



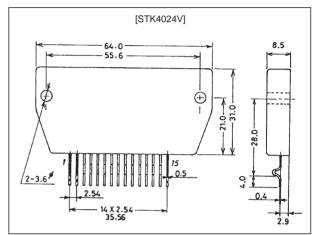
AF Power Amplifier (Split Power Supply) (20 W min, THD = 0.08%)

Features

- \bullet Compact packaging supports slimmer set designs (up to 70 W)
- Series designed from 20 up to 100 W (200 W) and pincompatibility (120 to 200 W have 18 pins)
- Simpler heat sink design facilitates thermal design of slim stereo sets
- Current mirror circuit application reduces distortion to 0.08%
- Supports addition of electronic circuits for thermal shutdown and load-short protection circuit as well as pop noise muting which occurs when the power supply switch is turned on and off

Package Dimensions

unit : mm **4062**



Specifications

Maximum Ratings at $Ta = 25^{\circ}C$

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V _{CC} max		±37	V
Thermal resistance	θј-с		2.6	°C/W
Junction temperature	Tj		150	°C
Operating substrate temperature	Tc		125	°C
Storage temperature	Tstg		-30 to +125	°C
Available time for load shorted	ts *1	$V_{CC} = \pm 24.5 \text{ V}, R_L = 8 \Omega, f = 50 \text{ Hz}, P_O = 20 \text{ W}$	2	s

Recommended Operational Voltage at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V _{CC}		±24.5	V
Load resistance	R _L		8	Ω

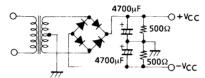
Operating Characteristics

at Ta = 25°C, V_{CC} = ± 24.5 V, R_L = 8 Ω , VG = 40 dB, Rg = 600 Ω , 100 k LPF ON, R_L (non-inductive)

Parameter	Symbol	Conditions	min	typ	max	Unit
Quiescent current	Icco	V _{CC} = ±29.5 V	15		120	mA
Output power	P _O (1)	THD = 0.08%, f = 20 Hz to 20 kHz	20			W
	P _O (2)	$V_{CC} = \pm 21.5V$, THD = 0.2%, $R_L = 4 \Omega$, $f = 1 \text{ kHz}$	20			W
Total harmonic distortion	THD	P _O = 1.0 W, f = 1 kHz			0.08	%
Frequency response	fL, fH	$P_0 = 1.0 \text{ W}, {}^{+0}_{-3} \text{ dB}$		20 to 50k		Hz
Input resistance	r _i	P _O = 1.0 W, f = 1 kHz		55		kΩ
Output noise voltage	V _{NO} *2	$V_{CC} = \pm 29.5 \text{ V}, R_g = 10 \text{ k}\Omega$			1.2	mVrms
Neutral voltage	V _N	V _{CC} = ±29.5 V	-70	0	+70	mV

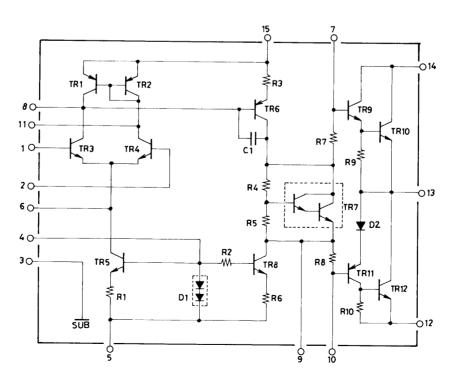
Note: Use rated power supply for test unless otherwise specified.

- *1 When measuring permissible load short time and output noise voltage use transformer power supply indicated below.
- *2 Output noise voltage represents the peak value on the rms scale (VTVM). The noise voltage waveform does not include the pulse noise.

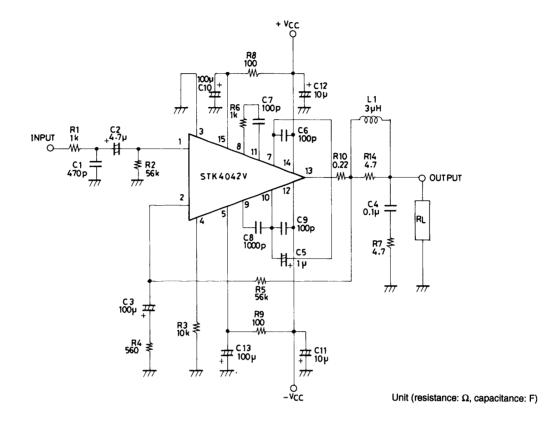


Specified Transformer Power Supply (RP-25 Equivalent)

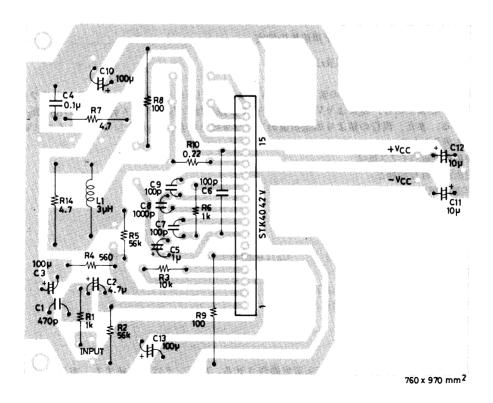
Equivalent Circuit



Application Circuit: 20W min Single Channel AF Power Amplifier



Sample Printed Circuit Pattern for Application Circuit (Copper-foiled side)



Unit (resistance: Ω , capacitance: F)

Description of External Parts

 R_1, C_1 : Input filter circuit

· Reduces high-frequency noise.

C₂: Input coupling capacitor

 DC current suppression. A reduction in reactance is effective because of increases in capacitor reactance at low frequencies and 1/f noise dependence on signal source resistance which result in output noise worsening.

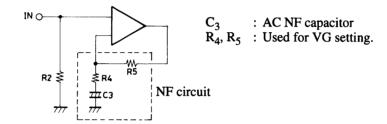
R₂ : Input bias resistor

• Biases the input pin to zero.

• Effects V_N stability (refer to NF circuit).

• Due to differential input, input resistance is more or less determined by this resistance value.

 R_4, R_5 : NFB circuit (AC NF circuit). Use of resistor with 1% error is suggested. $C_3 \, (R_2)$



ullet VG settings are obtained using R_4 and R_5 according to the following equation:

$$log20 - \frac{R_5}{R_4}$$
 40 dB is recommended.

• Low-frequency cutoff frequency settings are obtained using R₄ and C₃ according to the following equation:

$$f_L = \frac{1}{2\pi \cdot R_4 \cdot C_3}$$
 [Hz]

When changing the VG setting, you should change R_4 which requires a recheck of the low cutoff frequency setting. When the VG setting is changed using R_5 , the setting should ensure R_2 equals R_5 so that V_N balance stability is maintained. If the resistor value is increased more than the existing value, V_N balance may be disturbed and result in deterioration of V_N temperature characteristics.

R₃ : Differential constant-current bias resistor

 R_6, R_7 : For oscillation suppression and phase compensation applications (For use with differential stage applications)

 R_7, C_4 : For oscillation suppression and phase compensation applications

(A Mylar capacitor is recommended for C₄ for use with output stage applications)

 C_6, C_9 : For oscillation suppression and phase compensation applications

Power stage (Must be connected near the pin) C_6 : Positive (+) power C_9 : Negative (-) power

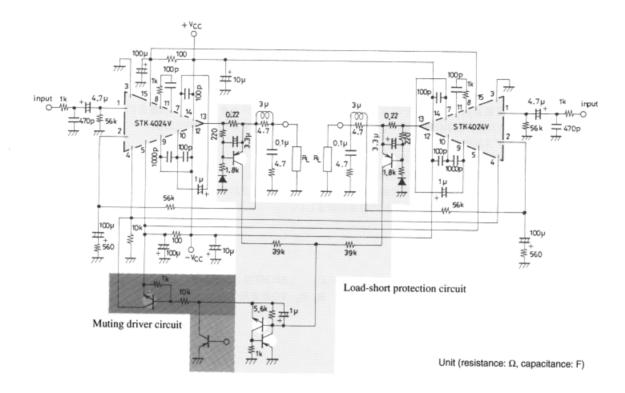
C₈ : For oscillation suppression and phase compensation applications

(Oscillation suppression before power step clip)

C₅: For oscillation suppression and distortion improvement applications

 $\begin{array}{ll} R_8, C_{10} & : \text{ Ripple filter circuit on positive (+) side.} \\ R_9, C_{13} & : \text{ Ripple filter circuit on negative (-) side.} \\ C_{11}, C_{12} & : \text{ For oscillation suppression applications} \end{array}$

• Used for reducing power supply impedance to stable IC operation and should be connected near the IC pin. We recommend that you use an electrolytic capacitor.



- No products described or contained herein are intended for use in surgical implants, life-support systems, aerospace equipment, nuclear power control systems, vehicles, disaster/crime-prevention equipment and the like, the failure of which may directly or indirectly cause injury, death or property loss.
- Anyone purchasing any products described or contained herein for an above-mentioned use shall:
 - ① Accept full responsibility and indemnify and defend SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors and all their officers and employees, jointly and severally, against any and all claims and litigation and all damages, cost and expenses associated with such use:
 - ② Not impose any responsibility for any fault or negligence which may be cited in any such claim or litigation on SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors or any of their officers and employees jointly or severally.
- Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

This catalog provides information as of November, 1996. Specifications and information herein are subject to change without notice.