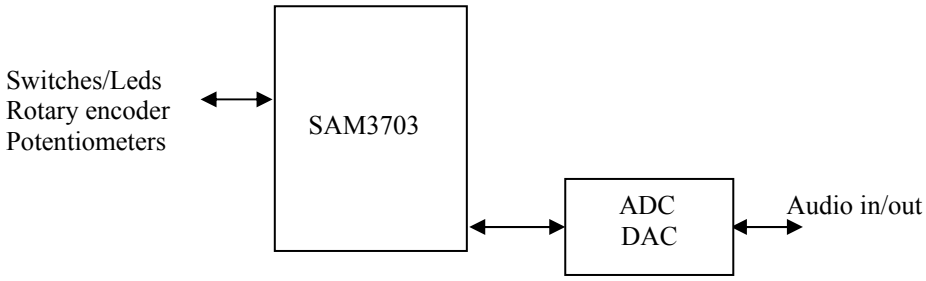
# 3703-EK2_Rev1

## Evaluation Board and Reference Design for Low-Cost Effect Module with SAM3703

### Overview

3703-EK2 is a high quality stand-alone evaluation and reference board based on SAM3703 dedicated to low cost and low power audio effect applications. Typical power consumption with standard full featured firmware is 360mW.
Beside the SAM3703 the 3703-EK hardware includes:

- Economy Audio CODEC Philips UDA1345TS (96dB SNR)




### Operating Mode

3703-EK operates on two modes:

- Program mode (STIN high at power-up): The software tools are enabled to program the internal EEPROM for stand alone mode.
- Stand-alone mode (STIN low at power-up): In this mode the SAM3703 executes the program from its embedded EEPROM and can talk with external devices via the PANEL interface and/or the MIDI serial port.

### Connectors Configuration

| Reference | Type | Name | Description |
|---|---|---|---|
| J1 | DC Plug | +9/12VDC | Power Supply, 9V…12V, minus on dip |
| *J2* | *1*2 (Not Mounted)* | *+9/12VDC* | *Power Supply, 9V…12V* |
| J3 | Jack 6.35 (Mono) | GUIT/MIC/LINE IN 1 | Audio Input 1 for Guitar, Mike or Line level signal |
| J4 | Jack 6.35 (Mono) | GUIT/MIC/LINE IN 2 | Audio Input 2 for Guitar, Mike or Line level signal |
| *J5* | *1*3 (Not Mounted)* | *MIC/LINE IN 1-2* | *Stereo Audio Input (stereo)* |
| J6 | RCA | LINE OUT LEFT | Left Audio Output |
| J7 | RCA | LINE OUT RIGHT | Right Audio Output |
| *J8* | *1*3 (Not Mounted)* | *LINE OUT STEREO* | *Stereo Audio Output* |
| J9 | HE10-2*10 | FRONT PANEL | Panel interface |
| J10 | 1*6 | PROGRAM/MIDI | Serial port for remote control from PC and programming of SAM3703 EEPROM memory. Compatible with Dream RS232 interface DBG-IF3 |
| J11 | 1*2 | RESET | External Reset. Compatible with Dream RS232 interface DBG-IF3 |
| *J12* | *HE10-2*7 (Not Mounted)* | *OPTIONS* | *Connection for extended panel* |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## Jumper Configuration

| Reference | Default Setting | Description |
|---|---|---|
| JD1 | A Closed<br>B-Open | Crystal frequency select:<br>• JD1 A-Closed/B-Open, JD2 A-Closed/B-Open: 12.288 MHz<br>• JD1 B-Closed/A-Open, JD2 A-Closed/B-Open: 11.2896 MHz<br>• JD1 A-Closed/B-Open, JD2 B-Closed/A-Open: 9.6 MHz<br>• JD1 B-Closed/A-Open, JD2 B-Closed/A-Open: 6.9552 MHz |
| JD2 | A Closed<br>B-Open | |
| JD3 | Closed | For test and consumption measurement |
| JD4-JD5 | Open | Input stage Z and gain – Channel 2:<br>• JD4-JD5-Open: Z=1Mohm, Gain= -6dB to 28dB<br>• JD4-JD5-Closed: Z=11kohm, Gain= 0dB to 34dB |
| JD6-JD7 | Open | Input stage Z and gain – Channel 1:<br>• JD6-JD7-Open: Z=1Mohm, Gain= -6dB to 28dB<br>• JD6-JD7-Closed: Z=11kohm, Gain= 0dB to 34dB |
| JD8 | Open | • Open: ADC GAIN=0dB<br>• Closed: ADC GAIN=+6 dB |
| JD9 | Open | Default open for use of Right ADC channel for Poti scanning (VIN pin on Front Panel connector).<br>Can be closed for Audio input from GUIT/MIC/LINE IN 2 |


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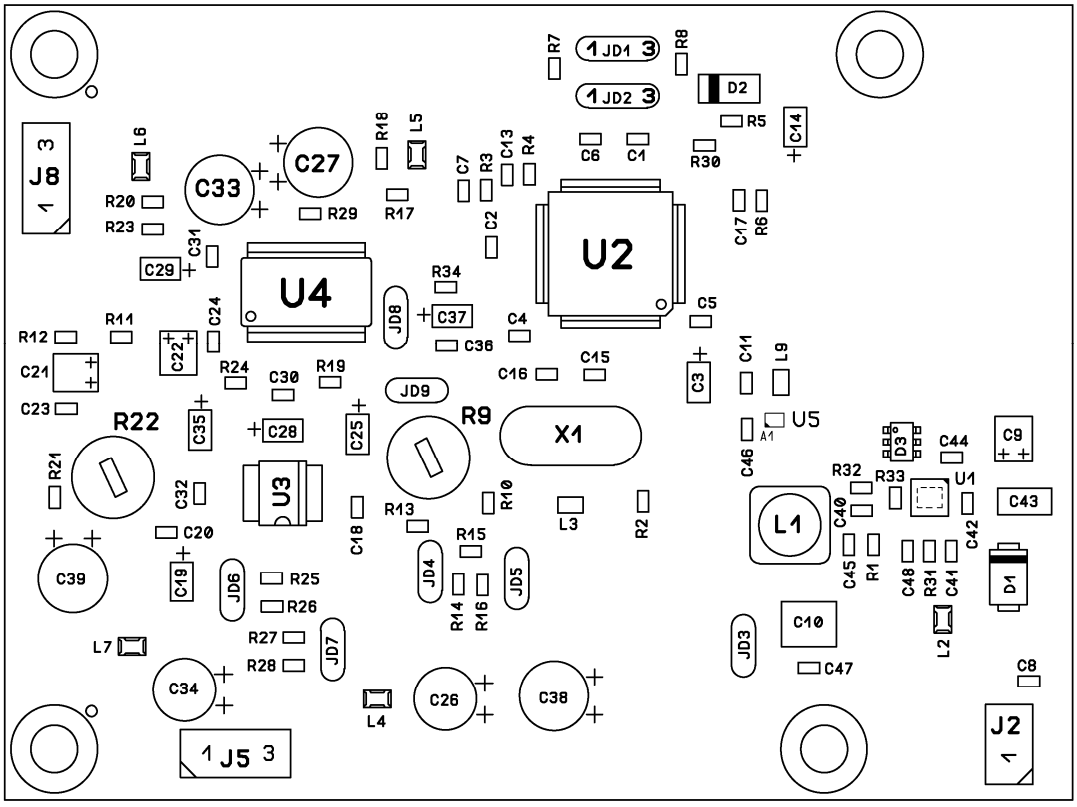
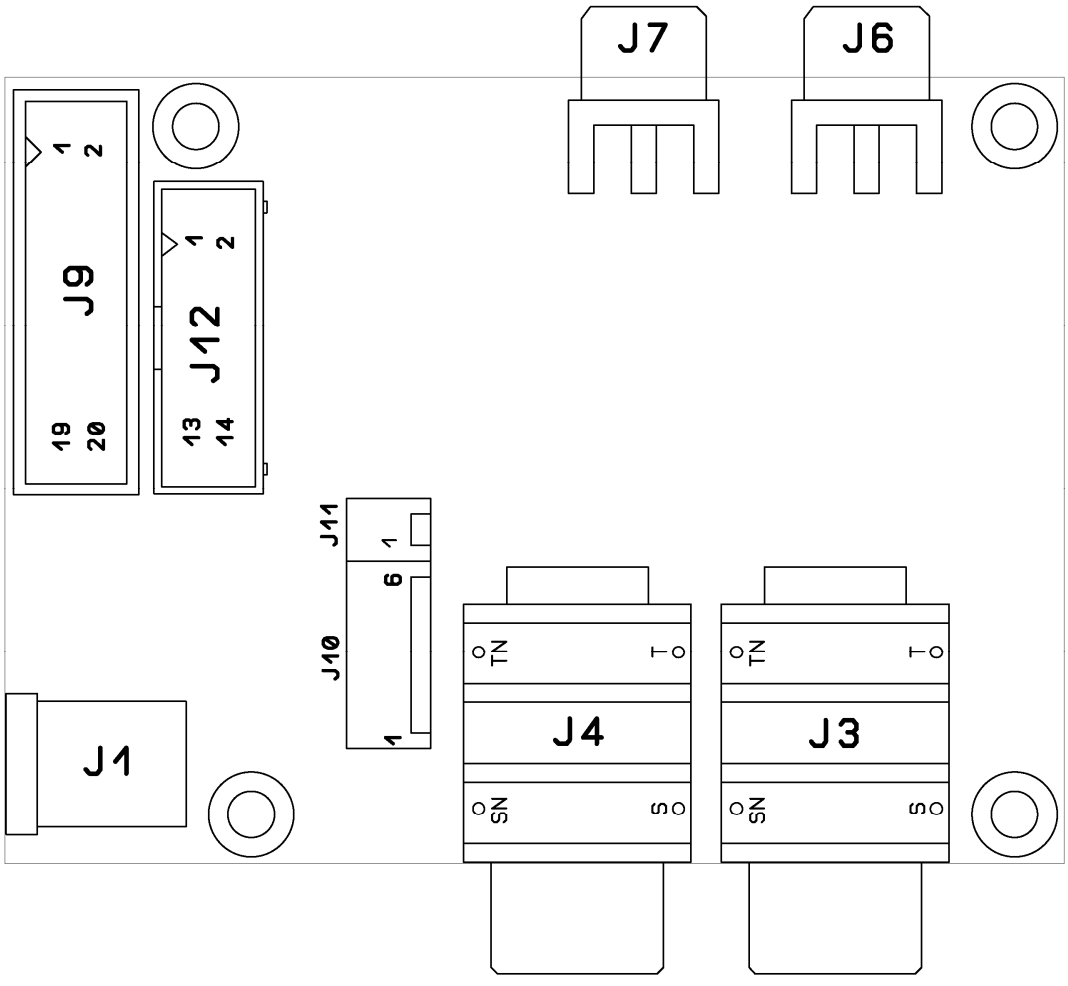
## Layout





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## Bill of Material

3703-EK2.DSN Revision: 1
Bill Of Materials July 24,2009 12:22:46
Page 1

| Item | Quantity | Reference | Part | Manufacturer | Reference |
|---|---|---|---|---|---|
| | | | | | |
| 1 | 14 | C1,C2,C4,C5,C6,C7,C8, C13,C20,C23,C24,C30, C31,C36 | 100nF | | |
| 2 | 4 | C3,C28,C29,C37 | 10µF-T-6V | | |
| 3 | 1 | C9 | 10µF-T-16V | | |
| 4 | 1 | C10 | 22µF-X5R | | |
| 5 | 1 | C11 | 10µF-X7R-6.3V | | |
| 6 | 1 | C14 | 1uF-T | | |
| 7 | 2 | C15,C16 | 22pF | | |
| 8 | 1 | C17 | 470pF | | |
| 9 | 2 | C18,C32 | 220pF | | |
| 10 | 1 | C19 | 10uF-T-6V | | |
| 11 | 2 | C21,C22 | 47µF-T-4V | | |
| 12 | 2 | C25,C35 | 1µF-T | | |
| 13 | 2 | C26,C34 | 47nF-MKT | | |
| 14 | 2 | C27,C33 | 10µF-Low Dist | PANASONIC | EC1AHAM100X |
| 15 | 2 | C38,C39 | 4.7µF-Low dist | PANASONIC | EC1AHAM4R7X |
| 16 | 1 | C40 | 10nF-X7R | | |
| 17 | 2 | C41,C47 | 100nF-X5R | | |
| 18 | 1 | C42 | 100nF-X7R-25V | | |
| 19 | 1 | C43 | 4.7µF-X7R-25V | | |
| 20 | 1 | C44 | 22nF-X7R-16V | | |
| 21 | 1 | C45 | 3.3nF-X7R | | |
| 22 | 1 | C46 | 4.7µF-X7R-6.3V | | |
| 23 | 1 | C48 | 22nF-X7R | | |
| 24 | 1 | D1 | CD214A-B340LF | BOURNS | CD214A-B340LF |
| 25 | 1 | D2 | LL4148 | VISHAY | LL4148 |
| 26 | 1 | D3 | ZLLS2000 | ZETEX | ZLLS2000 |
| 27 | 2 | JD1,JD2 | SOLDER PAD2 | | |
| 28 | 6 | JD3,JD4,JD5,JD6,JD7, JD8 | SOLDER PAD | | |
| 29 | 1 | JD9 | SOLDER PAD | | |
| 30 | 1 | J1 | DC PLUG | 3E | LD02.02 |
| 31 | 1 | J2 | N.M. | | |
| 32 | 2 | J3,J4 | NMJ4HFD2 | NEUTRIK | NMJ4HFD2 |
| 33 | 2 | J5,J8 | N.M. | | |
| 34 | 2 | J6,J7 | RCA_JACK | 3E | 10.575N |
| 35 | 1 | J9 | HEAD_10X2 | | |
| 36 | 1 | J10 | MLSS100-06 | ITW PANCON | MLSS100-06 |
| 37 | 1 | J11 | MLSS100-02 | ITW PANCON | MLSS100-02 |
| 38 | 1 | J12 | N.M. | | |
| 39 | 1 | L1 | 7447785147 | WURTH | 7447785147 |
| 40 | 1 | L2 | NFM21PC104R1E3 | MURATA | NFM21PC104R1E3 |
| 41 | 1 | L3 | 742792093 | WURTH | 742792093 |


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| Item | Quantity | Reference | Part | Manufacturer | Reference |
|---|---|---|---|---|---|
| | | | | | |
| 42 | 4 | L4,L5,L6,L7 | NFM21CC102R1H3 | MURATA | NFM21CC102R1H3 |
| 43 | 1 | L9 | LQM21PN1R0M | MURATA | LQM21PN1R0MC0 |
| 44 | 1 | R1 | 1.65k | | |
| 45 | 1 | R2 | 330 | | |
| 46 | 2 | R3,R4 | 4.7k | | |
| 47 | 5 | R5,R16,R18,R23,R28 | 10k | | |
| 48 | 5 | R6,R10,R13,R21,R25 | 1k | | |
| 49 | 3 | R7,R8,R30 | 100k | | |
| 50 | 2 | R9,R22 | 50k TRIM | BOURNS | POT-3329H |
| 51 | 2 | R11,R12 | 2.2k | | |
| 52 | 4 | R14,R15,R26,R27 | 510k | | |
| 53 | 2 | R17,R20 | 100 | | |
| 54 | 4 | R19,R24,R29,R34 | 0 | | |
| 55 | 1 | R31 | 47k | | |
| 56 | 1 | R32 | 6.8k | | |
| 57 | 1 | R33 | 4.11k | | |
| 58 | 1 | U1 | LM34914 | NATIONAL | LM34914 |
| 59 | 1 | U2 | SAM3703 | DREAM | SAM3703 |
| 60 | 1 | U3 | OPA2353 | BURR-BROWN | OPA2353 |
| 61 | 1 | U4 | UDA1345TS | PHILIPS | UDA1345TS |
| 62 | 1 | U5 | LM3679 | NATIONAL | LM3679TL-1.8 or LM3679UR-1.8 |
| 63 | 1 | X1 | 12.2880 MHz | | |


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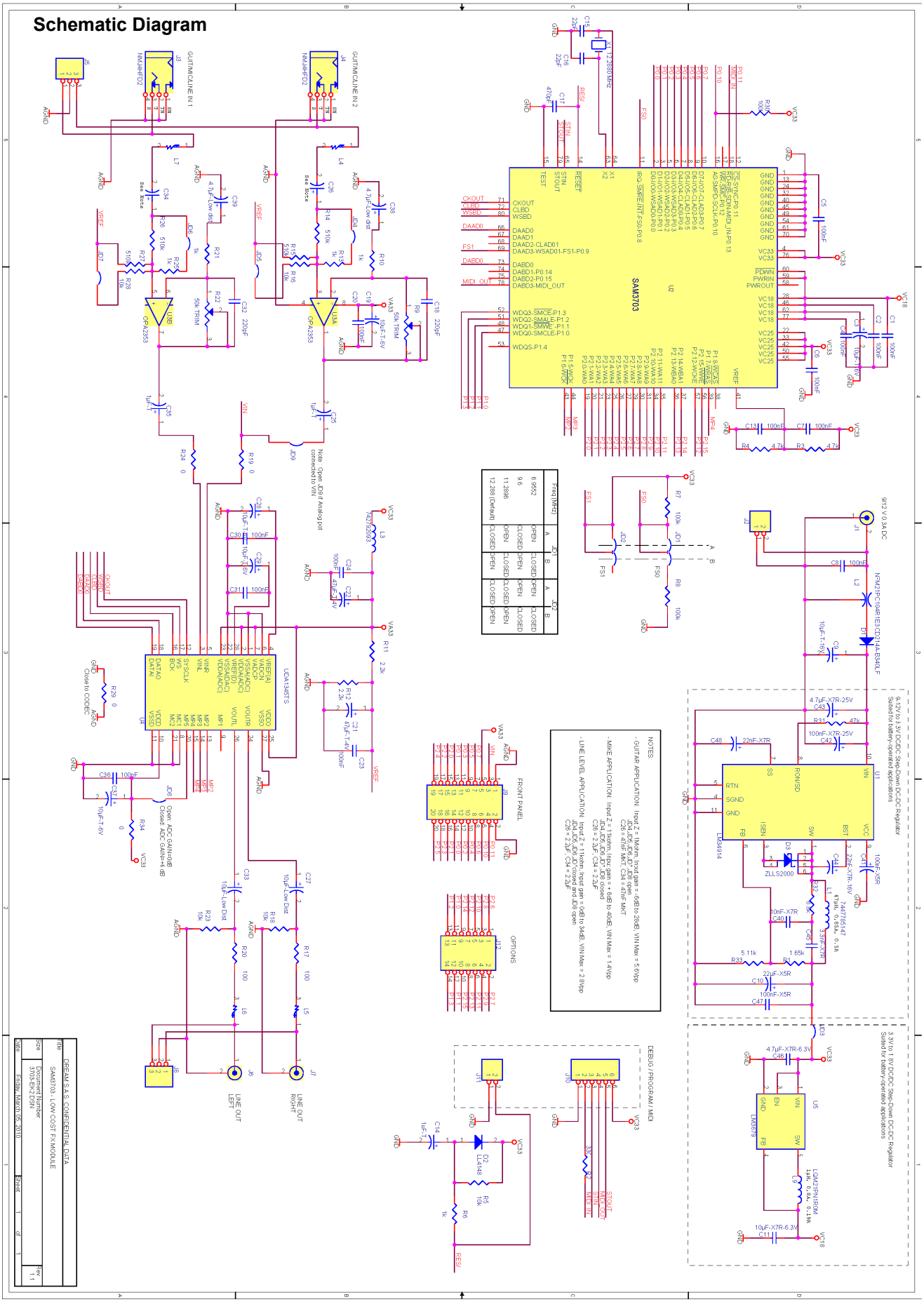
## Schematic Diagram





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