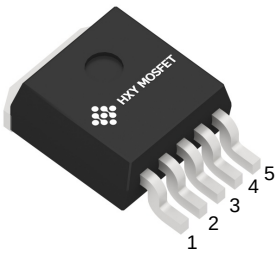
TDA2050A

18W Hi-Fi AMPLIFIER AND 35W DRIVER

Description

The TDA2050A is a monolithic integrated circuit in Pentawatt package, intended for use as an audio class AB audio amplifier. Thanks to its high power capability the TDA2050A is able to provide up to 35W true rms power into 4 ohm load@ THD =10%, VS=36V, f=1KHz and up to 32W into 8ohm load @THD=10%, 44V, f=1KHz. Moreover, the TDA2050A delivers typically 50W music power into 4 ohm load over 1 sec at VS=22.5V, f=1KHzThe high power and very low harmonic and crossover distortion (THD=0.05% typ, @ VS = 44V, PO = 0.1 to 15W, RL=8ohm, =100Hz to 15KHz) make the device most suitable for both HiFi and high class TV sets.)



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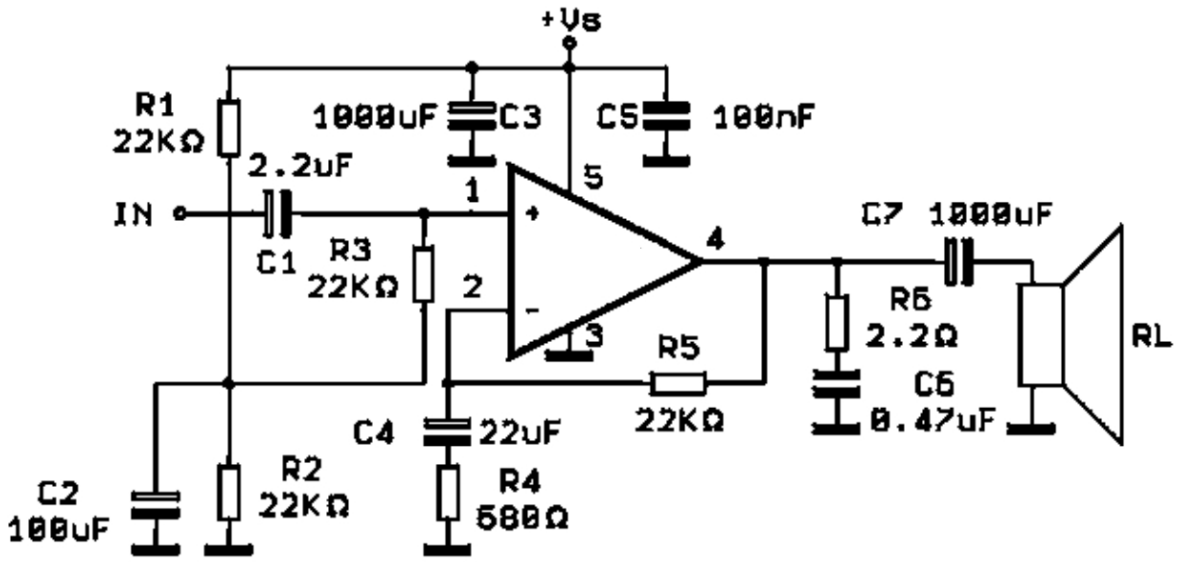
Typical Application



Thermal Data

Symbol	Parameter	Value	Unit
Rth (j-case)	Thermal Resistance Junction-case Max	3	°C/W

Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
Vs	Supply Voltage	± 25	V
Vi	Input Voltage	Vs	
Vi	Differential Input Voltage	±15	V
Io	Peak Output Current (internally limited)	4.5	A
Ptot	Total Power Dissipation at Tcase =90°C	25	W
Tstg, Tj	Storage and Junction Temperature	– 40 to + 150	°C

Electrical Characteristics

(Refer to the test circuit, VS = ± 18V, Tamb = 25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Vs	Supply Voltage		±4.5		±25	V
Id	Quiescent Drain Current			26	35	mA
Ib	Input Bias Current	VS = ±22 V		0.2	2	µA
Vos	Input Offset Voltage	VS = ±22 V		±2	±20	mV
Ios	Input Offset Current			±20	±200	nA
PO	Output Power	d=0.5%, Gv=26dB f = 40 to 15 KHz RL = 4Ω RL = 8Ω VS = ±22 V RL = 8Ω	 24 22	 28 18 25		 W W W
BW	Power Bandwidth	Po = 15W RL = 4Ω		40		kHz
SR	Slew Rate			6		V/µsec
Gv	Open Loop Voltage Gain	f = 1kHz		80		dB
Gv	Closed Loop Voltage Gain	f = 1 kHz	30	30.5	31	dB
d	Total Harmonic Distortion	Po = 0.1 to 14W RL = 4Ω		0.08		%
		f = 40 to 15 KHz f =1kHz		0.03		%
		Po = 0.1 to 9W				
		f = 40 t o 15000 Hz RL = 8Ω		0.5		%
d2	Second Order CCIF Intermodulation Distortion			0.03		%
d3	Third Order CCIF Intermodulation Distortion			0.08		%
eN	Input Noise Voltage	B = Curve A		2		µV
		B = 22 Hz to 22 kHz		3	10	µV
iN	Input Noise Current	B = Curve A		50		pA
		B = 22 Hz to 22 kHz		80	200	pA
S/N	Signal to Noise Ratio	RL=4Ω , Rg =10kΩ , B = Curve A				
		PO = 15W		106		dB
		PO = 1W		94		dB
Ri	Input Resistance(pin 1)	(pen loop) f = 1kHz	0.5	5		MΩ
SVR	Supply Voltage Rejection	RL = 4Ω , Rg = 22kΩ Gv = 26dB , f = 100 Hz		45		dB
Tj	Thermal Shut-down Junction			140		°C

Figure 1 : Single Supply Amplifier

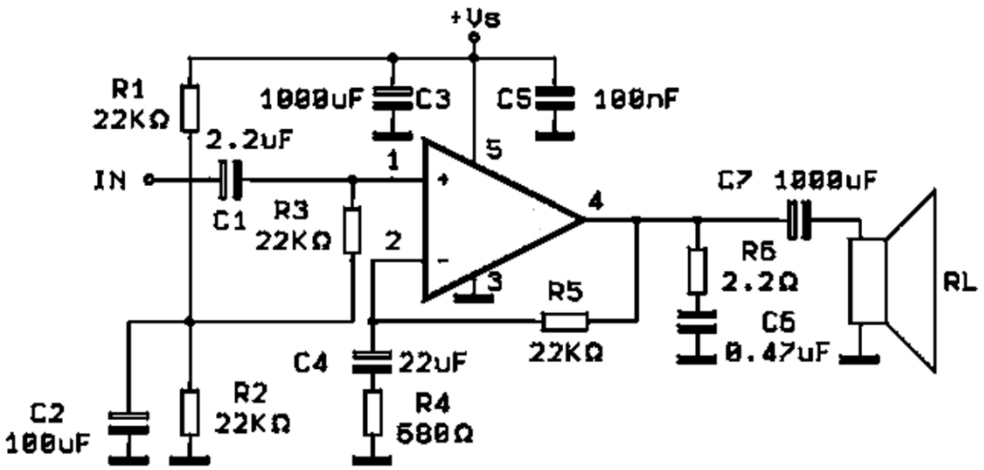


Figure 2 : Open Loop-frequency Response

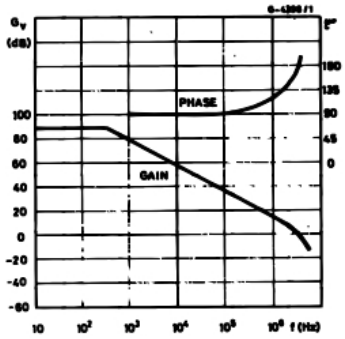


Figure 3 : Output Power versus Supply Voltage

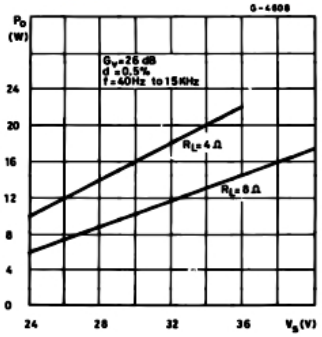


Figure 4 : Total Harmonic Distortion versus Output Power (test using rise filters)

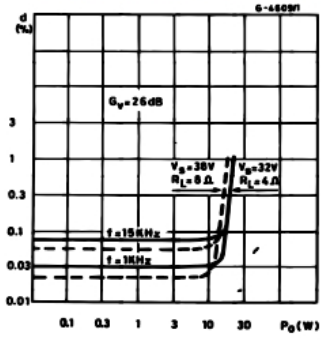


Figure 5 : Two Tone CCIF Intremodulation Distortion

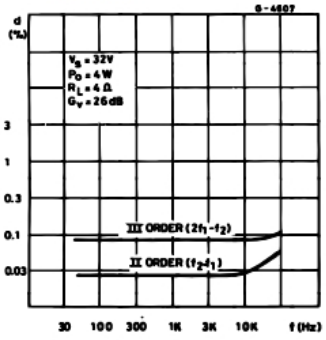


Figure 6 : Large Signal Frequency Response

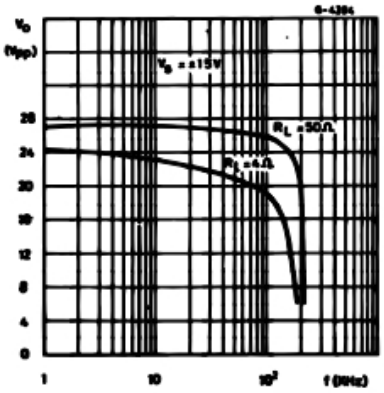


Figure 7 : Maximum Allowable Power Dissipation versus Ambient Temperature

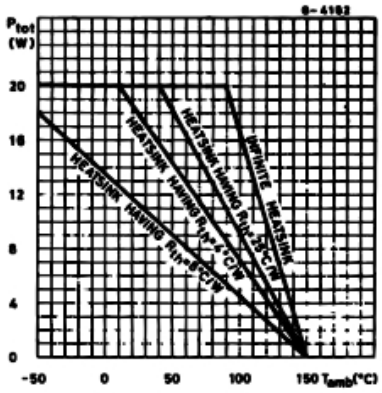


Figure 8 : Output Power versus Supply Voltage

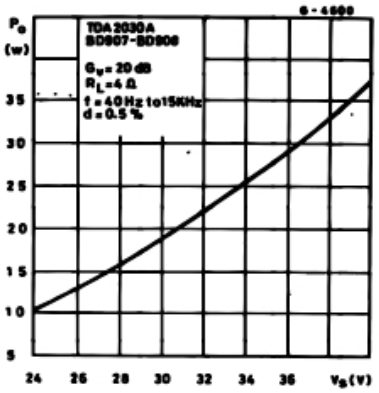


Figure 9 : Total Harmonic Distortion versus Output Power

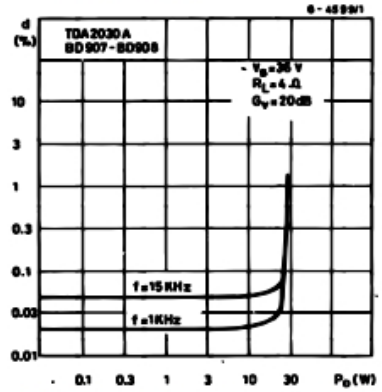


Figure 10 : Output Power versus Input Level

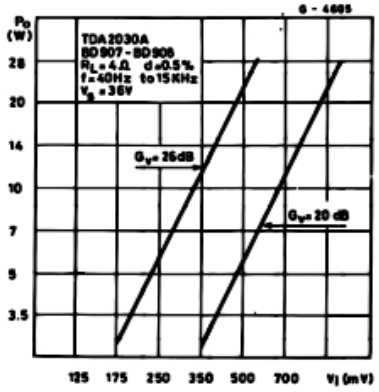


Figure 11 : Power Dissipation versus Output Power

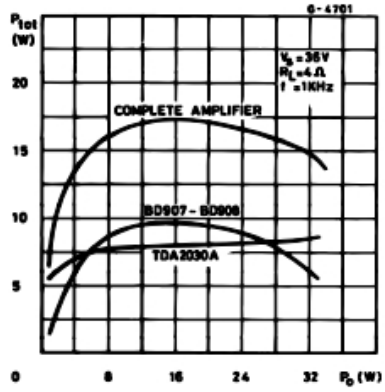


Figure 12 : Typical Amplifier with Spilt Power Supply

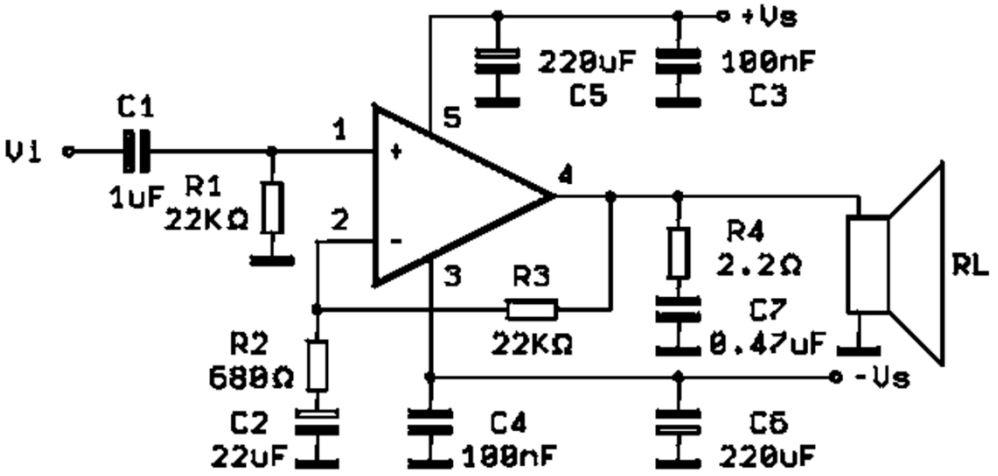
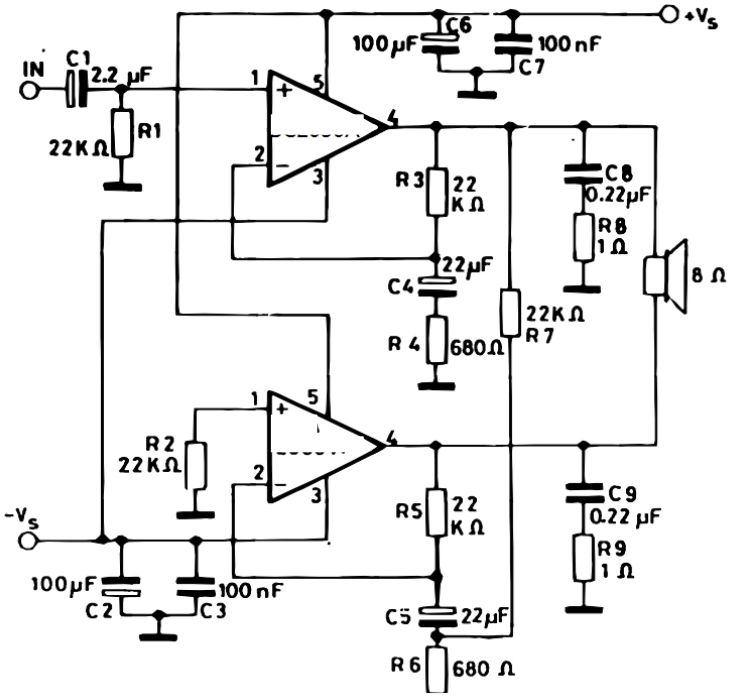


Figure 13 : Bridge Amplifier with Split Power Supply (PO = 34W, VS = ± 16V)



Outline Drawing

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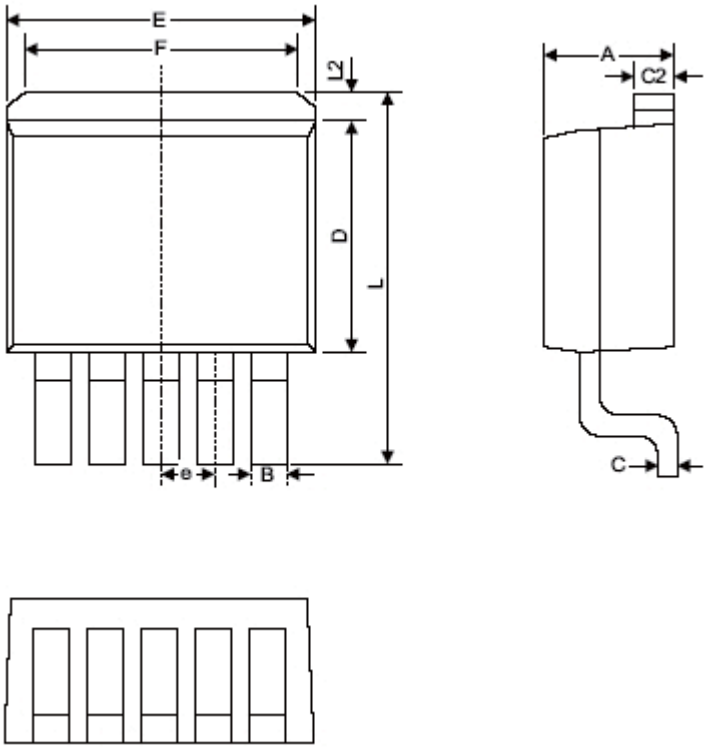
Unit: mm



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.06	4.83	0.160	0.190
B	0.76	1.02	0.030	0.040
C	0.36	0.64	0.014	0.025
C2	1.14	1.40	0.045	0.055
D	8.64	9.65	0.340	0.380
E	9.78	10.54	0.385	0.415
e	1.57	1.85	0.062	0.073
F	6.60	7.11	0.260	0.280
L	15.11	15.37	0.595	0.605
L2	-	1.40	-	0.055

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