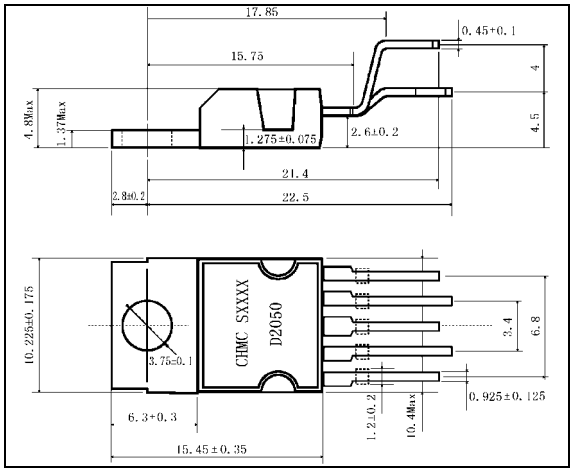
32W Hi-Fi AUDIO POWER AMPLIFIER TDA2050

DESCRIPTION

Outline Drawing

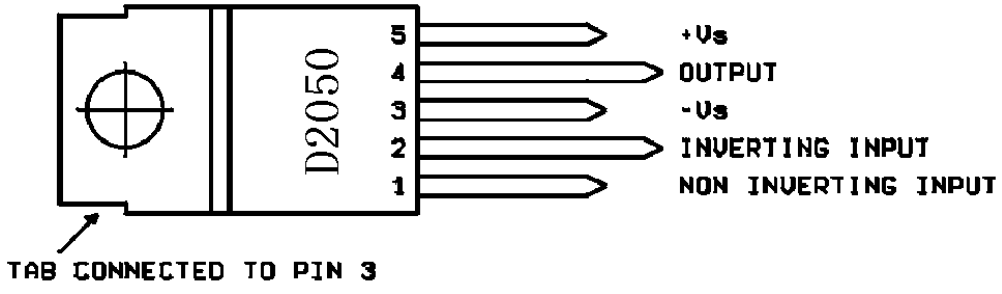


The TDA2050 is a monolithic integrated circuit in Pentawatt package, intended for use as an audio class AB audio amplifier. Thanks to its high power capability the TDA2050 is able to provide up to35W true rms power into 4 ohm load @ THD =10%, Vs = ±18V, f = 1KHz and up to 32W into 8ohm load @THD = 10%, Vs = ±22V, f = 1KHz. Moreover, theTDA2050 delivers typically 50W music power into 4 ohm load over 1 sec at Vs=22.5V, f = 1KHz. The high power and very low harmonic and crossover distortion (THD = 0.05% typ, @ Vs = ±22V, Po = 0.1 to 15W, RL=8ohm, f = 100Hz to 15KHz) make the device most suitable for both HiFi and high class TV sets.

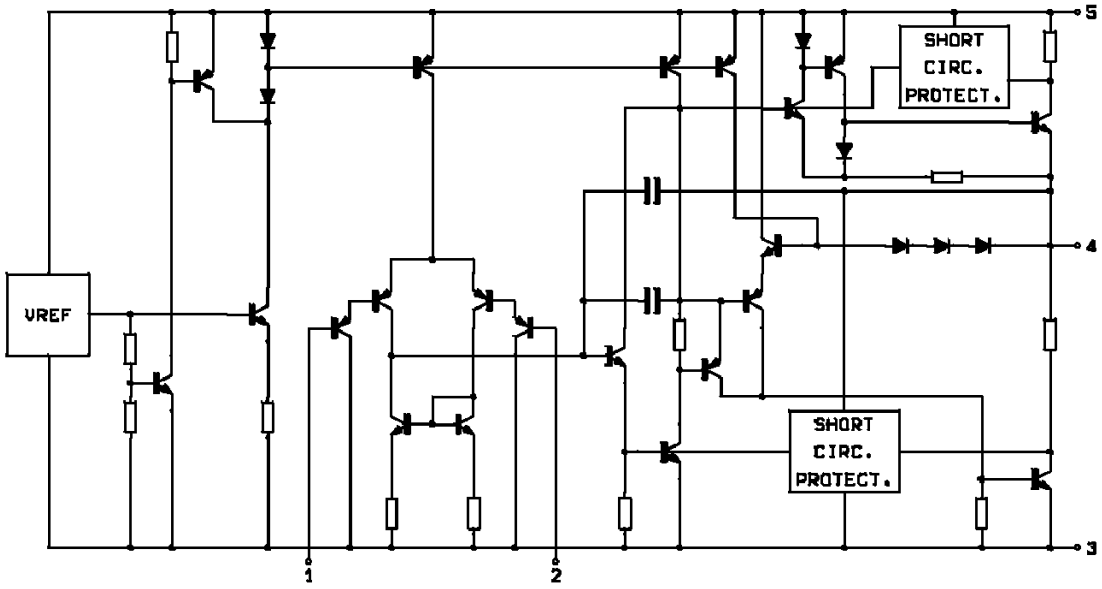
FEATURE

- High output power(50W music power IEC 268.3 RULES)
- High operating supply voltage (50V)
- Single or split supply operations
- Very low distortion
- Short circuit protection (out to GND)
- Thermal shutdown

PIN CONNECTION



BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Characteristic	Symbol	Value	Unit
Supply voltage	Vs	±25	V
Input voltage	Vi	Vs	V
Differential input voltage	Vi	±15	V
Output peak current(internally limited)	Io	5	A
Power dissipationTcase=75°C	Ptot	25	W
Storage and junction temperature range	Tstg,Tj	-40~+150	°C

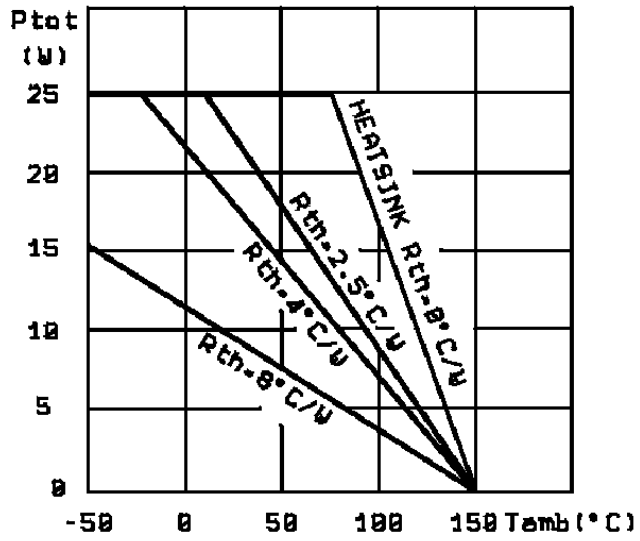
ELECTRICAL CHARACTERISTICS(Unless otherwise specified: Vs=±18V ; f=1KHz ; Ta=25°C)

Characteristics	Symbol	Test conditions	Min	Typ	Max	Unit
Supply voltage range	Vs		±4.5		±25	V
Quiescent drain current	Id	Vs=±4.5V Vs=±25V		30 55	50 90	mA
Input bias current	Ib	Vs=±22V		0.1	0.5	µA
Input offset voltage	Vos	Vs=±22V			±15	mV
Input offset current	Ios	Vs=±22V			±200	nA
RMS output power	Po	d=0.5% RL=4Ω RL=8Ω Vs=±22V RL=8Ω	24 22	28 18 25		W
		d=10% RL=4Ω RL=8Ω Vs=±22V RL=8Ω		35 22 32		
		d=10%,T=1s Vs=±22.5V RL=4Ω		50		

Continue:

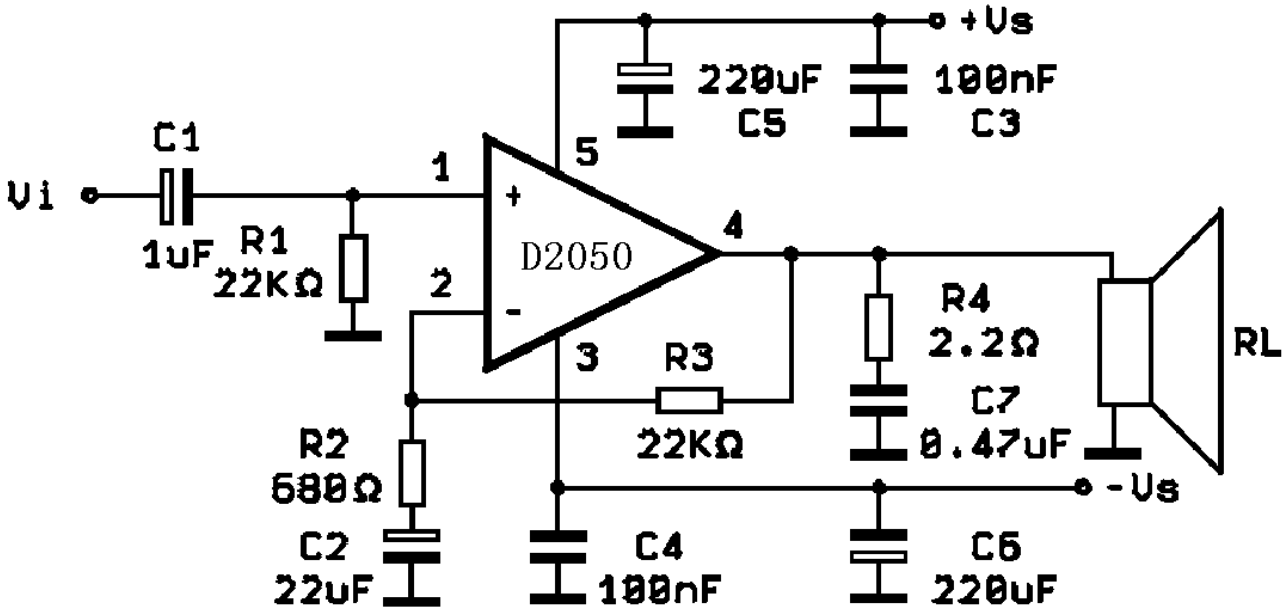
Characteristics	Symbol	Test conditions	Min	Typ	Max	Unit
Total harmonic distortion	d	R_L=4Ω f=1kHz,Po=0.1 to 24W f=100Hz to 10kHz,Po=0.1 to 18W		0.03	0.5 0.5	%
		Vs=±22V R_L=8Ω f=1kHz,Po=0.1 to 20W f=100Hz to 10kHz,Po=0.1 to 15W		0.02	0.5	%
Slew Rate	SR		5	8		V/µs
Open loop voltage gain	Gv			80		dB
Closed loop voltage gain	Gv		30	30.5	31	dB
Power bandwidth(-3dB)	BW	R_L=4Ω Vi=200mV	20 to 80000			Hz
Total input noise	e_N	Curve A B=22Hz to 22kHz		4 5	10	µV
Input resistance(pin 1)	Ri		500			kΩ
Supply voltage rejection	SVR	Rs=22kΩ;f=100Hz Vripple=0.5Vrms		45		dB
Efficiency	η	Po=28W;R_L=4Ω		65		%
		Po=25W; R_L=8Ω Vs=±22V		67		%
Thermal shut-down Junction temperature	T_{sd-j}			150		°C

Maximum Allowable Power Dissipation vs. Ambient Temperature

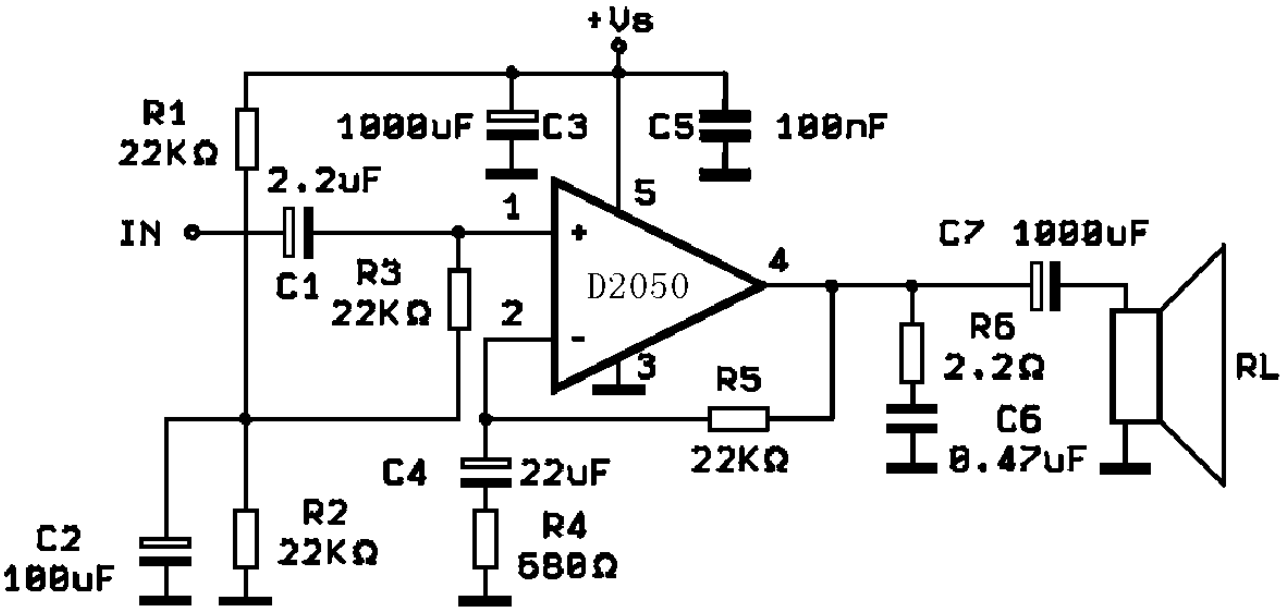


APPLICATION CIRCUIT

Split Supply Typical Application Circuit

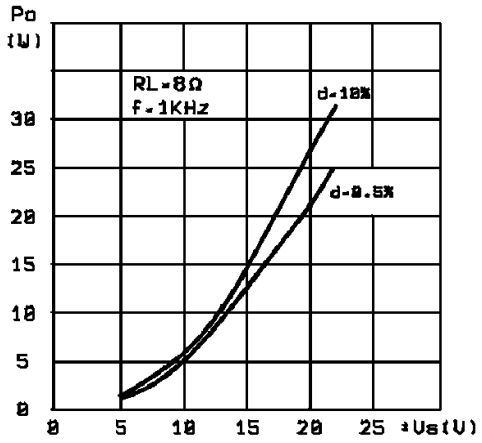


Single Supply Typical Application Circuit

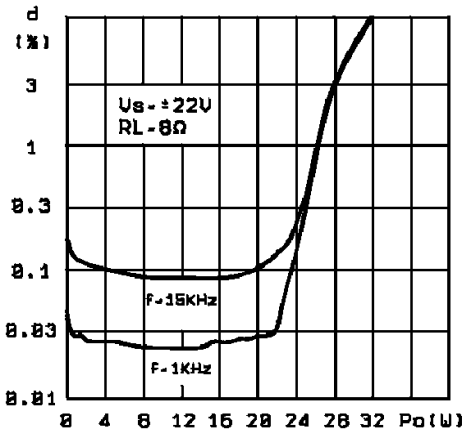


CHARACTERISTIC CURVES

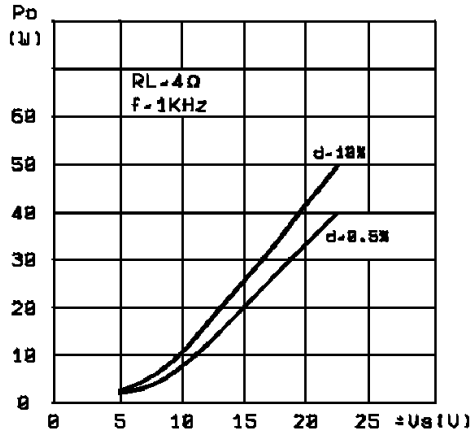
Output Power vs. Supply Voltage



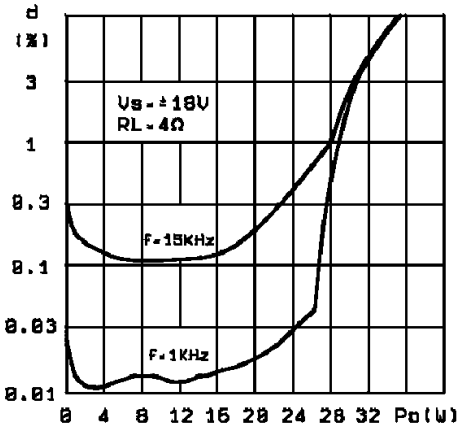
Distortion vs. Output Power



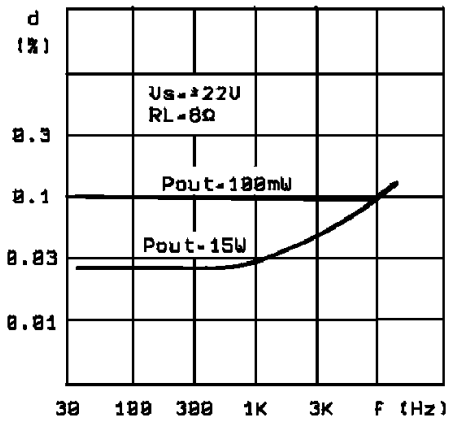
Output Power vs. Supply Voltage



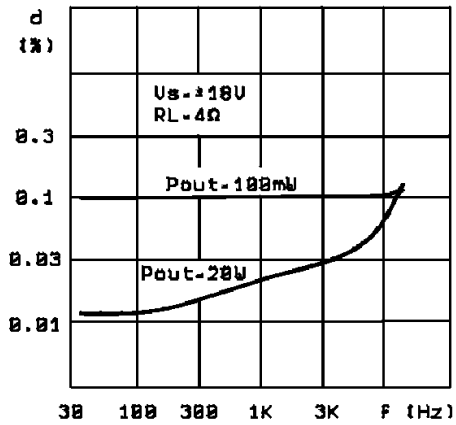
Distortion vs. Output Power



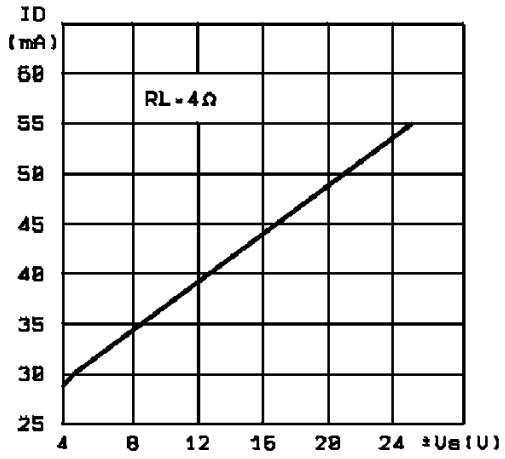
Distortion vs. Frequency



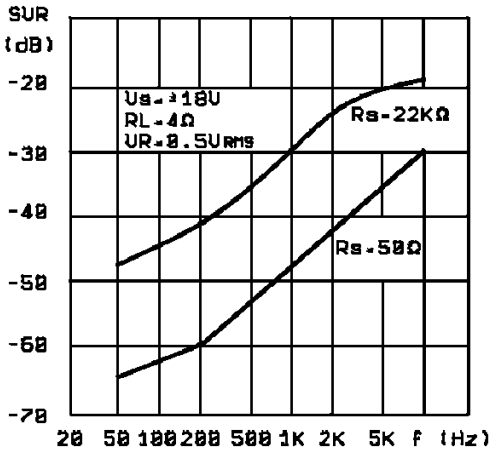
Distortion vs. Frequency



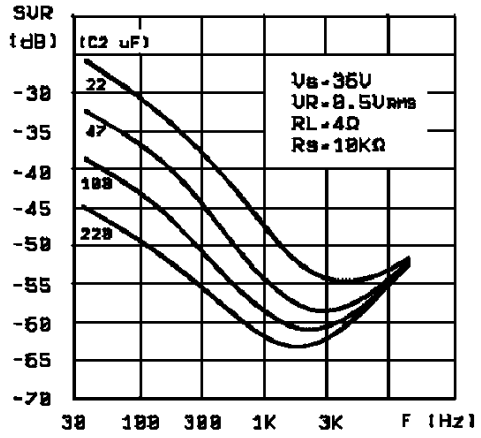
Quiescent Current vs. Supply Voltage



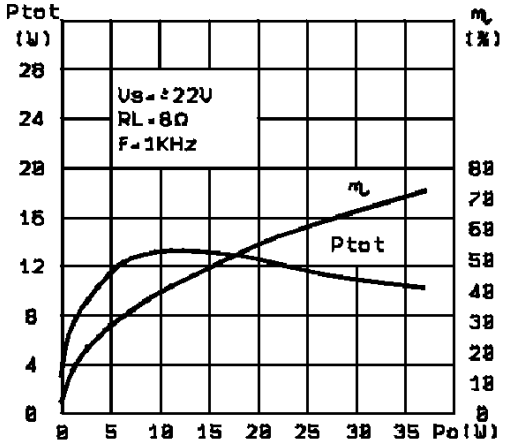
Supply Voltage Rejection vs. Frequency



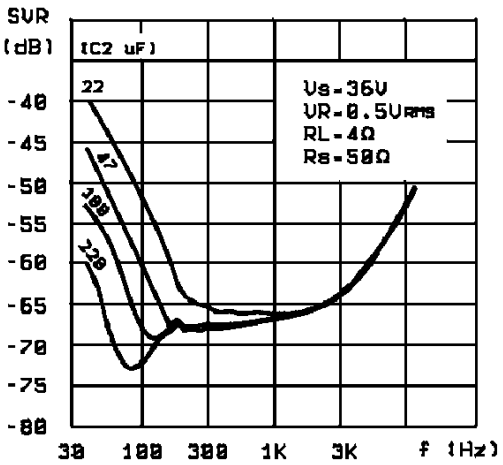
Supply Voltage Rejection vs. Frequency (Single supply) for Different values of C2 (circuit of fig. 3)



Total Power Dissipation and Efficiency vs. Output Power



Supply Voltage Rejection vs. Frequency (Single supply) for Different values of C2 (circuit of fig. 3)



Total Power Dissipation and Efficiency vs. Output Power