

| Type | Funktionsbeschreibung | |
|----------|----------------------------------------------|-------------------------------------|
| STK 0025 | Darlington Endstufe ohne A-Stufen Vortreiber | QC, 25 W 4 OHM 0.1% |
| STK 0029 | Darlington Endstufe ohne A-Stufen Vortreiber | QC, 30 W 4 OHM 0.1% |
| STK 0030 | Darlington Endstufe ohne A-Stufen Vortreiber | TC, 35 W 4 OHM 0.1% |
| STK 0039 | Darlington Endstufe ohne A-Stufen Vortreiber | QC, 35 W 4 OHM 0.1% |
| STK 0040 | Darlington Endstufe ohne A-Stufen Vortreiber | TC, 40 W 4 OHM 0.1% |
| STK 0049 | Darlington Endstufe ohne A-Stufen Vortreiber | QC, 50 W 4 OHM 0.1% |
| STK 0050 | Darlington Endstufe ohne A-Stufen Vortreiber | TC, 50 W 4 OHM 0.1% |
| STK 0055 | Darlington Endstufe ohne A-Stufen Vortreiber | QC, 50 W 4 OHM 0.1% |
| STK 0059 | Darlington Endstufe ohne A-Stufen Vortreiber | QC, 60 W 4 OHM 0.1% |
| STK 0060 | Darlington Endstufe ohne A-Stufen Vortreiber | TC, 70 W 4 OHM 0.1% |
| STK 0080 | Darlington Endstufe ohne A-Stufen Vortreiber | TC, 100 W 4 OHM 0.1% |
| STK 0105 | Darlington Endstufe ohne A-Stufen Vortreiber | QC, 120 W 4 OHM 0.1% |
| STK 011 | Hybrid Verstärker | 6.5 W 8 OHM Einfach-V _{CC} |
| STK 013 | Hybrid Verstärker | 10 W 8 OHM Einfach-V _{CC} |
| STK 014 | Hybrid Verstärker | 15 W 8 OHM Einfach-V _{CC} |
| STK 015 | Hybrid Verstärker | 10 W 8 OHM Einfach-V _{CC} |
| STK 016 | Hybrid Verstärker | 15 W 8 OHM Einfach-V _{CC} |
| STK 020 | Hybrid Verstärker | 10 W 8 OHM Dual-V _{CC} |
| STK 024 | Hybrid Verstärker | 20 W 8 OHM Einfach-V _{CC} |
| STK 025 | Hybrid Verstärker | 20 W 8 OHM Dual-V _{CC} |
| STK 031 | Hybrid Verstärker | 25 W 8 OHM Einfach-V _{CC} |
| STK 035 | Hybrid Verstärker | 30 W 8 OHM Einfach-V _{CC} |
| STK 036 | Hybrid Verstärker | 35 W 4 OHM Dual-V _{CC} |
| STK 040 | Hybrid Verstärker Stereo | 2x10W 8 OHM Dual-V _{CC} |

| Type | Funktionsbeschreibung | |
|-----------|------------------------------------------|------------------------------------------------------|
| STK 041 | Hybrid Verstärker Stereo | 2x15W 8 OHM Dual-V _{CC} |
| STK 043 | Hybrid Verstärker Stereo | 2x20W 8 OHM Dual-V _{CC} |
| STK 050 | Hybrid Verstärker | 50 W 8 OHM Dual-V _{CC} m. Überlast.Schutz |
| STK 050N | Hybrid Verstärker | 60 W 4 OHM Dual-V _{CC} m. Überlast.Schutz |
| STK 070 | Hybrid Verstärker | 70 W 8 OHM Dual-V _{CC} m. Überlast.Schutz |
| STK 070N | Hybrid Verstärker | 80 W 4 OHM Dual-V _{CC} m. Überlast.Schutz |
| STK 075 | Standard Hybrid Verstärker | 15 W 8 OHM Dual-V _{CC} |
| STK 077 | Standard Hybrid Verstärker | 20 W 8 OHM Dual-V _{CC} |
| STK 078 | Standard Hybrid Verstärker | 24 W 8 OHM Dual-V _{CC} |
| STK 080 | Standard Hybrid Verstärker | 30 W 8 OHM Dual-V _{CC} |
| STK 082 | Standard Hybrid Verstärker | 35 W 8 OHM Dual-V _{CC} |
| STK 084 | Standard Hybrid Verstärker | 50 W 8 OHM Dual-V _{CC} |
| STK 086 | Standard Hybrid Verstärker | 70 W 8 OHM Dual-V _{CC} |
| STK 075 G | Hybrid Verstärker m. geringer Verzerrung | 20 W 4 OHM Dual-V _{CC} THD 0.03% 20...20KHz |
| STK 080 G | Hybrid Verstärker m. geringer Verzerrung | 35 W 4 OHM Dual-V _{CC} THD 0.03% 20...20KHz |
| STK 082 G | Hybrid Verstärker m. geringer Verzerrung | 40 W 4 OHM Dual-V _{CC} THD 0.03% 20...20KHz |
| STK 084 G | Hybrid Verstärker m. geringer Verzerrung | 50 W 4 OHM Dual-V _{CC} THD 0.03% 20...20KHz |
| STK 086 G | Hybrid Verstärker m. geringer Verzerrung | 70 W 4 OHM Dual-V _{CC} THD 0.03% 20...20KHz |

| Type | Funktionsbeschreibung | |
|----------|---------------------------------------------------|--------------------------------------------------------------------------|
| STK 415 | 2-fach Verstärker Stereo an Einfachspeisespannung | 2x 5 W 8 OHM |
| STK 430 | | |
| STK 431 | | |
| STK 433 | 2-fach Verstärker Stereo an Einfachspeisespannung | 2x 5 W 8 OHM |
| STK 435 | 2-fach Verstärker Stereo an Einfachspeisespannung | 2x 7 W 8 OHM |
| STK 437 | 2-fach Verstärker Stereo an Einfachspeisespannung | 2x10 W 8 OHM |
| STK 439 | 2-fach Verstärker Stereo an Einfachspeisespannung | 2x15 W 8 OHM |
| STK 441 | 2-fach Verstärker Stereo an Einfachspeisespannung | 2x20 W 8 OHM |
| STK 443 | 2-fach Verstärker Stereo an Einfachspeisespannung | 2x25 W 8 OHM |
| STK 457 | 2-fach Verstärker Stereo an dualer Speisespannung | 2x15 W 4 OHM Dual- $V_{CC} \pm 16V, T_c \text{ max. } 105^\circ\text{C}$ |
| STK 459 | 2-fach Verstärker Stereo an dualer Speisespannung | 2x20 W 4 OHM Dual- $V_{CC} \pm 19V, T_c \text{ max. } 105^\circ\text{C}$ |
| STK 461 | 2-fach Verstärker Stereo an dualer Speisespannung | 2x25 W 4 OHM Dual- $V_{CC} \pm 21V, T_c \text{ max. } 105^\circ\text{C}$ |
| STK 463 | 2-fach Verstärker Stereo an dualer Speisespannung | 2x30 W 4 OHM Dual- $V_{CC} \pm 23V, T_c \text{ max. } 105^\circ\text{C}$ |
| STK 465 | 2-fach Verstärker Stereo an dualer Speisespannung | 2x35 W 4 OHM Dual- $V_{CC} \pm 25V, T_c \text{ max. } 105^\circ\text{C}$ |
| STK 507 | Spannungsregler | 0.3 A, 50 V, einstellbar |
| STK 521 | Spannungsregler | 1 A, 28 V, einstellbar |
| STK 523 | Spannungsregler | 1 A, 40 V, einstellbar |
| STK 531 | Spannungsregler | 2 A, 12 V, Festspannungsregler |
| STK 532 | Spannungsregler | 2 A, 18 V, Festspannungsregler |
| STK 533 | Spannungsregler | 2 A, 24 V, Festspannungsregler |
| STK 541 | Spannungsregler | 1 A, 12 V, Festspannungsregler |
| STK 542 | Spannungsregler | 1 A, 18 V, Festspannungsregler |
| STK 3042 | Treiberschaltung für Darlington Endstufen | $P_D \text{ max.} = 4W/\text{Kanal } 40mA, V_c = +48V$ |
| STK 3062 | Treiberschaltung für Darlington Endstufen | $P_D \text{ max.} = 4W/\text{Kanal } 40mA, V_c = \pm 55V$ |
| STK 3082 | Treiberschaltung für Darlington Endstufen | $P_D \text{ MAX.} = 4W/\text{Kanal } 40mA, V_c \pm 65V$ |

SANYO THICK FILM INTEGRATED CIRCUIT FOR POWER AMPLIFIER USE

Recently power amplifier for use of audio equipment has a tendency towards higher output power and lower distortion. Sanyo thick film power IC STK series are designed taking this tendency into consideration sufficiently, and can cover the wide range of output rating as 5 to 150 watts.

FEATURES

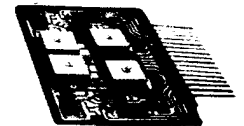
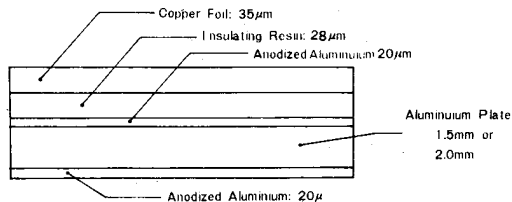
- (1) STK series are classified by output power and use, and are available in common printed board with external components. Only one designing can make other amplifier output power rating by changing IC.
- (2) ASO of power transistors are sufficiently designed against the abnormal operation as load shorting. No instantaneous destruction based on secondary breakdown are guaranteed against any all kinds of output power. Also allowable shorting time can be set when heat sink is adequately designed. Added thermal shut-down protector circuit can preserve IC.
- (3) The STK series having bigger output power rating have a pin for a protector circuit for load shorting and speaker damage.
- (4) Capable of supplying wide load range as use of 4 ohm, 8 ohm and 8 ohm BTL connection.
- (5) Voltage Gain setting according to input signal level depends on external components.
- (6) At designing of heat sink heat resistance between heat sink and device can be ignored. This is useful specially for designing of larger output power amplifier.

In an aspect of electrical characteristics:

- (7) Low distortion up to 0.005% at guaranteed band.
- (8) Small pop noise at switching on time of power supply.
- (9) Low noise characteristic.
- (10) The least scattering of characteristics because of functional trimming under manufacturing process.

These features are brought by SANYO's original IMST[®] technology. IMST[®] is short for Insulated Metal Substrate Technology.

Structure of Insulated Metal Substrate



New Product Thick Film AF Power Amplifier IC's

| Class | Type | Circuit Configuration | Output Power $R_L 4\Omega$ |
|---------------|------------------------------------------------|----------------------------------|---------------------------------------------------------------------|
| Low Cost Type | STK-4017 Series ※ | 1 Channl Single Power Supply | 7 ~ 30W (mini package type) |
| | STK-430 Series | 2 Channl Single Power Supply | 5 ~ 30W (tendency of higher output power) |
| Medium Class | STK-450 Series | 2 Channl Dual Power Supply | 10 ~ 40W (tendency of higher output power) |
| | STK-075G Series | 1 Channl Dual Power Supply | 15 ~ 80W (to lower distortion) |
| High Class | 2ch Voltage Amp 2ch Darlington Power Pack ※ | Dual Power Supply-DC Coupled | 20 ~ 40W (to lower distortion and with R_e) |
| | 2ch Voltage Amp Darlington Power Pack | Dual Power Supply-DC Coupled | 40 ~ 150W (tendency of higher output power and lower distortion) |

※ New Series

| DESCRIPTION | | 5 | 7 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 50 | 60 | 70 | 80 | 100 | output (W) | Remarks | |
|----------------------------|-----------------------|-----------------------------------|-------------------------------------------------------|----|-------------------|-------------|------------------------------------|----|-----------------------------------------|----|----|----|----|----|-----|------------|------------|----------|
| All in one Type | 1 ch/1 pack | Single Power Supply | *4017 4019 4021 | | 024 031 | | | | | | | | | | | | Reference | 0.5% |
| | | Dual Power Supply(FTC 20~20KHz) | 011 015 016 | | 025 032 036 | | 075 077 078 080 082 083 084 086 | | 075G 077G 078G 080G 082G 083G 084G 086G | | | | | | | | Distortion | 1% |
| | 2 ch/1 pack | Single Power Supply(FTC 10~15KHz) | 433 435 436 439 441 443 | | 437 | | | | | | | | | | | | | 1% |
| | | Dual Power Supply (FTC 20~20KHz) | 457 459 461 463 465 | | | | | | | | | | | | | 0.08% | | |
| Split Type | Voltage Amp | Standard | Tr.Differential, 2 Stage Amp (Current Mirror) | | STK 3024 STK 3034 | | STK 3044 STK 3064 * | | | | | | | | | | | < 0.02% |
| | | High grade | Tr.Differential, 2 Stage Amp (Current Mirror,Cascade) | | | | STK 3042 STK 3062 | | STK 3082 STK 3102 | | | | | | | | | < 0.01% |
| | | Ultra high grade | FET.Differential (Current Mirror,Cascade) | | | | * STK 3046 STK 3066 | | STK 3086 STK 3106 | | | | | | | | | < 0.008% |
| V amp+DPP or V amp+DPP*2 | Darlington Power Pack | Compre-mentary | 1 ch Darlington Power Pack | | | | 0025 0029 0035 0039 0045 0055 | | | | | | | | | | | < 0.04% |
| | | | 2 ch Darlington Power Pack | | | | 1029 1035 1039 1045 1055 | | | | | | | | | | | < 0.03% |
| | | Circuit | Without RE | | | | * 2025 2029 2035 2039 2045 | | | | | | | | | | | < 0.02% |
| | | | With RE | | | | * 2125 2129 2135 2139 2145 | | | | | | | | | | | < 0.02% |
| or | Power Pack | Compre-mentary | 1 ch Darlington Power Pack (2 Stage Amp) | | | | 0030 0040 0050 0060 0070 0080 0100 | | | | | | | | | | | < 0.02% |
| | | | Without RE | | | | 1030 1040 1050 1060 | | | | | | | | | | | < 0.02% |
| | | Circuit | Without RE | | | | 0040 0050 0060 0070 0080 0010 0100 | | | | | | | | | | | < 0.01% |
| | | | With RE (With the terminal for Class A Amp) | | | | * 1050 1060 1070 1080 1100 | | | | | | | | | | | < 0.01% |
| 2 ch Darlington Power Pack | | | | | | * 2030 2040 | | | | | | | | | | | < 0.02% | |
| | | | | | | * 2130 2140 | | | | | | | | | | | < 0.02% | |

STK-430 SERIES

| Type No (Series Name) | Maximum Rating | | Recommended Operation Condition | | | Operational Characteristics (Vcc: Recommended condition f=1kHz RL=8Ω) | | | | | | | | | | Package | Circuit Configuration |
|--------------------------|----------------|--------|---------------------------------|---------------------------|------------------|-----------------------------------------------------------------------|------------------|------------------|----------------|-----|---------|-----|----------------|----------------|---|--------------------------------|-----------------------|
| | Vcc max | Tc max | Supply Voltage Vcc(RL=8Ω) | Supply Voltage Vcc(RL=4Ω) | Closed Loop Gain | Closed Loop Gain | Po max/RL=8Ω min | Po max/RL=4Ω THD | THD typ | THD | THD max | Po | PBW (-3dB) min | PBW (-3dB) THD | | | |
| | V | °C | V | V | dB | dB | W | % | W | % | % | W | HZ | % | | | |
| STK-433 | 32 | 90 | 23 | 20 | 26~45 | 40 | 5 ² | 1.0 | 7 ² | 1.0 | 0.5 | 0.1 | 60~10k | 1.0 | ① | ○ Single Power Supply | |
| STK-435 | 39 | 90 | 27 | 24 | 26~45 | 40 | 7 | 1.0 | 10 | 1.0 | 0.5 | 0.1 | 40~20k | 1.0 | ① | ○ 2ch Amplifier in a packaging | |
| STK-436 | 50 | 90 | 32 | 27 | 26~45 | 40 | 10 | 1.0 | 12 | 1.0 | 0.3 | 0.1 | 30~20k | 1.0 | ① | | |
| STK-437 | 50 | 90 | 33 | 30 | 26~45 | 40 | 10 | 1.0 | 14 | 1.0 | 0.2 | 0.1 | 30~20k | 1.0 | ② | ○ Others Specification | |
| STK-439 | 56 | 85 | 39 | 35 | 26~45 | 40 | 15 | 1.0 | 20 | 1.0 | 0.2 | 0.1 | 30~20k | 1.0 | ② | Typical Value | |
| STK-441 | 63 | 85 | 44 | 40 | 26~45 | 40 | 20 | 1.0 | 24 | 1.0 | 0.3 | 0.1 | 30~20k | 1.0 | ② | Icco : 60mA | |
| STK-443 | 70 | 85 | 49 | 44 | 26~45 | 40 | 25 | 1.0 | 30 | 1.0 | 0.3 | 0.1 | 30~20k | 1.0 | ② | Vno : 0.5mV | |
| (STK-445*) | — | — | — | — | 26~45 | 40 | 30 | 1.0 | — | 1.0 | 0.2 | 0.1 | 30~20k | 1.0 | ② | | |

* under development

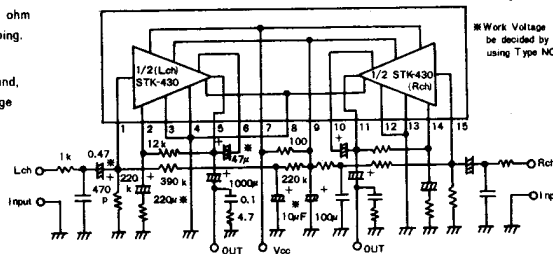
Note 1.

At 4 ohm load use, change a resistor from 390k ohm to 330k ohm in an application circuit in order to compensate unbalanced clipping.

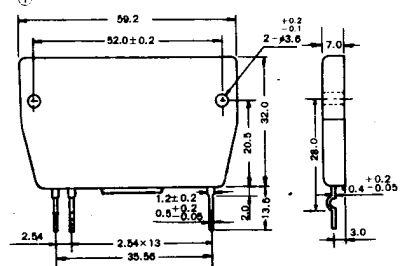
Note 2.

Add a capacitor of 0.1 to 1 uF between pin 7 of IC and ground, in order to improve an oscillation stability (e.g. in use of voltage gain below 30 dB.)

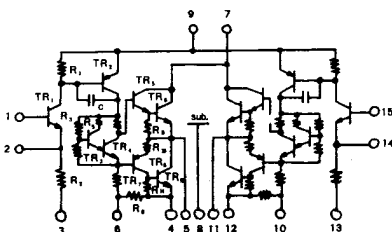
Application: 2ch A. F. Power Amplifier with 430 Family



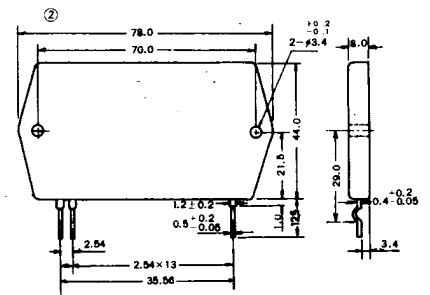
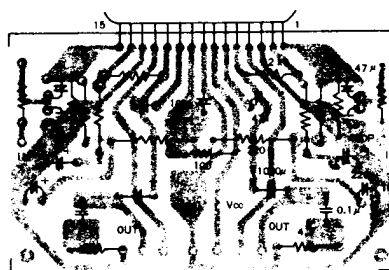
Package Dimension (Unit: mm)



Equivalent Circuit



An Example of Printed Pattern Design (Bottom View)



STK-075G SERIES

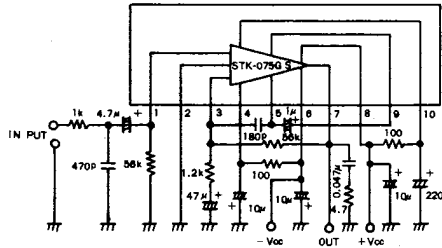
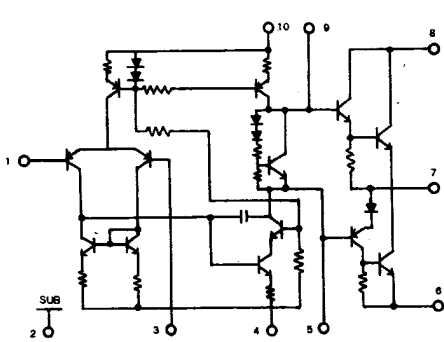
| Type No (Series Name) | Maximum Rating | | Recommended Operation Condition | | | | Operational Characteristics | | | | | | Package | Circuit Configuration | |
|--------------------------|---------------------|--------------------|--------------------------------------|--------------------------------------|------------------|------------------|---------------------------------------|------|---------------------------------------|------|------------|----------------|---------|-----------------------|--------------------------------------|
| | V _{CC} max | T _C max | V _{CC} (R _L =8Ω) | V _{CC} (R _L =4Ω) | Closed Loop Gain | Closed Loop Gain | P _O max/R _L =8Ω | | P _O max/R _L =4Ω | | THD(1 kHz) | P _O | | Number of Channel | Power Supply |
| | V | °C | V | V | dB | dB | min | THD | min | THD | typ | W | SEP 10P | ch | |
| STK-075G | ±28 | 105 | ±20 | ±18 | 26~45 | 33.4 | 15 | 0.03 | 20 | 0.05 | 0.05 | 0.25 | ① | 2 | ○ Dual Power Supply |
| STK-077G | ±33 | 105 | ±23 | ±20 | 26~45 | 33.4 | 20 | 0.03 | 24 | 0.05 | 0.05 | 0.25 | ① | 2 | ○ 1ch Amplifier in a packaging |
| STK-078G | ±35 | 105 | ±25 | ±22.5 | 26~45 | 33.4 | 24 | 0.03 | 30 | 0.05 | 0.05 | 0.25 | ① | 2 | ○ Others specification typical value |
| STK-080G | ±40 | 105 | ±27.5 | ±24 | 26~45 | 33.4 | 30 | 0.03 | 35 | 0.05 | 0.05 | 0.25 | ② | 2 | V _{CC} : 50mA |
| STK-082G | ±43 | 105 | ±30 | ±26 | 26~45 | 33.4 | 35 | 0.03 | 40 | 0.05 | 0.05 | 0.25 | ② | 2 | V _N : ±70mV |
| STK-084G | ±50 | 90 | ±35 | ±30 | 26~45 | 33.4 | 50 | 0.03 | 60 | 0.05 | 0.05 | 0.25 | ② | 2 | V _{NO} : 0.5mV |
| STK-086G | ±55 | 90 | ±42 | ±35 | 26~45 | 33.4 | 70 | 0.03 | 80 | 0.05 | 0.05 | 0.25 | ② | 2 | |

Note 1.
* 20~20kHz

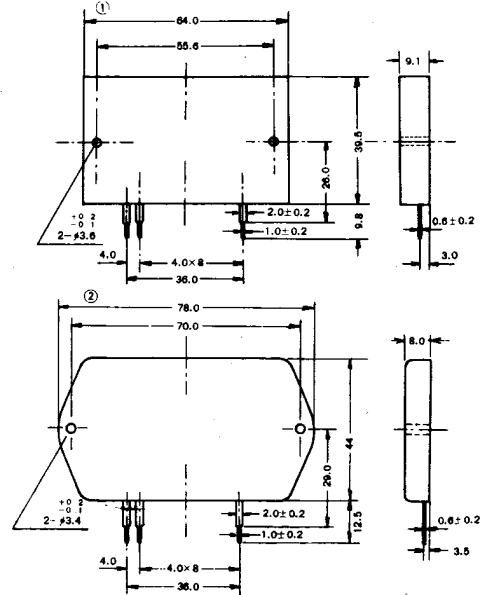
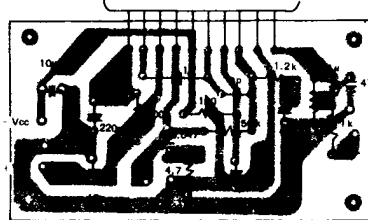
Application A.F. Power Amplifier with STK-075G Series

Package Dimension (Unit: mm)

EQUIVALENT CIRCUIT



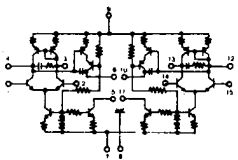
An Example of Printed Pattern Design (Bottom View)



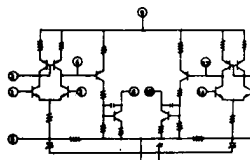
STK-3000 SERIES * NEW PRODUCT

| Type No. (Series Name) | Maximum Rating | | | | Recommended Operation Condition | | | Operational Characteristics | | | | | Circuit Configuration | |
|---------------------------|---------------------|----------------|--------------------|--------------------|---------------------------------|---------------------|------------------|-----------------------------|-----------------------|-------|----------------|------------|-----------------------|----|
| | V _{CC} max | P _d | T _C max | I _C max | V _{CC1} *1 | V _{CC2} *1 | Closed Loop Gain | Closed Loop Gain | P _O max *2 | | | Package | Number of Channel | |
| | V | W | °C | ma | V | V | dB | dB | min | THD | R _L | SEP 15P *3 | ch | |
| STK-3044 | ±48 | 4/ch | 100 | 40/ch | ±36 | ±40 | 20~40 | 34 | 40 | 0.02 | 8(4) | 1 | 2 | DC |
| -3042 | ±48 | 4/ch | 100 | 40/ch | ±36 | ±40 | 20~40 | 26 | 40 | 0.01 | 8(4) | 1 | 2 | DC |
| -3046* | ±48 | 4/ch | 100 | 40/ch | ±36 | ±40 | 20~40 | 30 | 40 | 0.008 | 8(4) | 2 | 2 | DC |
| STK-3064 | ±55 | 4/ch | 100 | 40/ch | ±41 | ±45 | 20~40 | 34 | 60 | 0.02 | 8(4) | 1 | 2 | DC |
| -3062 | ±55 | 4/ch | 100 | 40/ch | ±41 | ±45 | 20~40 | 26 | 60 | 0.01 | 8(4) | 1 | 2 | DC |
| -3066* | ±55 | 4/ch | 100 | 40/ch | ±41 | ±45 | 20~40 | 30 | 60 | 0.008 | 8(4) | 2 | 2 | DC |
| STK-3084 | ±65 | 4/ch | 100 | 40/ch | ±47 | ±50 | 20~40 | 34 | 80 | 0.02 | 8(4) | 1 | 2 | DC |
| -3082 | ±65 | 4/ch | 100 | 40/ch | ±47 | ±50 | 20~40 | 26 | 80 | 0.01 | 8(4) | 1 | 2 | DC |
| -3086* | ±65 | 4/ch | 100 | 40/ch | ±47 | ±50 | 20~40 | 30 | 80 | 0.008 | 8(4) | 2 | 2 | DC |

Equivalent Circuit

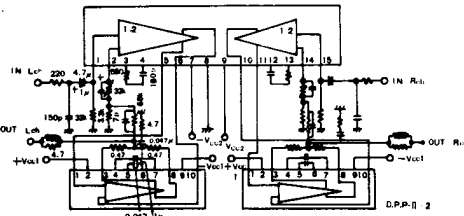


STK-3042, 3062, 3082

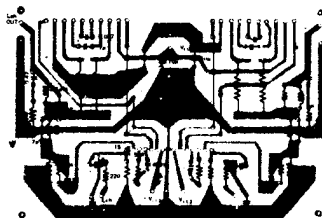


STK-3044, 3064, 3084

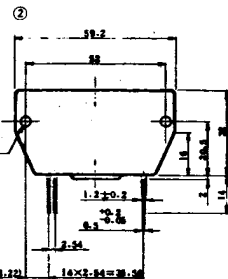
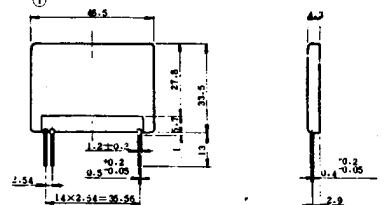
Application



An Example of Printed Pattern Design (Bottom View)



Package Dimension (Unit: mm)



STK-3046, 3066, 3086

D.P.P 2000 SERIES

| Type No. | | Maximum Rating | | | | | | Recommended Operation | | Electrical Characteristics | | | | with RE | |
|-------------------------|-------------------------------|----------------|----------------|--------|-------------|------------|-------------|-------------------------------------|-------------------------------------|----------------------------|----------------------|-------|----------------------|---------|---------|
| Pure Complementary | Quasi Complementary | Vcc max | θ_{j-c} | Ic max | Tj | t_s^{*1} | T stg | Supply Voltage Vcc at RL=8 Ω | Supply Voltage Vcc at RL=4 Ω | Closed Loop Gain | Po max/RL=8 Ω | | Po max/RL=4 Ω | | Package |
| | | V | $^{\circ}C/W$ | A | $^{\circ}C$ | sec | $^{\circ}C$ | V | V | dB | W | THD % | W | THD % | |
| (STK-2030) *STK-2130 | *2 *STK-2025 (STK-2125) | ± 40 | 2.6 | 3 | 150 | 2 | -30~+105 | ± 24 | ± 22 | 26.3 | 20 | 0.02 | 23 | 0.03 | NO YES |
| | *STK-2029 (STK-2129) | ± 43 | 2.2 | 5 | 150 | 2 | -30~+105 | ± 25.5 | ± 24 | 26.3 | 25 | 0.02 | 30 | 0.03 | NO YES |
| | (STK-2035) *STK-2135 | ± 48 | 2.1 | 5 | 150 | 2 | -30~+105 | ± 28.5 | ± 26 | 26.3 | 30 | 0.02 | 35 | 0.03 | NO YES |
| | (STK-2039) *STK-2139 | ± 50 | 1.85 | 5 | 150 | 2 | -30~+105 | ± 30 | ± 28 | 26.3 | 35 | 0.02 | 40 | 0.03 | NO YES |
| (STK-2040) *STK-2140 | | ± 54 | 1.8 | 5 | 150 | 2 | -30~+105 | ± 32 | ± 31 | 26.3 | 40 | 0.02 | 45 | 0.03 | NO YES |

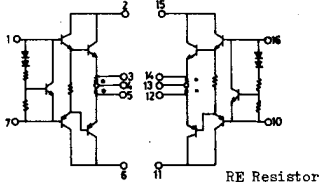
*1 Allowable time for load shorting. *2 *Mark Standardization

Equivalent Circuit

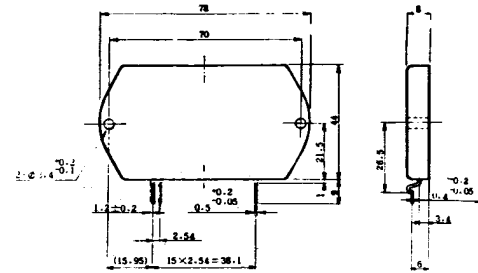
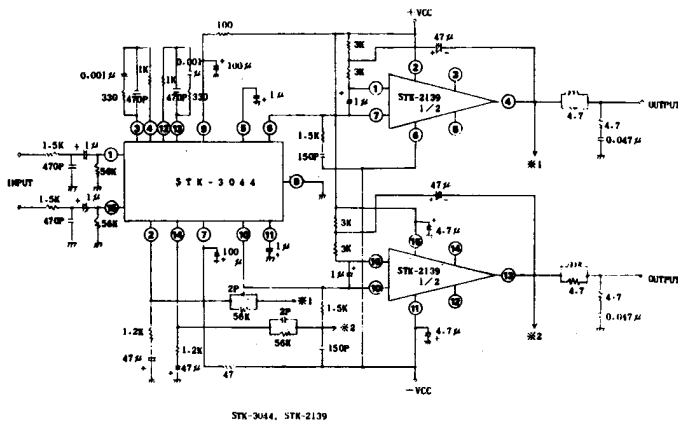
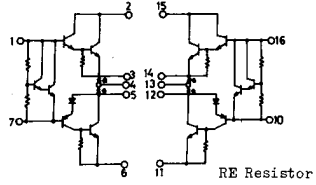
Application

Package Dimension (Unit:mm)

Pure Complementary



Quasi Complementary



D.P.P. SERIES

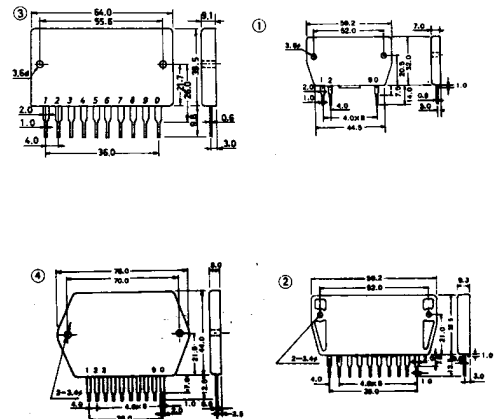
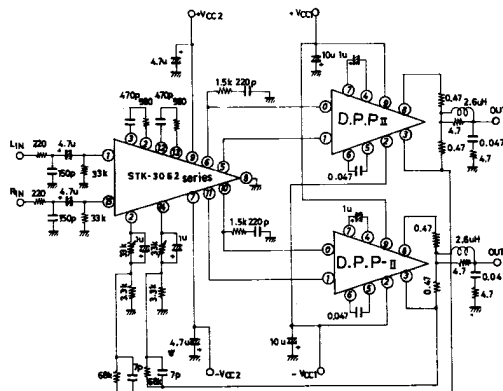
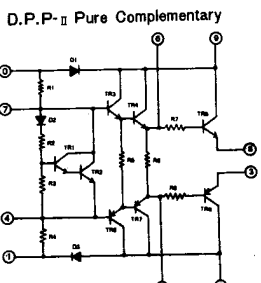
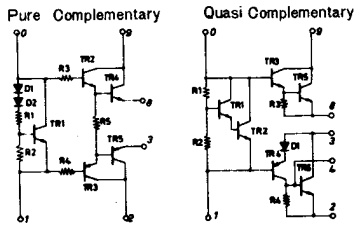
| Type No. | | Maximum Rating | | | | | | Recommended Operation Condition | | Operational Characteristics | | | | Package | |
|---------------------------|---------------------|----------------|----------------|---------|-------------|------------|-------------|-------------------------------------|-------------------------------------|-----------------------------|-------------------------|-------------|-------------------------|---------|-----------|
| Pure Complementary | Quasi Complementary | Vcc max | θ_{j-c} | Ic max | Tj | t_s^{*1} | Tstg | Supply Voltage Vcc (RL=8 Ω) | Supply Voltage Vcc (RL=4 Ω) | Closed Loop Gain | Po max *2/RL=8 Ω | | Po max *2/RL=4 Ω | | SEP 10pin |
| | | V | $^{\circ}C/W$ | A | $^{\circ}C$ | sec | $^{\circ}C$ | V | V | dB | min | THD % | min | THD % | |
| STK-0030 | STK-0025 | ± 35 | 2.6 | 3 | 150 | 2 | -30~+105 | ± 24.4 | ± 23 | 34 | 23 | 0.02 | 25 | 0.05 | ① |
| | STK-0029 | ± 37 | 2.4 | 5 | 150 | 2 | -30~+105 | ± 25.0 | ± 24 | 34 | 25 | 0.02 | 30 | 0.05 | ① |
| STK-0040 (STK-0040-II) | STK-0039 | ± 40 | 2.4 | 4 | 150 | 2 | -30~+105 | ± 28.5 | ± 26 | 34 | 30 | 0.02 | 35 | 0.05 | ② |
| | | ± 45 | 2.0 | 5 | 150 | 2 | -30~+105 | ± 31 | ± 28 | 34 | 35 | 0.02 | 40 | 0.05 | ② |
| STK-0050 (STK-0050-II) | STK-0049 | ± 48 | 2.0 | 5/(5) | 150 | 2 | -30~+105 | $\pm 33/(\pm 36)$ | ± 31 | 34 | 40 | 0.02/(0.01) | 45 | 0.03 | ① |
| | | ± 50 | 1.8 | 5 | 150 | 2 | -30~+105 | ± 35 | ± 32 | 34 | 45 | 0.02 | 50 | 0.03 | ② |
| STK-0060 (STK-0060-II) | STK-0055 | ± 53 | 1.8 | 5/(6) | 150 | 2 | -30~+105 | $\pm 36/(\pm 39)$ | ± 32 | 34 | 50 | 0.02/(0.01) | 55 | 0.03 | ② |
| | STK-0059 | ± 53 | 1.6 | 7 | 150 | - | -30~+105 | ± 38 | ± 34 | 34 | 55 | 0.02 | 60 | 0.03 | ② |
| STK-0070 (STK-0070-II) | STK-0065 | ± 55 | 1.4 | 7/(8) | 150 | - | -30~+105 | $\pm 40/(\pm 41)$ | ± 36 | 34 | 60 | 0.02/(0.01) | 70 | 0.03 | ③ |
| | STK-0075 | ± 55 | 1.4 | 7 | 150 | - | -30~+105 | ± 43 | ± 38 | 34 | 70 | 0.02 | 80 | 0.03 | ③ |
| STK-0080 (STK-0080-II) | | ± 65 | 1.3 | 10/(12) | 150 | - | -30~+105 | $\pm 46/(\pm 47)$ | ± 42 | 34 | 80 | 0.02/(0.01) | 100 | 0.03 | ③ |
| | STK-0105 | ± 75 | 1.0 | 10 | 150 | - | -30~+105 | ± 50 | ± 45 | 34 | 100 | 0.02 | 120 | 0.03 | ④ |

Note
*1 t_s : Available Load Shorting Time
*2 f=20~20kHz

Equivalent Circuit

AF Power Amplifier with D.P.P-II

Package Dimension (Unit:mm)



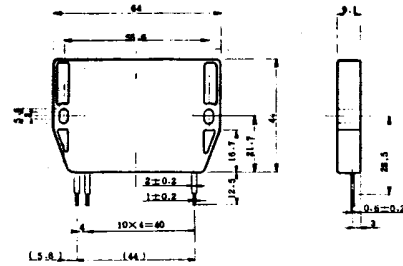
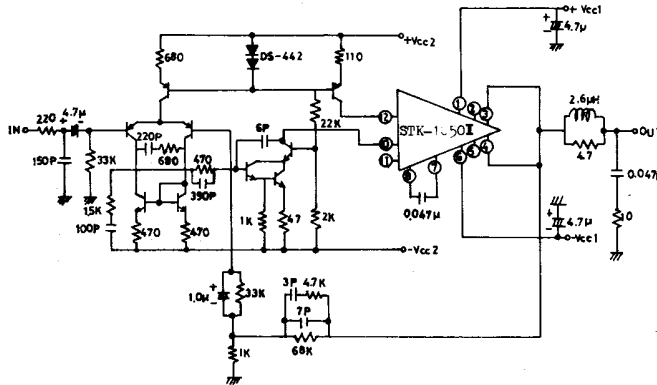
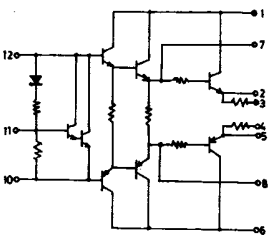
| Family | Maximum Rating | | | | | | Recommended Operation | | | Electrical Characteristics | | | | Package | with RE. |
|-------------|---------------------|------------------|--------------------|----------------|-------------------|------------|---------------------------------------------------------|---------------------------------------------------------|---------------------|----------------------------------------|----------------------------------------|-----|------|---------|----------|
| | V _{cc max} | θ _{j-c} | I _{c max} | T _j | t _s *1 | T sfg | Supply Voltage V _{cc} at R _L =8Ω | Supply Voltage V _{cc} at R _L =4Ω | Closed Loop Gain | P _{o max} /R _L =8Ω | P _{o max} /R _L =4Ω | THD | | | |
| | V | °C/W | A | °C | sec | °C | V | V | dB | W | W | % | % | | |
| STK 1050 I | ±53 | 1.6 | 6 | 150 | / | -30 ~ +105 | ±39 | ±35 | 34 | 50 | 0.01 | 55 | 0.02 | ① | YES |
| STK 1060 I | ±55 | 1.3 | 8 | 150 | / | -30 ~ +105 | ±41 | ±37 | 34 | 60 | 0.01 | 70 | 0.02 | ① | YES |
| STK 1070 I | ±60 | 1.3 | 10 | 150 | / | -30 ~ +105 | ±45 | ±40 | 34 | 70 | 0.01 | 80 | 0.02 | ① | YES |
| STK 1080 I | ±65 | 1.2 | 12 | 150 | / | -30 ~ +105 | ±47 | ±42 | 34 | 80 | 0.01 | 100 | 0.02 | ① | YES |
| *STK 1100 I | ±75 | 1.0 | 15 | 150 | / | -30 ~ +105 | ±50 | ±45 | 34 | 100 | 0.01 | 120 | 0.02 | ① | YES |

* Under Development

Equivalent Circuit

Application

Package Dimension (Unit:mm)



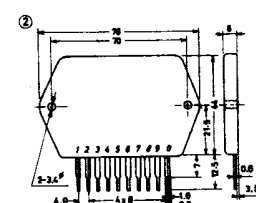
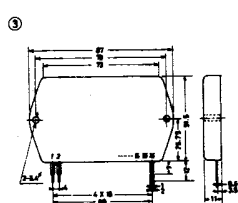
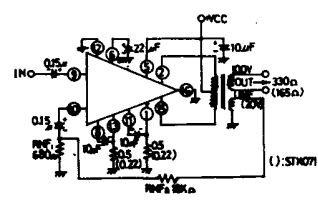
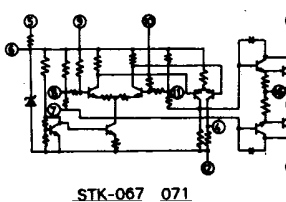
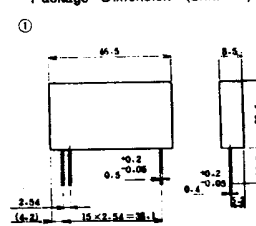
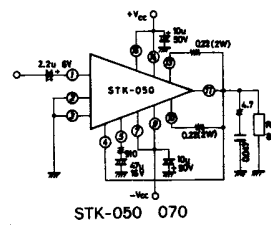
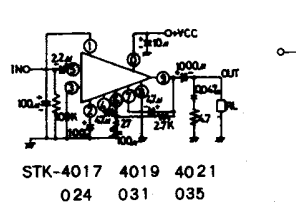
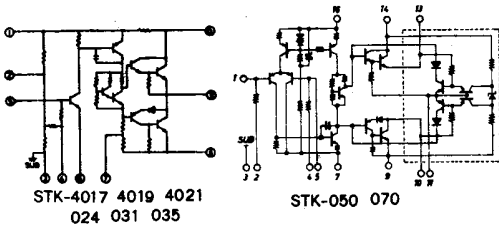
CONVENTIONAL TYPE AF POWER AMPLIFIER

| Description | Case | Maximum Rating | | Recommended Operation Condition | | Operational Characteristics | | | | | | | | | | | Use | | | | |
|----------------------------------|----------------------------------|----------------|-----------------|---------------------------------|----------------|--------------------------------------|--------------------------------------|------------------|------------------|--------------------|-----|----------------|--------------------|-----|----------------|-----|-----|----------------|-----|---------------------------|---------------|
| | | Package | P _{in} | V _{o max} | T _c | V _{cc} (R _L =8Ω) | V _{cc} (R _L =4Ω) | Closed Loop Gain | Closed Loop Gain | P _{o max} | | | P _{o max} | | | THD | | PBW | | | |
| | | | | | | | | | | min | THD | R _L | typ | THD | R _L | max | | P _o | Hz | THD | |
| STK-4017 STK-4019 STK-4021 | Single Power Supply | SEP① | 10 | 45 | 105 | 26.4 | 26.4 | 40 | 40 | 6.5 | 1 | 8 | 10 | 1 | 4 | 0.3 | 0.1 | 50~30k | 1 | Bus Amp Electric Organ | |
| STK-024 STK-031 STK-035 | 1 channel IC | SEP② | 10 | 60 | 85 | 44 | 38 | 20~40 | 30 | 20 | 0.5 | 8 | 25 | 0.5 | 4 | 0.2 | 0.1 | 20~30k | 0.5 | | Receiver etc. |
| STK-050 STK-070 | Dual Power Supply With Protector | SEP③ | 16 | ±45 | 85 | ±35 | ±30 | 26~40 | 30.5 | 50 | 0.2 | 8 | 50 | 0.5 | 4 | 0.2 | 0.1 | 20~20k | 0.5 | | |
| STK-067 STK-071 | Output Transformer Use | SEP③ | 16 | 35 | 85 | 26.4 | — | 35~46 | 40 | 30 | 5 | 8 | — | — | — | 3.0 | 0.1 | 70~10k | 5 | Public Address Bus Amp | |
| | | SEP③ | 16 | 35 | 85 | — | 26.4 | 35~46 | 40 | — | — | — | 60 | 5 | 4 | 3.0 | 0.1 | 70~10k | 5 | | |

Equivalent Circuit

Application

Package Dimension (Unit:mm)



STK-067 071

Sanyo

Thick Film Hybrid Integrated Circuit
10W min AF Power Ampl.
(2 Channel, 2 Power Supply)

STK-040

Features

2 power supplied 10W stereo power amplifier

Absolute Maximum Ratings at Ta=25°C

| | | |
|------------------------------|--------------------|-------------------------------------------------------------------------------------|
| Maximum Supply Voltage | V _{CCmax} | ±25 V |
| Operating Case Temperature | T _C | 90 °C |
| Storage Temperature | T _{stg} | -30 to +100 °C |
| Allowable Load Shorting Time | t _s | V _{CC} =±16.5V, P _O =10W, 2 sec R _L =8ohm, f=50Hz |

Recommended Operation Condition at Ta=25°C

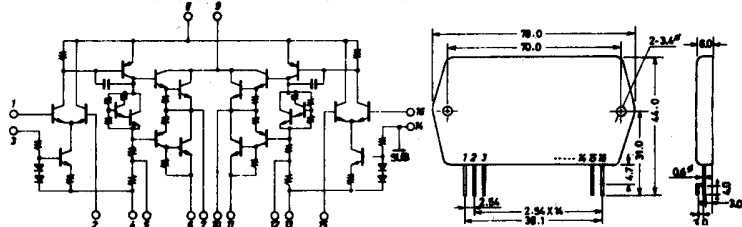
| | | |
|----------------------------|-----------------|---------|
| Recommended Supply Voltage | V _{CC} | ±16.5 V |
| Load Resistance | R _L | 8 ohm |

Operation Characteristics at Ta=25°C, V_{CC}=±16.5V, R_L=8ohm, R_G=600ohm, V_G=41.5dB:

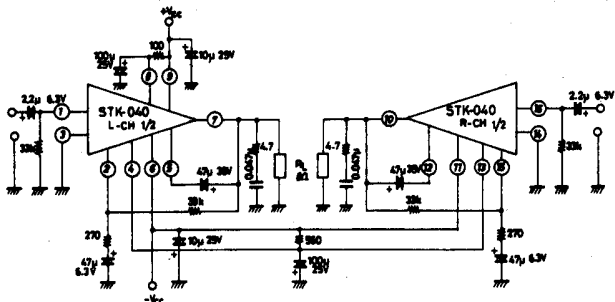
| | | | min | typ | max | unit |
|---------------------------|--------------------|----------------------------------------------------------|-----|--------|-----|-------------------|
| Quiescent Current | I _{CCO} | V _{CC} =±20V | 60 | 120 | | mA |
| Output Power | P _O (1) | THD=0.9%, f=1kHz | 10 | | | W |
| | P _O (2) | THD=0.9%, f=20-20k Hz | 5 | | | W |
| Total Harmonic Distortion | THD | P _O =1.0W, f=1kHz | | 0.2 | | % |
| Frequency Response | f | P _O =0.1W, -3dB | | 20-50k | | Hz |
| Input Resistance | r _i | P _O =0.1W, f=1kHz | | 32k | | ohm |
| Output Noise Voltage | V _{NO} | V _{CC} =±20V, R _G =10kohm | | 1.3 | | mV _{rms} |
| Output Center Voltage | V _N | V _{CC} =±20V | -70 | +70 | | mV |
| Cross Talk | | P _O =1.0W, f=50-10kHz, R _G =10kohm | | -50 | | dB |

[NOTICE] Use a regulated voltage supply unless noticed.
 * Use the approved voltage regulator for a test of V_{NO} & t_s.

Equivalent Circuit and Case Outline (unit:mm)



Application: 10W min AF Stereo Power Amplifier



Sanyo

Thick Film Hybrid Integrated Circuit
20W min AF Power Ampl.
(2 channels, 2 Power Supply)

STK-043

Absolute Maximum Ratings at Ta=25°C

| | | |
|------------------------------|--------------------|---------------------------------------------------------------------------------|
| Maximum Supply Voltage | V _{CCmax} | ±32.5 V |
| Operating Case Temperature | T _C | 90 °C |
| Storage Temperature | T _{stg} | -30 to +100 °C |
| Allowable Load Shorting Time | t _s | V _{CC} =±26V, f=50Hz, V _O =12V, R _L =open, 2 sec |

Recommended Operation Condition at Ta=25°C

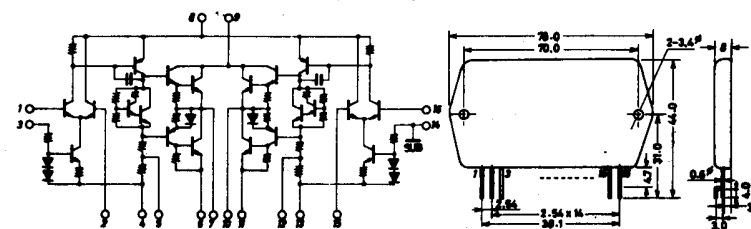
| | | |
|----------------------------|-----------------|-------|
| Recommended Supply Voltage | V _{CC} | ±22 V |
| Load Resistance | R _L | 8 ohm |

Operation Characteristics at Ta=25°C, V_{CC}=±22V, R_L=8ohm, R_G=600ohm, V_G=38.5dB:

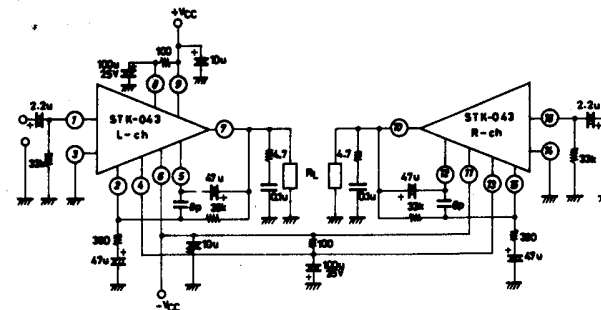
| | | | min | typ | max | unit |
|---------------------------|--------------------|-----------------------------------------------|-----|--------|-----|-------------------|
| Quiescent Current | I _{CCO} | V _{CC} =±26V, both channels | 60 | 120 | | mA |
| Output Power | P _O (1) | THD=0.5%, f=1kHz | 20 | | | W |
| | P _O (2) | THD=0.5%, f=20 to 20k Hz | 18 | | | W |
| Total Harmonic Distortion | THD | P _O =1.0W, f=1kHz | | 0.2 | | % |
| Frequency Response | f | P _O =0.1W, -3dB | | 20-50k | | Hz |
| Input Resistance | r _i | P _O =0.1W | | 32k | | ohm |
| Output Noise Voltage | V _{NO} | V _{CC} =±26V, R _G =10kohm | | 1.3 | | mV _{rms} |
| Output Center Voltage | V _N | V _{CC} =±26V | -70 | +70 | | mV |

[NOTICE] Use a regulated voltage supply unless noticed.
 * Use the approved voltage regulator for a test of V_{NO} and t_s.

Equivalent Circuit and Case Outline (unit:mm)



Application: 20W min 2 Channel AF Power Amplifier



STK 050 N
STK 070 N
STK 090 N

thick film IC

60 to 100 W min AF POWER AMP.

General Description

STK-050N series, which is a version of the conventional STK-050 series with the characteristics improved and also the power increased, comes in three models of 60W, 80W, and 90W.
(THD = 0.2%, f = 20 kHz, R_L = 4 ohm)

Features

- © IMST, 1 Channel by 2 Power Supplies.
- AF output power of STK-050N: 60W min.
AF output power of STK-070N: 80W min.
AF output power of STK-090N: 100W min.
- With constant current driven differential amp.
Direct coupled.
- Superior DC stability, low distortion.
- Protection circuit unrelated to error operation or tone distortion.

ABSOLUTE MAXIMUM RATINGS at Ta = 25°C

| | | STK-050N | STK-070N | STK-090N | Unit |
|----------------------------|---------------------|----------|------------|----------|------|
| Maximum Supply Voltage | V _{CC} max | ±45 | ±55 | ±65 | V |
| Operating Case Temperature | T _C max | | 90 | | °C |
| Storage Temperature | T _{stg} | | -30 ~ +100 | | °C |

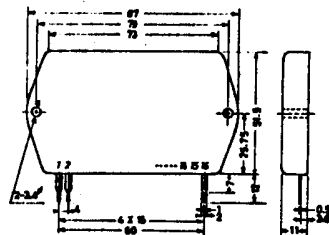
ELECTRICAL CHARACTERISTICS at Ta = 25°C

| | | STK-050N | STK-070N | STK-090N | Unit |
|---------------------------------------------------------------------------|---------------------------------|----------|-----------|----------|-------|
| Recommended Supply Voltage (R _L = 4 ohm) | V _{CC} | ±35 | ±40 | ±43 | V |
| Quiescent Current | I _{CCO} (typ) | | 30 | | mA |
| | I _{CCO} (max) | | 60 | | |
| Output Power (f = 20Hz ~ 20kHz THD=0.3%) | P _o | 60 | 80 | 100 | W |
| Total Harmonic Distortion (I _N = 1W, f = 1kHz) | THD | | 0.05 | | % |
| Inter Modulation Distortion (I _N = 1W, f = 70Hz: 7kHz = 4 : 1) | IMD (typ) | | 0.15 | | % |
| Input Impedance | R _i (typ) | | 30 | | k ohm |
| Open Loop Gain | G _o (typ) | | 80 | | dB |
| Closed Loop Gain | G _c (typ) | | 30.5 | | dB |
| Frequency Response | f _L / f _H | | 10 ~ 100k | | Hz |
| Output Noise Voltage | V _{NO} (typ) | | 0.3 | | mV |
| Output Center Voltage | V _N (typ) | | ±50 | | mV |

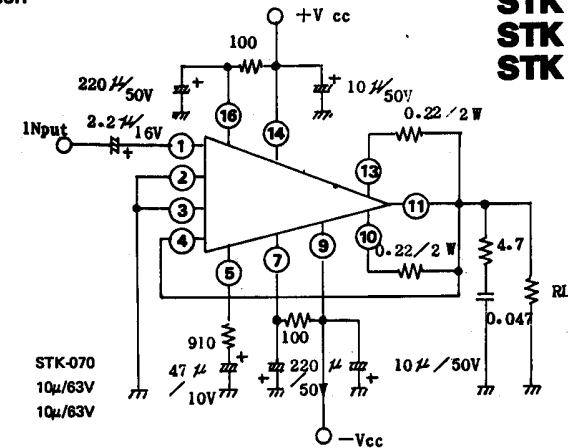
EQUIVALENT CIRCUIT



PACKAGE DIMENSION (Unit: mm)



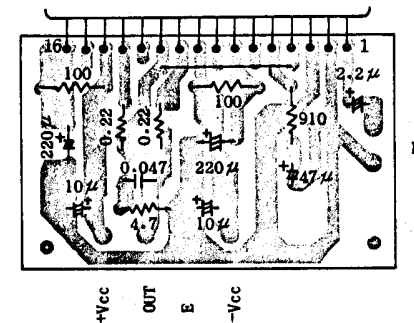
MEASURING CIRCUIT



| | STK-050 | STK-070 |
|----|---------|---------|
| C1 | 10μ/50V | 10μ/63V |
| C2 | 10μ/50V | 10μ/63V |

STK 050 N
STK 070 N
STK 090 N

PRINTED PATTERN DESIGN (Bottom View) , MEASURING CIRCUIT



HEAT SINK THERMAL RESISTANCE ON THE MEASURING EQUIPMENT

| Type No. | STK-050 | STK-070 | STK-090 |
|--------------------|---------|---------|---------|
| Thermal Resistance | 1.7 | 1.4 | 1.0 |