

Preliminary

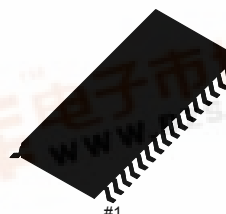
DIGITAL CONTROLLED AUDIO PROCESSOR**KB22501****GENERAL DESCRIPTION**

The KB22501 is an audio processor for volume/tone/fader control, which is suitable for car radios or Hi-Fi system. It has a built-in trimmer for user to set a source level R/L rear output is changable to input in the case of a home audio system for user conveniency, an external equalizer or a noise reduction circuit is selectable.

When the KB22501 is used with some sound-effect equipment such as graphic equalizer, the internal tone control block of KB22501 can be is bypassed for decreasing redundancy.

All selections and function controls are designed to be controlled by an I2C-bus protocol or a general microprocessor interface protocol.

32-SOP-450B

**FEATURES**

- 4-Input multiplexing (3 basic inputs + 1 optional input)
- Source Level trimmer (selectable input level)
- Volume control in 0.6dB step
- Tone control (internal bass/treble function block with external components)
- Source out / volume in (enable ext.graphic eq./ noise reduction equipment)
- Loudness / mute / levelshift function
- Fader control (separated for balance)
- All functions are programmable / controllable via serial I2C bus or general Micom interface protocol.

ORDERING INFORMATION

Device	Package	Operating Temperature
KB22501	32-SOP-450B	-25°C ~ +75°C

BLOCK DIAGRAM

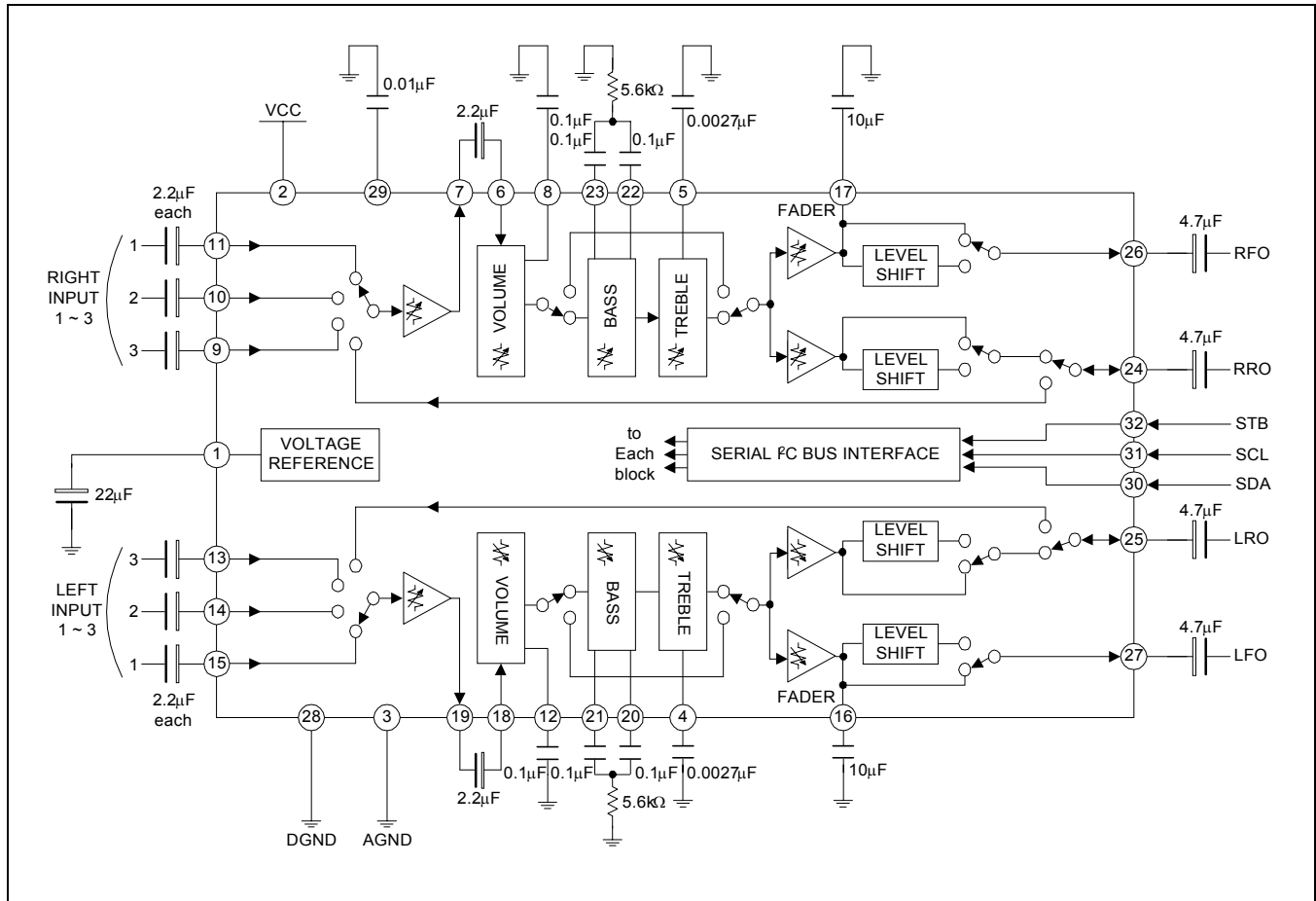


Figure 1.

PIN CONFIGURATION

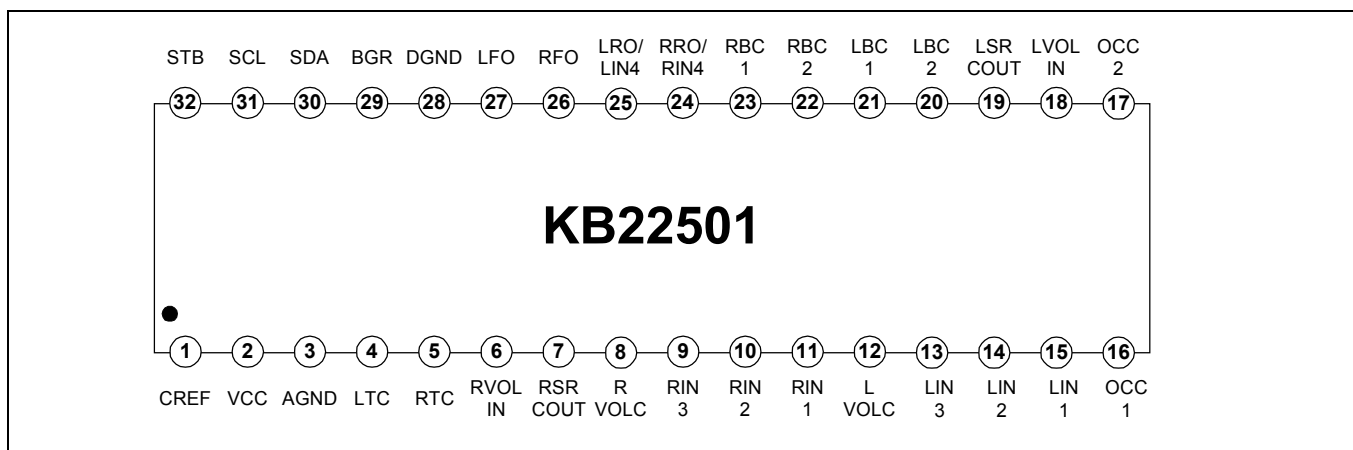


Figure 2.

PIN DESCRIPTION

Pin	Symbols	Description
1	CREF	Reference voltage ripple rejection capacitor tab
2	VCC	Power supply
3	AGND	Analog ground (0V)
4	LTC	Left treble capacitor TAB
5	RTC	Right treble capacitor TAB
6	RVOLIN	Right volume in / external equalizer for right channel
7	RSRCOUT	Right source out / external equalizer for right channel
8	RVOLC	Right volume loudness capacitor TAB
9	RIN3	Right audio input3
10	RIN2	Right audio input2
11	RIN1	Right audio input1
12	LVOLC	Left volume loudness capacitor TAB
13	LIN3	Left audio input3
14	LIN2	Left audio input2
15	LIN1	Left audio input1
16	OCC1	Offset cancelling capacitor TAB1
17	OCC2	Offset cancelling capacitor TAB2
18	LVOLIN	Left volume in / external equalizer for left channel
19	LSRCOUT	Left source out / external equalizer for left channel
20	LBC2	Left bass capacitor TAB2
21	LBC1	Left bass capacitor TAB1
22	RBC2	Right bass capacitor TAB2
23	RBC1	Right bass capacitor TAB1
24	RRO/RIN4	Right rear audio output / right audio input4
25	LRO/LIN4	Left rear audio output / left audio input4
26	RFO	Right front audio output
27	LFO	Left front audio output
28	DGND	Digital ground (0V)
29	BGR	Bandgap reference stabilization capacitor TAB
30	SDA	Data signal input of I2C bus
31	SCL	Clock signal input of I2C bus
32	STB	Strobe signal input

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Rating	Unit
Supply Voltage	VCCmax	15.0	V
Maximum Power Dissipation	Pdmax	1000	mW
Operating Temperature	Topr	-25°C ~ +75°C	°C
Storage Temperature	Tstg	-40°C ~ +125°C	°C

ELECTRICAL CHARACTERISTICS

(Vi = 1Vrms/1kHz, Ta = 25°C, Vcc = 13.2V typ.)

Parameter	Condition	Spec			Unit
		Min.	Typ.	Max.	
Operating Voltage	—	6.0	—	15.0	V
Supply Current	Vi = 0	6.0	10.0	14.0	mA
Input Dynamic	Vcc = 9.0V, THD = 1%	6.0	—	—	Vp-p
Input Adjustment Level	—	-5.4	-6.0	—	dB
S/N Ratio	Vi = 1Vrms, 1kHz	80	-	—	dB
THD	Vi = 1Vrms, 1kHz	—	0.01	0.1	%
Maximum Volume Attenuation	Vi = 1Vrms, 1kHz Volume = Min	0	—	-76.2	dB
Bass Adjustment Range	Vi = 1Vrms, 100Hz Treble = Min or Max	-14	—	-14	dB
Treble Adjustment Range	Vi = 1Vrms, 10kHz Bass = Min or Max	-12	—	12	dB
Front/Rear Adjustment Range	Vi = 1Vrms, 1kHz Fader = Min or Max	—	—	38.75 (Mute)	dB
Mute Attenuation Ratio	Vi = 1Vrms, 1kHz	—	—	-100	dB

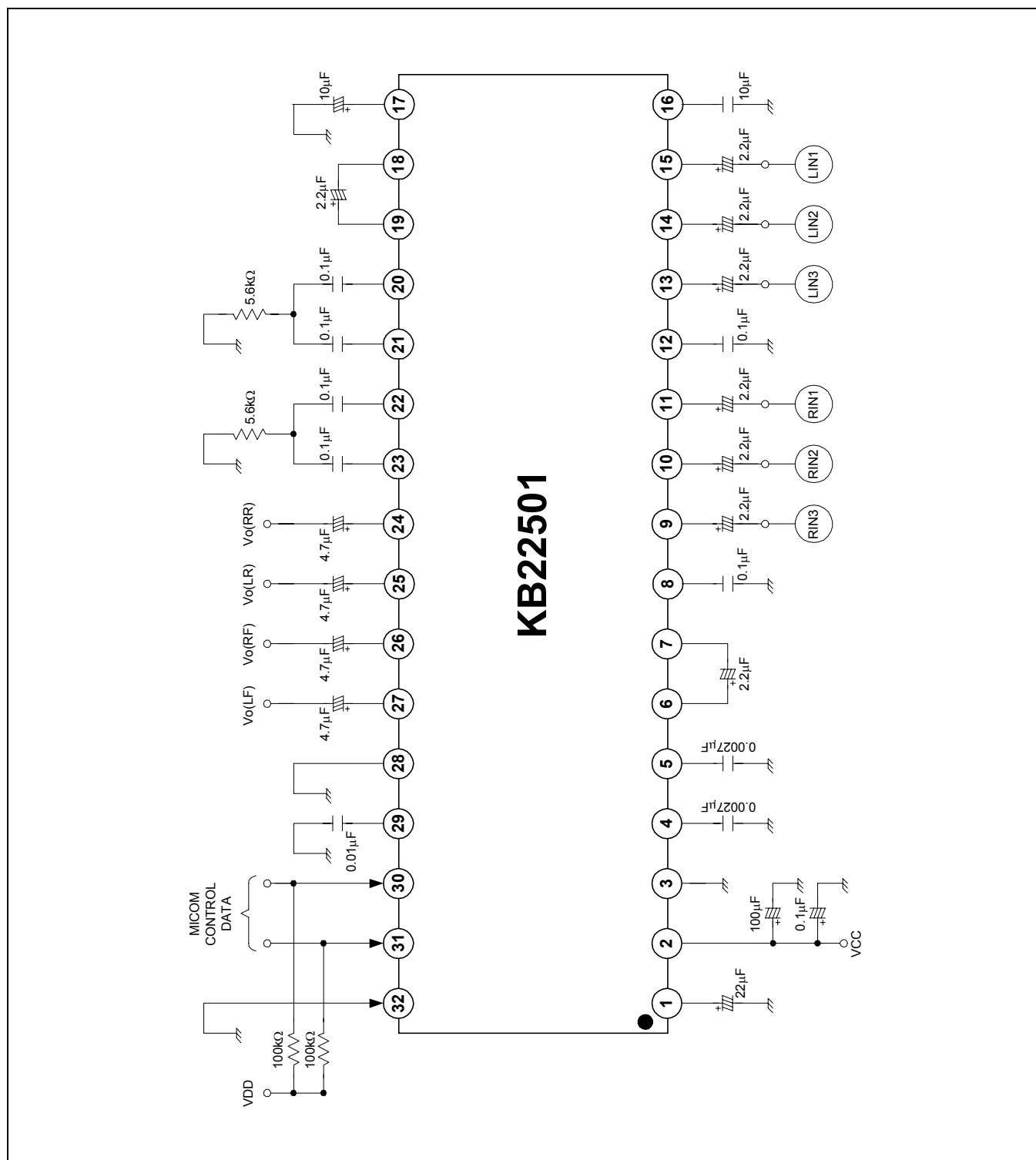


Figure 3.

APPLICATION CIRCUIT 2

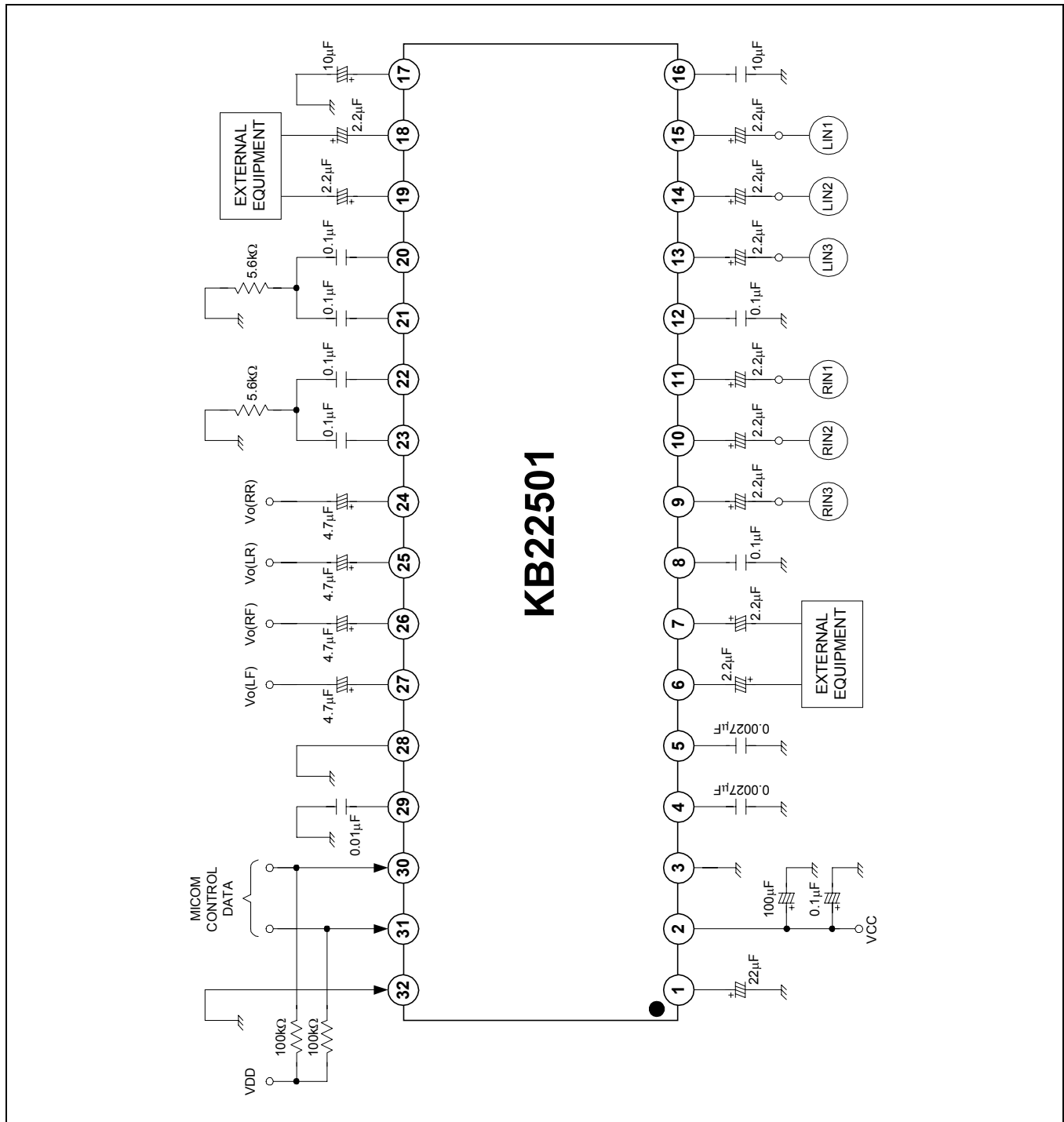


Figure 4.

Cf> Let the microprocessor set 'SEQ' signal to 0, if an external device is an audio-signal controlled processor same as a graphic equalizer.

APPLICATION CIRCUIT 3

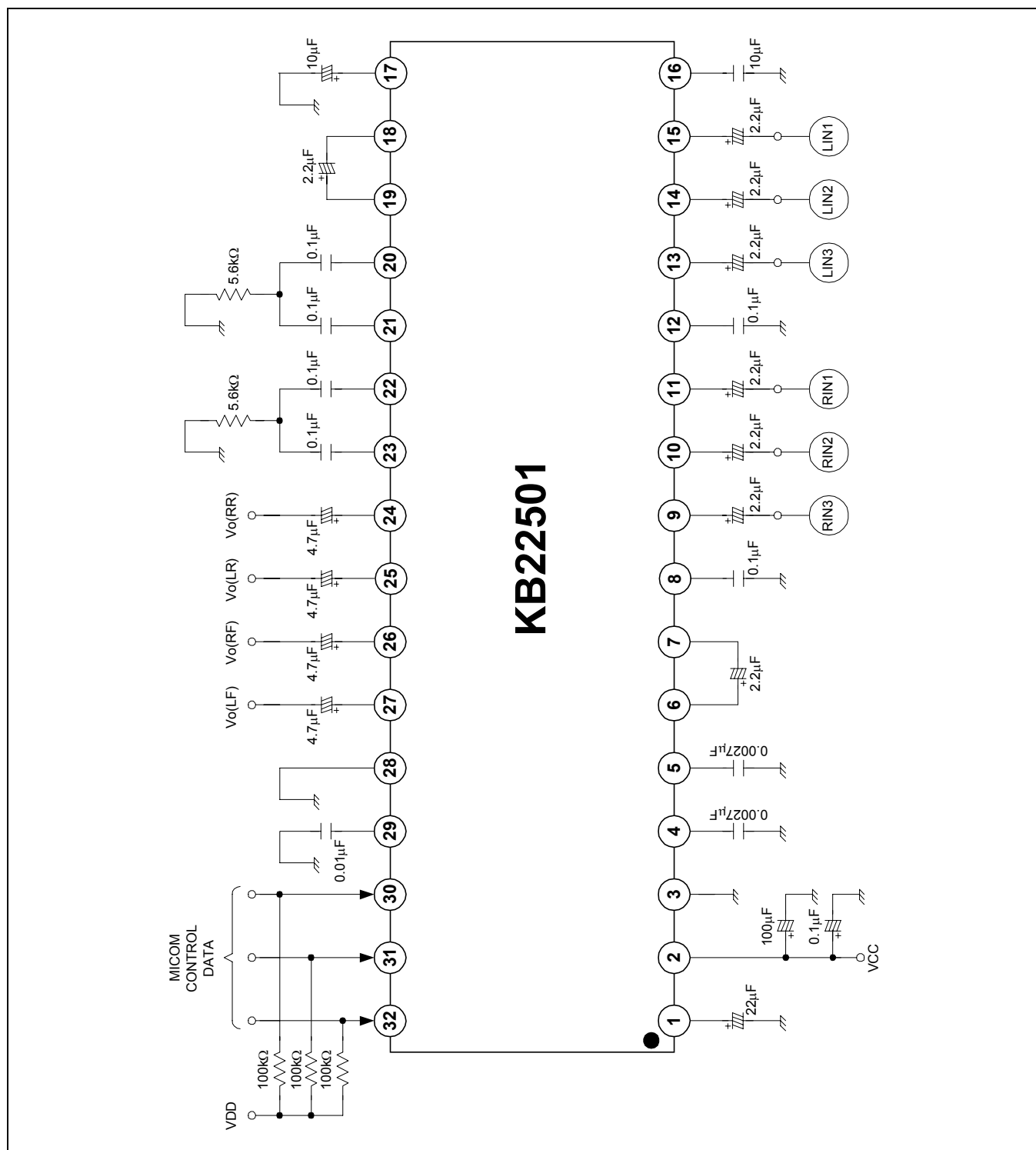


Figure 5.

APPLICATION CIRCUIT 4

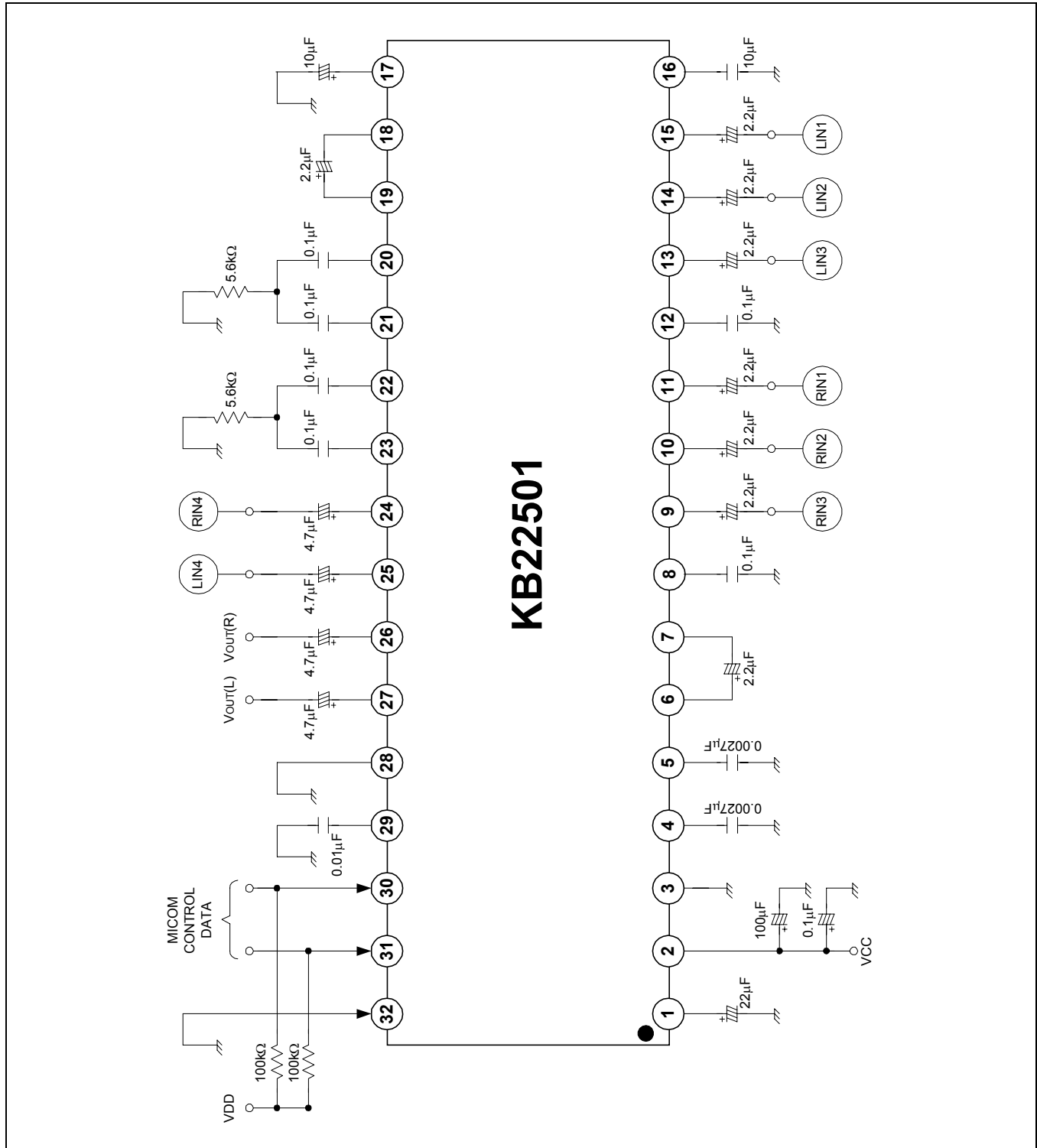


Figure 6.