



ON Semiconductor®

<http://onsemi.com>

# LA72715NV

Monolithic Linear IC

## JPN MTS (Multi Channel Television Sound) Decoder IC

### Overview

JPN MTS (Multi Channel Television Sound) Decoder IC

### Features

- With SIF circuit, alignment-free\* STEREO channel separation.  
\* In base band signal input mode, separation is adjusted by input level.
- Three I<sup>2</sup>C slave-addresses are prepared.
- The maximum output level is as large as 4.2dBV.  
(Frequency = 1kHz, distortion = less than 3%, V<sub>CC</sub> = 5V, TYP)
- The external clock is unnecessary.
- A couple of external input terminal is prepared.

### Functions

- Stereo & Bilingual demodulation.
- Stereo & Bilingual detection.
- Just clock out.

### Specifications

Maximum Ratings at Ta = 25°C

| Parameter                    | Symbol               | Conditions                               | Ratings     | Unit |
|------------------------------|----------------------|--|-------------|------|
| Maximum power supply voltage | V <sub>CCH</sub> max |  | 7.0         | V    |
| Allowable power dissipation  | P <sub>d</sub> max   | Ta ≤ 80°C, Mounted on a specified board* | 203         | mW   |
| Operating temperature        | T <sub>opr</sub>     |  | -20 to +80  | °C   |
| Storage temperature          | T <sub>stg</sub>     |  | -55 to +150 | °C   |

\* Mounted on a specified board: 114.3mm × 76.1mm × 1.6mm glass epoxy board

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

# LA72715NV

## Operating Ranges at Ta = 25°C

| Parameter                     | Symbol              | Conditions | Ratings    | Unit |
|-------------------------------|---------------------|------------|------------|------|
| Recommended operating voltage | V <sub>CCH</sub>    |            | 5.0        | V    |
| Allowable operating voltage   | V <sub>CCH op</sub> |            | 4.5 to 5.5 | V    |

## Electrical Characteristics at Ta = 25°C, V<sub>DD</sub> = 5V

[Condition of input signal at pin 5]

BASE BAND input

[Output] L-ch: pin 18, R-ch: pin 17

| Parameter                        | Symbol             | Conditions  | Ratings |       |     | unit  |
|----------------------------------|--------------------|---|---------|-------|-----|-------|
|                                  |                    |   | min     | typ   | max |       |
| Current dissipation              | I <sub>CC1</sub>   | No signal, Inflow current at pin 19                                       | 18      | 26    | 34  | mA    |
| MONO output level                | V <sub>OMN1</sub>  | fm = 1kHz, 100% Mod, Pre-emphasis OFF                                     | -6      | -4.5  | -3  | dBV   |
|                                  |                    |   | 501     | 595   | 708 | mVrms |
| MONO L/R level difference        | ΔV <sub>OMN1</sub> | fm = 1kHz, 100% Mod, Pre-emphasis OFF                                     | -1      | 0     | 1   | dB    |
| MONO distortion                  | THDM1              | fm = 1kHz, 100% Mod, Pre-emphasis OFF                                     |         | 0.2   | 0.5 | %     |
| MONO frequency characteristics   | FCM1               | fm = 10kHz/1kHz, 100% Mod, 15kHz LPF<br>Pre-emphasis OFF                  | -18     | -13.5 |     | dB    |
| MONO S/N                         | SNM1               | Non Mod, 15kHz LPF  | 60      | 65    |     | dB    |
| STEREO output level              | V <sub>OST1</sub>  | fm = 1kHz, 100% Mod, Cue (Stereo),<br>15kHz LPF                           | -6      | -4.5  | -3  | dBV   |
|                                  |                    |   | 501     | 595   | 708 | mVrms |
| STEREO distortion                | THDS1              | fm = 1kHz, 100% Mod, Cue (Stereo),<br>15kHz LPF                           |         | 0.5   | 1   | %     |
| STEREO S/N                       | SNS1               | Sub Carrier (Non Mod), Cue (Stereo),<br>15kHz LPF                         | 50      | 60    |     | dB    |
| Main output level                | V <sub>OMA1</sub>  | fm = 1kHz, 100% Mod, Cue (Bilingual),<br>15kHz LPF                        | -6      | -4.5  | -3  | dBV   |
|                                  |                    |   | 501     | 595   | 708 | mVrms |
| Main distortion                  | THDMA1             | fm = 1kHz, 100% Mod, Cue (Bilingual),<br>15kHz LPF                        |         | 0.2   | 0.5 | %     |
| Main S/N                         | SNMA1              | Sub Carrier (Non Mod), Cue (Bilingual), 15kHz LPF                         | 60      | 65    |     | dB    |
| SUB output level                 | V <sub>SU1</sub>   | fm = 1kHz, 100% Mod, Cue (Bilingual),<br>15kHz LPF                        | -6      | -4.5  | -3  | dBV   |
|                                  |                    |   | 501     | 595   | 708 | mVrms |
| SUB distortion                   | THDSU1             | fm = 1kHz, 100% Mod, Cue (Bilingual),<br>15kHz LPF                        |         | 0.7   | 1.5 | %     |
| SUB frequency characteristics    | FCSU1              | fm = 10kHz/1kHz, 60% Mod, Cue (Bilingual),<br>15kHz LPF, Pre-emphasis OFF | -18     | -14.5 |     | dB    |
| SUB Main S/N                     | SNSU1              | Sub Carrier (Non Mod), Cue (Bilingual), 15kHz LPF                         | 50      | 60    |     | dB    |
| STEREO separation L → R          | SEPR1              | fm = 1kHz (L-only), 60% Mod, Cue (Stereo),<br>15kHz LPF                   | 35      | 43    |     | dB    |
| STEREO separation R → L          | SEPL1              | fm = 1kHz (R-only), 60% Mod, Cue (Stereo),<br>15kHz LPF                   | 35      | 43    |     | dB    |
| Stay behind carrier level (SUB)  | CLSU1              | Main = 0%, Sub = 0% (Carrier)<br>Cue (Bilingual)                          |         | -50   | -40 | dBV   |
| Stay behind carrier level (MAIN) | CLMA1              | Main = 0%, Sub = 0% (Carrier)<br>Cue (Bilingual)                          |         | -55   | -45 | dBV   |
| Cross-talk MAIN → SUB            | CTSUB1             | Main : fm = 1kHz, 100% modulation,<br>Cue (Bilingual), 1kHz BPF           | 55      | 62    |     | dB    |
| Cross-talk SUB → MAIN            | CTMA1              | Sub : fm = 1kHz, 100% modulation,<br>Cue (Bilingual), 1kHz BPF            | 55      | 62    |     | dB    |
| MODE output MONO                 | MODMO1             | Input = Mono Signal   | 1.7     | 2     | 2.3 | V     |
| MODE output STEREO               | MODST1             | Input = Stereo Signal   | 0       | 1     | 1.3 | V     |
| MODE output BILINGUAL            | MODBI1             | Input = Bilingual Signal  | 2.7     | 3     | 3.3 | V     |
| Just Clock output High voltage   | JCH1               | f = 400Hz (mono), 25% Mod   | 4       |       |     | V     |
| Just Clock output Low voltage    | JCL1               | f = 400Hz (mono), 10% Mod   |         |       | 1   | V     |
| Max Output level                 | MOL1               | f = 1kHz, distortion = 3%   | 3.3     | 4.2   |     | dBV   |
|                                  |                    |   | 1462    | 1622  |     | mVrms |

Continued on next page.

# LA72715NV

Continued from preceding page.

| Parameter            | Symbol | Conditions                        | Ratings |       |                 | unit  |
|----------------------|--------|-----------------------------------|---------|-------|-----------------|-------|
|                      |        |                                   | min     | typ   | max             |       |
| EXTERNAL input level | EXTIN1 | f = 1kHz, (pin 12 & pin 13 input) |         | -14.5 |                 | dBV   |
|                      |        |                                   |         | 188.4 |                 | mVrms |
| 8pin-CONTROL "H"     | MUTEH  | MUTE-ON                           | 3.0     |       | V <sub>CC</sub> | V     |
| 8pin-CONTROL "OPEN"  | MUTEOP | MUTE-OFF                          |         | 0.9   |                 | V     |
| 8pin-CONTROL "L"     | MUTEL  | MUTE-OFF & Detection AREA CONROL  | 0       |       | 0.2             | V     |

[Condition of input signal at pin 5]

Deviation of SIF input MONO : (fm = 1kHz) 100%→4.5MHz±25kHz Pre-Emphasis ON

[Output] L-ch : pin 18, R-ch : pin 17

| Parameter                        | Symbol             | Conditions  | Ratings |       |       | unit  |
|----------------------------------|--------------------|---|---------|-------|-------|-------|
|                                  |                    |   | min     | typ   | max   |       |
| Current dissipation              | I <sub>CC2</sub>   | No signal, Inflow current at pin 19                                       | 20      | 28    | 36    | mA    |
| Input sensitivity level          | V <sub>SIN</sub>   | fc = 4.5MHz   | 70      | 90    | 110   | dBμV  |
|                                  |                    |   | 3.16    | 31.62 | 316.2 | mVrms |
| MONO output level                | V <sub>OMN2</sub>  | fm = 1kHz, 100% Mod, Pre-emphasis OFF                                     | -6      | -4.5  | -3    | dBV   |
|                                  |                    |   | 501     | 595   | 708   | mVrms |
| MONO L/R level difference        | ΔV <sub>OMN2</sub> | fm = 1kHz, 100% Mod, Pre-emphasis OFF                                     | -1      | 0     | 1     | dB    |
| MONO distortion                  | THDM2              | fm = 1kHz, 100% Mod, Pre-emphasis OFF                                     |         | 0.2   | 0.5   | %     |
| MONO frequency characteristics   | FCM2               | fm = 10kHz/1kHz, 100% Mod, 15kHz LPF<br>Pre-emphasis OFF                  | -18     | -13.5 |       | dB    |
| MONO S/N                         | SNM2               | Non Mod, 15kHz LPF  | 55      | 60    |       | dB    |
| STEREO output level              | V <sub>OST2</sub>  | fm = 1kHz, 100% Mod, Cue (Stereo),<br>15kHz LPF                           | -6      | -4.5  | -3    | dBV   |
|                                  |                    |   | 501     | 595   | 708   | mVrms |
| STEREO distortion                | THDS2              | fm = 1kHz, 100% Mod, Cue (Stereo),<br>15kHz LPF                           |         | 0.5   | 1     | %     |
| STEREO S/N                       | SNS2               | Sub Carrier (Non Mod), Cue (Stereo),<br>15kHz LPF                         | 50      | 57    |       | dB    |
| Main output level                | V <sub>OMA2</sub>  | fm = 1kHz, 100% Mod, Cue (Bilingual),<br>15kHz LPF                        | -6      | -4.5  | -3    | dBV   |
|                                  |                    |   | 501     | 595   | 708   | mVrms |
| Main distortion                  | THDMA2             | fm = 1kHz, 100% Mod, Cue (Bilingual),<br>15kHz LPF                        |         | 0.2   | 0.5   | %     |
| Main S/N                         | SNMA2              | Sub Carrier (Non Mod), Cue (Bilingual), 15kHz LPF                         | 55      | 60    |       | dB    |
| SUB output level                 | V <sub>OSU2</sub>  | fm = 1kHz, 100% Mod, Cue (Bilingual),<br>15kHz LPF                        | -6      | -4.5  | -3    | dBV   |
|                                  |                    |   | 501     | 595   | 708   | mVrms |
| SUB distortion                   | THDSU2             | fm = 1kHz, 100% Mod, Cue (Bilingual),<br>15kHz LPF                        |         | 0.7   | 1.5   | %     |
| SUB frequency characteristics    | FCSU2              | fm = 10kHz/1kHz, 60% Mod, Cue (Bilingual),<br>15kHz LPF, Pre-emphasis OFF | -18     | -14.5 |       | dB    |
| SUB Main S/N                     | SNSU2              | Sub Carrier (Non Mod), Cue (Bilingual), 15kHz LPF                         | 50      | 58    |       | dB    |
| STEREO separation L → R          | SEPR2              | fm = 1kHz (L-only), 60% Mod, Cue (Stereo),<br>15kHz LPF                   | 35      | 38    |       | dB    |
| STEREO separation R → L          | SEPL2              | fm = 1kHz (R-only), 60% Mod, Cue (Stereo),<br>15kHz LPF                   | 35      | 38    |       | dB    |
| Stay behind carrier level (SUB)  | CLSU2              | Main = 0%, Sub = 0% (Carrier)<br>Cue (Bilingual)                          |         | -50   | -40   | dBV   |
| Stay behind carrier level (MAIN) | CLMA2              | Main = 0%, Sub = 0% (Carrier)<br>Cue (Bilingual)                          |         | -55   | -45   | dBV   |
| Cross-talk MAIN → SUB            | CTSUB2             | Main : fm = 1kHz, 100% modulation,<br>Cue (Bilingual), 1kHz BPF           | 55      | 62    |       | dB    |
| Cross-talk SUB → MAIN            | CTMA2              | Sub : fm = 1kHz, 100% modulation,<br>Cue (Bilingual), 1kHz BPF            | 55      | 62    |       | dB    |
| MODE output MONO                 | MODMO2             | Input = Mono Signal   | 1.7     | 2     | 2.3   | V     |
| MODE output STEREO               | MODST2             | Input = Stereo Signal   | 0       | 1     | 1.3   | V     |
| MODE output BILINGUAL            | MODBI2             | Input = Bilingual Signal  | 2.7     | 3     | 3.3   | V     |
| Just Clock output High voltage   | JCH2               | f = 400Hz (mono), 25%Mod  | 4       |       |       | V     |

Continued on next page.

# LA72715NV

Continued from preceding page.

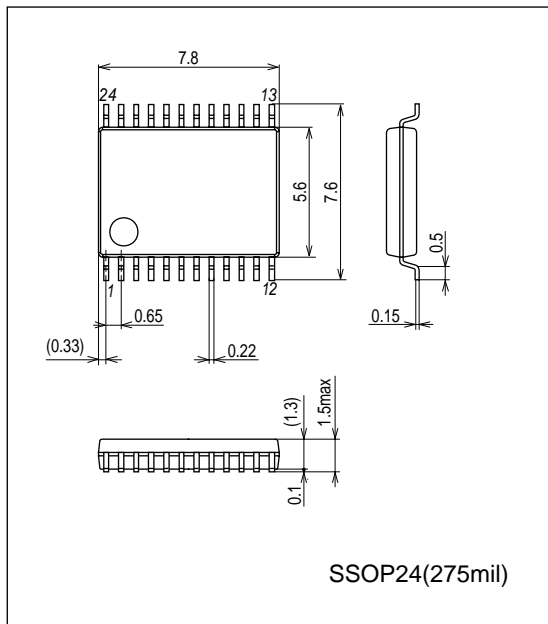
| Parameter                     | Symbol | Conditions                        | Ratings |       |                 | unit  |
|-------------------------------|--------|-----------------------------------|---------|-------|-----------------|-------|
|                               |        |                                   | min     | typ   | max             |       |
| Just Clock output Low voltage | JCL2   | f = 400Hz (mono), 10%Mod          |         |       | 1               | V     |
| Max Output level              | MOL2   | f = 1kHz, distortion = 3%         | 3.3     | 4.2   |                 | dBV   |
|                               |        |                                   | 1462    | 1622  |                 | mVrms |
| EXTERNAL input level          | EXTIN2 | f = 1kHz, (pin 12 & pin 13 input) |         | -14.5 |                 | dBV   |
|                               |        |                                   |         | 188.4 |                 | mVrms |
| 8pin-CONTROL "H"              | MUTEH  | MUTE-ON                           | 3.0     |       | V <sub>CC</sub> | V     |
| 8pin-CONTROL "OPEN"           | MUTEOP | MUTE-OFF                          |         | 0.9   |                 | V     |
| 8pin-CONTROL "L"              | MUTEL  | MUTE-OFF & Detection AREA CONROL  | 0       |       | 0.2             | V     |

## Package Dimensions

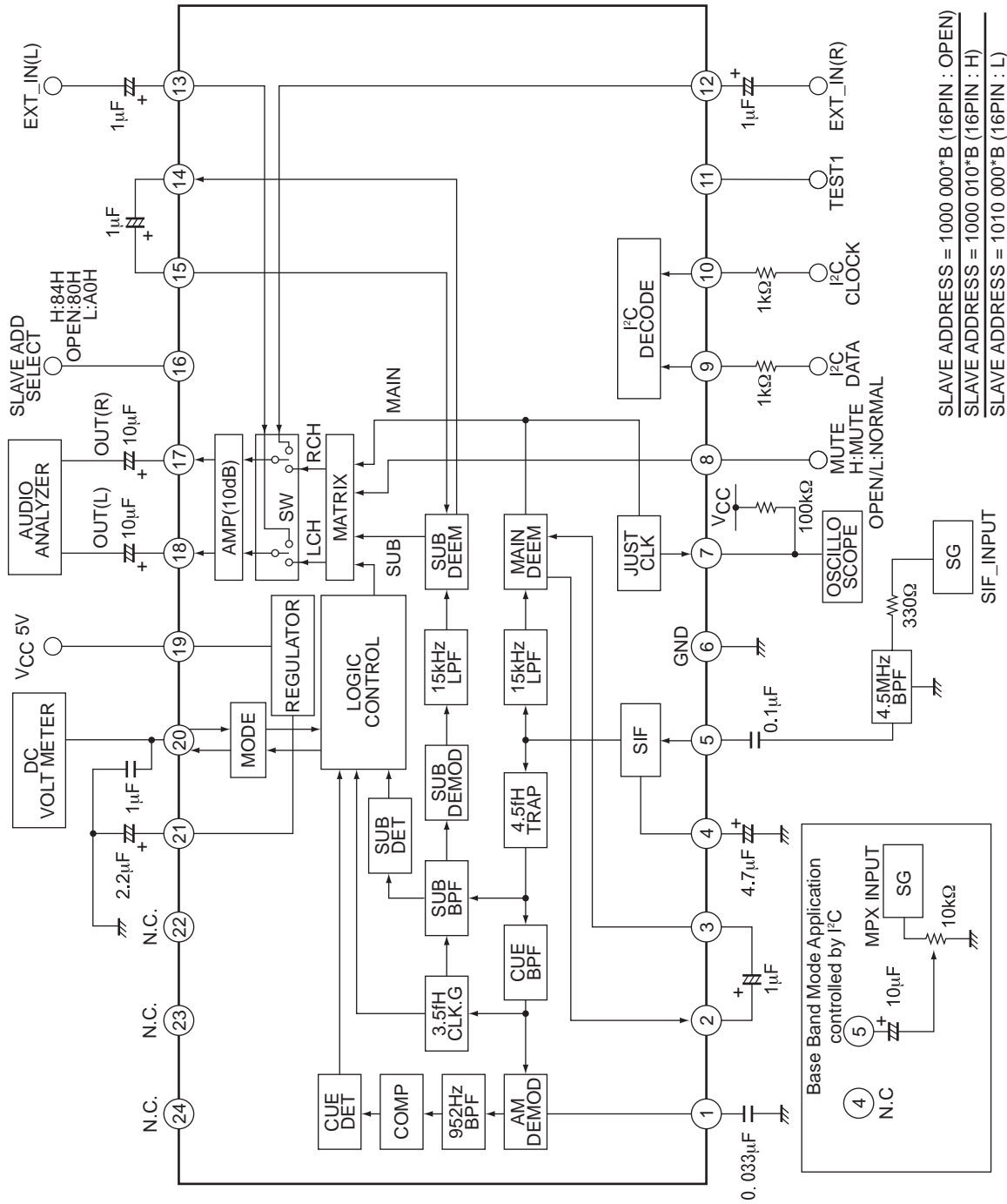
unit : mm (typ)

3175C

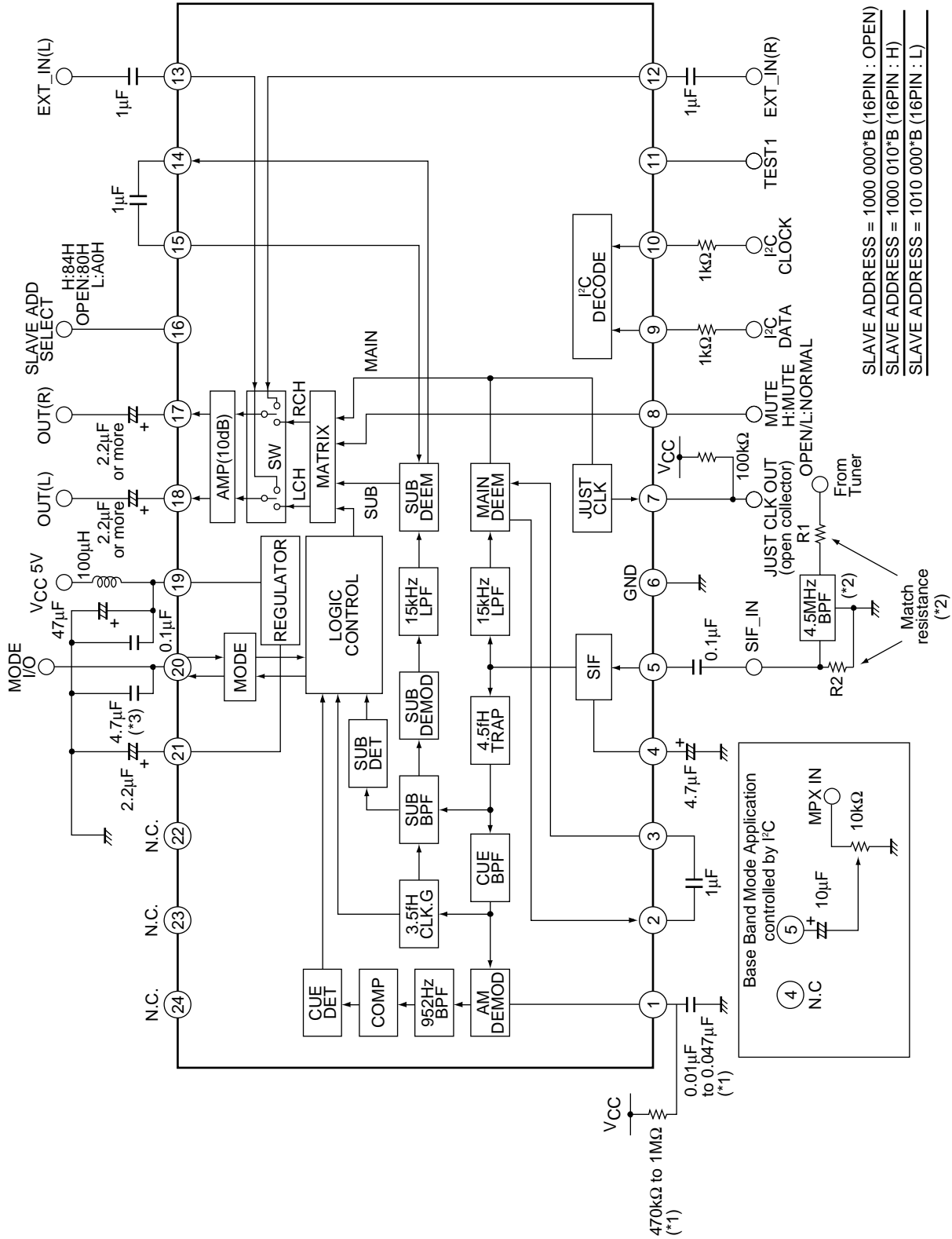
[LA72715NV]



Block Diagram and Test Circuit



Block Diagram and Application Circuit Example



The value of (1\*), (2\*), and (3\*) affects sensitivity for signal detection. It must be adjusted depending on the circumstances by the user.

(1\*): Recommended constant value  $0.0033\mu\text{F} + 470\text{k}\Omega$  (values when tested)

(2\*): Recommended matching resistor value  $R1=1\text{k}\Omega$ ,  $R2=1\text{k}\Omega$

Recommended BPF Murata SFSRA4M50DF00-B0

(3\*): Recommended constant value  $4.7\mu\text{F}$  to  $10\text{k}\Omega$

The ceramic capacitor may be used for the electrolytic capacitor.

# LA72715NV

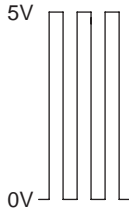
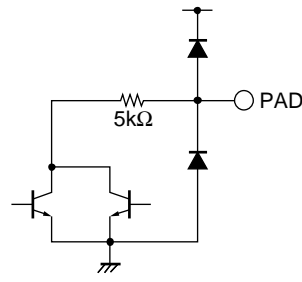
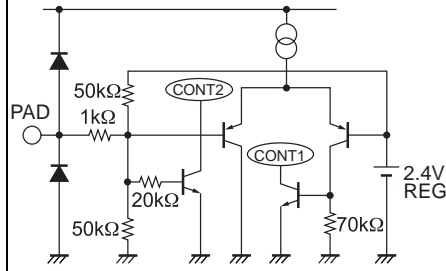
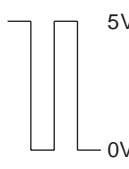
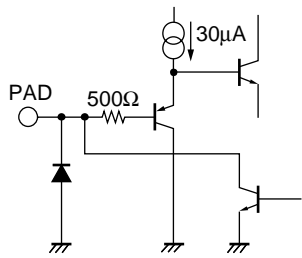
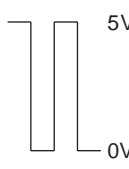
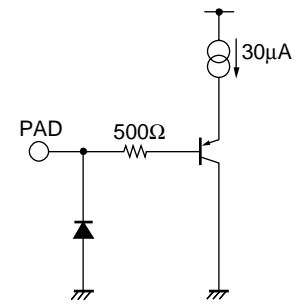
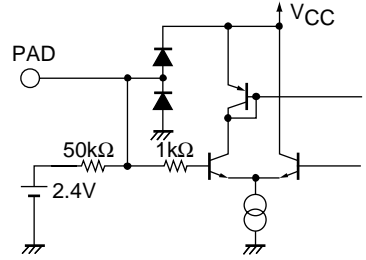
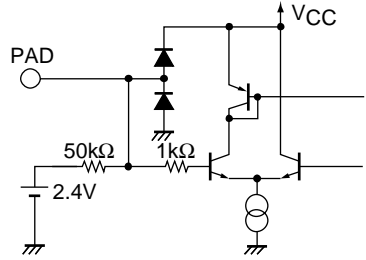
## Pin Functions

| Pin No. | Pin Name         | DC voltage<br>AC level                  | Function  | Equivalent Circuit |
|---------|------------------|---|---|--------------------|
| 1       | AM DETECTOR      | DC : 2.3V                               | Reference terminal of AM detection.   |                    |
| 2<br>14 | DC FILTER<br>OUT | 2pin<br>DC : 2.6V<br>14pin<br>DC : 2.1V | Absorbing the DC offset of signal line by external capacity.  |                    |
| 3<br>15 | DC FILTER IN     | DC : 2.4V                               | Absorbing the DC offset of signal line by external capacity.  |                    |
| 4       | FM FILTER        | DC : 2.9V                               | Filter terminal for making stable DC voltage of FM detection output in SIF part.<br>Normally, use a condenser of 4.7μF. Increase the capacity value with concerning frequency characteristics of low level.   |                    |
| 5       | SIF INPUT        | DC : 2.4V                               | Input terminal for SIF.<br>The input impedance is about 5kΩ. Be care for about pattern layout of the input circuit, because of causing buzz-beat and buzz by leaking noise signal into the input terminal.<br>(The noise signal depending on sound is particularly video signal and chroma signal and so on. VIF carrier becomes noise signal.) |                    |
| 6       | GND              |   |   |                    |

Continued on next page.

# LA72715NV

Continued from preceding page.

| Pin No. | Pin Name                                | DC voltage<br>AC level  | Function  | Equivalent Circuit  |
|---------|---|---|---|---|
| 7       | JUST CLOCK OUT                          |    | Rectangle wave output for JUST CLOCK.<br>(OPEN Collector)<br>100kΩ Pull-up  |    |
| 8       | MUTE control pin & Distinction control. | DC : 0V   | 3.0V to V <sub>CC</sub> : MUTE (CONT 1)<br>OPEN (0.9V) : NORM<br>0V : NORM & Detection AREA Control (CONT2)<br>Use it within the range of 0 to 0.2V when you operate usually. |     |
| 9       | Serial data input pin.                  |   | High : 2.5V to 5V<br>Low : 0V to 1.5V   |   |
| 10      | Serial CLK input pin                    |  | High : 2.5V to 5V<br>Low : 0V to 1.5V   |  |
| 11      | TEST1                                   |   |   |   |
| 12      | EXTIN_R                                 | DC : 2.4V<br>-14.5dBV   | EXT input Rch<br>not used : OPEN  |  |
| 13      | EXTIN_L                                 | DC : 2.4V<br>-14.5dBV   | EXT input Lch<br>not used : OPEN  |  |

Continued on next page.



# LA72715NV

Continued from preceding page.

| Pin No.        | Pin Name   | DC voltage<br>AC level    | Function   | Equivalent Circuit |
|----------------|--|---------------------------|--|--------------------|
| 16             | SLAVE ADD<br>SELECT                                  |                           |  |                    |
| 17<br>18       | Line Out (R)<br>terminal<br>Line Out (L)<br>terminal | DC : 2.4V<br>AC : -4.5dBV | Line output pin.   |                    |
| 19             | V <sub>CC</sub> 5V                                   |                           |  |                    |
| 20             | MTS MODE<br>OUT                                      | No signal<br>DC : 2.0V    | Detection output for M.T.S. signal.<br>BILINGUAL :3.0V<br>MONO :2.0V<br>STEREO :1.0V |                    |
| 21             | REG FILT   | DC : 2.4V                 | Filter terminal of reference voltage source  |                    |
| 22<br>23<br>24 | NC   |                           |  |                    |

## I<sup>2</sup>C BUS Serial Interface Specification

### (1) Data Transfer Manual

This LSI adopts control method (I<sup>2</sup>C-BUS) with serial data, and controlled by two terminals which called SCL (serial clock) and SDA (serial data). At first, set up<sup>\*1</sup> the condition of starting data transfer, and after that, input 8 bit data to SDA terminal with synchronized SCL terminal clock. The order of transferring is first, MSB (the Most Scale of Bit), and save the order. The 9th bit takes ACK (Acknowledge) period, during SCL terminal takes 'H', this LSI pull down the SDA terminal. After transferred the necessary data, two terminals lead to set up and of<sup>\*2</sup> data transfer stop condition, thus the transfer comes to close.

\*1 Defined by SCL rise down SDA during 'H' period.

\*2 Defined by SCL rise up SDA during 'H' period.

### (2) Transfer Data Format

After transfer start condition, transfers slave address (1000 000\*) to SDA terminal, control data, then, stop condition (See figure 1).

Slave address is made up of 7bits, <sup>\*3</sup>8th bit shows the direction of transferring data, if it is 'L' takes write mode (As this LSI side, this is input operation mode), and in case of 'H' reading mode (As this LSI side, this is output operation mode).

Data works with all of bit, transfer the stop condition before stop 8bit transfer, and to stop transfer, it will be canceled the transfer dates. At READ mode, this LSI outputs during ACK period, please must input 9 clocks.

\*3 It is called R/W bit.

# LA72715NV

Fig.1 DATA STRUCTURE “WRITE” mode

|                 |               |          |     |              |     |                |
|-----------------|---------------|----------|-----|--------------|-----|----------------|
| START Condition | Slave Address | R/W<br>L | ACK | Control data | ACK | STOP condition |
|-----------------|---------------|----------|-----|--------------|-----|----------------|

Fig.2 DATA STRUCTURE “READ” mode

|                 |               |          |     |                 |     |                |
|-----------------|---------------|----------|-----|-----------------|-----|----------------|
| START condition | Slave Address | R/W<br>H | ACK | Internal Data * | ACK | STOP condition |
|-----------------|---------------|----------|-----|-----------------|-----|----------------|

\* The output data synchronizes with the clock of SCL pin. Then the ACK output is made after the output data.

- bit8 is result of STERO DET (H : STEREO)
- bit7 is result of BILINGUAL DET (H : BILINGUAL)
- bit6 is Initial Condition ‘H’
- bit5 to bit1 are fixed to ‘L’

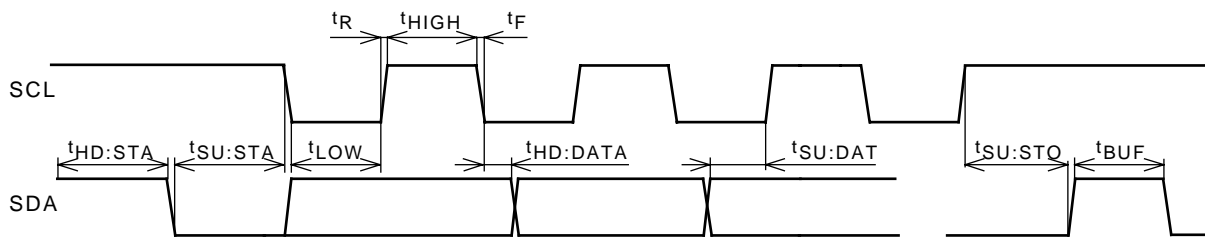
### (3) Initialize

This IC is initialized for circuit protection. Initial condition is “01h (Main-mode)”.

## Reference

| Parameter  | Symbol         | min  | max | unit    |
|--|----------------|------|-----|---------|
| LOW level input voltage  | $V_{IL}$       | -0.5 | 1.5 | V       |
| HIGH level input voltage   | $V_{IH}$       | 2.5  | 5.5 | V       |
| LOW level output current   | $I_{OL}$       |      | 3.0 | mA      |
| SCL clock frequency  | $f_{SCL}$      | 0    | 100 | kHz     |
| Set-up time for a repeated START condition                                       | $t_{SU : STA}$ | 4.7  |     | $\mu s$ |
| Hold time START condition. After this period, the first clock pulse is generated | $t_{HD : STA}$ | 4.0  |     | $\mu s$ |
| LOW period of the SCL clock  | $t_{LOW}$      | 4.7  |     | $\mu s$ |
| Rise time of both SDA and SDL signals  | $t_R$          | 0    | 1.0 | $\mu s$ |
| HIGH period of the SCL clock   | $t_{HIGH}$     | 4.0  |     | $\mu s$ |
| Fall time of both SDA and SDL signals  | $t_F$          | 0    | 1.0 | $\mu s$ |
| Data hold time   | $t_{HD : DAT}$ | 0    |     | $\mu s$ |
| Data set-up time   | $t_{SU : DAT}$ | 250  |     | ns      |
| Set-up time for STOP condition   | $t_{SU : STO}$ | 4.0  |     | $\mu s$ |
| BUS free time between a STOP and START condition                                 | $t_{BUF}$      | 4.7  |     | $\mu s$ |

## Definition of Timing



# LA72715NV

## I<sup>2</sup>C Control/LA72715NV Group number is ONLY 1 (Normal Use).

Grp-1

| D8 | D7 | D6 | D5 | D4 | D3 | D2 | D1 | Condition            |
|----|----|----|----|----|----|----|----|----------------------|
|    |    |    |    |    |    | 0  | 0  | Bilingual            |
| *  |    |    |    |    |    | 0  | 1  | Main                 |
|    |    |    |    |    |    | 1  | 0  | Sub                  |
|    |    |    |    |    |    | 1  | 1  | (Prohibit)           |
| *  |    |    |    |    | 0  |    |    | Normal               |
|    |    |    |    |    | 1  |    |    | Forced MONO          |
| *  |    |    |    | 0  |    |    |    | Normal (MUTE OFF)    |
|    |    |    |    | 1  |    |    |    | MUTE                 |
| *  |    |    | 0  |    |    |    |    | TV Mode (SW Normal)  |
|    |    |    | 1  |    |    |    |    | EXT Mode (SW EXT)    |
| *  |    | 0  |    |    |    |    |    | JUST CLOCK OFF       |
|    |    | 1  |    |    |    |    |    | JUST CLOCK ON        |
| *  | 0  |    |    |    |    |    |    | SIF Mode             |
|    | 1  |    |    |    |    |    |    | BASE BAND Mode       |
| *  | 0  |    |    |    |    |    |    | Fix                  |
|    | 1  |    |    |    |    |    |    | Prohibit (TEST Mode) |

\*: Initial condition

Read out data

| D8 | D7 | D6 | D5 | D4 | D3 | D2 | D1 | Condition                   |
|----|----|----|----|----|----|----|----|-----------------------------|
|    |    |    | 0  | 0  | 0  | 0  | 0  | Fixed                       |
| 0  |    |    |    |    |    |    |    | Normal                      |
| 1  |    |    |    |    |    |    |    | Stereo det                  |
|    | 0  |    |    |    |    |    |    | Normal                      |
|    | 1  |    |    |    |    |    |    | Bilingual det               |
|    |    | 0  |    |    |    |    |    | Except an initial condition |
|    |    | 1  |    |    |    |    |    | Initial condition           |

### Test Mode Condition

When STOP condition transform at Grp-1 data-end, controlled NORMAL mode.

Grp-2 (Only test condition : Normally, this group is hidden group)

| D8 | D7 | D6 | D5 | D4 | D3 | D2 | D1 | Condition/Moniter position |
|----|----|----|----|----|----|----|----|----------------------------|
| 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | -                          |
| 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | TEST-01 SIF out            |
| 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | TEST-02 SUB FIL out        |
| 0  | 0  | 0  | 0  | 0  | 0  | 1  | 1  | TEST-03 CUE FIL out        |
| 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | TEST-04 SUD DET out        |
| 0  | 0  | 0  | 0  | 0  | 1  | 0  | 1  | TEST-05 CUE DC1 out        |
| 0  | 0  | 0  | 0  | 0  | 1  | 1  | 0  | TEST-06 SUB DET2 out       |
| 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | TEST-07 110K out           |
| 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | TEST-08 28K out            |
| 0  | 0  | 0  | 0  | 1  | 0  | 0  | 1  | TEST-09 CUE PLS out        |
| 0  | 0  | 0  | 0  | 1  | 0  | 1  | 0  | TEST-10 FIL ZAP LEVEL      |

SLAVE ADDRESS 80H (16pin : OPEN)

SLAVE ADDRESS 84H (16pin : V<sub>CC</sub>)

SLAVE ADDRESS A0H (16pin : GND)

## LA72715NV

### Mode Select (pin & I<sup>2</sup>C setting)

| Broadcast signal | MUTE PIN setting | I <sup>2</sup> C |    |    |    |    | OUTPUT MODE |             |        | READ MODE OUT |    | MODE I/O |
|------------------|------------------|------------------|----|----|----|----|-------------|-------------|--------|---------------|----|----------|
|                  | 8pin             | D5               | D4 | D3 | D2 | D1 | LCH (18pin) | RCH (17pin) | MODE   | D8            | D7 | 20pin    |
| Bilingual        | L or OPEN        | 0                | 0  | 0  | 0  | 0  | MAIN        | SUB         | BOTH   | 0             | 1  | 3V       |
|                  | L or OPEN        | 0                | 0  | 0  | 0  | 1  | MAIN        | MAIN        | MAIN   | 0             | 1  |          |
|                  | L or OPEN        | 0                | 0  | 0  | 1  | 0  | SUB         | SUB         | SUB    | 0             | 1  |          |
|                  | L or OPEN        | 0                | 0  | 1  | *  | *  | MAIN        | MAIN        | MONO   | 0             | 1  |          |
|                  | *                | *                | 1  | *  | *  | *  | MUTE        | MUTE        | MUTE   | 0             | 1  |          |
|                  | H                | *                | *  | *  | *  | *  | MUTE        | MUTE        | MUTE   | 0             | 1  |          |
|                  | L or OPEN        | 1                | 0  | *  | *  | *  | EXT L       | EXT R       | EXT    | 0             | 1  |          |
| STEREO           | L or OPEN        | 0                | 0  | 0  | *  | *  | L           | R           | STEREO | 1             | 0  | 1V       |
|                  | L or OPEN        | 0                | 0  | 1  | *  | *  | L+R         | L+R         | MONO   | 1             | 0  |          |
|                  | *                | *                | 1  | *  | *  | *  | MUTE        | MUTE        | MUTE   | 1             | 0  |          |
|                  | H                | *                | *  | *  | *  | *  | MUTE        | MUTE        | MUTE   | 1             | 0  |          |
|                  | L or OPEN        | 1                | 0  | *  | *  | *  | EXT L       | EXT R       | EXT    | 1             | 0  |          |
| MONO             | L or OPEN        | 0                | 0  | *  | *  | *  | L+R         | L+R         | MONO   | 0             | 0  | 2V       |
|                  | *                | *                | 1  | *  | *  | *  | MUTE        | MUTE        | MUTE   | 0             | 0  |          |
|                  | H                | *                | *  | *  | *  | *  | MUTE        | MUTE        | MUTE   | 0             | 0  |          |
|                  | L or OPEN        | 1                | 0  | *  | *  | *  | EXT L       | EXT R       | EXT    | 0             | 0  |          |

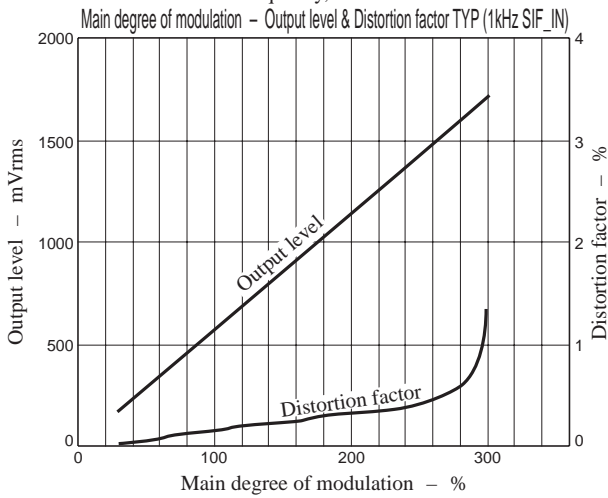
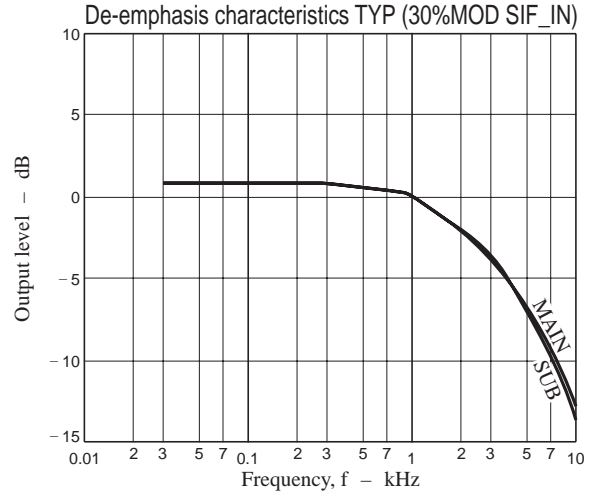
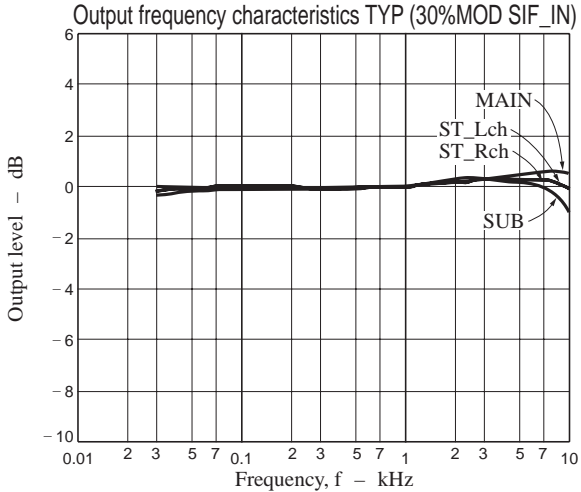
16pin : Slave address select. 0V to 1.5V : A0H, OPEN : 80H, 3.0V to V<sub>CC</sub> : 84H

### Serial Data Specification (I<sup>2</sup>C bus communication)

| Data bit                 |                                    |                          |                               |                          |                          |  |           |
|--------------------------|------------------------------------|--------------------------|-------------------------------|--------------------------|--------------------------|--|-----------|
| MSB<br>D8                | D7                                 | D6                       | D5                            | D4                       | D3                       | D2   | LSB<br>D1 |
| TEST                     | SIF or<br>BASE BAND                | JUST<br>CLK              | EXT SOURCE<br>SELECT          | NORMAL OUT<br>MUTE       | Forced<br>MONO           | Bilingual mode select  |           |
| <u>0</u> : OFF<br>1 : ON | <u>0</u> : SIF<br>1 : BASE<br>BAND | <u>0</u> : OFF<br>1 : ON | <u>0</u> : OFF(TV)<br>1 : EXT | <u>0</u> : OFF<br>1 : ON | <u>0</u> : OFF<br>1 : ON | 00: BILINGUAL<br><u>01</u> : MAIN<br>10 : SUB<br>11 : Unusable |           |

Note : Underline shows default setting

LA72715NV Reference Characteristics



ON Semiconductor and the ON logo are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of SCILLC's product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.