TOSHIBA Bipolar Linear Integrated Circuit Silicon Monolithic

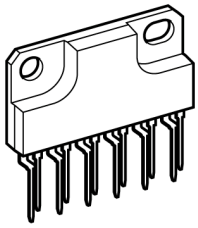
TA8211AH

Dual Audio Power Amplifier

The TA8211AH is dual audio power amplifier for consumer applications.

This IC provides an output power of 6 watts per channel (at V_{CC} = 20 V, f = 1 kHz, THD = 10%, R_L = 8 Ω).

It is suitable for power amplifier of TV and home stereo.



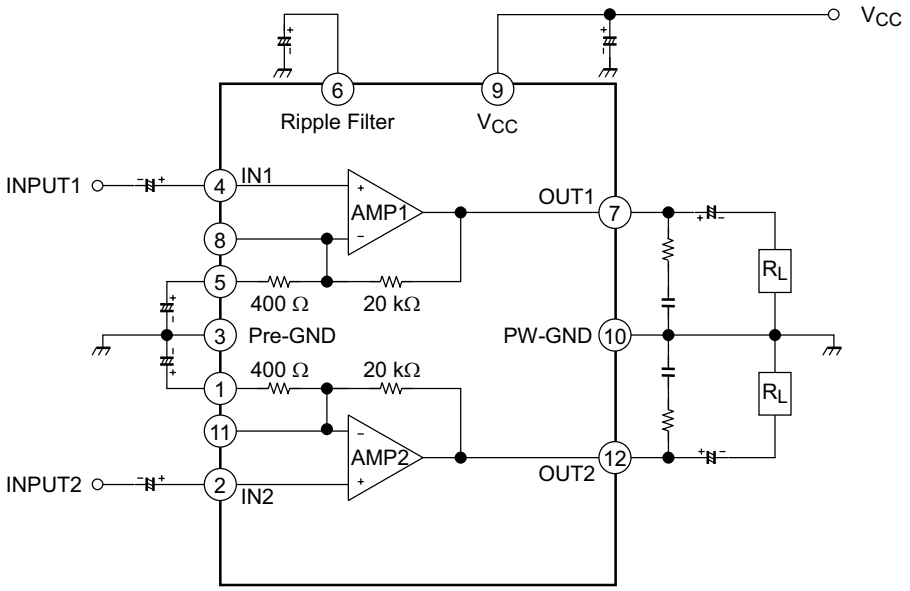
HZIP12-P-1.78B

Weight: 4.04 g (typ.)

Features

- High output power: P_{out} = 6 W/channel (Typ.)
  (V_{CC} = 20 V, R_L = 8 Ω, f = 1 kHz, THD = 10%)
- Low noise: V_{no} = 0.14 mVrms (Typ.)
  (V_{CC} = 28 V, R_L = 8 Ω, G_V = 34dB, R_g = 10 kΩ, BW = 20 Hz~20 kHz)
- Very few external parts
- Built in thermal shut down protector circuit
- Operating supply voltage range: $V_{CC\ (opr)}$ = 10~30 V (Ta = 25°C)

Block Diagram



Application Information

Voltage gain

The closed loop voltage gain is determined by R_1, R_2.

$$G_V = 20\log\frac{R_1 + R_2}{R_2}\,(dB)$$

$$= 20\log\frac{20\,k\Omega + 400\,\Omega}{400\,\Omega}$$

$$\simeq 34\,(dB)$$

(a) Amplifier with gain > 34dB

$$G_V = 20\log\frac{R_1 + R_2 // R_3}{R_2 // R_3}\,(dB)$$

When $R_3 = 400\,\Omega$
$G_V \simeq 40$ (dB)
is given.

(b) Amplifier with gain < 34dB

$$G_V = 20\log\frac{R_1 + R_2 + R_4}{R_2 + R_4}\,(dB)$$

When $R_4 = 220\,\Omega$
$G_V \simeq 30$ (dB)
is given.

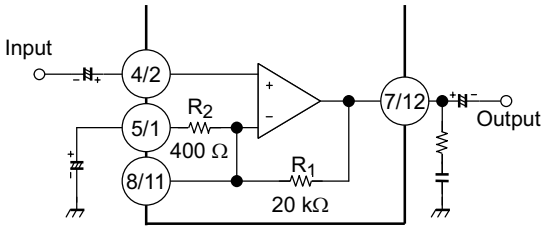


Figure 1

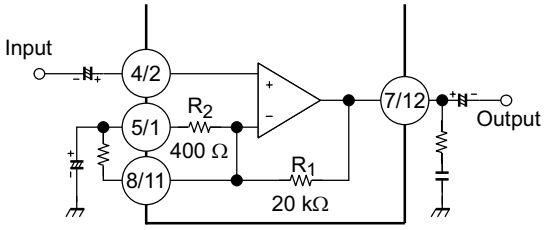


Figure 2

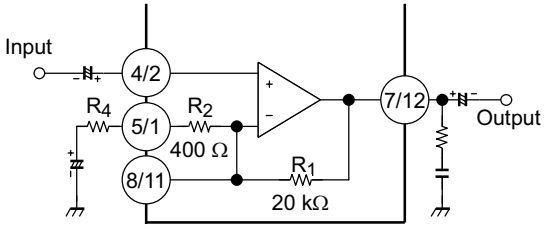
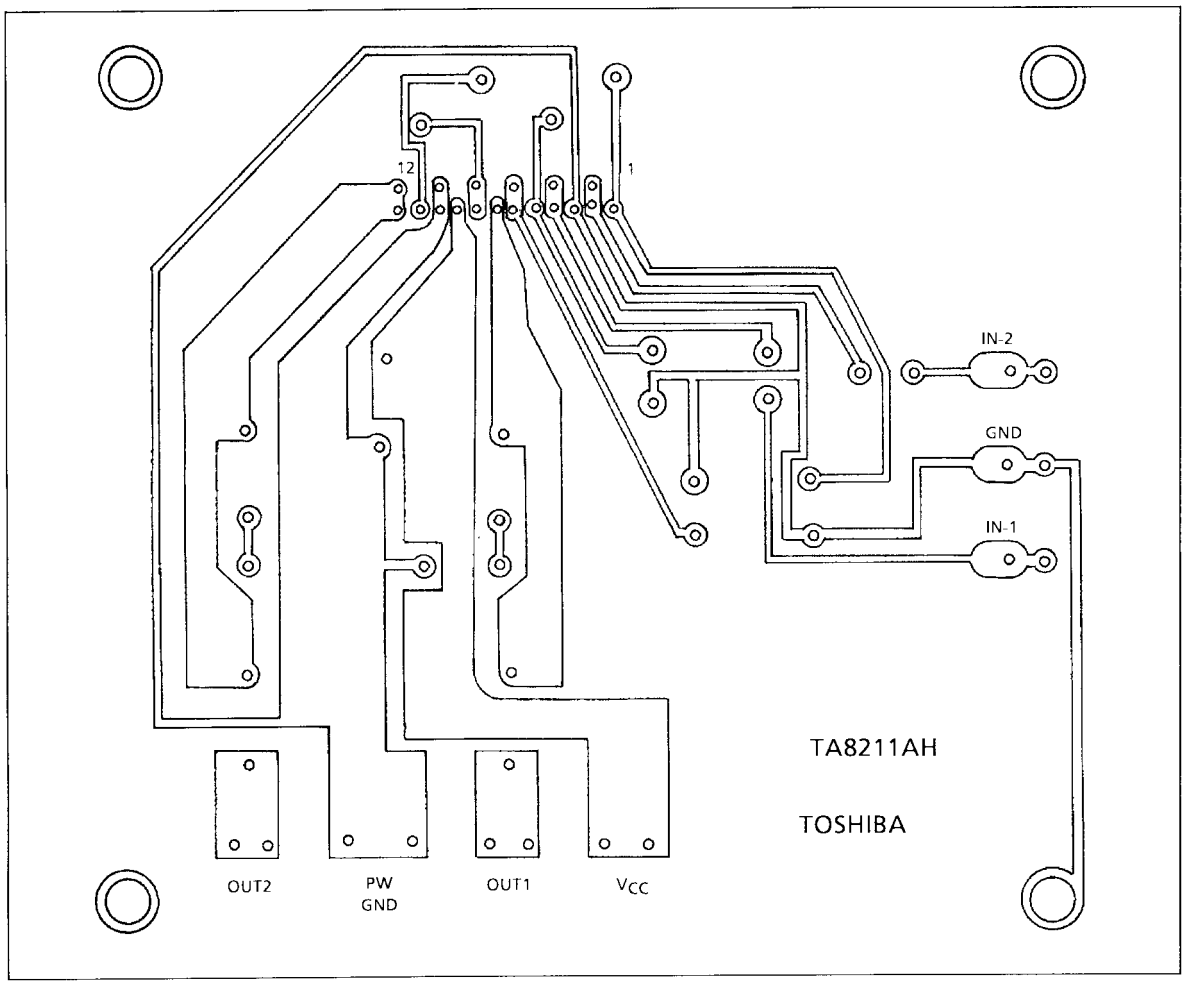


Figure 3

Cautions

This IC is not proof enough against a strong E-M field by CRT which may cause malfunction such as leak. Please set the IC keeping the distance from CRT.

Standard PCB



(Bottom view)

Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Supply voltage	V_{CC}	30	V
Output current (Peak/ch)	$I_{O\ (peak)}$	2	A
Power dissipation	P_D (Note)	25	W
Operating temperature	T_{opr}	−20~75	°C
Storage temperature	T_{stg}	−55~150	°C

Note: Derated above Ta = 25°C in the proportion of 200 mW/°C.

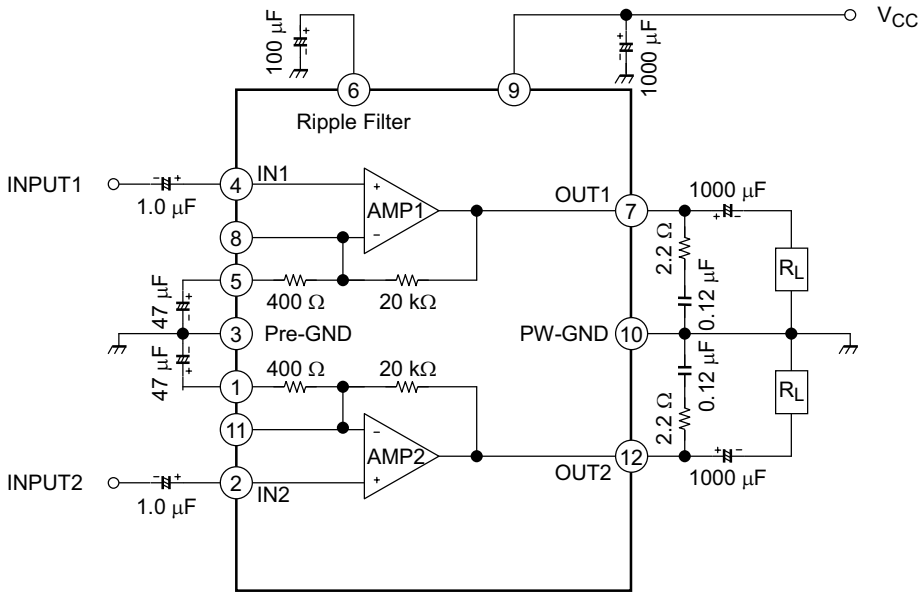
Electrical Characteristics
(unless otherwise specified, V_{CC} = 20 V, R_L = 600 Ω, R_g = 600 Ω, f = 1 kHz, Ta = 25°C)

Characteristics	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Quiescent current	I_{CCQ}	—	V_{in} = 0	—	75	130	mA
Output power	$P_{out\ (1)}$	—	THD = 10%	5.0	6.0	—	W
	$P_{out\ (2)}$	—	THD = 1%	—	4.5	—	
Total harmonic distortion	THD	—	P_{out} = 2 W	—	0.1	0.6	%
Closed loop voltage gain	G_V	—	V_{out} = 0.775 Vrms (0dBm)	32.5	34.0	35.5	dB
Open loop voltage gain	G_{VO}	—		—	60	—	dB
Input resistance	R_{IN}	—	—	—	30	—	kΩ
Ripple rejection ratio	R.R.	—	Rg = 0, f_{ripple} = 100 Hz V_{ripple} = 0.775 Vrms (0dBm)	−45	−57	—	dB
Output noise voltage	V_{no}	—	Rg = 10 kΩ, BW = 20 Hz~20 kHz	—	0.14	0.3	mVrms

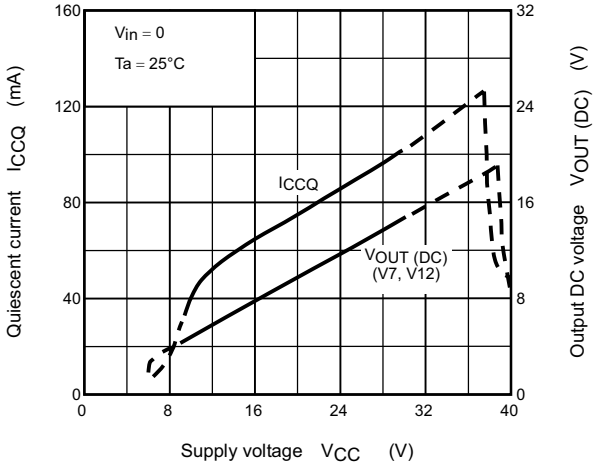
Typ. DC Voltage of Each Terminal (V_{CC} = 20 V, Ta = 25°C)

Terminal No.	1	2	3	4	5	6	7	8	9	10	11	12
DC voltage (V)	2.1	2.25	GND	2.25	2.1	6.8	9.8	2.25	V_{CC}	GND	2.25	9.8

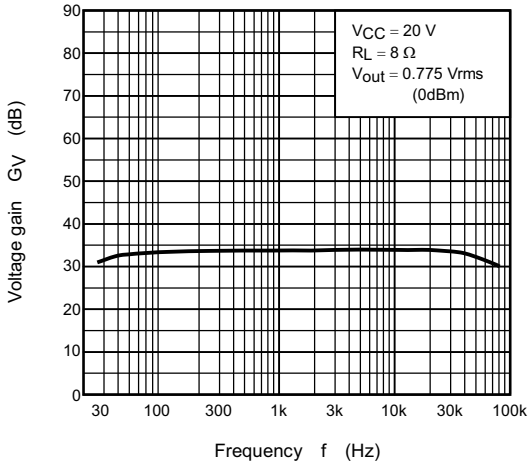
Test Circuit



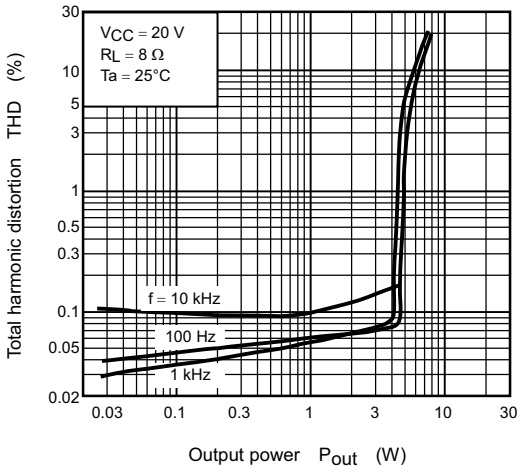
I_{CCQ}, $V_{OUT\ (DC)}$ – V_{CC}



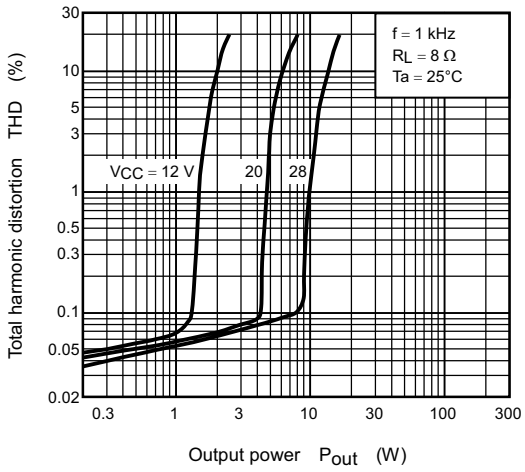
G_V – f



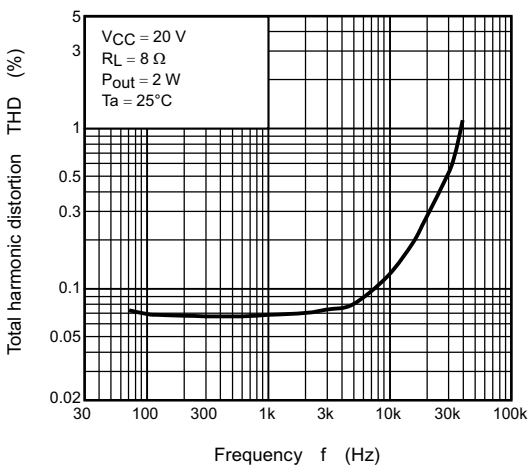
THD – P_{out}



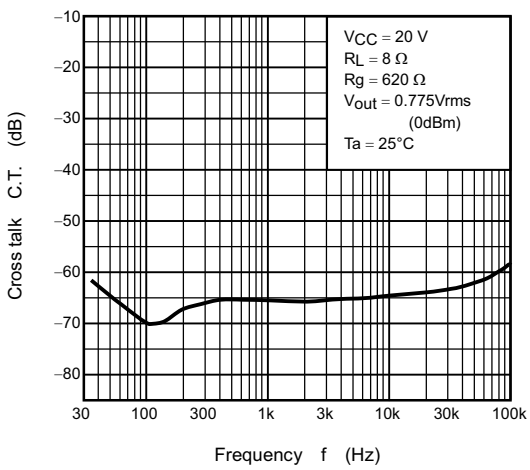
THD – P_{out}



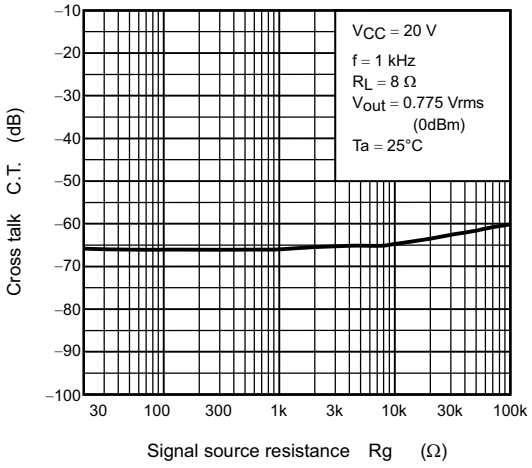
THD – f



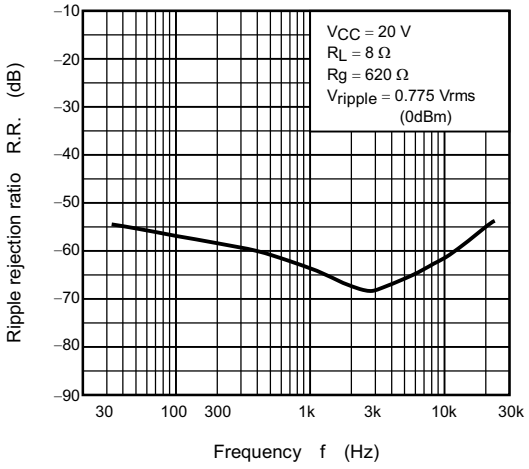
C.T. – f



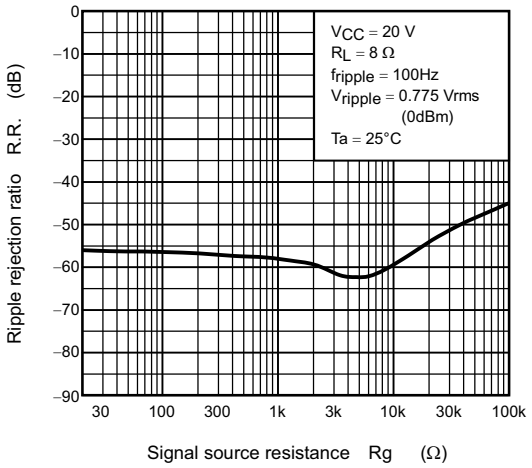
C.T. – Rg



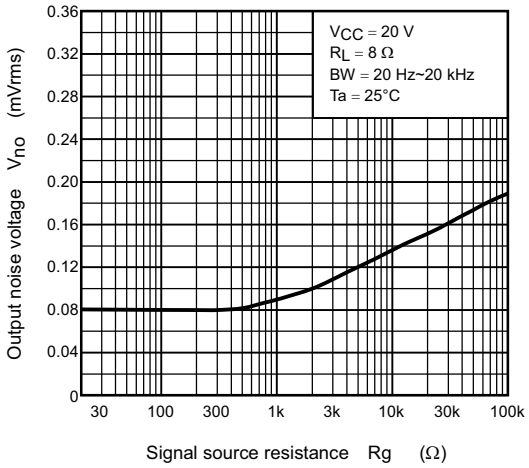
R.R. – f



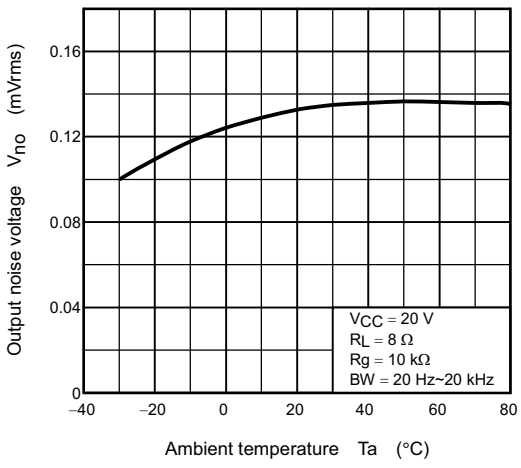
R.R. – Rg



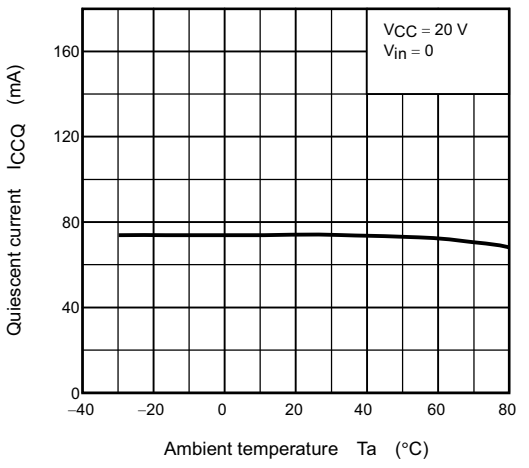
V_{no} – Rg



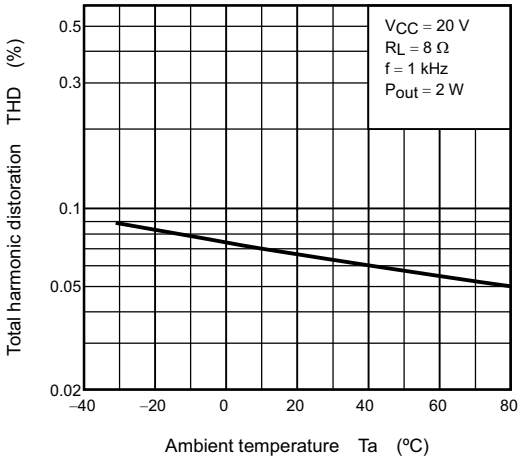
V_{no} – Ta



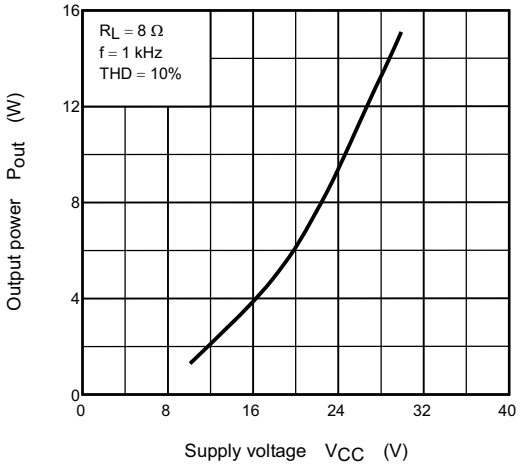
I_{CCQ} – Ta



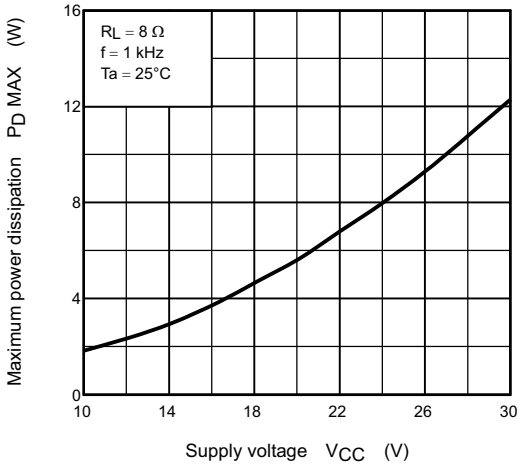
THD – Ta



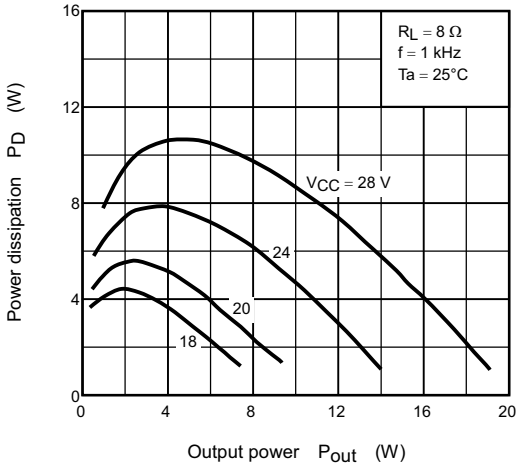
P_{out} – V_{CC}



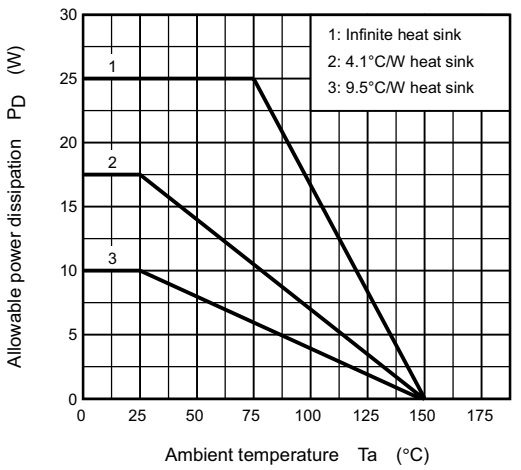
P_D MAX – V_{CC}



P_D – P_{out}

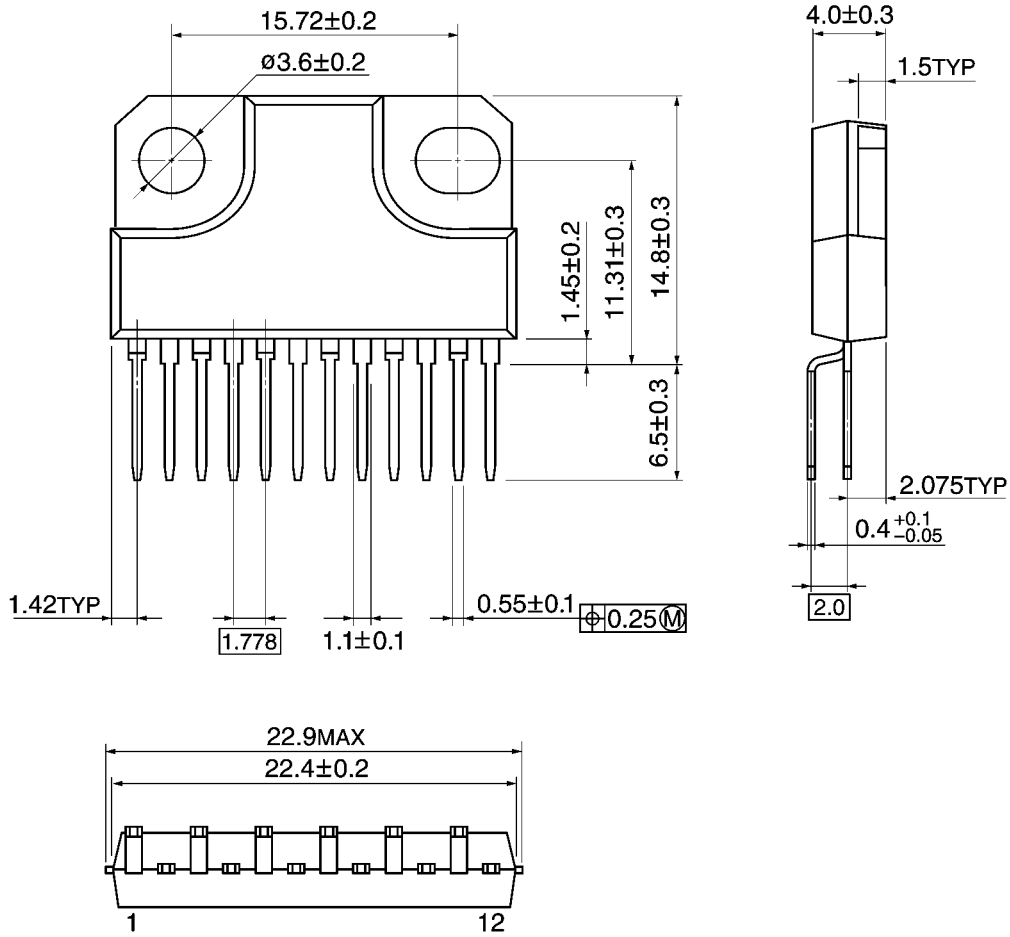


P_D – Ta



Package Dimensions

HZIP12-P-1.78B Unit: mm



Weight: 4.04 g (typ.)

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