

AFM Monaural Signal Processor for 8 mm VCR

Description

The CXA2038R is a bipolar IC designed as an AFM monaural signal processor for 8 mm VCRs. All functions necessary for AFM monaural are concentrated onto a single 64-pin LQFP.

Features

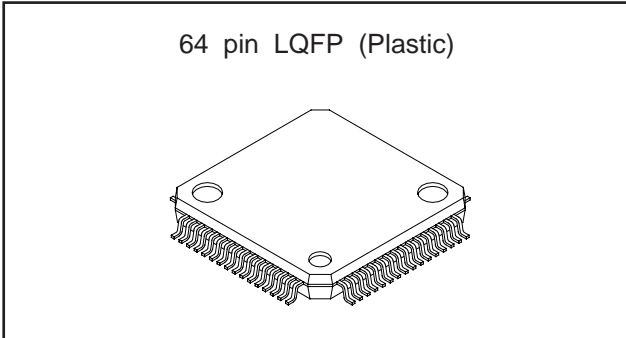
- Low supply voltage (3.15 V) design
- Low power consumption ($V_{CC}=3.15$ V)
 - Recording: 65 mW
 - Playback: 103 mW
- Built-in BPF (1.5 MHz)
- FM modulator center frequency made non-adjusting.
- Supports NTSC and PAL
- Enables both parallel and 3-line serial mode control
- Supports electronic volume (EVR) control

Applications

8 mm VCRs

Structure

Bipolar silicon monolithic IC



Absolute Maximum Ratings ($T_a=25$ °C)

- Supply voltage V_{CC} 7 V
- Operating temperature T_{opr} -20 to +75 °C
- Storage temperature T_{stg} -65 to +150 °C
- Allowable power dissipation

| | | |
|-------|------|----|
| P_D | 1120 | mW |
|-------|------|----|

 (When mounted on board)

Operating Conditions

- Recommended supply voltage

| | | |
|-----------|------|---|
| V_{CC} | 3.15 | V |
| V_{CCH} | 4.75 | V |
- Supply voltage range

| | | |
|-----------|-------------|---|
| V_{CC} | 3 to 5.25 | V |
| V_{CCH} | 4.5 to 5.25 | V |

 However, $V_{CCH} \geq V_{CC}$

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Pin Description

(Vcc1, Vcc2=3.15 V, VccH=4.75 V, Ta=27 °C)

| Pin No. | Symbol | Pin voltage | | Equivalent circuit | Description |
|---------|--------|---------------------|----|--------------------|--|
| | | DC | AC | | |
| 1 | ALCDET | — | — | | ALC time constant pin. ALC is OFF when this pin is connected to GND. |
| 2 | NC | — | — | | |
| 3 | FADE | See attached sheet. | — | | EVR control pin for fader. 0 to 0.5 V with fixed gain. Increasing the applied voltage lowers the gain and causes the fader to operate. |
| 4 | NC | — | — | | |
| 5 | NC | — | — | | |

| Pin No. | Symbol | Pin voltage | | Equivalent circuit | Description |
|---------|--------|-------------------|----|--------------------|---|
| | | DC | AC | | |
| 6 | IREF | 1.17 V | — | | <p>Pin for generating the reference current. Connect a 47 kΩ external resistor. Be careful not to cause cross talk.</p> |
| 7 | IFDC | 1.90 V | — | | <p>Signal path DC monitor pin.</p> |
| 8 | RFDC | 1.88 V | — | | <p>Signal path DC monitor pin.</p> |
| 9 | VCT TC | 1.83 V | — | | <p>IC internal bias pin. Connect a decoupling capacitor.</p> |
| 10 | GND1 | 0 V ^{*1} | — | | <p>Audio system GND pin.</p> |

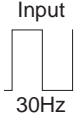
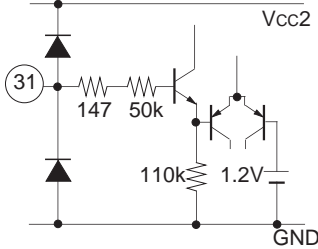
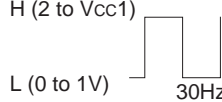
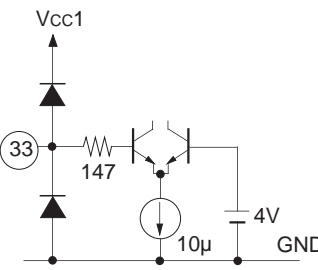
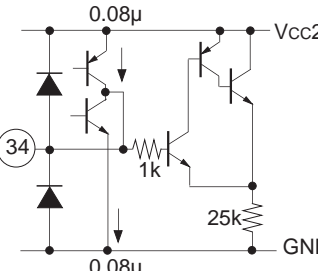
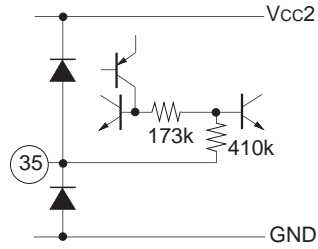
*1 Externally applied voltage

| Pin No. | Symbol | Pin voltage | | Equivalent circuit | Description |
|---------|--------|-------------|----|--------------------|--|
| | | DC | AC | | |
| 11 | WEIGHT | 1.18 V | — | | NR WEIGHT time constant pin. |
| 12 | NRDC | 1.68 V | — | | NR block DC monitor pin. |
| 13 | TCH | 0.47 V | — | | NR attack/recovery time constant pins. |
| 14 | TC | 1.1 V | — | | |
| 15 | NC | — | — | | |

| Pin No. | Symbol | Pin voltage | | Equivalent circuit | Description | | | | |
|------------------------|------------------|-------------|----|--------------------|---|--------------|----|------------------------|----|
| | | DC | AC | | | | | | |
| 16 | NC | — | — | | | | | | |
| 17 | SI/PA (SP/LP) | — | — | | <p>Serial/parallel (SP/LP) mode switching pin. When this pin is 4.3 V or more, the IC operates in serial control mode and mode control for the IC is performed by Pins 58 (CS), 59 (CK) and 60 (SI). When this pin is 3.5 V or less, the IC operates in parallel control mode as follows.</p> <table border="1"> <tr> <td>L (0 to 1 V)</td> <td>LP</td> </tr> <tr> <td>H (2 to 3.5 V) or OPEN</td> <td>SP</td> </tr> </table> | L (0 to 1 V) | LP | H (2 to 3.5 V) or OPEN | SP |
| L (0 to 1 V) | LP | | | | | | | | |
| H (2 to 3.5 V) or OPEN | SP | | | | | | | | |
| 18 | VCT | 1.23 V | — | | <p>IC internal bias pin. Connect a decoupling capacitor.</p> | | | | |
| 19 | NC | — | — | | | | | | |
| 20 | NC | — | — | | | | | | |

| Pin No. | Symbol | Pin voltage | | Equivalent circuit | Description |
|---------|----------|-------------|--|--------------------|--|
| | | DC | AC | | |
| 21 | RFAGC TC | 2.3 V | — | | Pin for deciding RFAGC time constant. |
| 22 | PBRFIN | — | Reference input AFM 15 mVp-p | | Input pin for PB RF signal. The reference input level is approximately 200 mVp-p (Y + C + AFM). Note that the reference input level for the AFM component is 15 mVp-p. |
| 23 | BPFMONI | 1.0 V | Reference output 110 mVp-p | | Pin for monitoring the BPF output. Connect a 4.7 kΩ external resistor. |
| 24 | RECFMOUT | 0.9 V | 1.5 MHz Reference output 210 mVp-p | | Recording FM modulated audio output pin. |
| 25 | NC | — | — | | |

| Pin No. | Symbol | Pin voltage | | Equivalent circuit | Description | | | | |
|-----------------------|------------|---------------------|-------------------------------|--------------------|---|--------------|-----|-----------------------|------|
| | | DC | AC | | | | | | |
| 26 | BPF f0 ADJ | See attached sheet. | — | | Pin for varying the BPF fo. Non-adjusting mode when 0 to 0.8 V ($V_{CC} = 3.15$ V). | | | | |
| 27 | MUTETC | 2.3 V | — | | Time constant pin for determining the MUTE OFF delay time. | | | | |
| 28 | NTSC/PAL | — | — | | <p>NTSC/PAL switching pin during parallel mode.</p> <table border="1"> <tr> <td>L (0 to 1 V)</td> <td>PAL</td> </tr> <tr> <td>H (2 V to V_{CC1})</td> <td>NTSC</td> </tr> </table> | L (0 to 1 V) | PAL | H (2 V to V_{CC1}) | NTSC |
| L (0 to 1 V) | PAL | | | | | | | | |
| H (2 V to V_{CC1}) | NTSC | | | | | | | | |
| 29 | Fsc IN | 1.53 V | Reference input 300 mVp-p | | <p>fsc input pin.</p> <p>The input level is 200 to 500 mVp-p.</p> <p>During NTSC: 3.579545 MHz</p> <p>During PAL: 4.433619 MHz</p> | | | | |
| 30 | NC | — | — | | | | | | |

| Pin No. | Symbol | Pin voltage | | Equivalent circuit | Description | | | | |
|------------------------|----------------|-------------|---|--|--|------------------------|--------|--------------------|---------|
| | | DC | AC | | | | | | |
| 31 | RFSWP | — |  |  | <p>RFSWP input pin.</p>  | | | | |
| 32 | NC | — | — | | | | | | |
| 33 | BPFMONI CTL | — | — |  | <p>BPF ON/OFF switch control pin.</p> <table border="1" data-bbox="1061 1086 1444 1164"> <tr> <td>L (0 to 3.5 V) or OPEN</td> <td>BPF ON</td> </tr> <tr> <td>H2 (4.3 V to VccH)</td> <td>BPF OFF</td> </tr> </table> | L (0 to 3.5 V) or OPEN | BPF ON | H2 (4.3 V to VccH) | BPF OFF |
| L (0 to 3.5 V) or OPEN | BPF ON | | | | | | | | |
| H2 (4.3 V to VccH) | BPF OFF | | | | | | | | |
| 34 | PLLLPF | — | — |  | <p>PLL time constant pin. Since this pin has a small attraction and discharge current, signals should be received with high impedance when monitoring this pin. Also, be careful not to cause cross talk.</p> | | | | |
| 35 | LPEMP TC | 1.87 V | — |  | <p>LPEMP time constant pin. Be careful not to cause cross talk.</p> | | | | |

| Pin No. | Symbol | Pin voltage | | Equivalent circuit | Description |
|---------|--------|---------------------|-----------------------------------|--------------------|--|
| | | DC | AC | | |
| 36 | DEVADJ | See attached sheet. | — | | Deviation adjusting pin. The variable width is from 0 to Vcc1. |
| 37 | MONI | 1.84 V | Reference output -15 dBm*2 | | Pin for monitoring the signal before modulation during recording and after demodulation during playback. |
| 38 | NC | — | — | | |
| 39 | NC | — | — | | |
| 40 | GND2 | *1 0 V | — | | RF system GND pin. |

*1 Externally applied voltage

*2 0dBm=2.19 Vp-p

| Pin No. | Symbol | Pin voltage | | Equivalent circuit | Description |
|---------|--------|-------------|----|--------------------|---|
| | | DC | AC | | |
| 41 | NC | — | — | | |
| 42 | NC | — | — | | |
| 43 | VCTH | 1.89 V | — | | RF system reference bias pin. Connect a decoupling capacitor. |
| 44 | SHTC | 1.7 V | — | | S/H time constant pin. |
| 45 | NC | — | — | | |

| Pin No. | Symbol | Pin voltage | | Equivalent circuit | Description | | | | |
|-------------------------|-------------|-------------|---------------------------------------|--------------------|---|--------------|----------|-------------------------|---------|
| | | DC | AC | | | | | | |
| 46 | NC | — | — | | | | | | |
| 47 | NC | — | — | | | | | | |
| 48 | MUTE ON/OFF | — | — | | <p>Mute control pin.</p> <table border="1"> <tr> <td>L (0 to 1 V)</td> <td>MUTE OFF</td> </tr> <tr> <td>H (2 V to Vcc1) or OPEN</td> <td>MUTE ON</td> </tr> </table> <p>Mute control is possible during both serial and parallel modes.</p> | L (0 to 1 V) | MUTE OFF | H (2 V to Vcc1) or OPEN | MUTE ON |
| L (0 to 1 V) | MUTE OFF | | | | | | | | |
| H (2 V to Vcc1) or OPEN | MUTE ON | | | | | | | | |
| 49 | LINE OUT | 2.01 V | <p>Reference output -7 dBm *1</p> | | <p>LINEOUT pin. Set the load to 47 kΩ or more.</p> | | | | |
| 50 | EPOUT | 2.01 V | <p>Reference output -7 dBm *1</p> | | <p>EPOUT pin. This pin can drive a load of 120 Ω.</p> | | | | |

*2 0dBm=2.19 Vp-p

| Pin No. | Symbol | Pin voltage | | Equivalent circuit | Description |
|---------|---------|-------------------------|--|--------------------|--|
| | | DC | AC | | |
| 51 | GNDH | ^{*1} 0 V | — | | Output buffer system GND pin. |
| 52 | NC | — | — | | |
| 53 | MUTEOUT | 0 V | — | | MUTEOUT pin. This pin outputs current during muting and power ON/OFF to operate the external SW Tr. |
| 54 | VccH | ^{*1} 4.75 V | — | | Output buffer system power supply pin. |
| 55 | MIXOUT | 2.01 V | Reference output -7 dBm ^{*2} | | MIXOUT pin. Set the load to 47 kΩ or more. |

^{*1} Externally applied voltage

^{*2} 0dBm=2.19 Vp-p

| Pin No. | Symbol | Pin voltage | | Equivalent circuit | Description | | | | |
|----------------------|------------------|--------------|----|--------------------|---|----------------------|------|-----------------|-----|
| | | DC | AC | | | | | | |
| 56 | Vcc2 | *1 3.15 V | — | | RF system power supply pin. | | | | |
| 57 | PMUTETC | 4.75 V | — | | Time constant pin for deciding the power ON/OFF mute time. | | | | |
| 58 | MIC/LINE (CS) | — | — | | <p>During parallel operation: MIC/LINE switching pin.</p> <table border="1"> <tr> <td>L (0 to 1 V) or OPEN</td> <td>LINE</td> </tr> <tr> <td>H (2 V to Vcc1)</td> <td>MIC</td> </tr> </table> <p>During serial operation: CS input pin.</p> | L (0 to 1 V) or OPEN | LINE | H (2 V to Vcc1) | MIC |
| L (0 to 1 V) or OPEN | LINE | | | | | | | | |
| H (2 V to Vcc1) | MIC | | | | | | | | |
| 59 | REC/PB (CK) | — | — | | <p>During parallel operation: REC/PB switching pin.</p> <table border="1"> <tr> <td>L (0 to 1 V) or OPEN</td> <td>REC</td> </tr> <tr> <td>H (2 V to Vcc1)</td> <td>PB</td> </tr> </table> <p>During serial operation: CK input pin.</p> | L (0 to 1 V) or OPEN | REC | H (2 V to Vcc1) | PB |
| L (0 to 1 V) or OPEN | REC | | | | | | | | |
| H (2 V to Vcc1) | PB | | | | | | | | |
| 60 | SI | — | — | | During serial operation: SI input pin. | | | | |

*1 Externally applied voltage

| Pin No. | Symbol | Pin voltage | | Equivalent circuit | Description |
|---------|---------|-------------|-----------------------------------|--------------------|--|
| | | DC | AC | | |
| 61 | VCT5 | 2.02 V | — | | IC internal bias pin. Connect a decoupling capacitor. |
| 62 | MICIN | 1.16 V | Reference input -38 dBm *2 | | Microphone input pin. Standard input level: -38 dBm. This pin has a small input signal level and high input impedance. Therefore, be careful not to cause cross talk with other signals. |
| 63 | Vcc1 | 3.15 V *1 | — | | Audio system power supply pin. |
| 64 | LINE IN | 1.16 V | Reference input -38 dBm *2 | | Line input pin. Standard input level: -38 dBm. This pin has a small input signal level and high input impedance. Therefore, be careful not to cause cross talk with other signals. |

*1 Externally applied voltage

*2 0dBm=2.19 Vp-p

V_{cc1}, V_{cc2}=3.15 V, V_{ccH}=4.75 V, T_a=27 °C

Electrical Characteristics

| No. | Item | Symbol | Measurement input signal conditions | | Reference signal source | | Control voltage | | | | Switch condition, normally set to "b" | | | | | | | Mode condition | Measurement method | Ratings | | | Unit | | | | | |
|-----|---|--------------------|-------------------------------------|-------------------|-------------------------|-----------|-----------------|-----------|----|-----|---------------------------------------|-----|---|---|----|----|----|----------------|--------------------|---------|----|----|------|-----|------|------|------|-----|
| | | | Input pin | Level | Frequency | Input pin | Level | Frequency | V3 | V26 | V33 | V44 | 1 | 3 | 22 | 29 | 31 | | | 33 | 44 | 62 | | 64 | Min. | Typ. | Max. | |
| 1 | Current consumption during recording 1 V _{cc1} + V _{cc2} systems | I _{REC1} | | | | | | | | | | | | | | | | | | | | 12 | 16 | 20 | mA | | | |
| 2 | Current consumption during recording 2 V _{ccH} system | I _{REC2} | | | | | | | | | | | | | | | | | | | | 2 | 3 | 4 | mA | | | |
| 3 | Current consumption during playback 1 V _{cc1} + V _{cc2} systems | I _{PB1} | | | | | | | | | | | | | | | | | | | | 21 | 28 | 35 | mA | | | |
| 4 | Current consumption during playback 2 V _{ccH} system | I _{PB2} | | | | | | | | | | | | | | | | | | | | 2 | 3 | 4 | mA | | | |
| 5 | MIC in LINE OUT reference output level | V _{LNOL} | SG62 | -38 dBm | 1 kHz | | | | | | | | | | | | | | | | | -8 | -7 | -6 | dBm | | | |
| 6 | MIC in LINE OUT reference output distortion | H _{LNO} | SG62 | -38 dBm | 1 kHz | | | | | | | | | | | | | | | | | | | | 0.2 | % | | |
| 7 | ALC level 1 (REF + 20 dB) | V _{ALC20} | SG62 | -18 dBm | 1 kHz | | | | | | | | | | | | | | | | | | | | | 1 | dBm | |
| 8 | ALC level 2 (REF + 36 dB) | V _{ALC36} | SG62 | -2 dBm | 1 kHz | | | | | | | | | | | | | | | | | | | | | | 3 | dBm |
| 9 | ALC effects (+36 dB/+20 dB) | V _{ALC} | SG62 | +36 dB /+20 dB | 1 kHz | | | | | | | | | | | | | | | | | | 0 | 0.6 | 2.5 | dB | | |
| 10 | ALC maximum input distortion (REF + 36 dB) | H _{ALCH} | SG62 | -2 dBm | 1 kHz | | | | | | | | | | | | | | | | | | | | | | 1 | % |
| 11 | FADER maximum attenuation | V _{FAL} | SG62 | -38 dBm | 1 kHz | | | | | | | | | | | | | | | | | | | | | | | dBm |
| 12 | FADER dead voltage level | V _{FALO} | SG62 | -38 dBm | 1 kHz | | | | | | | | | | | | | | | | | | | | | | | dB |

| No. | Item | Symbol | Measurement input signal conditions | | Reference signal source | | Control voltage | | | | Switch condition, normally set to "b" | | | | | | | | Mode condition | Measurement method | Ratings | | | Unit | | | | |
|-----|-------------------------------|--------|-------------------------------------|-------|-------------------------|-----------|-----------------|-----------|----|-----|---------------------------------------|-----|-----|---|---|----|----|----|----------------|--------------------|---------|----|----|------|-----|-----------------|-----------------|------|
| | | | Input pin | Level | Frequency | Input pin | Level | Frequency | V3 | V26 | V33 | V36 | V44 | 1 | 3 | 22 | 29 | 31 | | | 33 | 44 | 62 | | 64 | Min. | Typ. | Max. |
| 61 | MUTE ON/OFF High level | V48H | 48 | | DC | | | | | | | | | | | | | | | | | | | 2 | | V _{CC} | V | |
| 62 | Serial/parallel Low level | V17SL | 17 | | DC | | | | | | | | | | | | | | | | | | | | 0 | | 3.5 | V |
| 63 | Serial/parallel High level | V17SH | 17 | | DC | | | | | | | | | | | | | | | | | | | | 4.3 | | V _{CC} | V |
| 64 | SP/LP Low level | V17L | 17 | | DC | | | | | | | | | | | | | | | | | | | | 0 | | 1 | V |
| 65 | SP/LP High level | V17H | 17 | | DC | | | | | | | | | | | | | | | | | | | | 2 | | 3.5 | V |
| 66 | NTSC/PAL Low level | V28L | 28 | | DC | | | | | | | | | | | | | | | | | | | | 0 | | 1 | V |
| 67 | NTSC/PAL High level | V28H | 28 | | DC | | | | | | | | | | | | | | | | | | | | 2 | | V _{CC} | V |
| 68 | MUTE ON/OFF Low level | V48L | 48 | | DC | | | | | | | | | | | | | | | | | | | | 0 | | 1 | V |
| 69 | MUTE ON/OFF High level | V48H | 48 | | DC | | | | | | | | | | | | | | | | | | | | 2 | | V _{CC} | V |
| 70 | MIC/LINE Low level | V58L | 58 | | DC | | | | | | | | | | | | | | | | | | | | 0 | | 1 | V |
| 71 | MIC/LINE High level | V58H | 58 | | DC | | | | | | | | | | | | | | | | | | | | 2 | | V _{CC} | V |
| 72 | PB/REC Low level | V59L | 59 | | DC | | | | | | | | | | | | | | | | | | | | 0 | | 1 | V |
| 73 | PB/REC High level | V59H | 59 | | DC | | | | | | | | | | | | | | | | | | | | 2 | | V _{CC} | V |

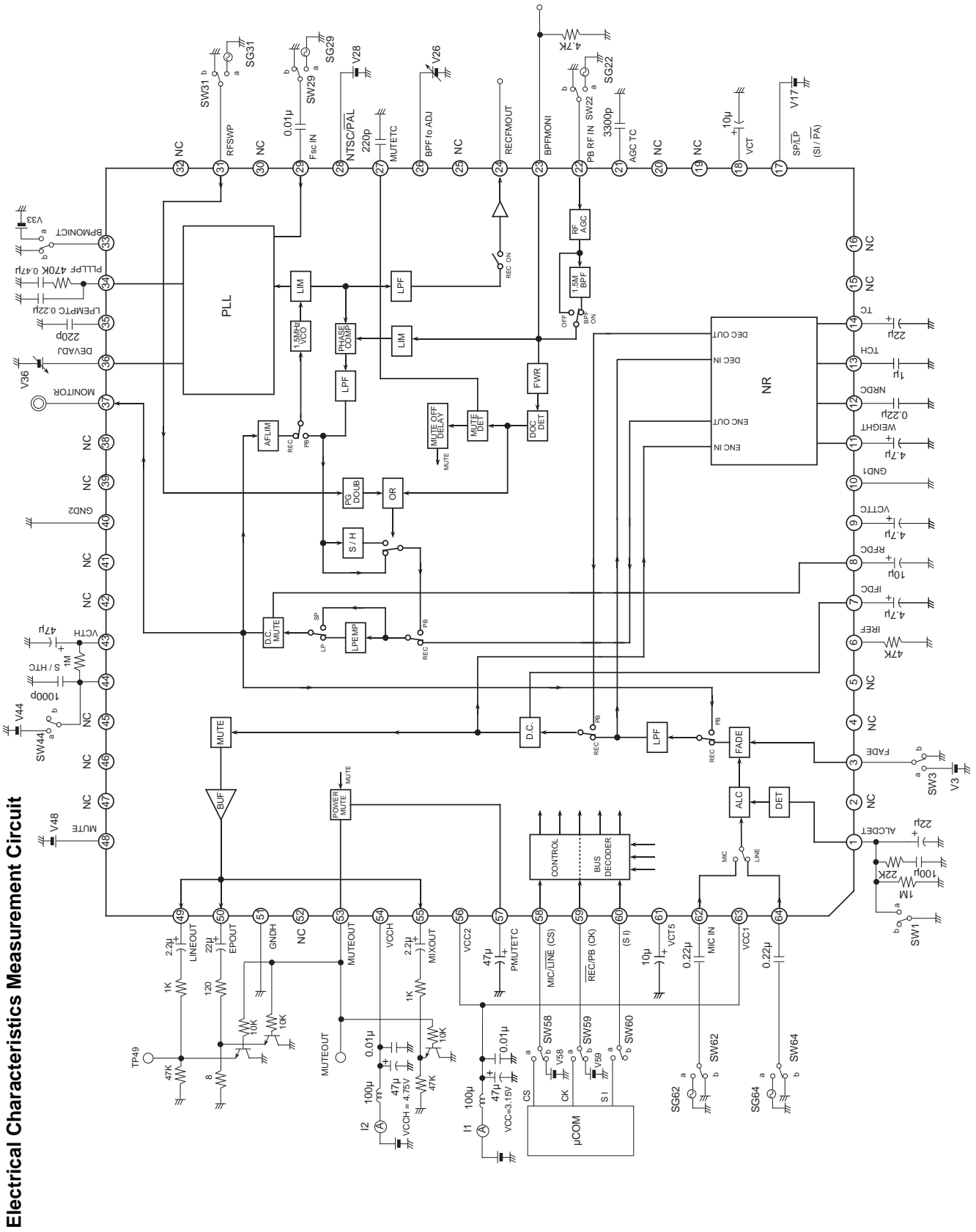
Mode Condition Table

Electrical characteristics measurement circuit mode table

| Mode condition | Bus decoder condition table during serial | | | | | | | | | | Condition table during parallel | | | | | | | Mode contents |
|----------------|---|---------|-------|----------|-------------|----------|-------------|--------|-----------|--------|---------------------------------|----------|-------------|------|-----------|------------|--|---------------|
| | Value | bit 0-5 | bit 6 | bit 7-10 | bit 11 | bit 12 | bit 13 | bit 14 | bit 15 | Value | V58 | V17 | V28 | V48 | V59 | | | |
| | | — | — | — | LINE MIC | LP SP | PAL NTSC | MUTE | REC PB | L H | LINE MIC | LP SP | PAL NTSC | MUTE | REC PB | | | |
| a | | | 0 | | 0 | 1 | 1 | 0 | 0 | | L | H | H | L | L | REC (LINE) | | |
| b | | | 0 | | 1 | 1 | 1 | 0 | 0 | | H | H | H | L | L | REC (MIC) | | |
| c | | | 0 | | 1 | 1 | 1 | 0 | 1 | | H | H | H | L | H | PB | | |
| d | | | 0 | | 1 | 0 | 1 | 0 | 0 | | H | L | H | L | L | LP MODE | | |
| e | | | 0 | | 1 | 0 | 0 | 0 | 0 | | H | H | L | L | L | PAL MODE | | |
| f | | | 0 | | 1 | 1 | 1 | 1 | 0 | | H | H | H | H | L | REC MUTE | | |
| g | | | 0 | | 1 | 1 | 1 | 1 | 1 | | H | H | H | H | H | PB MUTE | | |

Note)

- bit 6 should be "0".
- During serial control, set switches 58, 59 and 60 to "a", and V17 to 4.3 to VccH.
During parallel control, set switches 58, 59 and 60 to "b", and V17 to L (0 to 1 V) during LP and H (2 V to 3.5 V) during SP.



Electrical Characteristics Measurement Circuit

Input/Output Waveform

Fig. 1

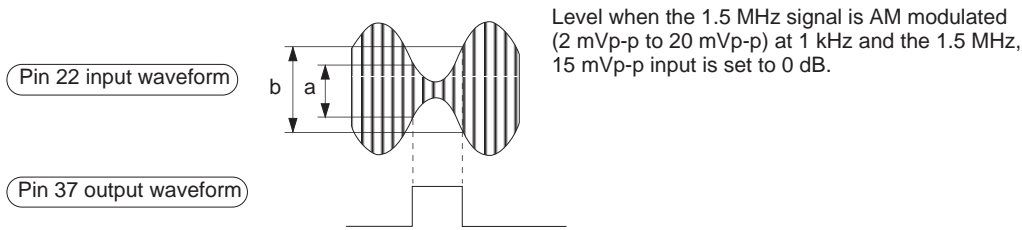


Fig. 2

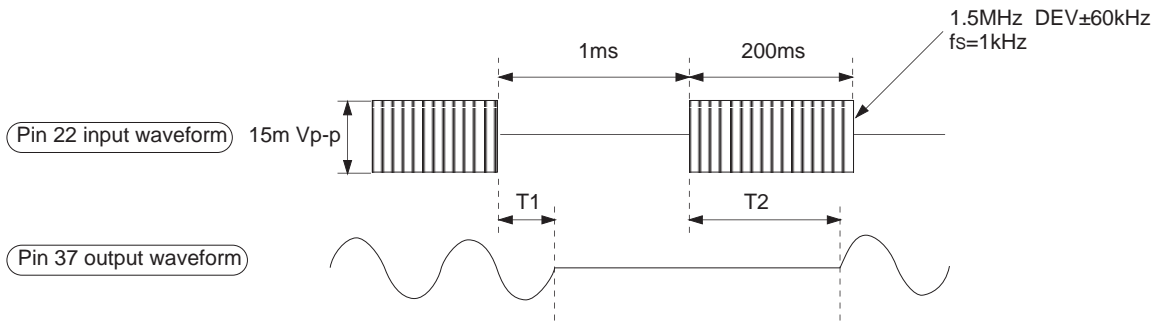
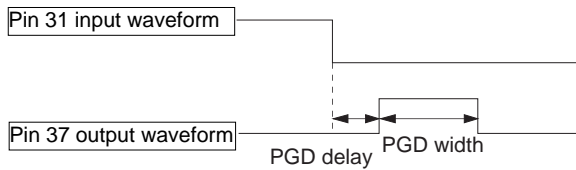


Fig. 3



Adjustment and measurement methods

• DEV adjustment method

Input the reference input (-38 dBm, 1 kHz) to the MIC input and adjust the voltage applied to Pin 36 so that the Pin 24 output reference frequency deflection is 1.5 MHz ±62.8 kHz.

When adjusting DEV, connect a 10 kΩ load resistor between Pin 24 and GND.

• Reference modulation distortion factor

Demodulate the Pin 24 output into the audio signal with the reference demodulator under the same conditions as for DEV adjustment above, then measure the distortion factor.

• BPF f0 adjustment method

Input 15 mVp-p, 1.4 MHz and 1.6 MHz signals to Pin 22 and adjust the voltage applied to Pin 26 so that the 1.4 MHz and 1.6 MHz levels output to Pin 23 are equal.

Note that since adjustment OFF mode results when the Pin 26 voltage is between 0 to 0.8 V, the BPF f0 should be adjusted with the Pin 26 voltage between 1.2 to 3 V (when Vcc1 = 3.15 V). When adjusting the BPF f0, connect a 4.7 kΩ load resistor between Pin 23 and GND.

Mode Control Tables

Parallel CTL mode table

| Pin No. | Symbol | CTL voltage | | | | |
|---------|------------|----------------|---------|----------------------------------|---------------------|------------------------------------|
| | | LOW (0 to 1 V) | OPEN | HIGH1 (2 V to V _{cc1}) | HIGH2 (2 V to 3.5V) | HIGH3 (4.3 V to V _{ccH}) |
| 17 | SP/LP | LP | SP | — | SP | SERIAL*1 |
| 28 | NTSC/PAL | PAL | — | NTSC | — | — |
| 33 | BPF ON/OFF | BPF ON | BPF ON | — | BPF ON | 1.5 MBPFOFF |
| 48 | MUTE | MUTE OFF | MUTE ON | MUTE ON | — | — |
| 58 | MIC/LINE | LINE | LINE | MIC | — | — |
| 59 | REC/PB | REC | REC | PB | — | — |

*1 When Pin 17 is 4.3 V or more, the IC operates in serial control mode.

Serial CTL mode table

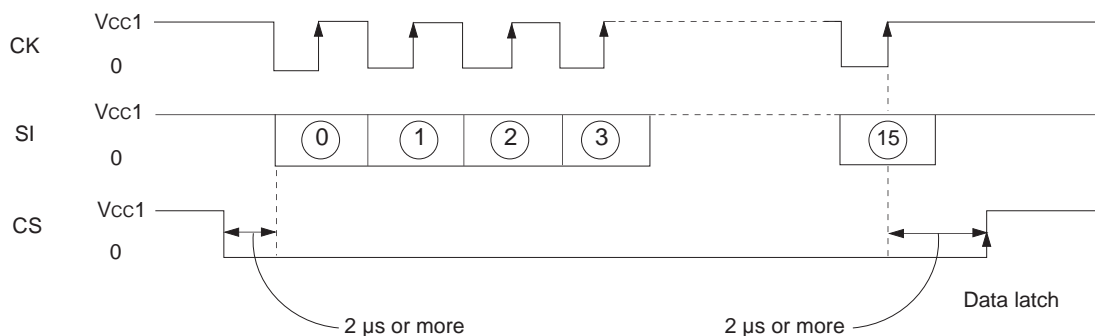
When Pin 17 is 4.3 V or more, the IC operates in serial control mode.

| bit No. | Control name | CTL value | Mode | Pin No. | Symbol | CTL voltage | | |
|---------|--------------------|-----------|--------|---------|--------|----------------|------|--------------------------------|
| | | | | | | LOW (0 to 1 V) | OPEN | HIGH (2 V to V _{cc}) |
| 0 | — | — | — | 58 | CS | L | L | H |
| 1 | — | — | — | 59 | CK | L | L | H |
| 2 | — | — | — | 60 | SI | L | L | H |
| 3 | — | — | — | | | | | |
| 4 | — | — | — | | | | | |
| 5 | — | — | — | | | | | |
| 6 | — | L | | | | | | |
| 7 | — | — | — | | | | | |
| 8 | — | — | — | | | | | |
| 9 | — | — | — | | | | | |
| 10 | — | — | — | | | | | |
| 11 | MIC/LINE switching | L | LINEIN | | | | | |
| | | H | MICIN | | | | | |
| 12 | SP/LP switching | L | LP | | | | | |
| | | H | SP | | | | | |
| 13 | NTSC/PAL switching | L | PAL | | | | | |
| | | H | NTSC | | | | | |
| 14 | MUTE | L | OFF | | | | | |
| | | H | MUTEON | | | | | |
| 15 | PB/REC | L | REC | | | | | |
| | | H | PB | | | | | |

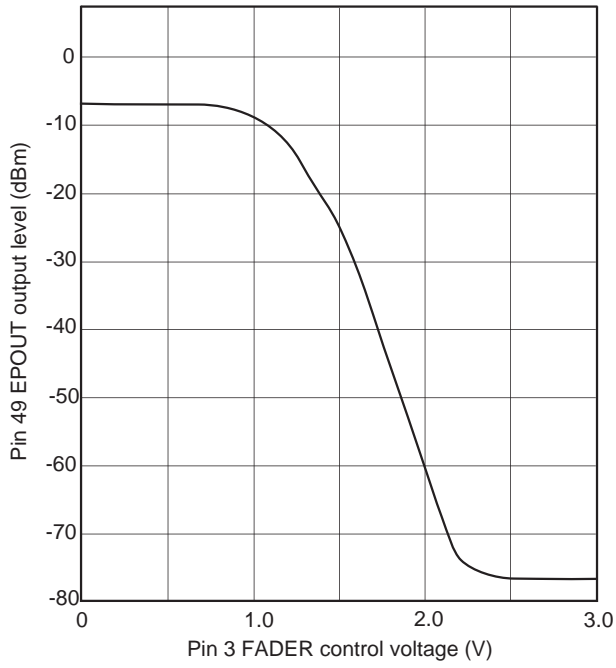
Note) bit 6 should normally be set to

Input conditions

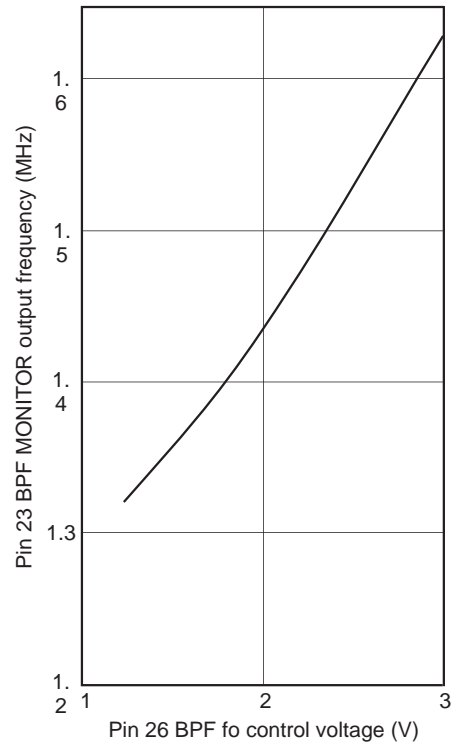
| Item | Symbol | Min. | Typ. | Max. | Unit |
|------------------------------------|------------------|------|------|------|------|
| Clock frequency | f _{ck} | | | 800 | kHz |
| Setup time | t _{su} | 400 | | | ns |
| Hold time | t _{HLD} | 400 | | | ns |
| CS fall time to SI start time | t ₁ | 2 | | | μs |
| Final CK rise time to CS rise time | t ₂ | 2 | | | μs |



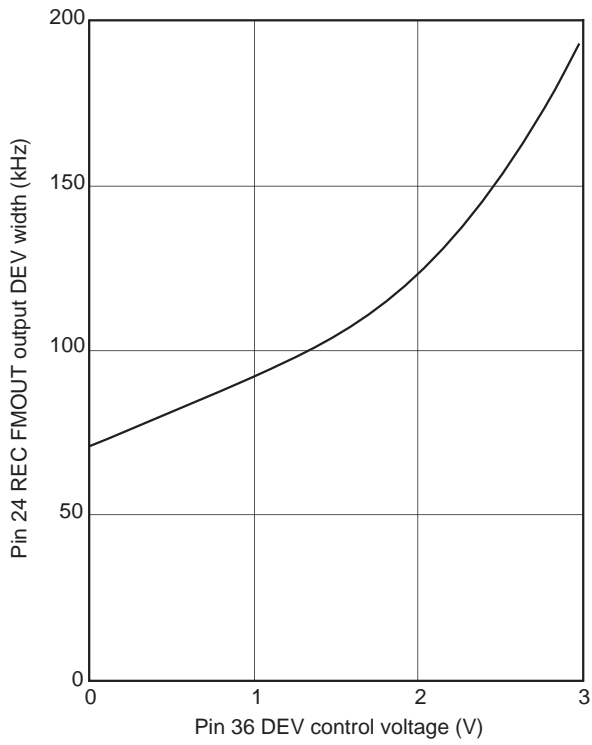
FADER characteristics A-Weight



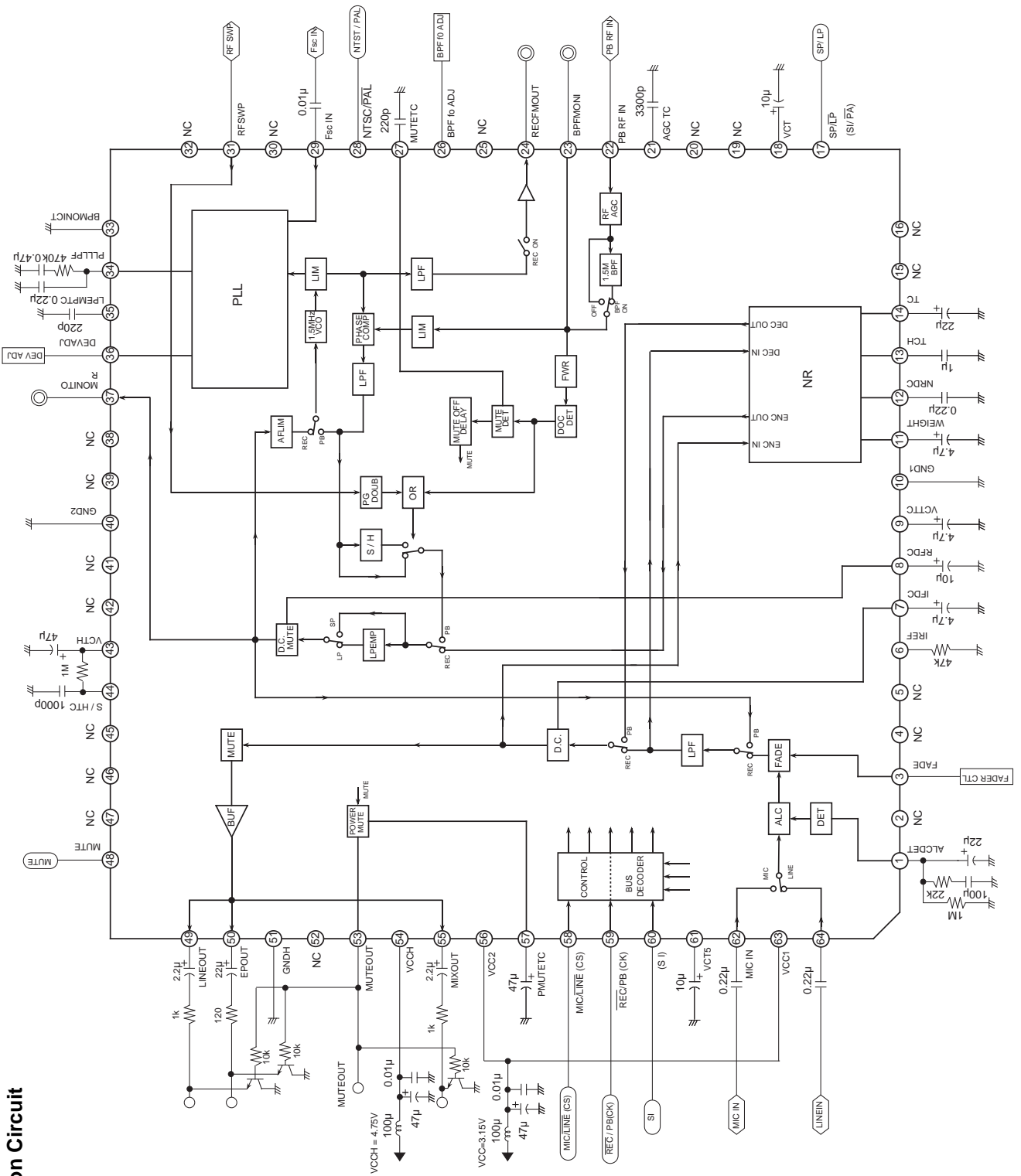
BPF fo characteristics



DEV width characteristics

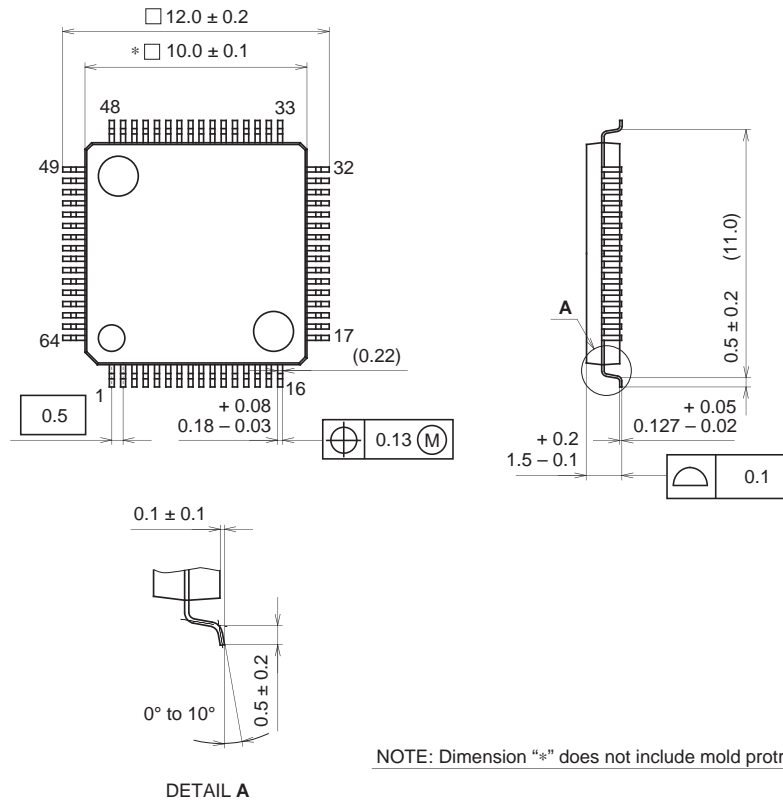


Application Circuit



Package Outline Unit : mm

64PIN LQFP (PLASTIC)



| | |
|------------|----------------|
| SONY CODE | LQFP-64P-L01 |
| EIAJ CODE | LQFP064-P-1010 |
| JEDEC CODE | _____ |

PACKAGE STRUCTURE

| | |
|------------------|--------------------------|
| PACKAGE MATERIAL | EPOXY RESIN |
| LEAD TREATMENT | SOLDER/PALLADIUM PLATING |
| LEAD MATERIAL | 42/COPPER ALLOY |
| PACKAGE MASS | 0.3g |