



EI Labs India Pvt. Ltd.

Embedded Devices



LinSeedV1

Product Technical Information

Doc Name : LinV1DS version 1.0

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NOTE

The LinSeed series of SoftChips is a tight system integration of third party semiconductor devices. EILABS India has tried to provide accurate information to the best of its knowledge. However, no responsibility is assumed for its use and such information is provided “as is” without any warranty of any kind, implied or otherwise. The device specification is subject to change as per the continuous improvement policy of EILABS India.

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1. Overview

LinSeedV1 is a state of the art, 60 pin Integrated SoftChip and is the first in a series of LinSeed modules. The SoftChip concept encapsulates the hardware completely from a user perspective and provides them with a very high level software API for configuration, control and data processing. The LinSeedV1 is a 32 bit processing module with standard Linux API for the user. The hardware details are required only to the extent of the external interfaces on the user board for the purposes of further system development. Traditional SoC programming information like internal registers, peripherals etc are not required for the system designer of LinSeedV1. All peripherals are accessed through appropriate Linux drivers. This fundamentally is a big value proposition of the offering.

LinSeedV1 is tight system integration on a 10 layer PCB of the following

- ARM 9 processor running at 180 MHz
- Built-in 16MB Flash and 32MB SDRAM.
- Linux kernel ported into Flash and Ready to run when powered up.

The entire circuit design is enclosed in a metal can, which acts as the EMI shield. New applications with user defined I/O up and running in less than a month by plugging in the LinSeedV1 module in user-defined 2 / 4 layer PCB.

Linseed supports the following Peripherals/ GPIO's.

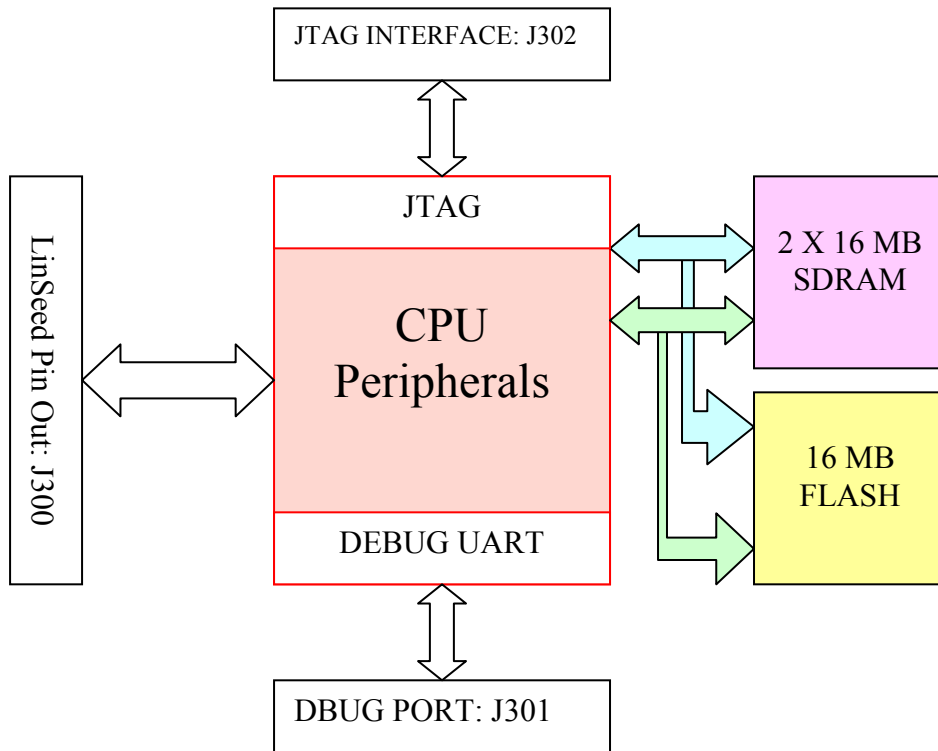
a.	USB Host:	2 ports.
b.	USB Device:	1 port.
c.	Serial Synchronous Communications:	3 ports
d.	I2C I/F:	1 port.
e.	Full function UART:	1 port.
f.	Half function UART:	1 port.
g.	Debug.	1 port.
h.	RTC	
i.	GPI/O's	12.
j.	Ethernet.	Optional.
k.	SPI F:	3 ports.

Two different power supply voltages are required to power the LinSeed.

1. 1.8 V D.C. This is used to power the core of the ARM 9 Processor.
2. 3.3V D.C. This is used to power the External Bus I/O Lines and the Peripheral I/O lines.

BLOCK DIAGRAM

The block schematic of linseed, 60 pin soft chip with 1.27mm pitch, connectors of 1X30, placed as DIP connector is as shown below.



MEMORY MAP

Memory	Memory range
Flash	0x1000 0000 - 0x10FF FFFF
SDRAM	0x2000 0000 - 0x21FF FFFF

2. LinSeed Functional Pin Out

VCC33	1	POWER	EIL LinSeed	GND	60	GND
VCC33	2			GND	59	GND
VCC33	3			IRQ	58	IRQ0
VCC33	4				57	IRQ1
RF	15	SSC (AUDIO)		GPIO	53	GPIO_0
RK	6				42	GPIO_1
RD	5				40	GPIO_2
TD	17				51	GPIO_3
TK	16				43	GPIO_4
TF	18				52	GPIO_5
RTS	13	FF USART			55	GPIO_6
DSR	12				56	GPIO_7
CTS	14				54	GPIO_8
DCD	11				41	GPIO_9
RDX	9				44	GPIO_10
TDX	7			50	GPIO_11	
DTR	10			SPI	47	SPICK
RI	8	38			MISO	
RX0	24	46			MOSI	
TX0	23	48			SPI_CS0	
TWCK	27	TWI	45	SPI_CS1		
TWD	28		49	SPI_CS2		
USB_DP_PUP	25	USB DEVICE	GPIO	39	GPIO_12	
USB_CNXP	26		NRST	37	NRST	
DDP	19		GND	36	GND	
DDM	20	35		GND		
HDPB	29	34		GND		
HDMB	30	USB HOST2	CORE POWER	33	GND	
HDPB	21			32	VCC18	
HDMA	22			31	VCC18	
		USB HOST1				

3. Pin Details

External Connector J300: 2 x 1.27mm berg connector male 1x 30.

PIN. NO.	PIN NAME	FUNCTION	TYPE OF SIGNAL	SIGNAL LEVEL		
				MIN.	TYPICAL	MAX.
01.	VCC33	POWER FOR PERIPHERALS & I/O.	IN	3V.	3.3V.	3.6V
02.	VCC33	POWER FOR PERIPHERALS & I/O.	IN	3V.	3.3V.	3.6V.
03.	VCC33	POWER FOR PERIPHERALS & I/O.	IN	3V.	3.3V.	3.6V
04.	VCC33	POWER FOR PERIPHERALS & I/O.	IN	3V.	3.3V.	3.6V
05.	RD	SSC RCR DATA.	IN		3.3V.	
06.	RK	SSC RCR CLOCK.	IO		3.3V.	
07.	TDX	FF UART TX DATA.	OUT		3.3V.	
08.	RI	FF UART RING INDICATOR.	IN		3.3V.	
09.	RDX	FF UART RX DATA.	IN		3.3V.	
10.	DTR	FF UART DTR.	OUT		3.3V.	
11.	DCD	FF UART DATACARRIER DETECT.	IN		3.3V.	
12.	DSR	FF UART DATASET READY.	IN		3.3V.	
13.	RTS	FF UART RTS.	OUT		3.3V.	
14.	CTS	FF UART CLEAR TO SEND.	IN		3.3V.	
15.	RF	SSC RECEIVER FRAME SYNCHRO.	IO		3.3V.	
16.	TK	SSC TRANSMITTER CLOCK.	IO		3.3V.	
17.	TD	SSC TRANSMITTER DATA.	OUT		3.3V.	
18.	TF	SSC TRANSMITTER FRAME.	IO		3.3V.	
19.	DDP	USB DEVICE PORT DATA +.			ANALOG	
20.	DDM	USB DEVICE PORT DATA -.			ANALOG	
21.	HDP A	USB HOST PORT A DATA+.			ANALOG	
22.	HDMA	USB HOST PORT A DATA -.			ANALOG	
23.	TX0	HALF FUNCTION UART TRANSMITTER.	OUT		3.3V.	
24.	RX0	HALF FUNCTION UART RECEIVER.	IN		3.3V.	
25.	USB DP PUP	PULL UP FOR USB DEVICE.	OUT			

26.	USB CNX	SIGNAL TO CHK. WHETHER HOST IS CONNECTED.	IN			
27.	TWCK	I2C CLOCK.	IO		3.3V.	
28.	TWD	I2C DATA.	IO		3.3V.	
29.	HDPB	USB HOST PORT B DATA+.			ANALOG	
30.	HDMB	USB HOST PORT B DATA -.			ANALOG	
31.	VCC18	POWER FOR CORE.	IN	1.65V.	1.8V.	1.9V.
32.	VCC18	POWER FOR CORE.	IN	1.65V.	1.8V.	1.9V.
33.	GND.	LOGIC GROUND.				
34.	GND	LOGIC GROUND.				
35.	GND	LOGIC GROUND.				
36.	GND	LOGIC GROUND.				
37.	NRST	RESET.	IN			
38.	MISO	SPI MASTER IN SLAVE OUT	IO		3.3V	
39.	GPIO_12	GPIO 12.	IO		3.3V	
40.	GPIO_2	GPIO 02.	IO		3.3V.	
41.	GPIO_9.	GPIO 09.	IO		3.3V	
42.	GPIO_1	GPIO 01.	IO		3.3V.	
43.	GPIO_4	GPIO 04.	IO		3.3V.	
44.	GPIO_10	GPIO 10.	IO		3.3V.	
45.	SPI_CS1	SPI CHIP SELECT 1	OUT		3.3V.	
46.	MOSI	SPI MASTER OUT SLAVE IN.	IO		3.3V.	
47.	SPICK	SPI CLOCK.	IO		3.3V.	
48.	SPI_CS0	SPI CHIPSELECT 0.	IO		3.3V.	
49.	SPI_CS2	SPI CHIP SELECT2.	OUT		3.3V.	
50.	GPIO_11.	GPIO 11.	IO		3.3V.	
51.	GPIO_3	GPIO 03.	IO		3.3V.	
52.	GPIO_5	GPIO 05.	IO		3.3V.	
53.	GPIO_0	GPIO 00.	IO		3.3V.	
54.	GPIO_8	GPIO 08.	IO		3.3v	
55.	GPIO_6	GPIO 06.	IO		3.3V	
56.	GPIO_7	GPIO 07.	IO		3.3V.	
57.	IRQ1	INTERRUPT 1	IN			
58.	IRQ0	INTERRUPT 0	IN			
59.	GND.	LOGIC GROUND	LOGIC GROUND			
60.	GND.	LOGIC GROUND	LOGIC GROUND			

NOTE

The Carrier board should cater to the following:

- a. A stable, 3.3V D.C supply to power the peripherals, memory etc.
- b. A stable 1.8V DC supply to power the Core of LinSeed.
- c. At power on, the Reset pin NRST/, Pin37 of Linseed should be connected to a power on reset circuit, which will keep the NRST/ line low for about 1000 milli

seconds, to allow all the clocks, including the slow clock on the LinSeed module to stabilize before the program execution can begin.

J302 – JTAG Connector:

This connector is used for hardware / software debugging thro JTAG. This is not needed in general, as the LinSeed module comes with Linux ported on to it.

J301 – DEBUG Connector:

Debug UART signals are connected to this connector. All the signals are at CMOS level.

Pin No	Name	Pin Description
1	DBGU_TXD	Debug Transmit Data
2	GND	Ground
3	DBGU_RXD	Debug Receive Data

4. ENVIRONMENTAL

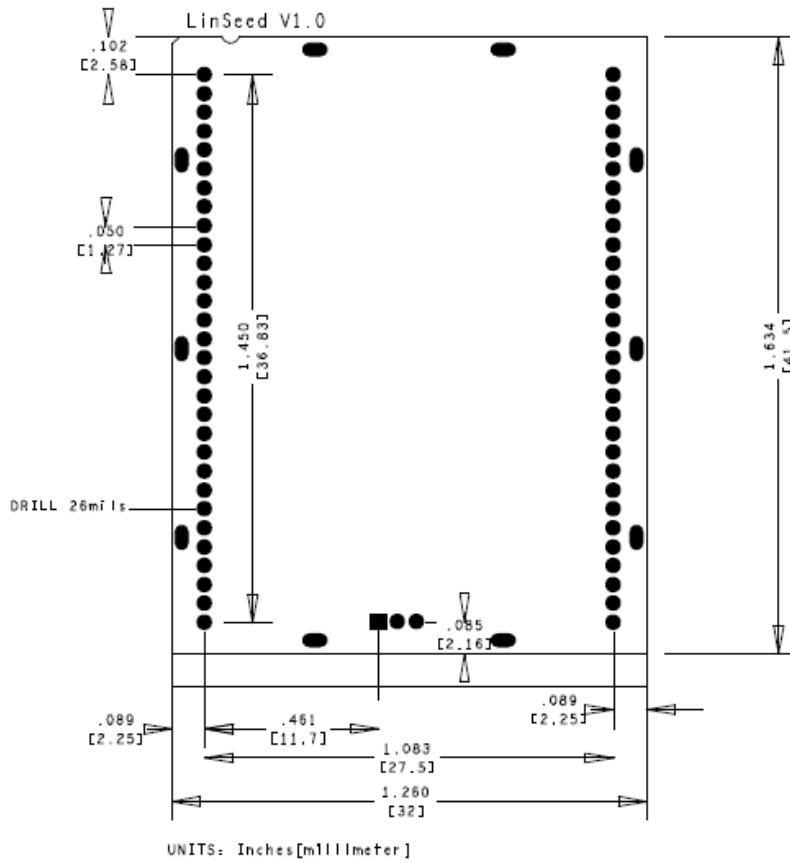
Operating Temperature: **-20 Degrees Celsius to + 85 Degrees Celsius (INDUSTRIAL GRADE)**

ROHS COMPLIANT

5. MECHANICAL

SIZE : 41.5 x 32 mm

The footprint is provided below



6. Example Realization

Please refer to the evaluation board documentation LIN_EVAL_V1