TAA 611 C

Audio amplifier

The TAA 611/C is a monolithic integrated circuit particularly designed for use in radio receiver, record player and portable TV sets as audio amplifier. The usable range of supply voltages is very high (from 4.5 to 15V). Special features of the circuit include a low quiescent current and self-centering bias for operation at any voltage from 4.5 to 15V. The circuit requires a minimum number of external components and the input is direct coupled. The package is a special plastic DIP with a shaped heat sink soldered on a copper bar inserted in the plastic. The package shows a very low thermal resistance. To decrease the thermal resistance an external heat sink can easily be mounted by means of ordinary hardware.

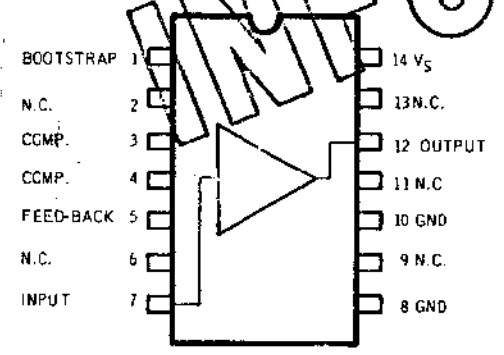
- SELF CENTERING BIAS
- LOW QUIESCENT CURRENT
- LOW CROSS-OVER DISTORTION
- HIGH INPUT IMPEDANCE
- HIGH EFFICIENCY
- SPECIAL PACKAGE WITH EXTERNAL HEAT-SINK

ABSOLUTE MAXIMUM RATINGS (Note 1)

Max Operating Supply Voltage	15 V
Max Supply Voltage (no signal)	18 V
Power Dissipation (T_A = 60°C)	1.06 W (see note 2)
Input Voltage	-0.5 to 1.5 Vp
Peak Output Current	1 A
Storage Temperature	-25 to 125°C
Operating Temperature Range	(see note 2)
Junction Temperature	125°C

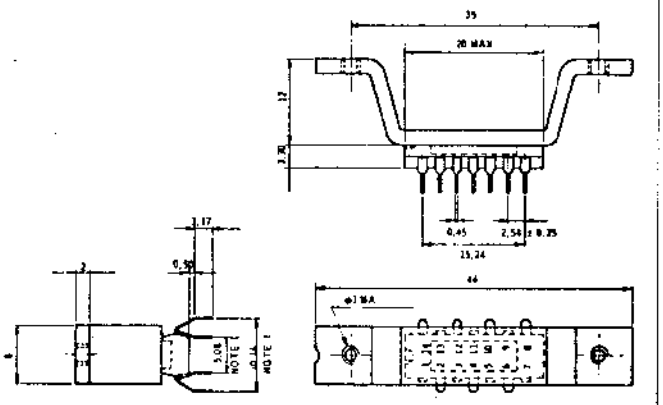
Note on page 2

CONNECTION DIAGRAM



Top view

PHYSICAL DIMENSIONS
High Power Plastic Split-Dip
External Slug



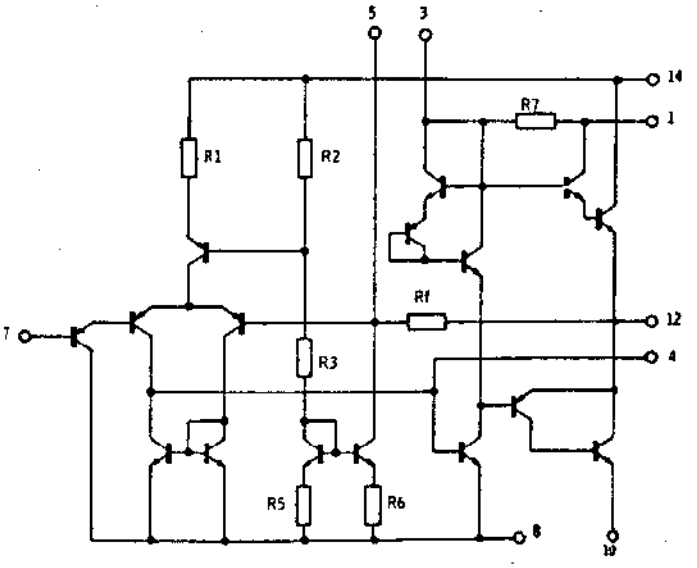
Notes: 1) Leads are intended for insertion in hole rows, 5.08 and 10.16 center.
2) All dimensions in mm

SGS Deutschland Halbleiter-Bauelemente GmbH, Wasserburg/Inn

TYPICAL ELECTRICAL CHARACTERISTICS (note 1)

PARAMETER	CONDITIONS	V_S =11V	V_S =15V	UNIT
Total Current	V7 = V8 = V10 = 0	5.2	7.5	mA
Quiescent Current of Output Transistors	V7 = V8 = V10 = 0	1.1	1.7	mA
Input Bias Current	V7 = V8 = V10 = 0	70	96	nA
DC Output Voltage	V7 = V8 = V10 = 0	5.9	7.9	V
Open Loop Voltage Gain	R_L = 8 OHM	71	72	dB
Closed Loop Voltage Gain	Test Circuit 1, R_L = 8 OHM, f_S = 1 KHz, P_{out} = 50 mW	34	34	dB
	Test Circuit 2, R_L = 8 OHM, f_S = 1 KHz, P_{out} = 50 mW	48	48	dB
Output Voltage	f_S = 1 KHz, R_L = 8 OHM, THD = 10%	3.75	5.2	Vr.m.s.
Total Harmonic Distortion	Test Circuit 1, R_L = 8 OHM, f_S = 1 KHz, P_{out} = 50 mW	0.35	0.33	%
	Test Circuit 1, R_L = 8 OHM, f_S = 1 KHz, P_{out} = 1 W	0.23	0.22	%
	Test Circuit 2, R_L = 8 OHM, f_S = 1 KHz, P_{out} = 50 mW	1.57	1.47	%
	Test Circuit 2, R_L = 8 OHM, f_S = 1 KHz, P_{out} = 1 W	1.13	1.09	%
Signal to noise ratio	Test Circuit 1, R_L = 8 OHM, f_S = 1 KHz, P_{out} = 1 W, R_S = 220 K	75	75	dB
	Test Circuit 2, R_L = 8 OHM, f_S = 1 KHz, P_{out} = 1 W, R_S = 20 K	75	75	dB
Input impedance	Open loop	0.75	0.75	M OHM
R_f (see electrical diagram)		7.5	7.5	K OHM
$R_{th\ j-a}$		62	62	°C/W
$R_{th\ j-c}$		17	17	°C/W

ELECTRICAL DIAGRAM



NOTES :

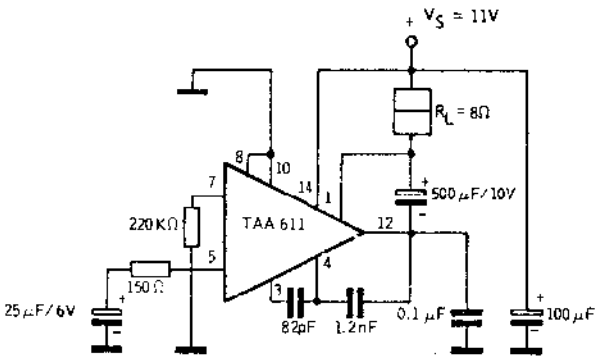
(1) Ambient temperature T_A = 25°C unless otherwise noted.
(2) Refer to "MAX ALLOWABLE P_D VERSUS T_A" at page 3.

OUTPUT POWER AS A FUNCTION OF THE SUPPLY VOLTAGE AND OF THE LOADING CONDITIONS

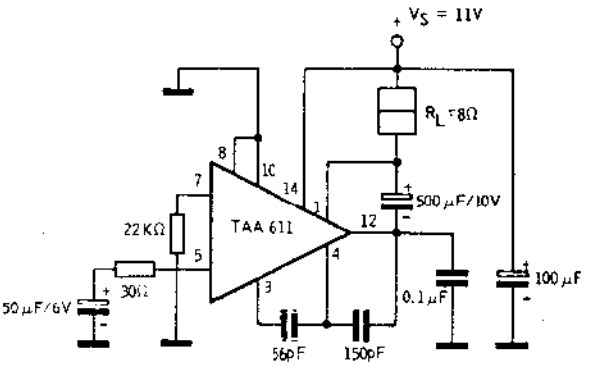
(Typical values at ambient temperature T_A = 25°C)

V_S (V)	R_L (OHM)	Pout (W) at Clipping	Pout (W) THD = 10%	External Heat Sink
6	4	0.5	0.65	Not required
	8	0.35	0.46	Not required
9	4	1.4	1.8	Required
	8	0.9	1.15	Not required
11	8	1.4	1.8	Not required
12	8	1.7	2.0	Not required
15	8	2.8	3.3	Required

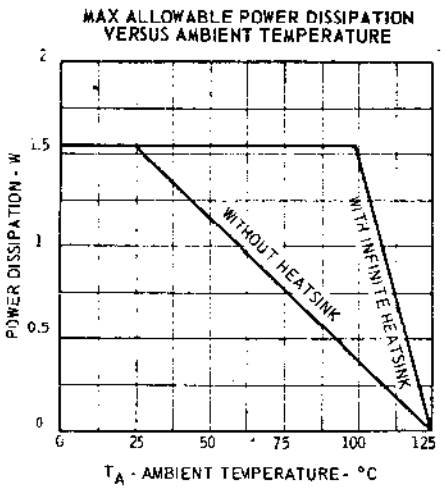
TEST CIRCUIT 1 (A_V = 50)

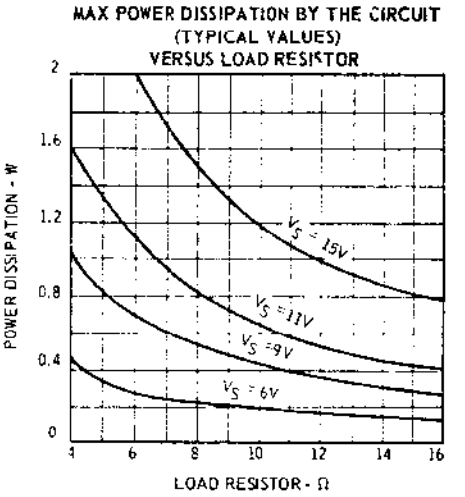


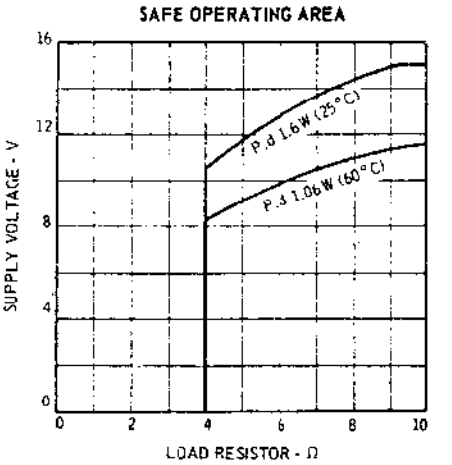
TEST CIRCUIT 2 (A_V = 250)



TYPICAL ELECTRICAL CHARACTERISTICS (25°C free air temperature unless otherwise noted)

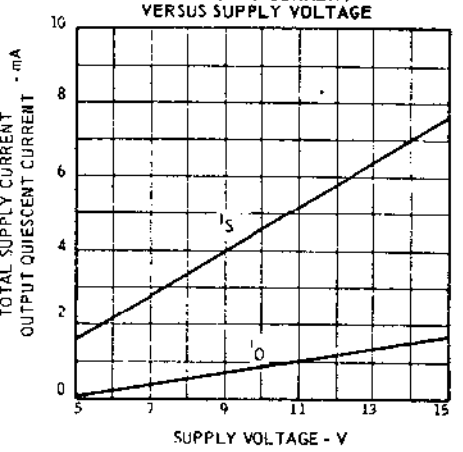




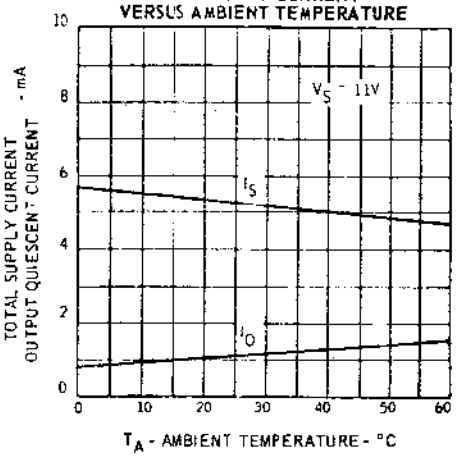


TYPICAL ELECTRICAL CHARACTERISTICS (25°C free air temperature unless otherwise noted)

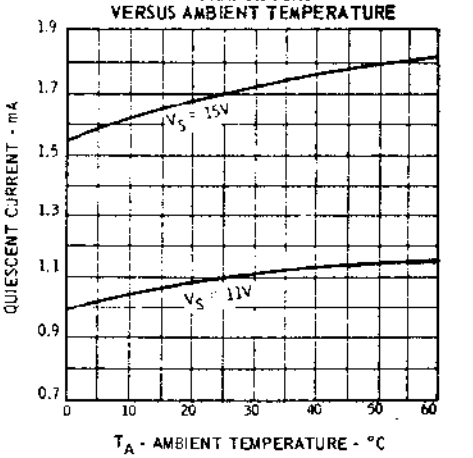
TOTAL SUPPLY CURRENT AND OUTPUT QUIESCENT CURRENT VERSUS SUPPLY VOLTAGE



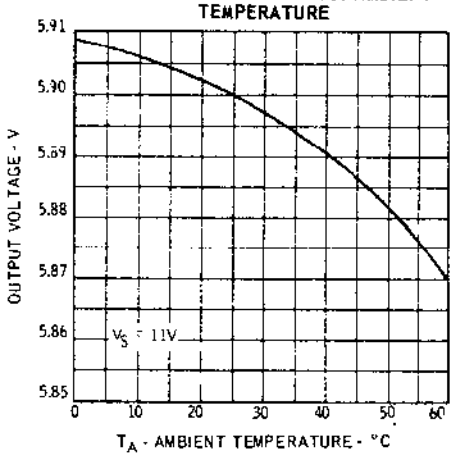
TOTAL SUPPLY CURRENT AND OUTPUT QUIESCENT CURRENT VERSUS AMBIENT TEMPERATURE



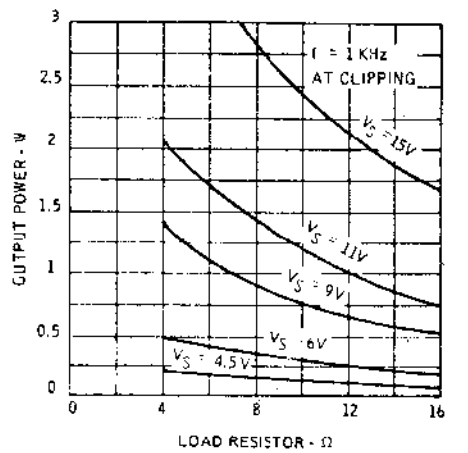
QUIESCENT CURRENT OF OUTPUT TRANSISTORS VERSUS AMBIENT TEMPERATURE



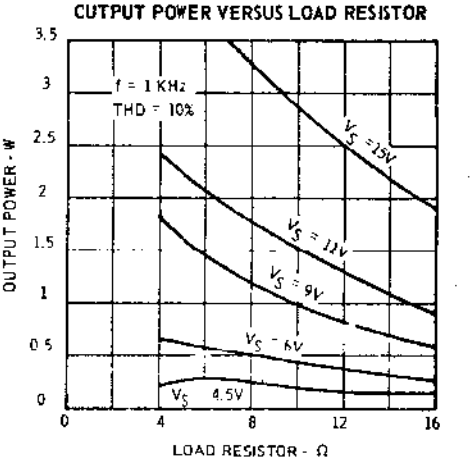
D.C. OUTPUT LEVEL VERSUS AMBIENT TEMPERATURE



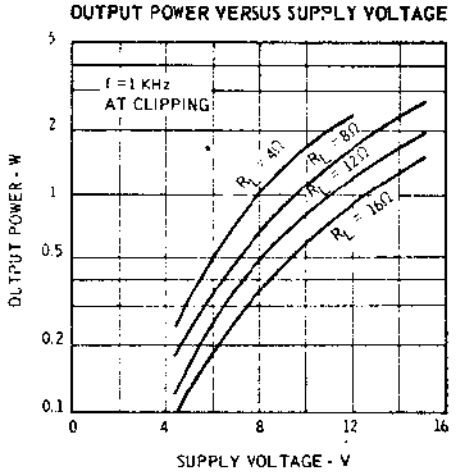
OUTPUT POWER VERSUS LOAD RESISTOR



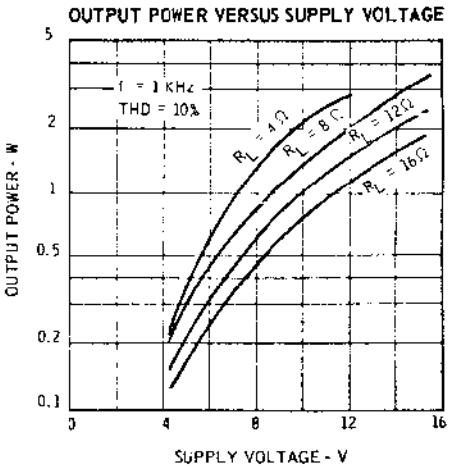
CUTPUT POWER VERSUS LOAD RESISTOR



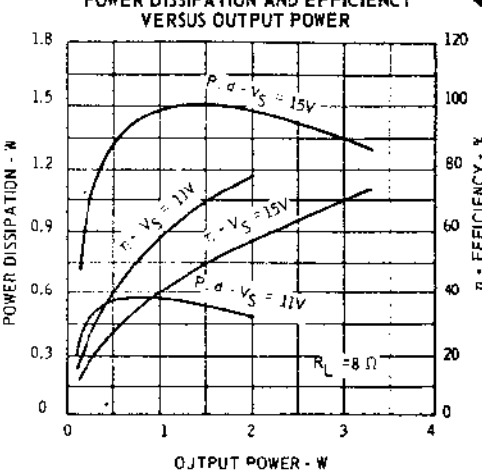
OUTPUT POWER VERSUS SUPPLY VOLTAGE



OUTPUT POWER VERSUS SUPPLY VOLTAGE

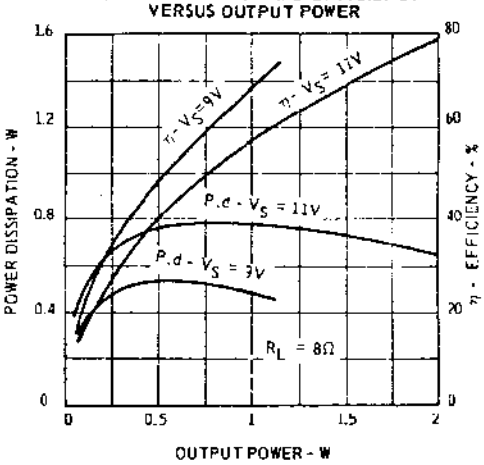


POWER DISSIPATION AND EFFICIENCY VERSUS OUTPUT POWER

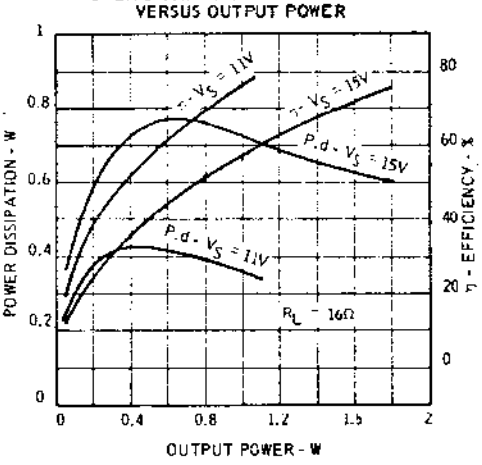


TYPICAL ELECTRICAL CHARACTERISTICS (25°C free air temperature unless otherwise noted)

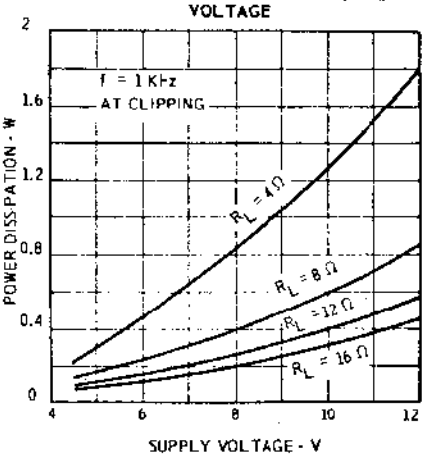
POWER DISSIPATION AND EFFICIENCY VERSUS OUTPUT POWER



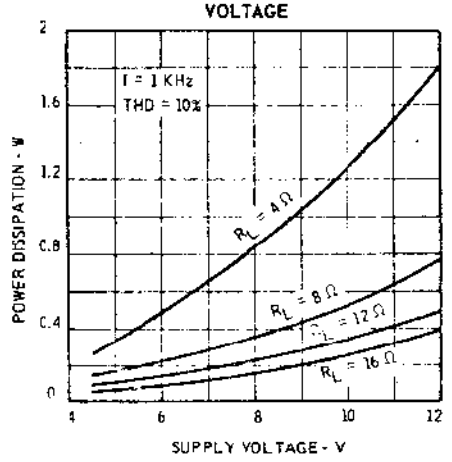
POWER DISSIPATION AND EFFICIENCY VERSUS OUTPUT POWER



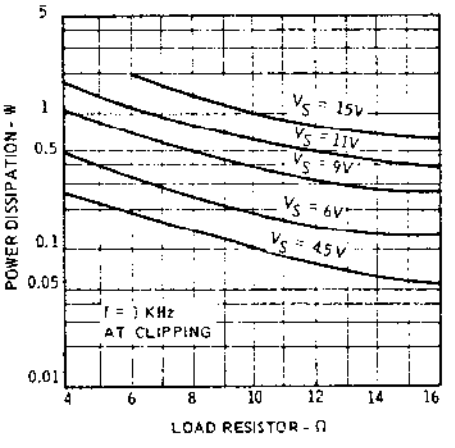
POWER DISSIPATION VERSUS SUPPLY VOLTAGE



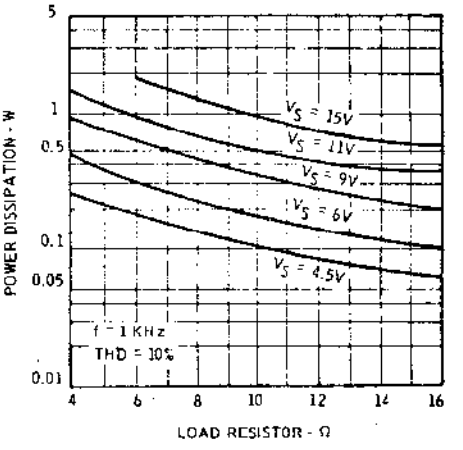
POWER DISSIPATION VERSUS SUPPLY VOLTAGE



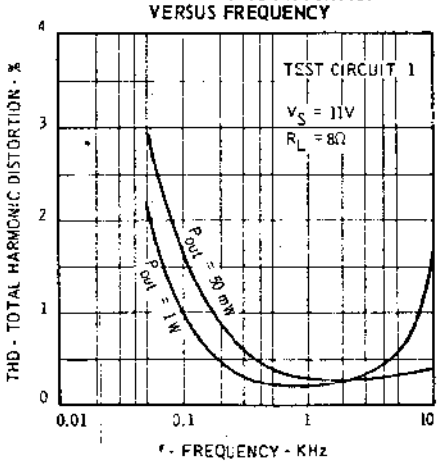
POWER DISSIPATION VERSUS LOAD RESISTOR



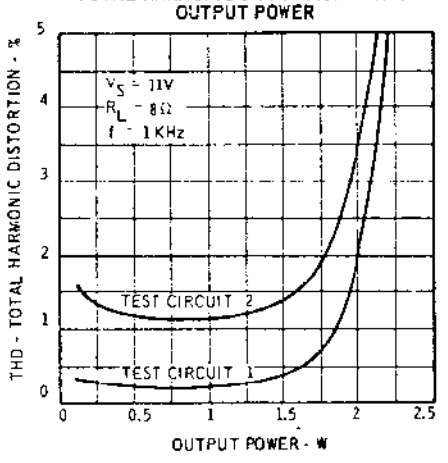
POWER DISSIPATION VERSUS LOAD RESISTOR



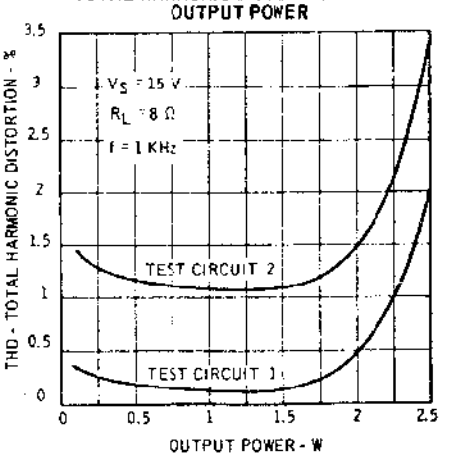
TOTAL HARMONIC DISTORTION VERSUS FREQUENCY



TOTAL HARMONIC DISTORTION VERSUS OUTPUT POWER

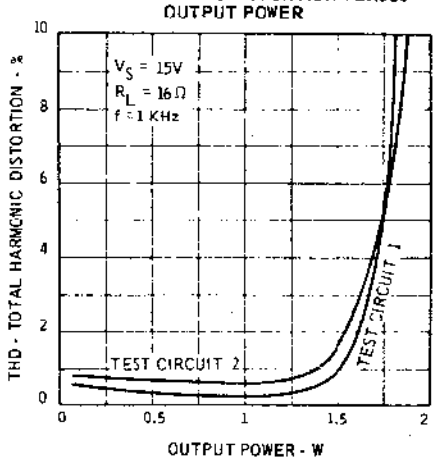


TOTAL HARMONIC DISTORTION VERSUS OUTPUT POWER



TYPICAL ELECTRICAL CHARACTERISTICS (25°C free air temperature unless otherwise n··· d)

TOTAL HARMONIC DISTORTION VERSUS OUTPUT POWER



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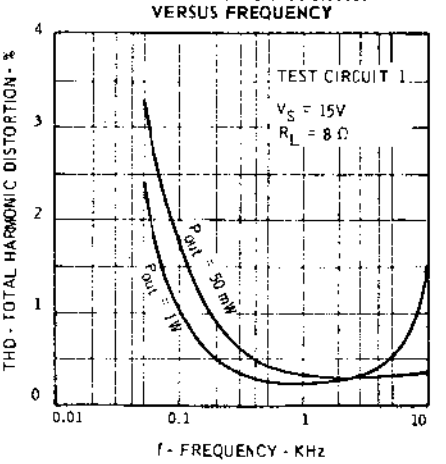

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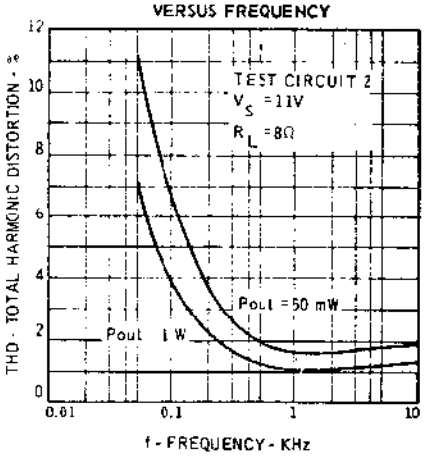

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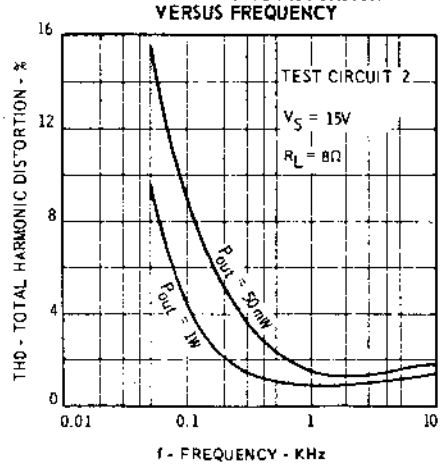
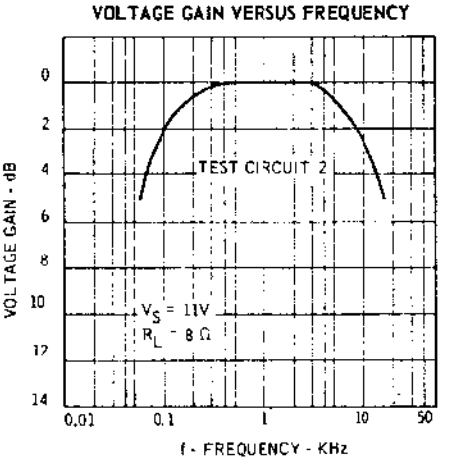
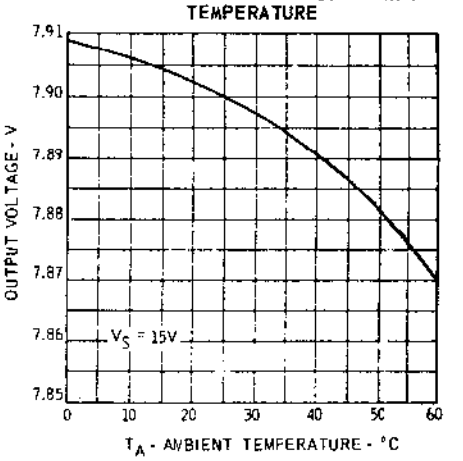


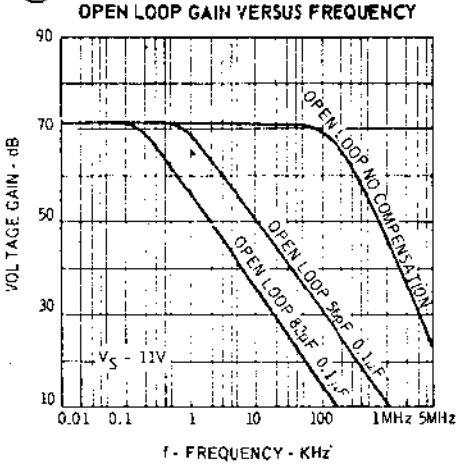
VOLTAGE GAIN VERSUS FREQUENCY



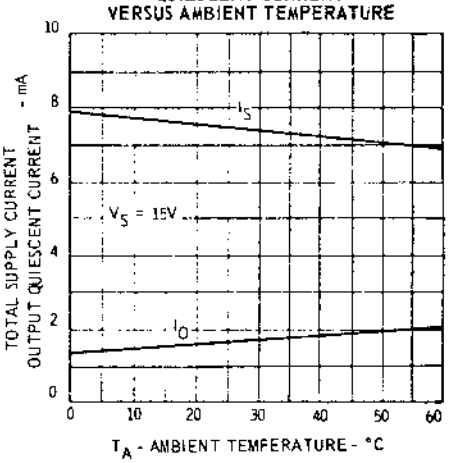
D.C. OUTPUT LEVEL VERSUS AMBIENT TEMPERATURE



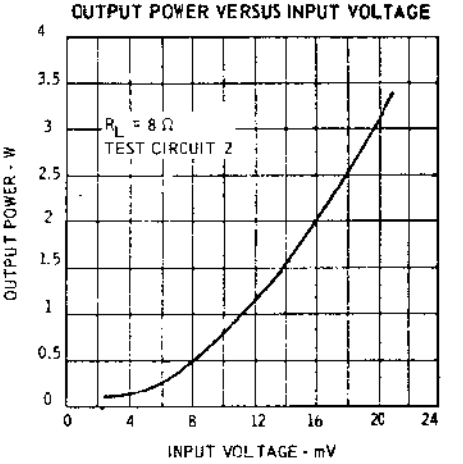
OPEN LOOP GAIN VERSUS FREQUENCY



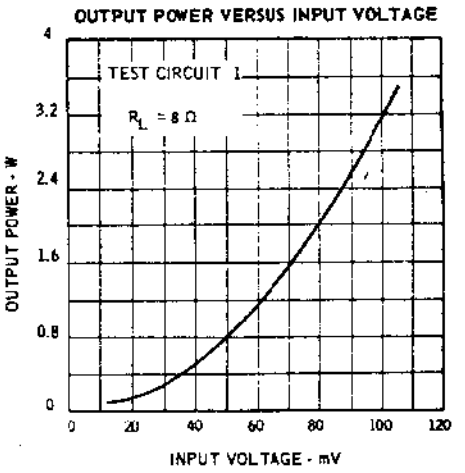
TOTAL SUPPLY CURRENT AND OUTPUT QUIESCENT CURRENT VERSUS AMBIENT TEMPERATURE

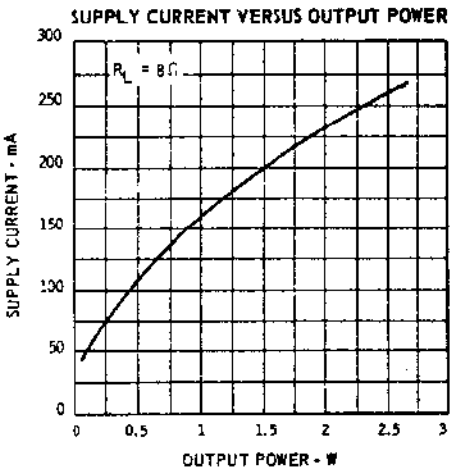


OUTPUT POWER VERSUS INPUT VOLTAGE

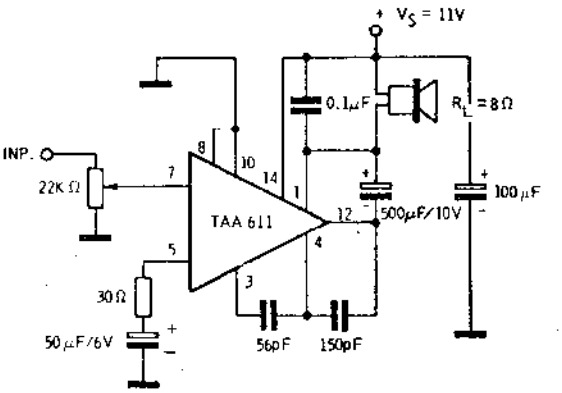


TYPICAL ELECTRICAL CHARACTERISTICS (25 °C free air temperature unless otherwise noted)





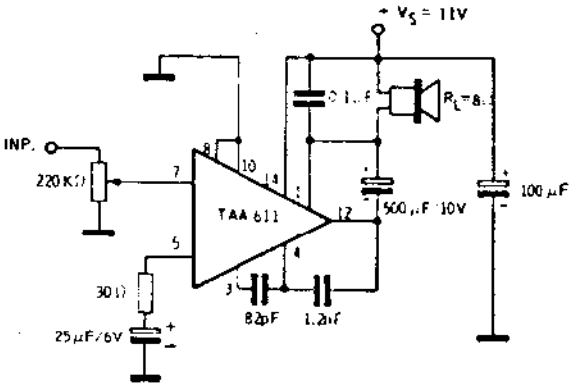
TYPICAL APPLICATION : AUDIO AMPLIFIER FOR RADIO RECEIVER



ELECTRICAL CHARACTERISTICS OF THE AMPLIFIER

Supply Voltage		11V
Voltage Gain		48 dB
Sensitivity	P_O = 50 mW	2.5 mV r.m.s.
	P_O = 1 W	11.3 mV r.m.s.
Frequency Response	– 3 dB	50 to 15 KHz
Total Current	P_O = 0	5.2 mA
	P_O = 1 W	160 mA
Max Output Power	THD = 10%; f_S = 1 KHz	1.8 W
Distortion	P_O = 50 mW; f_S = 1 KHz	1.57%
Efficiency	P_O = 1 W	55%
Noise Voltage at the Input	R_S = 51 OHM; BW = 15 KHz	5 μV
DC Output Voltage	R_S = 0 ÷ 20 KOHM	5.9 V
Supply Voltage Rejection (at the input)		54 dB

TYPICAL APPLICATION : AUDIO AMPLIFIER FOR RECORD-PLAYER



ELECTRICAL CHARACTERISTICS OF THE AMPLIFIER

Supply Voltage		11 V
Voltage Gain		34 dB
Sensitivity	P_O = 50 mW	12.6 mV r.m.s.
	P_O = 1 W	57 mV r.m.s.
Frequency Response	-3dB	50 to 15 KHz
Total Current	P_O = 0	5.2 mA
	P_O = 1 W	160 mA
Max Output Power	THD = 10%; f_S = 1 KHz	1.8 W
Distortion	P_O = 50 mW; f_S = 1 KHz	0.35%
Efficiency	P_O = 1 W	55%
Noise Voltage at the Input	R_S = 51 OHM; BW = 15 KHz	5 μV
DC Output Voltage	R_S = 0 ÷ 20 KOHM	5.9 V
Supply Voltage Rejection (at the input)		40 dB