

INTRODUCTION

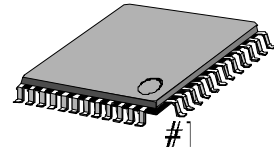
The S1A0293A is a monolithic integrated circuit for an audio system.

The S1A0293A consists of a MIC AMP, MIC and MICOM or Manual selection part for PHONO, TUNER, CD, TAPE, AUX, and VTR input.

FEATURES

- 6-Input Dual Analog Switch
- Dual Phono Amp
- Dual Buffer Amp 2
- Dual MIC Mix
- MICOM Interface for function selection.
- Manual function selection switch without MICOM
- LEC Driving circuit for indication of selected function
- Operating voltage : $V_{CC} = 6V \text{ — } 12V$

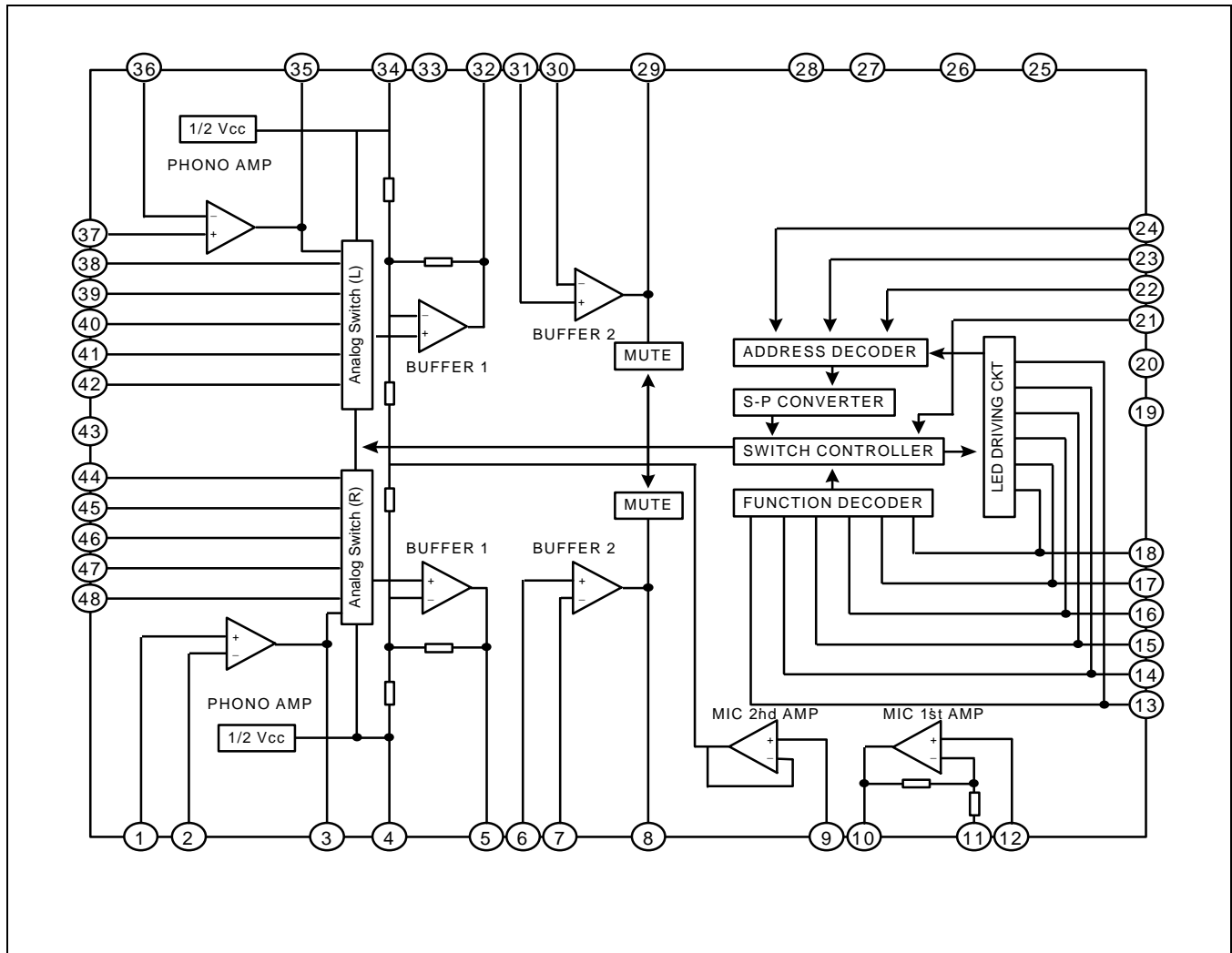
48-QFP-1010E



ORDERING INFORMATION

| Device | Package | Operating Temperature | Pitch |
|---------------|--------------|-----------------------|---------|
| S1A0293A-Q1R0 | 48-QFP-1010E | -20°C ~ + 70°C | 0.75 mm |

BLOCK DIAGRAM



PIN DESCRIPTION

Pin Description

| Pin No | Symbol | I/O | Description |
|--------|-------------------|-----|--|
| 1 | PHRIN | I | Right Channel PHONO AMP Input |
| 2 | PHRNF | I | Right Channel PHONO AMP Negative feedback |
| 3 | PHROUT | O | Right Channel PHONO AMP Output |
| 4 | RHV _{CC} | – | Right Channel 1/2 V _{CC} |
| 5 | BFR1 OUT | O | Right Channel 1st Buffer Output |
| 6 | BFR2 INPUT | I | Right Channel 2nd Buffer Input |
| 7 | BRF2 NF | I | Right Channel 2nd Buffer Negative feedback |
| 8 | BFR2 OUT | O | Right Channel 2nd Buffer Output |
| 9 | MIC 2/N | I | Mic 2nd AMP Input |
| 10 | MIC 1OUT | O | Mic 1st AMP Output |
| 11 | MIC1 | I | Mic 1st AMP Negative feedback |
| 12 | MIC | I | Mic 1st AMP Input |
| 13 | MSPH | I/O | Manual Selection S/W for PHONO function |
| 14 | MSTU | I/O | Manual Selection S/W for Tuner function |
| 15 | MSCD | I/O | Manual Selection S/W for Compact Disc |
| 16 | MSTA | I/O | Manual Selection S/W for Tape |
| 17 | MSAU | I/O | Manual Selection S/W for Aux |
| 18 | MSVT | I/O | Manual Selection S/W for VTR |
| 19 | D-GND | – | Digital GND |
| 20 | RESET | – | RESET |
| 21 | MUTIN | I | Not use |
| 22 | CEIN | I | Enable Input from MICOM |
| 23 | CLIN | I | Clock Input from MICOM |
| 24 | DAIN | I | DATA Input from MICOM |
| 25 | u/M SEL | – | u-com/Manual Selection |
| 26 | MUTIM | – | Muting time decision during Manual Control |
| 27 | V _{CC} | – | V _{CC} (Digital) |
| 28 | V _{CC} | – | V _{CC} (Analog) |
| 29 | BFL2 OUT | O | Left Channel 2nd Buffer Output pin |
| 30 | BFL2 NF | I | Left Channel 2nd Buffer Negative feedback |
| 31 | BFL2 INT | I | Left Channel 2nd Buffer Input |

Pin Description (Continued)

| Pin No | Symbol | I/O | Description |
|--------|-------------------|-----|--|
| 32 | MFL1 OUT | O | Left Channel 1st Buffer Output |
| 33 | RRF/L | – | Ripple Rejection filter |
| 34 | LHV _{CC} | – | Left Channel 1/2 V _{CC} |
| 35 | PHLOUT | O | Left Channel PHONO Ouput |
| 36 | PHLNF | I | Left Channel PHONO AMP Negative feedback |
| 37 | PHLIN | I | Left Channel PHONO AMP Input |
| 38 | TULIN | I | Left Channel Tuner Input |
| 39 | CDLIN | I | Left Channel Compact Disc Input |
| 40 | TALIN | I | Left Channel TAPE Input |
| 41 | AULIN | I | Left Channel Aux Input |
| 42 | VTLIN | I | Left Channel VTR Input |
| 43 | A-GND | – | Analog GND |
| 44 | VTR IN | I | Right Channel VTR Input |
| 45 | AUR IN | I | Right Channel Aux Input |
| 46 | TAR IN | – | Right Channel TAPE Input |
| 47 | CDRIN | I | Right Channel Compact Disc Input |
| 48 | TURIN | I | Right Channel Tuner Input |

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

| Characteristic | Symbol | Value | Unit |
|-----------------------|------------------|-----------|------|
| Supply Voltage | V _{CC} | 12 | V |
| Power Dissipation | P _D | 400 | mW |
| Operating Temperature | T _{OPR} | -20 – 75 | °C |
| Storage Temperature | T _{STG} | -55 – 125 | °C |

ELECTRICAL CHARACTERISTICS(V_{CC} = 12V, f = 1kHz unless otherwise specified).

| Characteristic | | Symbol | Test Conditions | SPEC | | | UNIT |
|-------------------------------|-----------------|----------------------|---|------|------|------|------------------|
| | | | | Min. | Typ. | Max. | |
| Quiescent Circuit Current | Manual | I _{CCQ1} | LED Current | 25 | 40 | 55 | mA |
| | u-Com | I _{CCQ2} | Exception | 20 | 35 | 50 | |
| Function Beginning Selection | | V _{fo} | Manual Mode | – | 0.2 | 0.5 | V |
| Function Indication Selection | | V _{f1} | Manual / u-Com | – | 0.2 | 0.5 | V |
| Phono Amp Close Loop Gain | | G _{VP} | f = 1kHz | 34 | 35 | 36 | dB |
| 1st Amp Close Loop Gain | | G _{VB1} | f = 1kHz | 5 | 6 | 7 | dB |
| 2nd Amp Close Loop Gain | | G _{VB2} | f = 1kHz | 5 | 6 | 7 | dB |
| 1st Mic Amp Gain | | G _{vm1} | f = 1kHz | 33 | 34 | 35 | dB |
| 2st Mic Amp Gain | | G _{vm2} | f = 1kHz | 5 | 6 | 7 | dB |
| Analog S/W Max Input Voltage | | V _{in amx} | f = 1kHz, THD = 1% | 1.2 | 1.5 | – | V _{rms} |
| 1st Buffer Max Ouput Voltage | | V _{ob 1max} | f = 1kHz, THD = 1% | 2.5 | 3.0 | – | V _{rms} |
| 2st Buffer Max Ouput Voltage | | V _{obmax} | f = 1kHz, THD = 1% | 2.5 | 3.0 | – | V _{rms} |
| 1st Mic Max Output Voltage | | V _{om1max} | f = 1kHz, THD = 1% | 1.2 | 1.5 | – | V _{rms} |
| Function Cross Talk | | CT1 | f = 1kHz R _G = 4.7kΩ V _{OB2} = 1V _{RMS} | 75 | 85 | – | dB |
| Channel Cross Talk | Phono | CT2 | f = 1kHz R _G = 0Ω | 55 | 65 | – | dB |
| | Phono exception | CT3 | V _{OB2} = 1V _{RMS} | 65 | 75 | – | |
| S/N ratio | Phono | S/N 1 | f = 1kHz R _G = 0Ω | 55 | 65 | – | dB |
| | Phono exception | S/N2 | V _{OB2} = 200mV _{RMS} | 75 | 85 | – | |
| THD | Phono | THD1 | f = 1kHz R _G = 0Ω | – | 0.05 | 0.1 | % |
| | Phono exception | THD2 | V _{OB2} = 1V _{RMS} | – | 0.03 | 0.05 | |

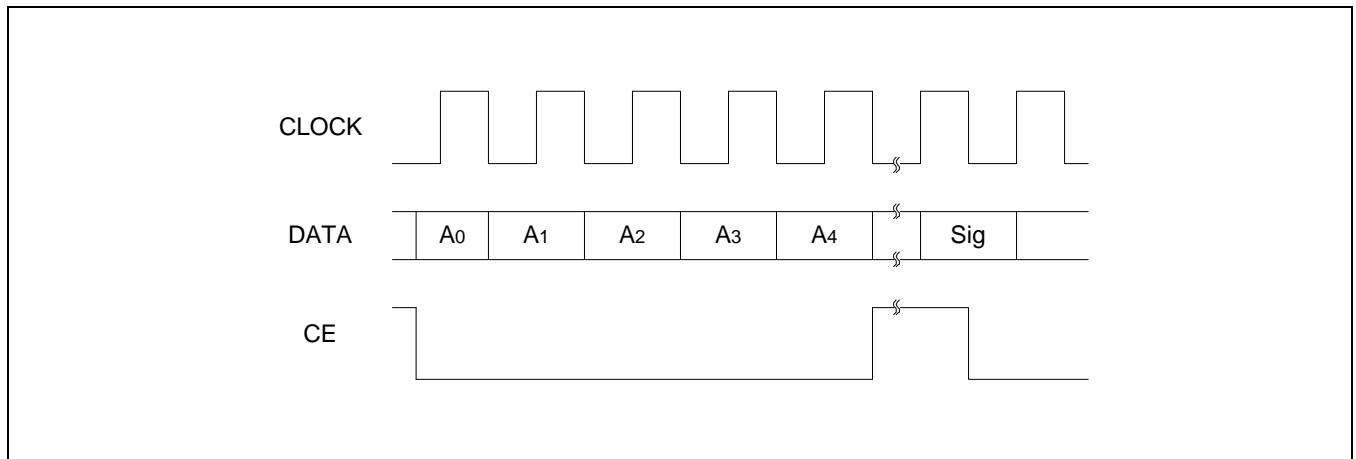
APPLICATION INFORMATION

Logic Part

First of all, if you let the MICOM operate, pin 25 has to connect to the GND.

The S1A0293A obtains the MICOM data such as the following: timing diagram, and then, converts the data from serial to parallel type by the use of internal analog switches.

The signal input from MICOM, consists of the 12-bit serial data, and the data consists of the 4-bit address and the 8-bit data for the selection of the switch input.



DATA INPUT METHOD

| | ADDRESS | DATA |
|-------|---------|----------|
| PHONO | 0101 | 10000000 |
| TUNER | 0101 | 01000000 |
| CD | 0101 | 00100000 |
| TAPE | 0101 | 00010000 |
| AUX | 0101 | 00001000 |
| VTR | 0101 | 00000100 |

APPLICATION CIRCUIT

