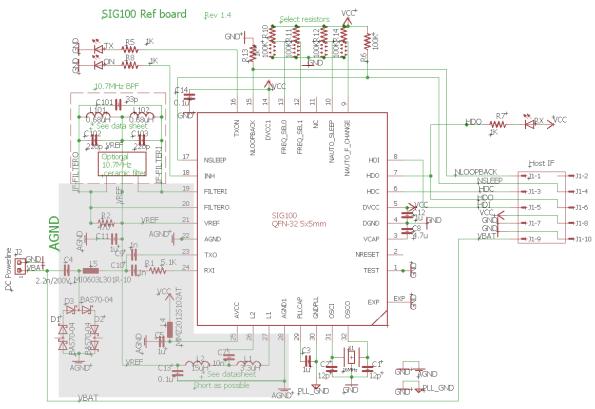


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1. SIG100 Ref board schematic



Preliminary Proprietary Information of Yamar Electronics Ltd.

See SIG100 data sheet http://www.yamar.com/datasheet/DS-SIG100.pdf



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2. SIG100 BOM

Oty Value Device Package Parts Description			T	ı	1	
1 10.7M	Qty	Value	Device	Package		Description
1 10.7M	2	0.1u	C0603	C0603	C13, C14	CAPACITOR
	2	0.68uH	L0805	R0805	-	INDUCTOR
R11, R12, R14	1	10.7M	FILTERSMF	SMF	F1	l ·
1 10n C0603 C0603 C7 CAPACITOR 2 12p C0603 C0603 C1, C2 CAPACITOR 1 15uH L2 R0805 L2 Abracon 815-AIML-0805-150K-T 1 16MHz XTAL_16M IQG2016 X1 NDK NX2016SA-16MHz SMD, 2.0x1.6 mm 3 1K RR0402 R0402 R5, R7, R8 RESISTOR 1 1k* RR0402 R0402 R13 RESISTOR 2 1n C0603 C0603 C9, C10 CAPACITOR 2 1n C0603 C0603 C3, C5, C11, C12 CAPACITOR 1 1.2.2n/200V C0805 C0805 C4 CAPACITOR 2 220p C0603 C0603 C102, C103 CAPACITOR 1 3.3uH L1 R0805 L1 Abracon 815-AIML-0805-3R3K-T 1 33p C0603 C0603 C101 CAPACITOR 1 4.7u C0805 C8	4	100K	R0402-SW	SW-R0402	R11,	SWITCH RESISTOR
2 12p	1	100K	RR0402	R0402	R6	RESISTOR
1 15uH L2 R0805 L2 Abracon 815-AIML-0805-150K-T 1 16MHz XTAL_16M IQG2016 X1 NDK NX2016SA-16MHz SMD, 2.0x1.6 mm 3 1K RR0402 R0402 R5, R7, R8 RESISTOR 1 1k* RR0402 R0402 R13 RESISTOR 2 1n C0603 C0603 C9, C10 CAPACITOR 4 1u C0603 C0603 C3, C5, C11, C12 CAPACITOR 1 2.2n/200V C0805 C0805 C4 CAPACITOR 2 220p C0603 C0603 C102, C103, C103 CAPACITOR 1 3.3uH L1 R0805 L1 Abracon 815-AIML-0805-3R3K-T 1 33p C0603 C0603 C101 CAPACITOR 1 4.7u C0805 C8 CAPACITOR 1 4.7u C0805 C8 CAPACITOR 1 4.7u R0402 R0402 R1 RESISTOR <td>1</td> <td>10n</td> <td>C0603</td> <td>C0603</td> <td>C7</td> <td>CAPACITOR</td>	1	10n	C0603	C0603	C7	CAPACITOR
1 16MHz XTAL_16M IQG2016 X1 NDK NX2016SA-16MHz SMD, 2.0x1.6 mm 3 1K RR0402 R0402 R5, R7, R8 RESISTOR 1 1k* RR0402 R0402 R13 RESISTOR 2 1n C0603 C0603 C9, C10 CAPACITOR 4 1u C0603 C0603 C3, C5, C11, C12 CAPACITOR 1 2.2n/200V C0805 C0805 C4 CAPACITOR 2 220p C0603 C0603 C102, C102, C103 CAPACITOR 1 3.3uH L1 R0805 L1 Abracon 815-AIML-0805-3R3K-T 1 33p C0603 C0603 C101 CAPACITOR 1 4.7u C0805 C8 CAPACITOR 1 4.7u C0805 C8 CAPACITOR 1 4.7u R0402 R0402 R2 RESISTOR 1 5.1K RR0402 R0402 R1 RESISTOR	2	12p	C0603	C0603	C1, C2	CAPACITOR
Mina	1	15uH	L2	R0805	L2	Abracon 815-AIML-0805-150K-T
R8	1	16MHz	XTAL_16M	IQG2016	X1	·
2 1n C0603 C0603 C9, C10 CAPACITOR 4 1u C0603 C3, C5, C11, C12 CAPACITOR 1 2.2n/200V C0805 C0805 C4 CAPACITOR 2 220p C0603 C0603 C102, C103 CAPACITOR 1 3.3uH L1 R0805 L1 Abracon 815-AIML-0805-3R3K-T 1 33p C0603 C0603 C101 CAPACITOR 1 4.7u C0805 C8 CAPACITOR 1 4.7u C0805 C8 CAPACITOR 1 4.7u C0805 C8 CAPACITOR 1 4.7u RR0402 R0402 R2 RESISTOR 1 5.1K RR0402 R0402 R1 RESISTOR 3 BAS70-04 BAS70-04 SOT23 D1, D2, D3 BAS70-04 Silicon Schottky Diodes 1 Host IF 057-010-1 057-010-1 J1 10-pin CONNECTOR 2 LED </td <td>3</td> <td>1K</td> <td>RR0402</td> <td>R0402</td> <td></td> <td>RESISTOR</td>	3	1K	RR0402	R0402		RESISTOR
4 1u C0603 C3, C5, C11, C12 CAPACITOR 1 2.2n/200V C0805 C0805 C4 CAPACITOR 2 220p C0603 C102, C103 CAPACITOR 1 3.3uH L1 R0805 L1 Abracon 815-AIML-0805-3R3K-T 1 33p C0603 C0603 C101 CAPACITOR 1 4.7u C0805 C8 CAPACITOR 1 4.7u RR0402 R0402 R1 RESISTOR 1 5.1K RR0402 R0402 R1 RESISTOR 3 BAS70-04 BAS70-04 SOT23 D1, D2, D3 BAS70-04 Silicon Schottky Diodes 1 Host IF 057-010-1 057-010-1 J1	1	1k*	RR0402	R0402	R13	RESISTOR
C11, C12	2	1n	C0603	C0603	C9, C10	CAPACITOR
2 220p C0603 C102, C103 CAPACITOR 1 3.3uH L1 R0805 L1 Abracon 815-AIML-0805-3R3K-T 1 33p C0603 C0603 C101 CAPACITOR 1 4.7u C0805 C0805 C8 CAPACITOR 1 470 RR0402 R0402 R2 RESISTOR 1 5.1K RR0402 R0402 R1 RESISTOR 3 BAS70-04 BAS70-04 SOT23 D1, D2, D3 BAS70-04 Silicon Schottky Diodes 1 DC Powerline MTA02-100 10X02MTA J2 AMP connector 1 Host IF 057-010-1 057-010-1 J1 10-pin CONNECTOR 2 LED LEDCHIP- LEDG603 LEDG603 RX LED 1 MI0603L301R- MI0603L301R- 10 R0805 L5 Optional for EMC usage LAIRD - MI0603L301R-10, else place 0 Ohm resistor 1 MMZ2012S102 MMZ2012S102 R0805 L4 TDK MMZ2012S102AT	4	1u	C0603	C0603		CAPACITOR
1 3.3uH L1 R0805 L1 Abracon 815-AIML-0805-3R3K-T 1 33p C0603 C0603 C101 CAPACITOR 1 4.7u C0805 C8 CAPACITOR 1 470 RR0402 R0402 R2 RESISTOR 1 5.1K RR0402 R0402 R1 RESISTOR 3 BAS70-04 BAS70-04 SOT23 D1, D2, D3 BAS70-04 Silicon Schottky Diodes 1 DC Powerline MTA02-100 10X02MTA J2 AMP connector 1 Host IF 057-010-1 057-010-1 J1 10-pin CONNECTOR 2 LED LEDCHIP- CHIP- ON, TX LED LED LEDCHIPLED_O GO3 RX LED 1 MI0603L301R- MI0603L301R- 10 RN L5 Optional for EMC usage LAIRD - MI0603L301R-10, else place 0 Ohm resistor 1 MMZ2012S102 MMZ2012S102 R0805 L4 TDK MMZ2012S102AT	1	2.2n/200V	C0805	C0805	C4	CAPACITOR
1 33p C0603 C101 CAPACITOR 1 4.7u C0805 C8 CAPACITOR 1 470 RR0402 R0402 R2 RESISTOR 1 5.1K RR0402 R0402 R1 RESISTOR 3 BAS70-04 BAS70-04 SOT23 D1, D2, D3, D3, D4 BAS70-04 Silicon Schottky Diodes 1 DC Powerline MTA02-100 10X02MTA J2 AMP connector 1 Host IF 057-010-1 057-010-1 J1 10-pin CONNECTOR 2 LED LEDCHIP- LED0603 LED0603 LED LED 1 LED LEDCHIPLED_0 G03 RX LED 1 MI0603L301R- MI0603L301R- 10 R0805 L5 Optional for EMC usage LAIRD - MI0603L301R-10, else place 0 Ohm resistor 1 MMZ2012S102 MMZ2012S102 R0805 L4 TDK MMZ2012S102AT	2	220p	C0603	C0603	-	CAPACITOR
1 4.7u C0805 C8 CAPACITOR 1 470 RR0402 R0402 R2 RESISTOR 1 5.1K RR0402 R0402 R1 RESISTOR 3 BAS70-04 BAS70-04 SOT23 D1, D2, D3 BAS70-04 Silicon Schottky Diodes 1 DC Powerline MTA02-100 10X02MTA J2 AMP connector 1 Host IF 057-010-1 057-010-1 J1 10-pin CONNECTOR 2 LED LEDCHIP- CHIP- CHIP- ON, TX LED LED LEDCHIPLED_0 GO3 RX LED 1 LED LEDCHIPLED_0 GO3 RX LED 1 MI0603L301R- MI0603L301R- 10 R0805 L5 Optional for EMC usage LAIRD - MI0603L301R-10, else place 0 Ohm resistor 1 MMZ2012S102 MMZ2012S102 R0805 L4 TDK MMZ2012S102AT	1	3.3uH	L1	R0805	L1	Abracon 815-AIML-0805-3R3K-T
1 470 RR0402 R0402 R2 RESISTOR 1 5.1K RR0402 R0402 R1 RESISTOR 3 BAS70-04 BAS70-04 SOT23 D1, D2, D3 BAS70-04 Silicon Schottky Diodes 1 DC Powerline MTA02-100 10X02MTA J2 AMP connector 1 Host IF 057-010-1 057-010-1 J1 10-pin CONNECTOR 2 LED LEDCHIP-	1	33p	C0603	C0603	C101	CAPACITOR
1 5.1K RR0402 R1 RESISTOR 3 BAS70-04 BAS70-04 SOT23 D1, D2, D3 BAS70-04 Silicon Schottky Diodes 1 DC Powerline MTA02-100 10X02MTA J2 AMP connector 1 Host IF 057-010-1 057-010-1 J1 10-pin CONNECTOR 2 LED LEDCHIP- LED0603 LED0603 LED 1 LED LEDCHIPLED_0 G03 RX LED 1 MI0603L301R- MI0603L301R- 10 R0805 L5 Optional for EMC usage LAIRD - MI0603L301R-10, else place 0 Ohm resistor 1 MMZ2012S102 MMZ2012S102 R0805 L4 TDK MMZ2012S102AT	1	4.7u	C0805	C0805	C8	CAPACITOR
3 BAS70-04 BAS70-04 SOT23 D1, D2, D3 BAS70-04 Silicon Schottky Diodes D3 1 DC Powerline MTA02-100 10X02MTA J2 AMP connector 1 Host IF 057-010-1 057-010-1 J1 10-pin CONNECTOR 2 LED LEDCHIP- CHIP- CHIP- LED0603 LED0603 LED0603 1 LED LEDCHIPLED_0 CHIPLED_06 RX LED 603 03 03 LEDCHIPLED_06 RX LED 1 MI0603L301R- MI0603L301R- R0805 L5 Optional for EMC usage LAIRD - MI0603L301R-10, else place 0 Ohm resistor 1 MMZ2012S102 MMZ2012S102 R0805 L4 TDK MMZ2012S102AT	1	470	RR0402	R0402	R2	RESISTOR
D3	1	5.1K	RR0402	R0402	R1	RESISTOR
1 Host IF 057-010-1 057-010-1 J1 10-pin CONNECTOR 2 LED LEDCHIP- LED0603 CHIP- LED0603 ON, TX LED 1 LED LEDCHIPLED_0 603 RX LED 1 MI0603L301R- 10 MI0603L301R- 10 R0805 L5 Optional for EMC usage LAIRD - MI0603L301R-10, else place 0 Ohm resistor 1 MMZ2012S102 MMZ2012S102 R0805 L4 TDK MMZ2012S102AT	3	BAS70-04	BAS70-04	SOT23		BAS70-04 Silicon Schottky Diodes
2 LED LEDCHIP- LED0603 CHIP- LED0603 ON, TX LED 1 LED LEDCHIPLED_0 603 CHIPLED_06 03 RX LED 1 MI0603L301R- 10 MI0603L301R- 10 R0805 L5 Optional for EMC usage LAIRD - MI0603L301R-10, else place 0 Ohm resistor 1 MMZ2012S102 MMZ2012S102 R0805 L4 TDK MMZ2012S102AT	1	DC Powerline	MTA02-100	10X02MTA	J2	AMP connector
LED0603	1	Host IF	057-010-1	057-010-1	J1	10-pin CONNECTOR
603 03	2	LED			ON, TX	LED
10 10 MI0603L301R-10, else place 0 Ohm resistor 1 MMZ2012S102 R0805 L4 TDK MMZ2012S102AT	1	LED	_	_	RX	LED
	1			R0805	L5	MI0603L301R-10, else place 0 Ohm
<u> </u>	1		MMZ2012S102 AT	R0805	L4	TDK MMZ2012S102AT
1 SIG100 SIG100 QFN32 U1	1	SIG100	SIG100	QFN32	U1	

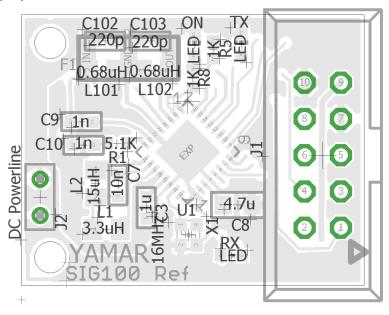


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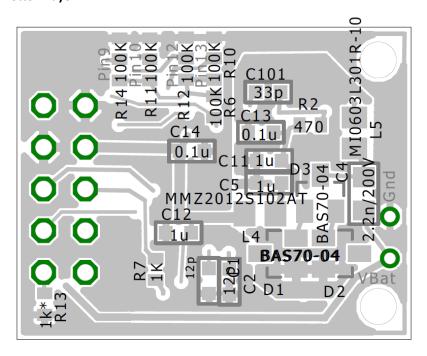
3. SIG100 PCB layout recommendation

Note: Analog ground layer and GND PLL should be connected to the digital ground near the Exp pad.

Top layer

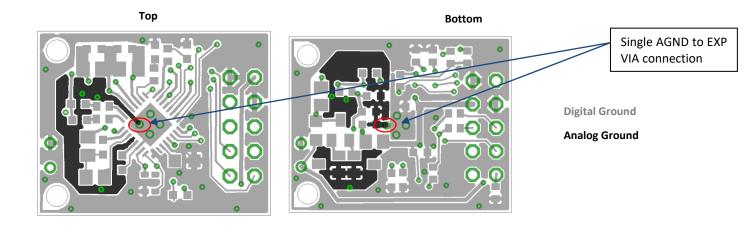


Bottom layer

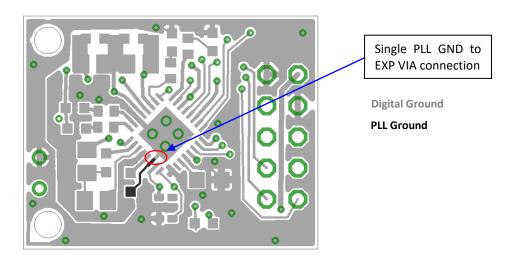




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TOP - PLL Ground connection to EXP



- ✓ VCC and DGND layout traces should be as wide as possible. Connect a 0.1uF capacitor between each VCC and DGND pins, as close as possible to the pins.
- ✓ It is recommended to keep the traces connecting the 3.3V power supply to VCC pins as short as possible with wide PCB traces.
- ✓ Connect AGND to EXP with a single short trace.
- \checkmark Connect PLL_GND to EXP with a single short trace.
- ✓ Connect L1, L2, C13, and C3, C5, C7, C8, C11, and C12 as close as possible to their pins.
- ✓ Connect R1 as close as possible to RXI pin.
- ✓ Connect all filtering caps as close as possible to their pins.
- ✓ Connect crystal and its capacitors close to OSCI and OSCO pins. Keep DGND plan around them.

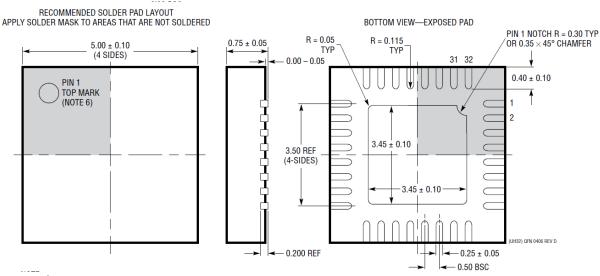


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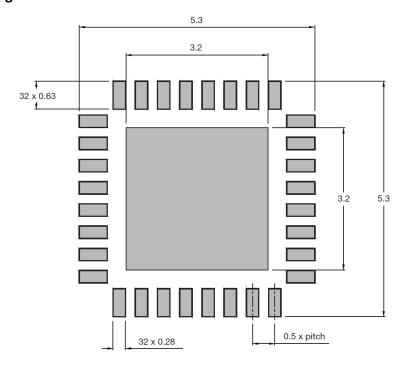
4. SIG100 Package, Mechanical

The device package is QFN 32 5mm x 5mm.

4.1 Mechanical Drawing



4.2 PCB drawing



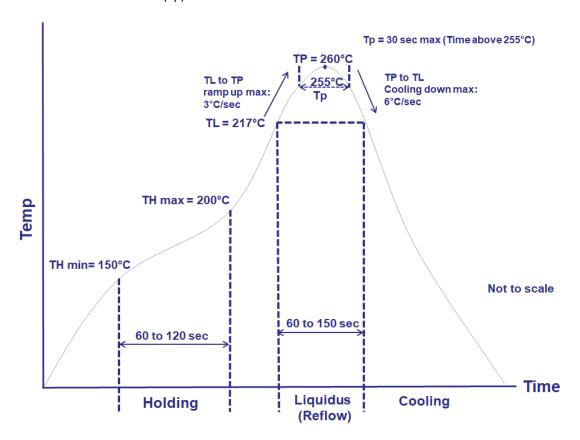


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4.3 Soldering profile

Soldering reflow profile is according to IPC/JEDEC J-STD-020 (MSL3).

- > Peak temperature (TP) is 260°C.
- ➤ Holding time is between 60 sec to 120 sec between TH min 150°C to TH max 200°C.
- Liquidus temperature (TL) is 217 °C. Liquidus time is between 60 sec to 150 sec.
- > TL to TP max ramp up is 3°C/sec.
- > TP to TL max cool down rate is 6°C/sec.
- Max time above 255°C (Tp) is 30 sec.



Representation of IPC/JEDEC J-STD-020 (MSL3) profile