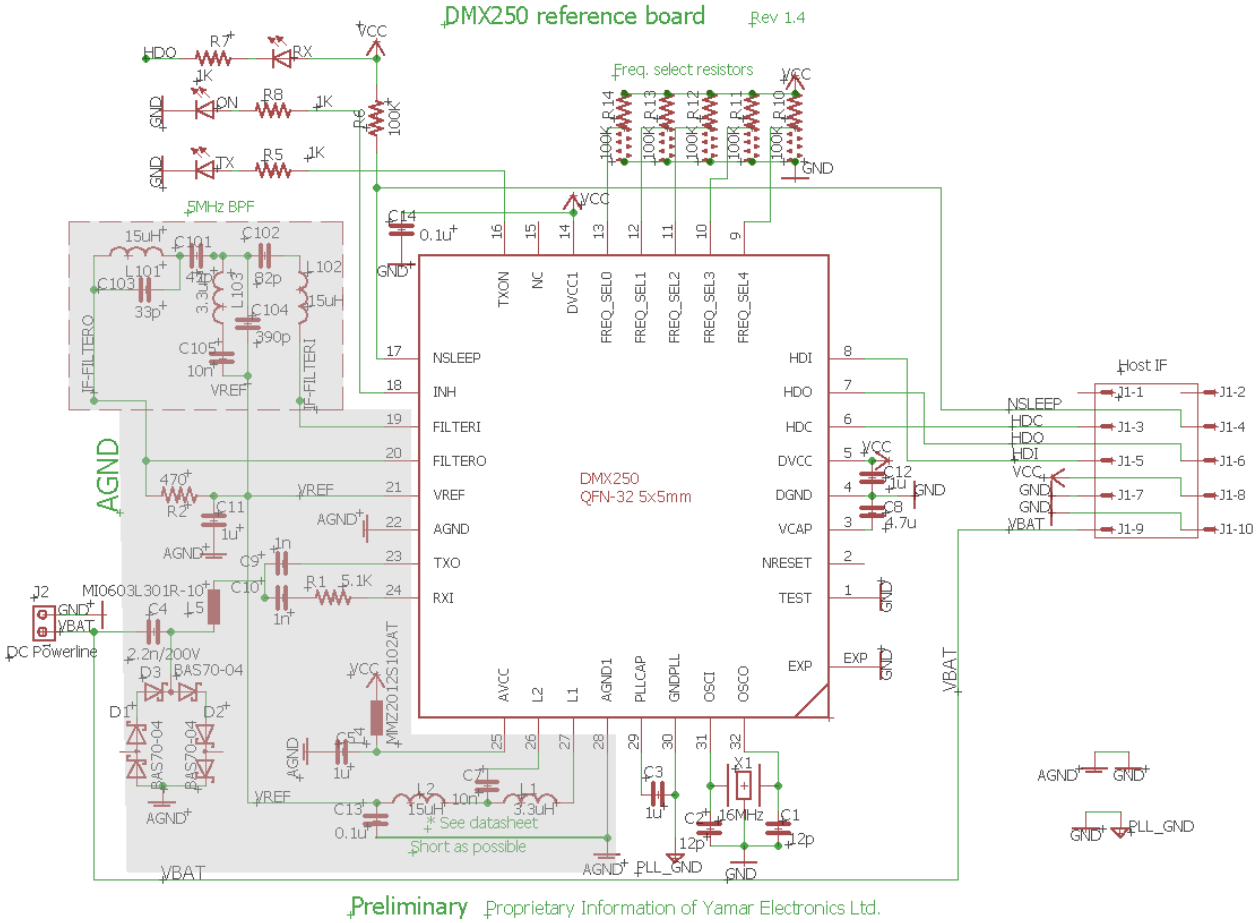
YAMAR	DMX250 Ref Board R1_4 Assembly	www.yamar.com

1. DMX250 Ref board schematic



See DMX250 data sheet http://www.yamar.com/datasheet/DS-DMX250.pdf

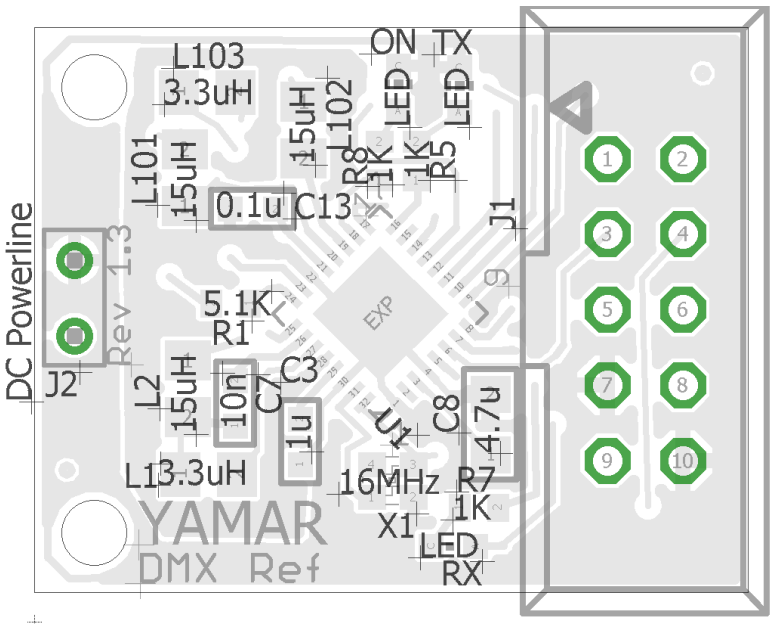
2. DMX250 BOM

Qty	Value	Device	Package	Parts	Description
2	0.1u	C0603	C0603	C13, C14	CAPACITOR
5	100K	R0402-SW	SW-R0402	R10, R11, R12, R13, R14	SWITCH RESISTOR
1	100K	RR0402	R0402	R6	RESISTOR
2	10n	C0603	C0603	C7, C105	CAPACITOR
2	12p	C0603	C0603	C1, C2	CAPACITOR
2	15uH	L0805	R0805	L101, L102	INDUCTOR
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
2	1n	C0603	C0603	C9, C10	CAPACITOR
4	1u	C0603	C0603	C3, C5, C11, C12	CAPACITOR
1	2.2n/200V	C0805	C0805	C4	CAPACITOR
1	3.3uH	L0805	R0805	L103	INDUCTOR
1	3.3uH	L1	R0805	L1	Abracon 815-AIML-0805-3R3K-T
1	33p	C0603	C0603	C103	CAPACITOR
1	390p	C0603	C0603	C104	CAPACITOR
1	4.7u	C0805	C0805	C8	CAPACITOR
1	470	RR0402	R0402	R2	RESISTOR
1	47p	C0603	C0603	C101	CAPACITOR
1	5.1K	RR0402	R0402	R1	RESISTOR
1	82p	C0603	C0603	C102	CAPACITOR
3	BAS70-04	BAS70-04	SOT23	D1, D2, D3	BAS70-04 Silicon Schottky Diodes
1	DC Powerline	MTA02-100	10X02MTA	J2	AMP connector
1	DMX250	DMX250	QFN32	U1	Yamar DMX250 powerline transceiver IC
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_0603	CHIPLED_0603	RX	LED
1	MI0603L301R-10	MI0603L301R-10	R0805	L5	Optional for EMC usage LAIRD - MI0603L301R-10, else place 0 Ohm resistor
1	MMZ2012S102AT	MMZ2012S102AT	R0805	L4	TDK MMZ2012S102AT

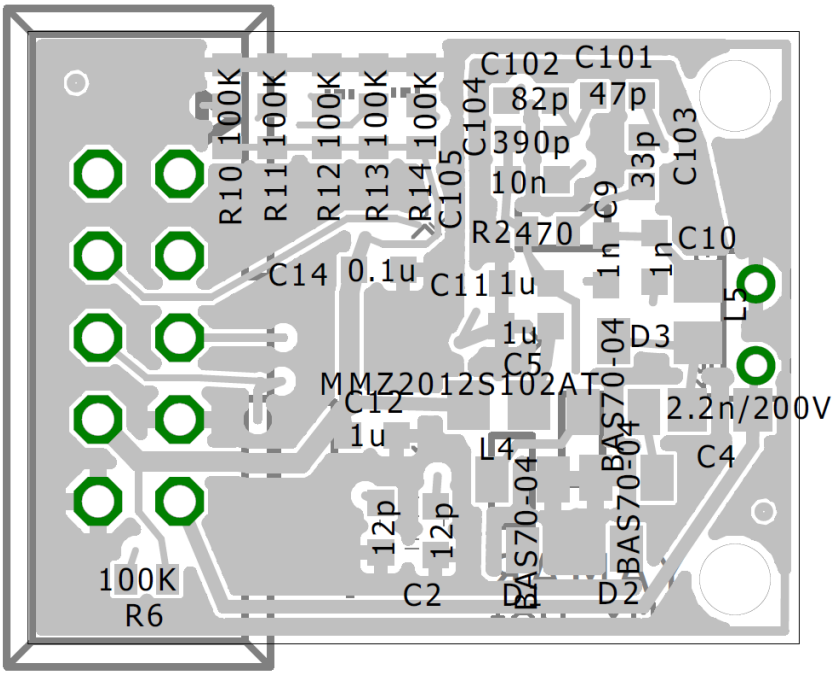
3. DMX250 PCB layout recommendation

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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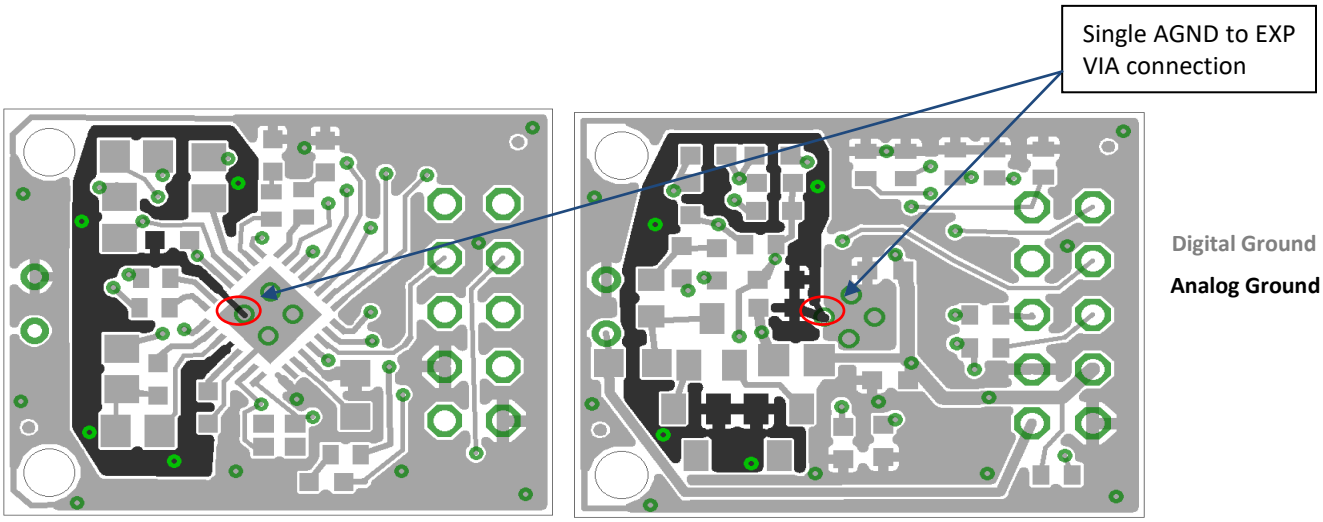
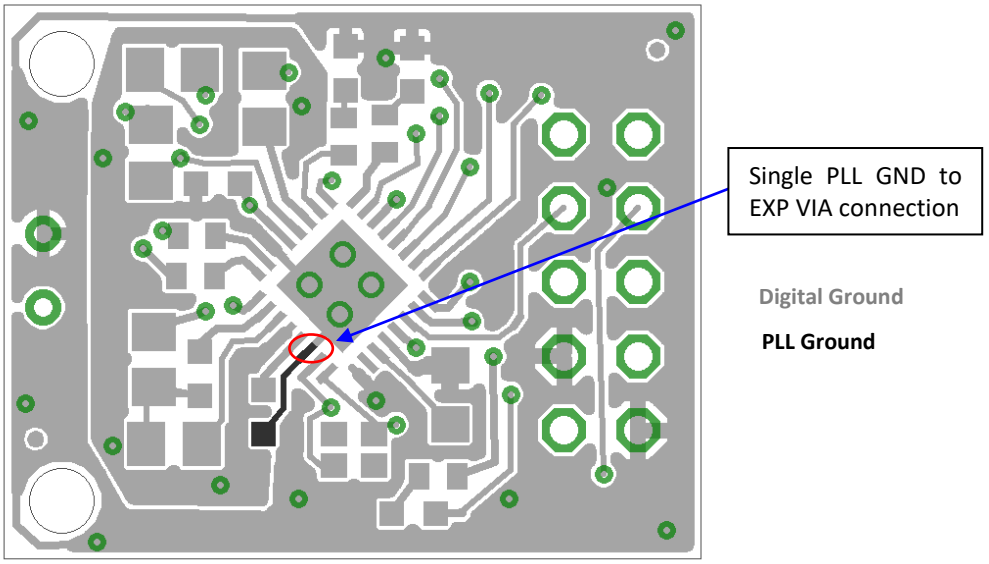


PLL Ground connection to EXP



- ✓ 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.
- ✓ 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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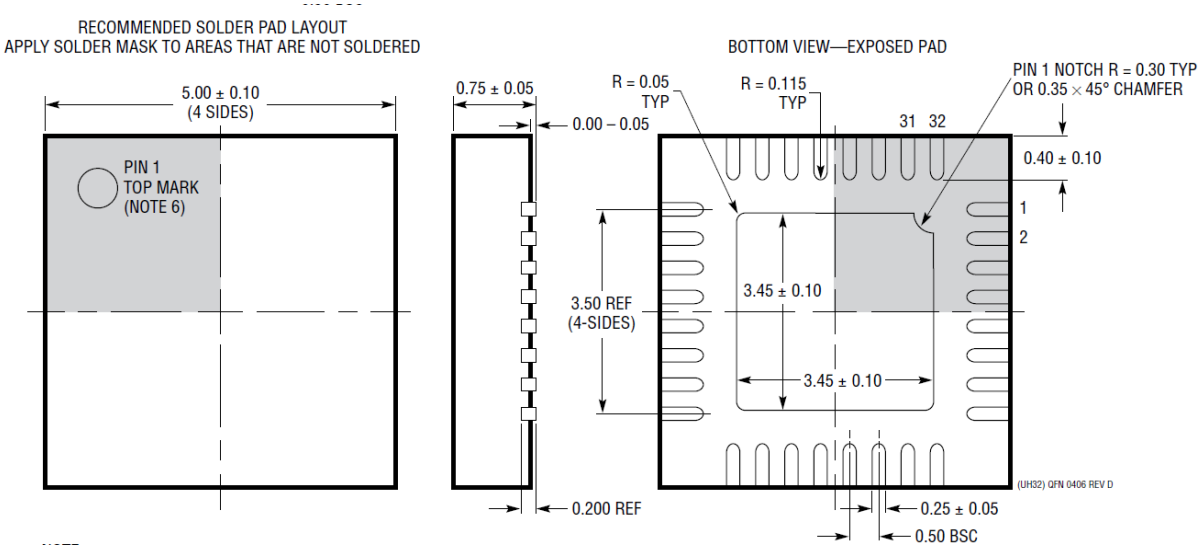
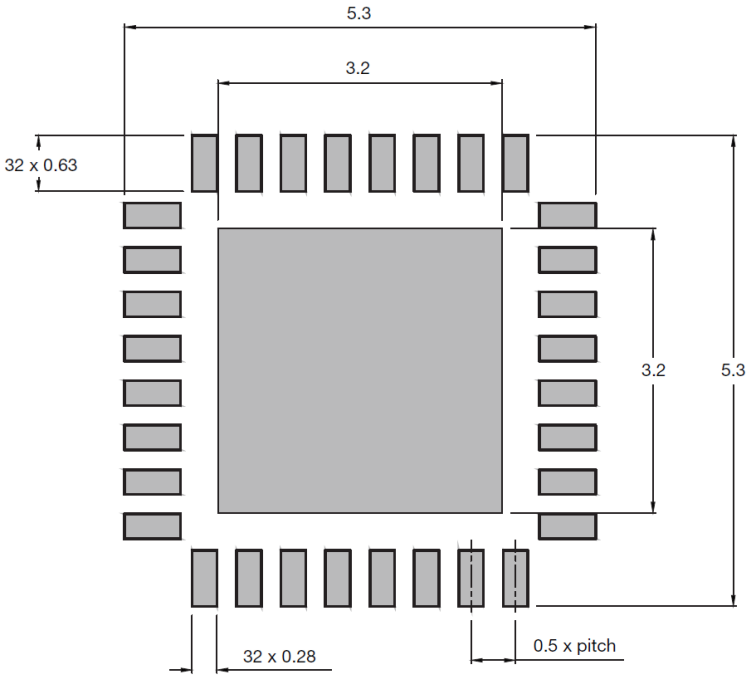
4. DMX250 Package, Mechanical

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

4.1 Mechanical Drawing



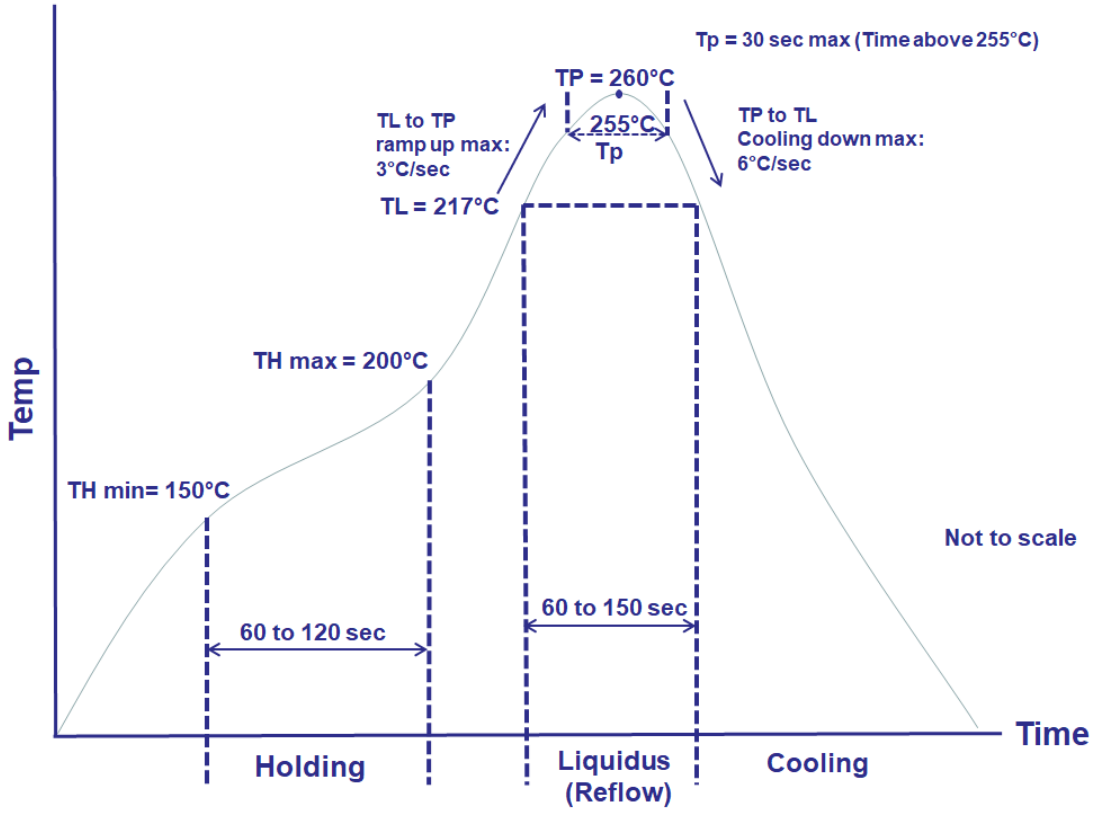
4.2 PCB drawing



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