Ordering number : ENN7072

Thick-Film Hybrid IC

STK402-270

Three-Channel Class AB Audio Power Amplifier IC 40 W + 40 W + 40 W

Overview

The STK402-200 series products are audio power amplifier hybrid ICs that consist of optimally-designed discrete component power amplifier circuits that have been miniaturized using SANYO's unique insulated metal substrate technology (IMST). SANYO has adopted a new low thermal resistance substrate in these products to reduce the package size by about 60% as compared to the earlier SANYO STK408-000 series.

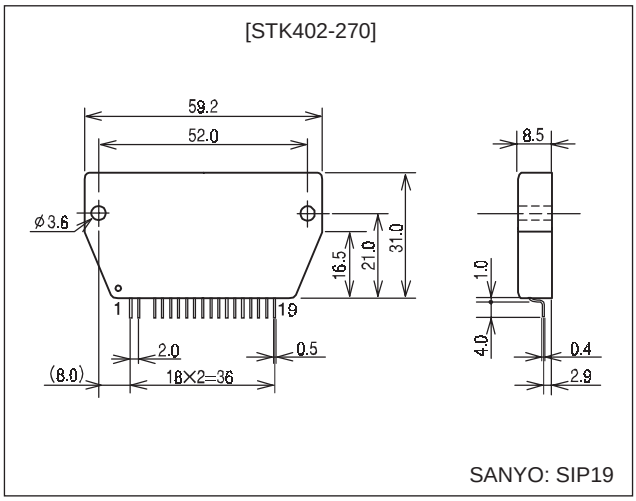
Features

- Series of pin compatible power amplifiers ranging from 20 W ×3 channels to 60 W ×3 channels (10%/1 kHz) devices. The same printed circuit board can be used depending on the output power grade.
- The pin arrangement is compatible with that of the 2-channel STK402-000 series. This means that 3-channel printed circuit boards can also be used for 2-channel products.
- Miniature packages
  — 15 W/ch to 40 W/ch (THD = 0.4%, f = 20 Hz to 20 kHz); 59.2 mm ×31.0 mm ×8.5 mm *
  *: Not including the pins.
- Achieves superlative heat dissipation due to the adoption of SANYO's Insulated Metal Substrate Technology (IMST).
- Output load impedance: R_L = 6 Ω
- Allowable load shorted time: 0.3 seconds
- Supports the use of standby, muting, and load shorting protection circuits.

Package Dimensions

unit: mm

4191-SIP19



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Series Organization

These products are organized as a series based on their output capacity.

Item	Type No.				
	STK402-220	STK402-230	STK402-240	STK402-250	STK402-270
Output 1 (10%/1 kHz)	20 W + 20 W + 20 W	30 W + 30 W + 30 W	40 W + 40 W + 40 W	45 W +45 W +45 W	60 W + 60 W + 60 W
Output 2 (0.4%/20 Hz to 20 kHz)	15 W + 15 W + 15 W	20 W + 20 W + 20 W	25 W + 25 W + 25 W	30 W + 30 W + 30 W	40 W + 40 W + 40 W
Maximum supply voltage (No signal)	±30 V	±34 V	±38 V	±40 V	±50 V
Maximum supply voltage (6 Ω)	±28 V	±32 V	±36 V	±38 V	±44 V
Recommended supply voltage (6 Ω)	±19 V	±22 V	±25 V	±26.5 V	±30 V
Package	59.2 mm ×31.0 mm ×8.5 mm				

Specifications

Maximum Ratings at Ta = 25°C

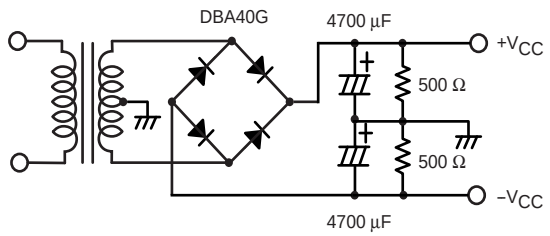
Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage (No signal)	V_{CC} max(1)		±50	V
Maximum supply voltage	V_{CC} max(2)	R_L = 6 Ω, 8 Ω	±44	V
Thermal resistance	θj-c	Per power transistor	3.1	°C/W
Junction temperature	Tj max	Both the Tj max and the Tc max conditions must be met.	150	°C
Operating IC substrate temperature	Tc max		125	°C
Storage temperature	Tstg		–30 to +125	°C
Allowable load shorted time *2	ts	V_{CC} = ±30.0 V, R_L = 6 Ω, Tc = 25°C, f = 50 Hz, P_O = 40 W, 1ch drive	0.3	s

Operating Characteristics at Tc = 25°C, R_L = 6 Ω (noninductive load), Rg = 600 Ω, VG = 30 dB

Parameter	Symbol	Conditions*1					Ratings			Unit
		V_{CC} (V)	f (Hz)	P_O (W)	THD (%)		min	typ	max	
Output power	P_O (1)	±30.0	20 to 20 k		0.4		40			W
	P_O (2)	±30.0	1 k		10			60		
	P_O (3)	±30.0	20 to 20 k		0.4	at 8 Ω		35		
Total harmonic distortion	THD (1)	±30.0	20 to 20 k	1.0					0.4	%
	THD (2)	±30.0	1 k	5.0				0.01		
Frequency characteristics	f_L, f_H	±30.0		1.0		+0 –3 dB		20 to 50 k		Hz
Input impedance	ri	±30.0	1 k	1.0				55		kΩ
Output noise voltage *3	V_{NO}	±36.0				Rg = 2.2 kΩ			1.2	mVrms
Quiescent current	I_{CCO}	±36.0					10	60	110	mA
Neutral voltage	V_N	±36.0					–70	0	+70	mV

Notes: 1. Unless otherwise noted, use a constant-voltage supply for the power supply used during inspection.

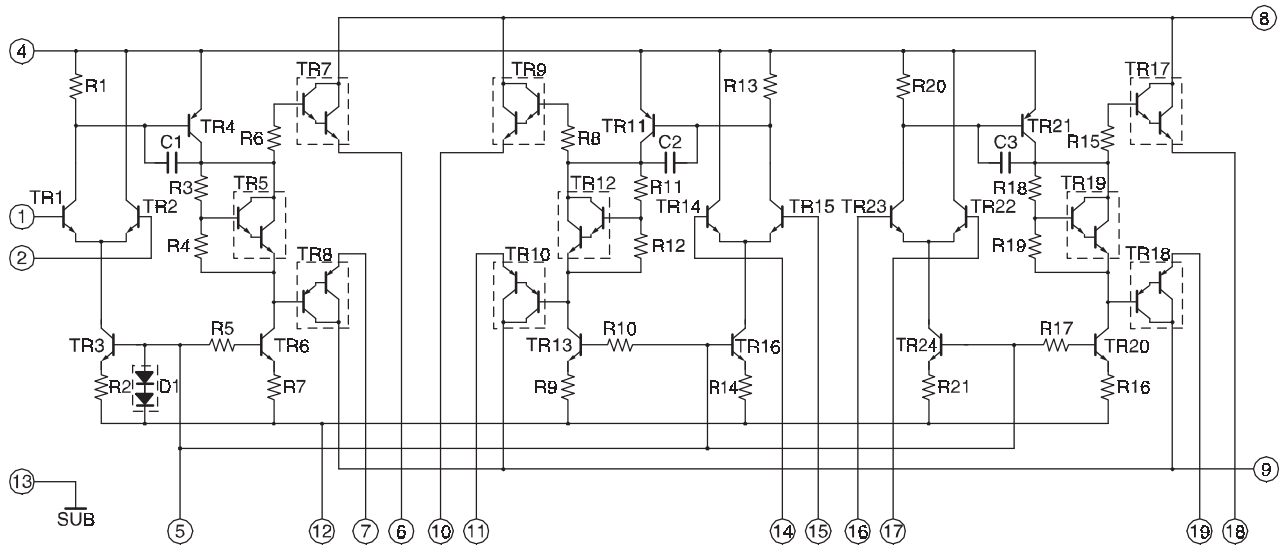
2. Use the transformer power supply circuit stipulated in the figure below for allowable load shorted time measurement and output noise voltage measurement.



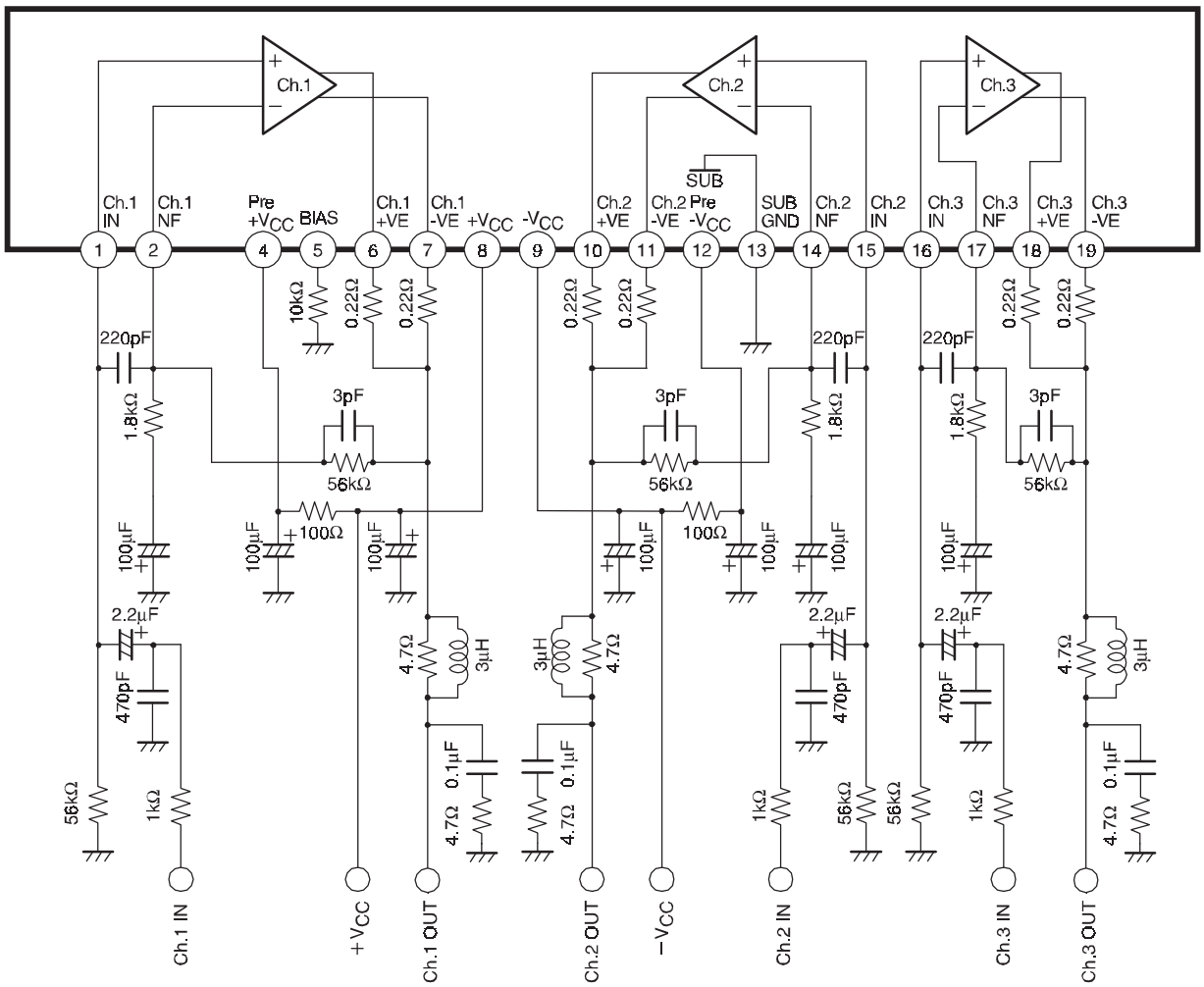
Stipulated Transformer Power Supply (RP-25 equivalent)

3. The output noise voltage values shown are peak values read with a VTVM. However, an AC stabilized (50 Hz) power supply should be used to minimize the influence of AC primary side flicker noise on the reading.

Internal Equivalent Circuit



Sample Application Circuit



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