FXCore Module - Datasheet

1 Introduction

FXCore Module is an extremely compact stereo development board for the Experimental Noize FXCore DSP. It makes the FXCore breadboard friendly and easily incorporated in a project.

The power module assures very efficient power delivery for a very large range of input voltage. The micro-controller allows for a very easy program selection with a single potentiometer.

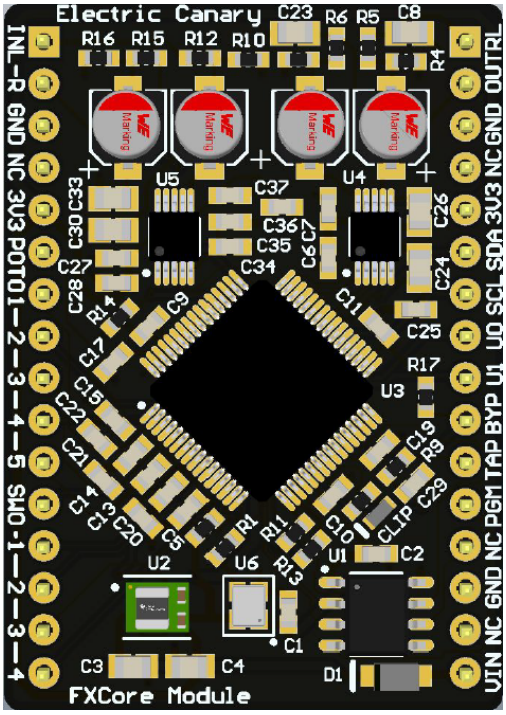
The FXCore Module opens the door to a world of powerful DSP effects with a plethora of controls.

2 Features

- Stereo Line In & Out
- Onboard Step-Down Module 4-36V Input, 3.3V Output
- Easy Analog Program Selection
- Onboard Clipping LED
- Extremely Compact Design
- Breadboard Compatible
- Easy Access to Tap-Tempo, Bypass & User Outputs

Contents

3 Pin Configuration



N°	Name	I/O	Description
1	INL	I	Left Line Audio Input
2	INR	I	Right Line Audio Input
3	GND	I	Ground
4	NC	X	Not Connected
5	3V3	I	+3.3V Power Input
6	POT0	I	Analog Input for Potentiometer 0
7	POT1	I	Analog Input for Potentiometer 1
8	POT2	I	Analog Input for Potentiometer 2
9	POT3	I	Analog Input for Potentiometer 3
10	POT4	I	Analog Input for Potentiometer 4
11	POT5	I	Analog Input for Potentiometer 5
12	SW0	I	Digital Input for Switch 0
13	SW1	I	Digital Input for Switch 1
14	SW2	I	Digital Input for Switch 2
15	SW3	I	Digital Input for Switch 3
16	SW4	I	Digital Input for Switch 4

Table 1: Pin Configuration

N°	Name	I/O	Description
17	VIN	I	Power Module Input (4.5V to 36V)
18	NC	X	Not Connected
19	GND	I	Ground
20	NC	I/O	Not Connected in Normal Operation (UPDI Pin of U1)
21	PGM	I	Analog Input for Selecting one of the 16 Programs
22	TAP	I	Digital Input for Tap Tempo
23	BYP	I	Digital Input for Bypass
24	U1	O	Digital User 1 Output
25	U0	O	Digital User 0 Output
26	SCL	I/O	Serial Clock Wire of the FXCore I2C Programming Bus
27	SDA	I/O	Serial Data Wire of the FXCore I2C Programming Bus
28	3V3	I	+3.3V Power Input
29	NC	X	Not Connected
30	GND	I	Ground
31	OUTR	O	Right Line Audio Output
32	OUTL	O	Left Line Audio Output

Table 2: Pin Configuration (continued)

4 Absolute Maximum Ratings

Parameter	Min	Max	Unit
Storage Temperature	-40	+140	°C
Operating Temperature	-30	+80	°C
+3.3V Voltage	-0.3	+6	V
VIn Voltage	-0.3	+42	V
Audio Line In Voltage	-0.7	+7	V
Audio Line In Current	-10	+10	mA
PGM Pin Voltage	-0.5	+3.8	V
PGM Pin Current	-40	+40	mA

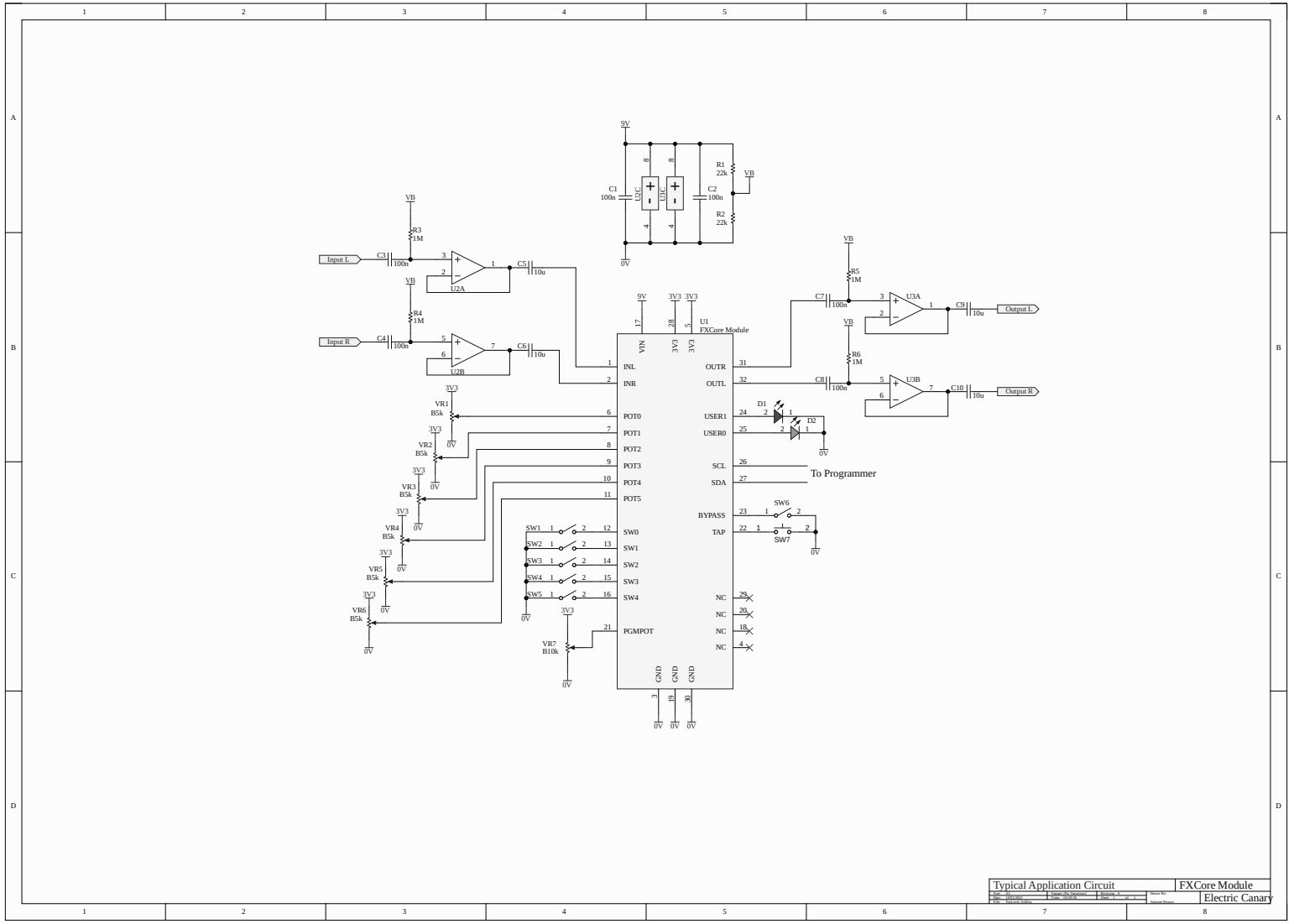
Table 3: Absolute Maximum Ratings

5 Characteristics

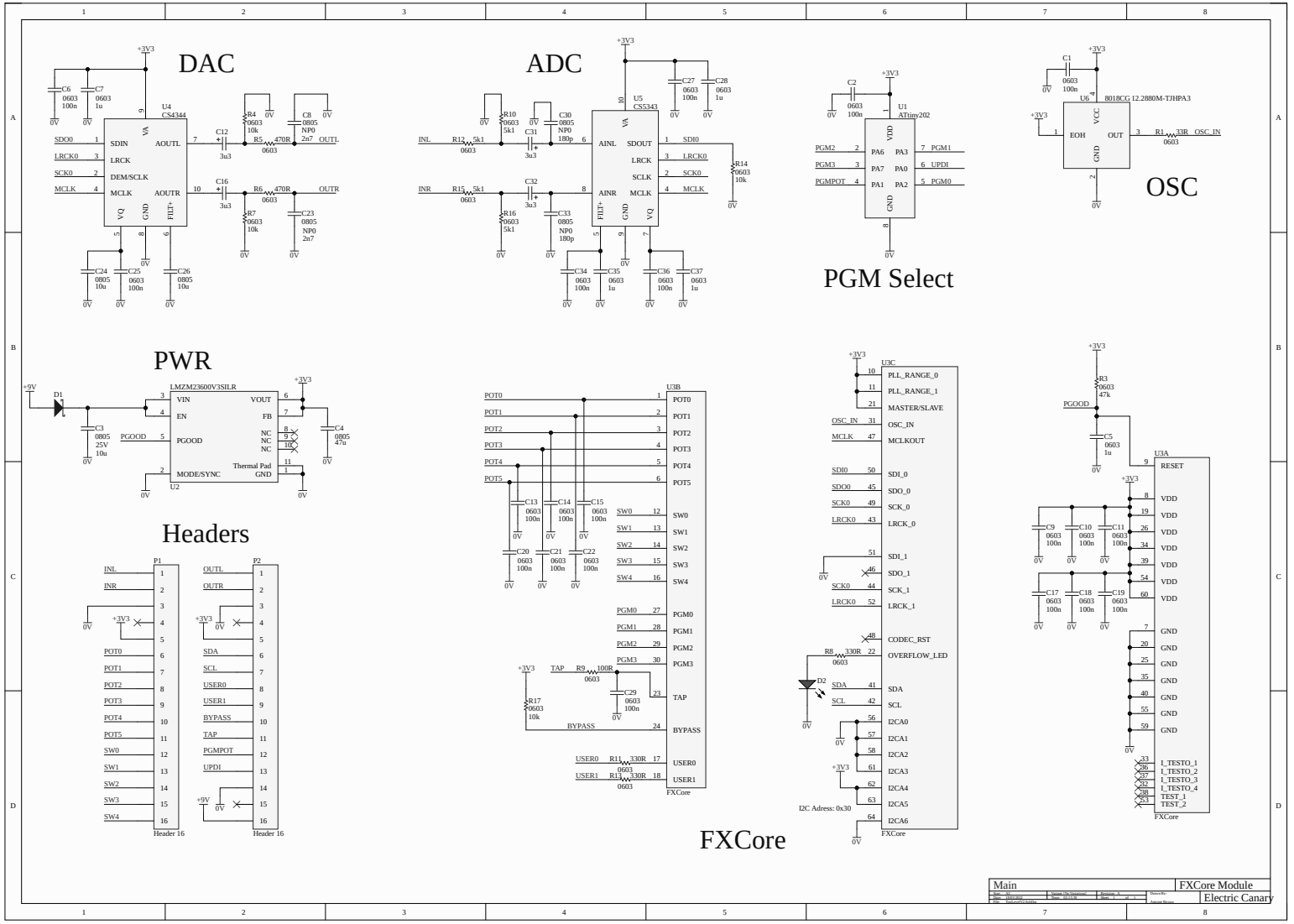
Parameter	Min	Typ.	Max	Unit
3.3V Power Supply	3.2	3.3	3.42	V
VIn Power Supply	4	9	36	V
3.3V Current	-	155	-	mA
Power Module Supply Switching Frequency	675	750	825	kHz
POT0 – POT5 source impedance	-	-	10	kΩ
Input low voltage to SWO – SW4, ENABLE and TAP	GND	-	0.66	V
Input high voltage to SWO – SW4, ENABLE and TAP	2.64	-	3.3	V
Output low voltage to USER0 & USER1	0	-	0.4	V
Output high voltage to USER0 & USER1	2.4	-	3.3	V
Estimated FLASH endurance (Erase/Write cycles)	-	10 000	-	-
Sample rate range	9.766	48	48.046	kHz
Dynamic Range	86	94	-	dBA
Full Scale Input Voltage	3.7	3.75	3.8	Vpp
Full Scale Output Voltage	2	2.15	2.3	Vpp

Table 4: Characteristics

6 Typical Application Schematic



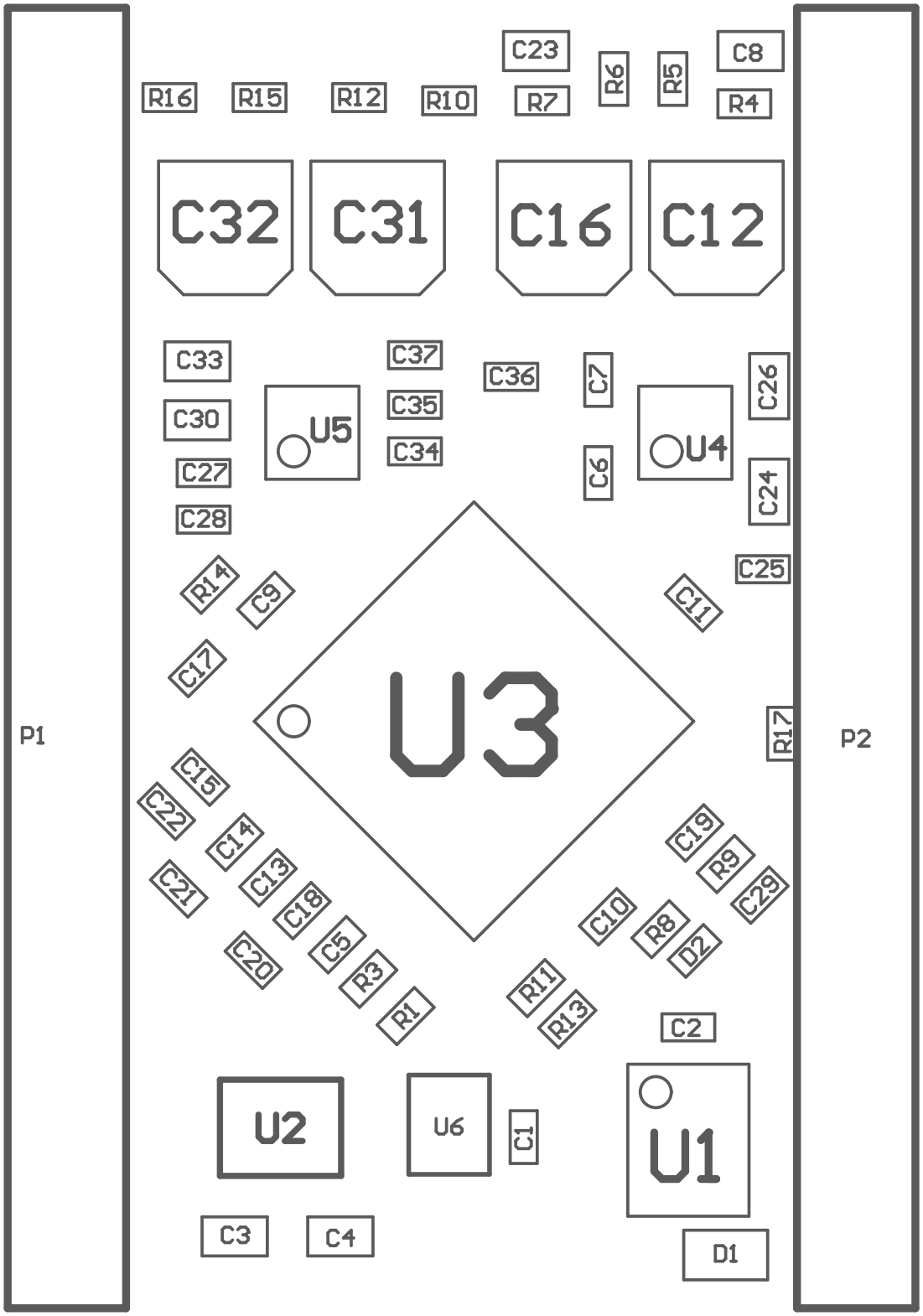
7 Schematic



8 Bill of Materials

Name	Value
R1	33Ω
R3	47kΩ
R4, R7, R14, R17	10kΩ
R5, R6	470Ω
R8, R11, R13	330Ω
R9	100Ω
R10, R12, R15, R16	5.1kΩ
C1, C2, C6, C9, C10, C11, C13, C14, C15, C17, C18, C19, C20, C21, C22, C25, C27	100nF
C3, C24, C26	10μF
C4	47μF
C5, C7, C28, C35, C37	1μF
C8, C23	2.7nF
C12, C16, C31, C32	3.3μF
D1	Schottky
D2	LED
P1, P2	16 Pin Header
U1	ATtiny202
U2	LMZM23600V3SILR
U3	FXCore
U4	CS4344
U5	CS5343
U6	12.288MHz Oscillator

9 Assembly


P1
P2
C23
R6
R5
C8
R16
R15
R12
R10
R7
R4
C32
C31
C16
C12
C33
C37
C36
C7
C26
C30
U5
C35
U4
C27
C34
C6
C24
C28
C25
R14
C9
C11
C17
U3
R17
C15
C22
C19
C14
R9
C13
C29
C21
C18
C10
R8
C5
D2
C20
R3
R11
R1
R13
C2
U2
U6
C1
U1
C3
C4
D1

10 Dimensions