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Power amplifier circuit theory that STK6153 and STK3048 make

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STK3048 is the voltage amplification integrated circuit of preceding stage; STK6153 is that the electric current of final-stage amplifies the integrated circuit.

STK3048 capsulates for 15 foot uniline type thick layer of double track, it exposes heat sink and 8 The foot links up, but is insulated from inner circuit. 8The foot has certain shielding action on inner circuit after earthing. Needn't install the heat sink separately at the time of this thick membrane block job.



Own two-stage in common within STK3048, the input stage brings the protective difference amplifier, difference is in charge of group polar diodes to shield. The capacitance-resistance of its collecting electrode connects the phase compensation network in series and can prevent the input stage from producing transient distortion because of the burst signal. Collect in two inter-electrodely and connect with a series of mirror image current sources. The purpose that this circuit meets people is forming electric current linearity phase inversion and left input tube of the right input tube the current source where two phases reduce, implement current excitation to the final-stage. Main for voltage amplifier stage for costing grouping altogether grounded emitter circuit, at last wideband amplification signal tube, and offer impedance matching for inputting, outputting inter-stage straight coupling; It is distorted that the lower pipeline exports the open loop that the enlarged electric current of the upper tube aims at reducing this grade, and provide the greater driving power for final-stage. This two-step amplifying tube is complemented and taken constant-current source as and supported, it is high to inhibit strength to the power ripple.

STK6153 capsulate for 10 the intersection of foot and the intersection of monophonic and uniline type thick layer ' The double track needs two, The inner circuit has already and exposed the electric insulation of the heat sink. The integrated constant pressure source is biased within STK6153, not promoting and not amplifying circuit of one grade of combination current of preceding stage. Adopt all complementary symmetrical structures, fine characteristic of having high speed, high precision, high-power, low-noise etc.. Because the constant pressure source is biased and built-in, not one grade of big power tubes has been in best and working state all the time, have extremely good compensating effect of temperature. The complementary output of this thick membrane block learns to design into the middle-type Darington's composite circuit upside down, export in open-collector form, reducible output impedence.

The power amplifier circuit composed of STK3048 and STK6153 is slightly shown as in Fig. 3-41 power, protective circuit ,Dash line grades of the intersection of IC and material object dissect the internal circuit offered before and after being in the frame. The small electric capacity of the preceding stage can choose China of Germany and produce WIMA or ERO high-quality electric capacity, the power filter uses and electrolyzes and chooses electric capacity of Nissan Marcon NIPPON, CHEMICON Nitsuko, Rubycon brand as the best big, each one greatly electrolyzes the small electric capacity of connecting a WIMA0.1uF- 0.33uF in parallel in order to improve the frequency character. Circuit needn't can debug normal operation, in at overall hearing feel, whole diapason the intersection of range and inner every frequency band seem very balanced, the trends are great, Frequency Response FR is wide, distorted and low, transient and fast in response, the tone quality is pure and strong, and the noise is very little. The circuit sine power; 2X100W, distortion.



STK3048 and STK6153 internal circuit is comparatively simple, its tone quality is very good. But the design of the peripheral circuit and application of peripheral component exert a great influence on IC tone quality, so a power amplifier adopts the circuit shown in Fig. 3-42.



1.Adopt Gm control volume, connect the sound volume potentiometer in IC3 NE5532 Gain to noise temperature ratio control point at,last sound volume magnitude in order to changing. STK3048 work is in the best stable condition. Scarcely slip the noise while regulating sound volume. The more important thing is the dynamic range is still constant when low sound volume is played, the music detail behaves thoroughly at the time of big sound volume, there is no messy sense at all.

2.Adopt the negative feedback circuit of constant current, the linear resistance R and R' changes amplifier constant voltage way into the permanent stream mode to drive load, make the step response of the power amplifier be improved, strengthen the efforts of bass and sharpness of the high pitch.

3.Cancel the cycle and shoulder the feedback capacitance, IC4 NE5532 And the peripheral component forms and outputs the zero bit servo circuit of middle point. Use for servo STK3048, 14 The foot, and cause the drift of STK6153 Ausgang direct current potential after to cancelling the feedback capacitance, analyze strength in high, low frequency of improving the amplifier.

The subjective hearing of this amplifier is appraised: The high pitch is very thin and clear, middle pitch is bright and thorough, bass is plump and powerful, the gamut register is well arranged, the harmonic distortion is little, the noise is low, the dynamic range is extremely wide. Because this circuit is relatively large in output power, the power that should pay attention to using should have sufficient capacity, STK6153 heat sink should not be too small. Operational amplifier IC adopts the independent active servo power to supply power. In addition, must install the protective circuit of the loudspeaker with amplifier.

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