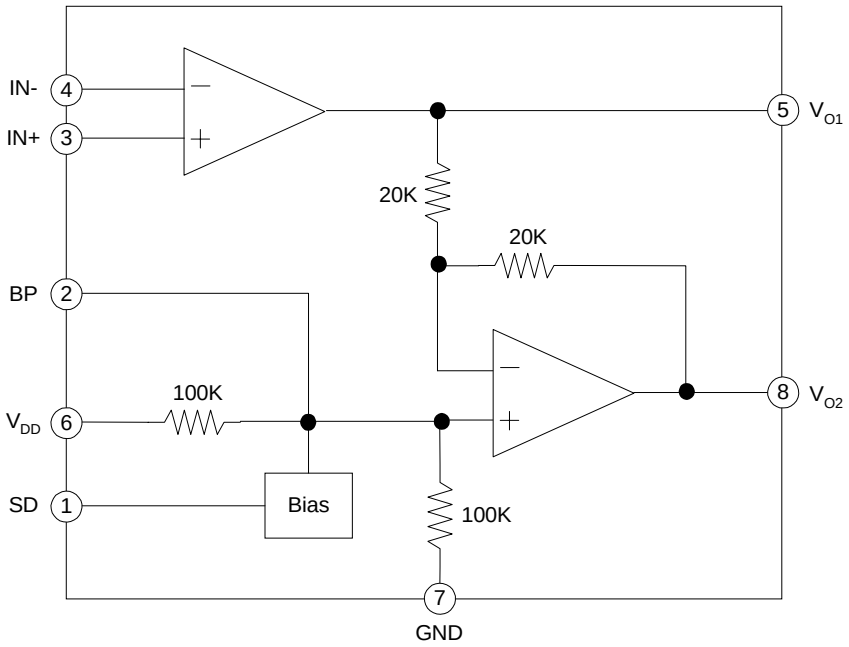
- Cellular phone
- Portable computer
- Audio systems

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.

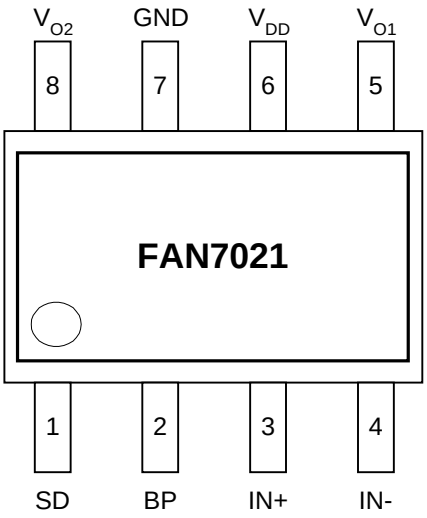
8-SOP-225

Internal Block Diagram



Rev. 1.0.0

Pin Assignments



Pin Definitions

Pin Number	Pin Name	Pin Function Description
1	SD	Shutdown
2	BP	Bypass
3	IN+	Input +
4	IN–	Input –
5	V_{O1}	Power AMP output 1
6	V_{DD}	Supply Voltage
7	GND	Ground
8	V_{O2}	Power AMP output 2

Absolute Maximum Ratings (Ta = 25°C)

Parameter	Symbol	Value	Unit	Remark
Maximum Supply Voltage	V_{DD}	6.0	V	Maximum supply voltage
Power Dissipation	P_D	-	W	-
Operating Temperature	T_{OPR}	–40 ~ +85	°C	Operating temperature
Storage Temperature	T_{STG}	–65 ~ +150	°C	Storage temperature

Recommended Operating Conditions (Ta = 25°C)

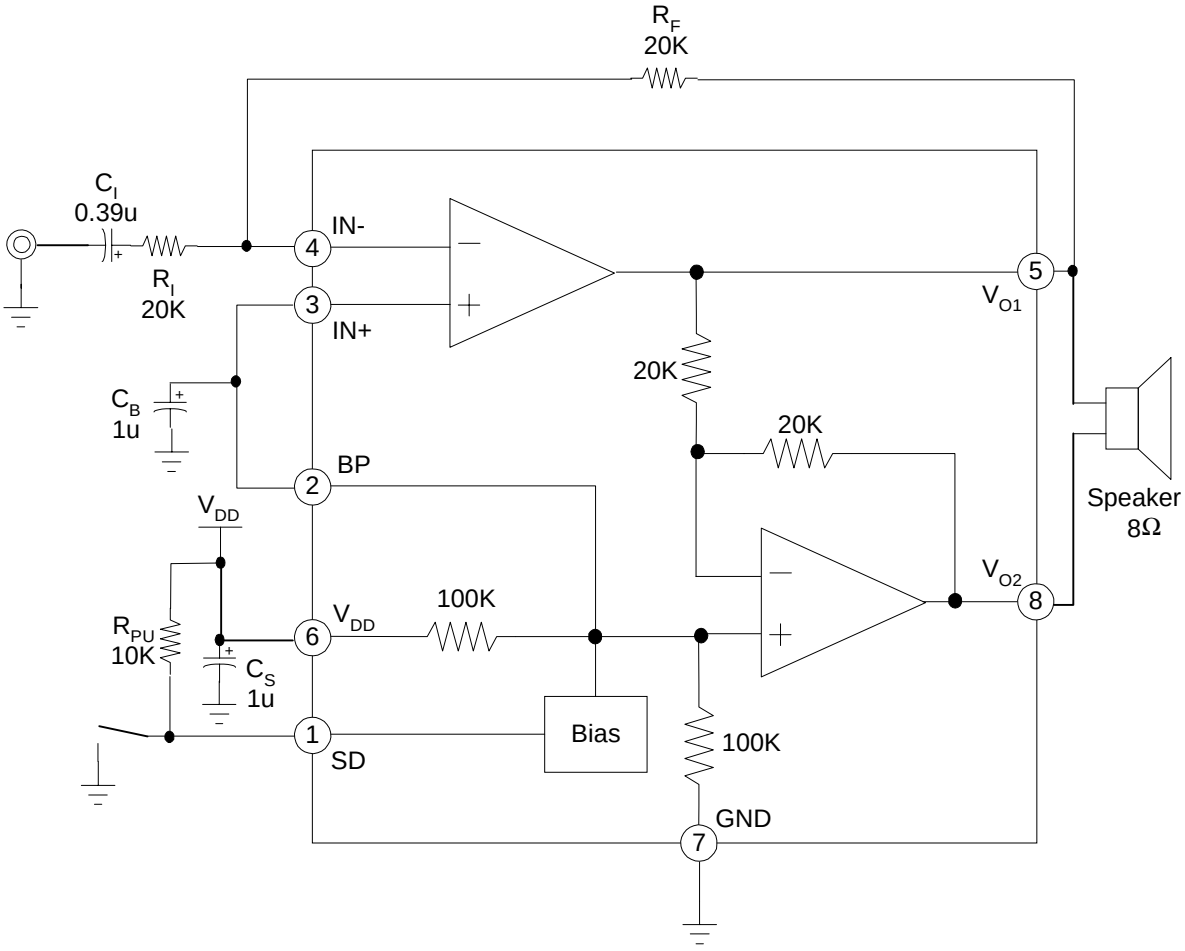
Parameter	Symbol	Min.	Typ.	Max.	Unit
Operating Supply Voltage	V_{DD}	2.0	-	5.5	V

Electrical Characteristics

(R_L = 8Ω, Ta = 25°C, Unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
V_{DD} = 5.0V, UNLESS OTHERWISE SPECIFIED						
Quiescent power supply current	I_{DD}	V_{IN}=0V,I_O=0A	-	4.0	7.0	mA
Shutdown current	I_{SD}	V_{SD}=V_{DD}	-	0.01	2.0	μA
Output offset voltage	V_{OS}	V_{IN}=0V	-	5	50	mV
Output power	P_O	THD=0.2% (Max.);f=1KHz	-	1	-	W
Total harmonic distortion+Noise	THD+N	P_O=0.25Wrms,A_{VD}=2,filter=80KHz				
		f=1KHz	-	0.1	-	%
		f=20KHz	-	0.4	-	%
Power supply rejection ratio	PSRR	V_{DD}=4.9V to 5.1V	-	65	-	dB
V_{DD} = 3.3V, UNLESS OTHERWISE SPECIFIED						
Quiescent power supply current	I_{DD}	V_{IN}=0V,I_O=0A	-	3.0	-	mA
Shutdown current	I_{SD}	V_{SD}=V_{DD}	-	0.01	-	μA
Output offset voltage	V_{OS}	V_{IN}=0V	-	5	-	mV
Output power	P_O	THD=1% (Max.);f=1KHz	0.45	0.5	-	W
Total harmonic distortion+Noise	THD+N	P_O=0.25Wrms,A_{VD}=2,filter=80KHz				
		f=1KHz	-	0.15	-	%
		f=20KHz	-	0.45	-	%
Power supply rejection ratio	PSRR	V_{DD}=3.2V to 3.4V	-	65	-	dB
V_{DD} = 2.6V, UNLESS OTHERWISE SPECIFIED						
Quiescent power supply current	I_{DD}	V_{IN}=0V,I_O=0A	-	2.5	-	mA
Shutdown current	I_{SD}	V_{SD}=V_{DD}	-	0.01	-	μA
Output offset voltage	V_{OS}	V_{IN}=0V	-	5	-	mV
Output power	P_O	THD=0.3% (Max.);f=1KHz	-	0.25	-	W
Total harmonic distortion+Noise	THD+N	P_O=0.25Wrms,A_{VD}=2,filter=80KHz				
		f=1KHz	-	0.25	-	%
		f=20KHz	-	0.5	-	%
Power supply rejection ratio	PSRR	V_{DD}=2.5V to 2.7V	-	65	-	dB

Typical Application Circuits



Performance Characteristics

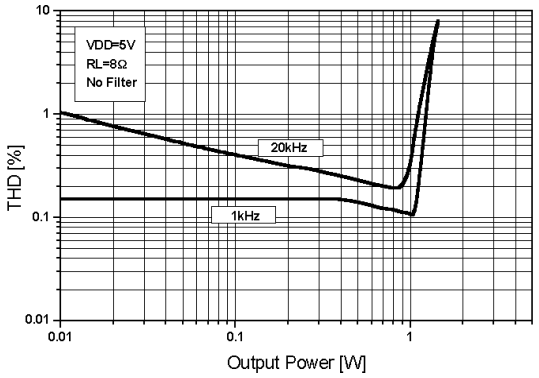


Figure 1. THD+N versus output power

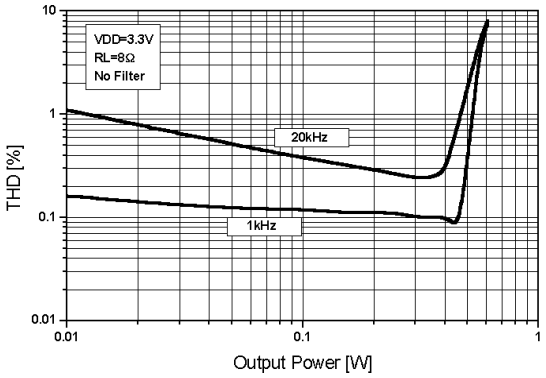


Figure 2. THD+N versus output power

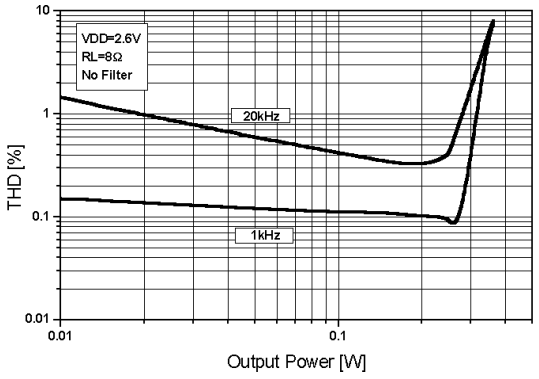


Figure 3. THD+N versus output power

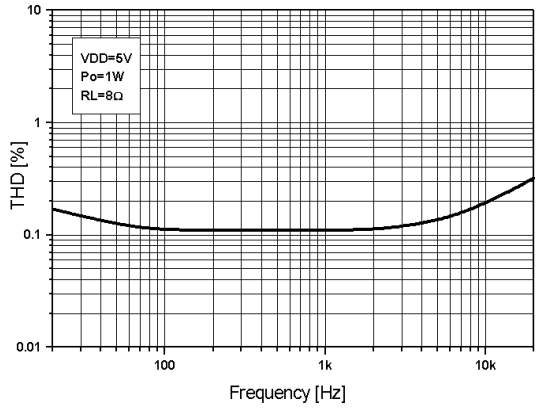


Figure 4. THD+N versus Frequency

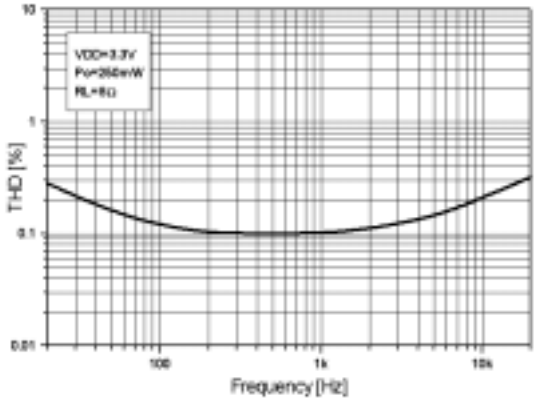


Figure 5. THD+N versus Frequency

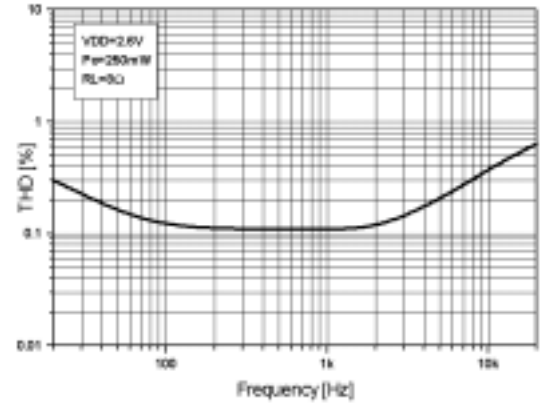


Figure 6. THD+N versus Frequency

Performance Characteristics (Continued)

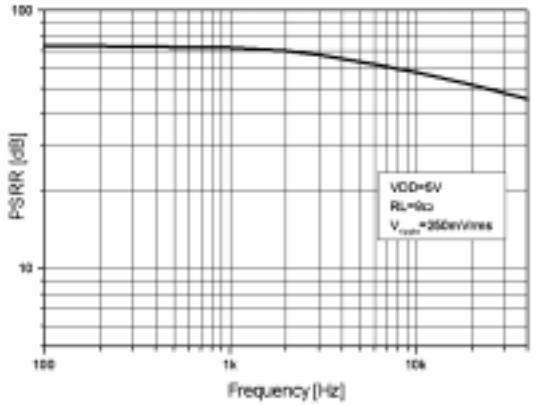


Figure 7. Power supply rejection ration

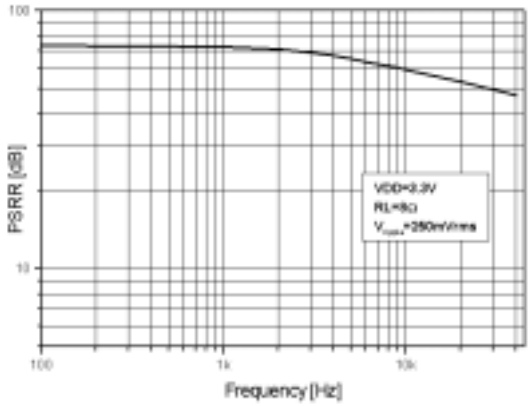


Figure 8. Power supply rejection ration

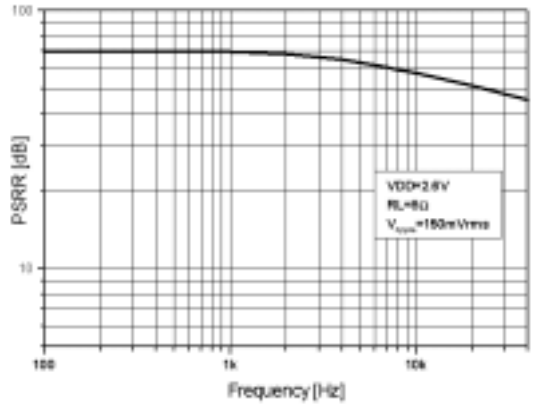


Figure 9. Power supply rejection ration

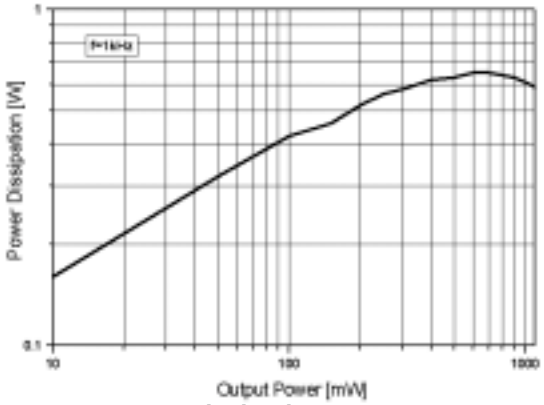


Figure 10. Power Dissipation versus output power

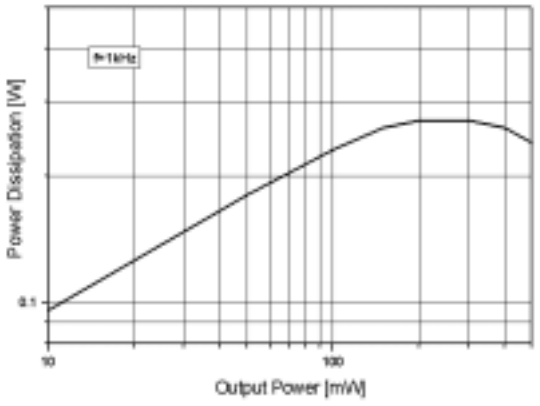


Figure 11. Power Dissipation versus output power

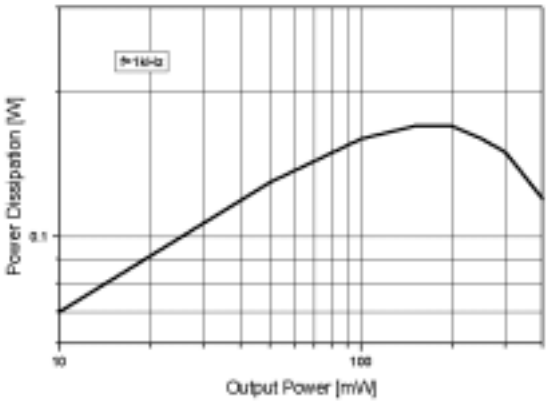


Figure 12. Power Dissipation versus output power

Performance Characteristics (Continued)

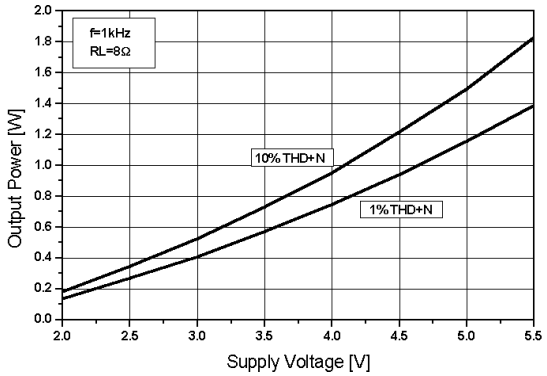


Figure 13. Output power versus supply voltage

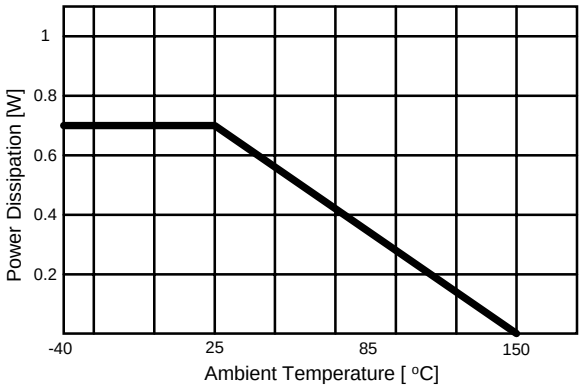
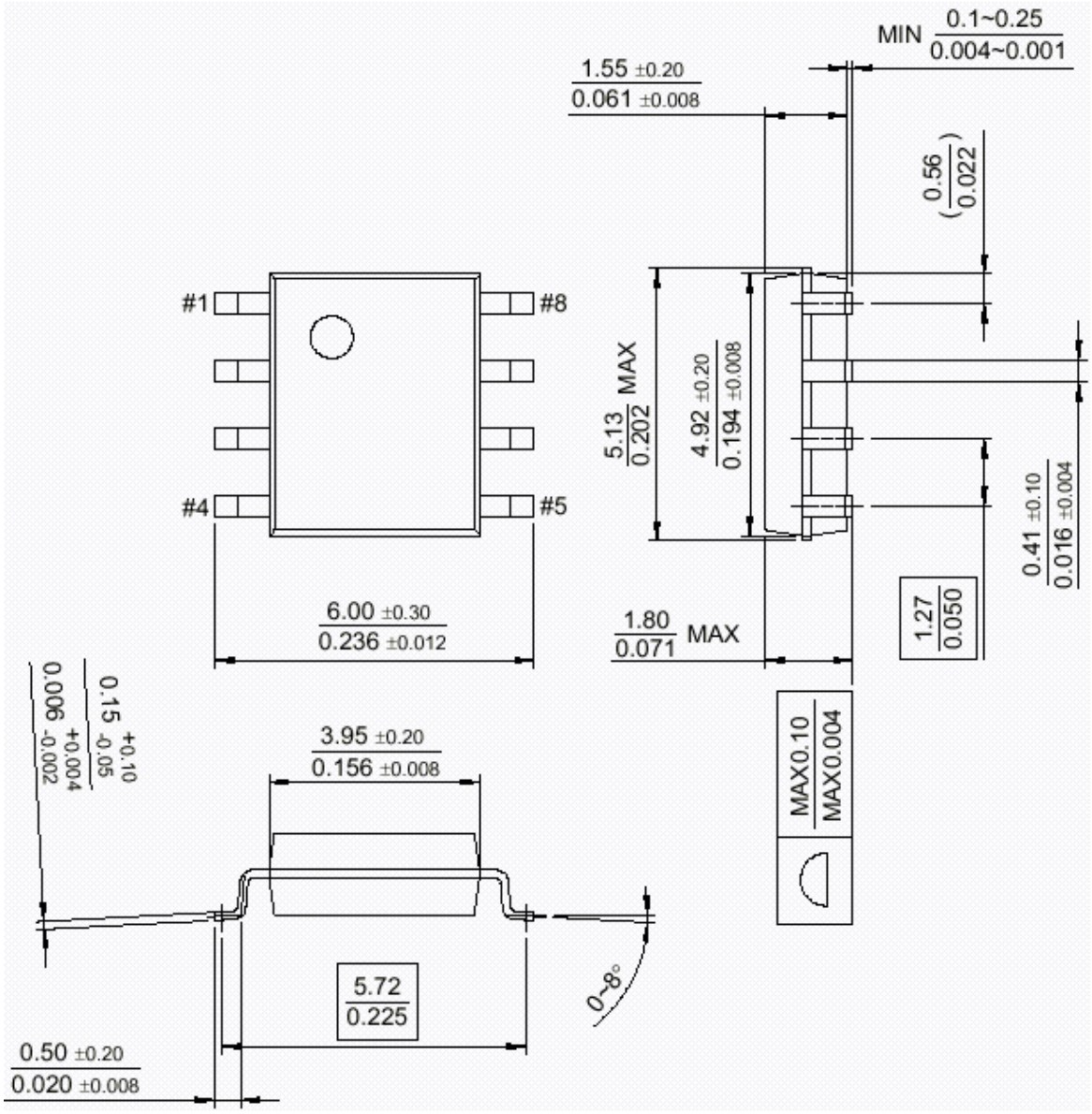


Figure 14. Power darting curve

Mechanical Dimensions (Unit: mm)

Package

8-SOP-225



Ordering Information

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