

**Funkey**  
project

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Title: *FunKey*

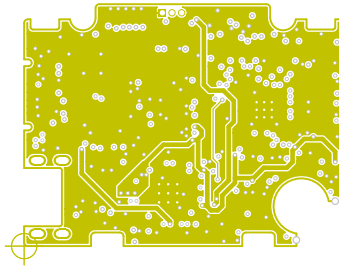
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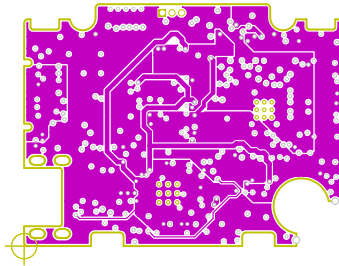


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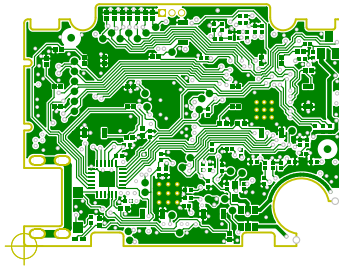
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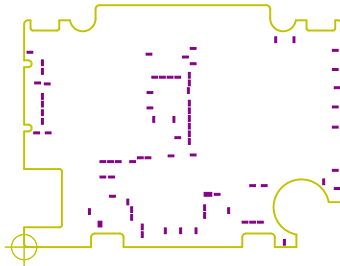
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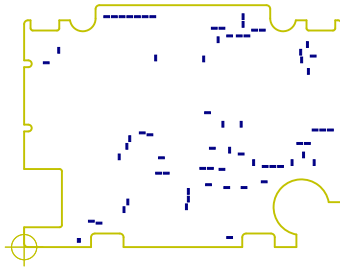


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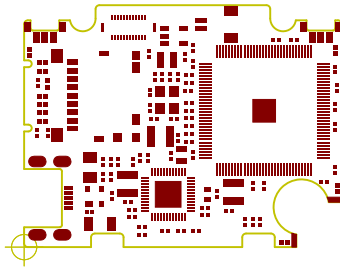
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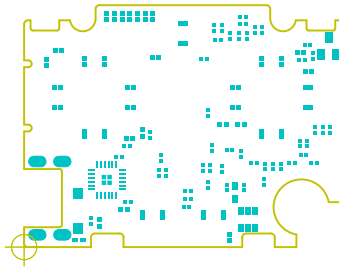
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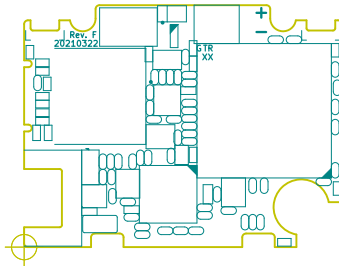


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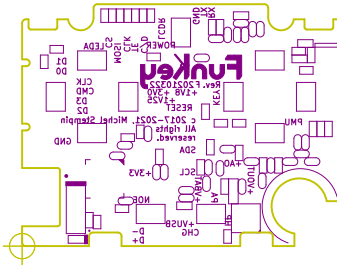
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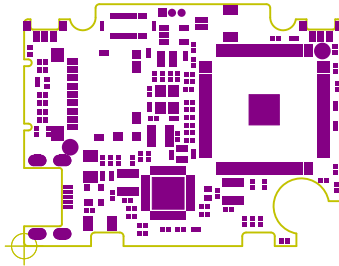
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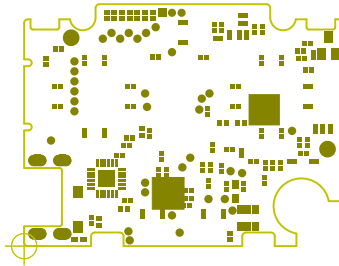
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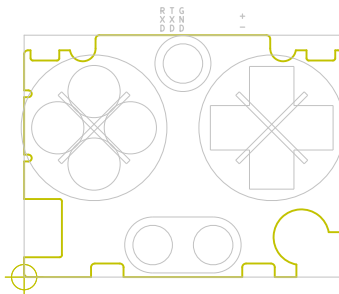
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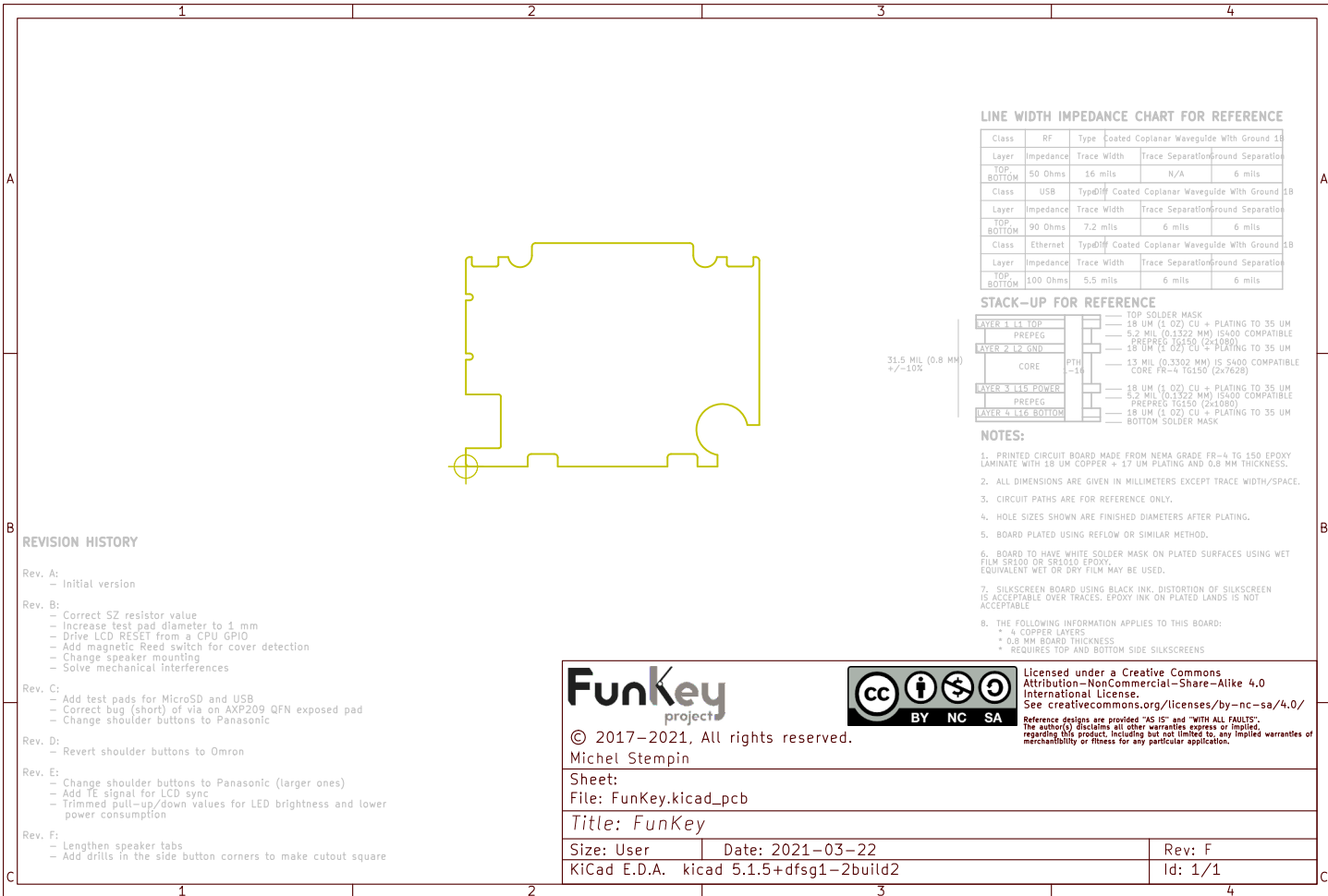
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**LINE WIDTH IMPEDANCE CHART FOR REFERENCE**

Class	RF	Type	Coated Coplanar Waveguide With Ground	19
Layer	Impedance	Trace Width	Trace Separation	Ground Separation
TOP	50 Ohms	16 mils	N/A	6 mils
BOTTOM	USB	Type011F	Coated Coplanar Waveguide With Ground	18
Layer	Impedance	Trace Width	Trace Separation	Ground Separation
TOP	90 Ohms	7.2 mils	6 mils	6 mils
BOTTOM	Ethernet	Type011F	Coated Coplanar Waveguide With Ground	18
Layer	Impedance	Trace Width	Trace Separation	Ground Separation
TOP	100 Ohms	5.5 mils	6 mils	6 mils
BOTTOM				

**STACK-UP FOR REFERENCE**

LAYER 1 14 TOP	PTH	TOP SOLDER MASK
PREPEG		18 UM (1.0Z) CU + PLATING TO 35 UM
LAYER 2 12 GRD		5.2 MIL (0.1322 MM) 15400 COMPATIBLE
CORE		PREPREG TG150 (2x1080)
		18 UM (1.0Z) CU + PLATING TO 35 UM
		13 MIL (0.3302 MM) IS 5400 COMPATIBLE
		CORE FR-4 TG150 (2x7628)
LAYER 3 16 POWER		18 UM (1.0Z) CU + PLATING TO 35 UM
PREPEG		5.2 MIL (0.1322 MM) 15400 COMPATIBLE
LAYER 4 16 BOTTOM		PREPREG TG150 (2x1080)
		18 UM (1.0Z) CU + PLATING TO 35 UM
		BOTTOM SOLDER MASK

31.5 MIL (0.8 MM)  
+/-10%

**NOTES:**

1. PRINTED CIRCUIT BOARD MADE FROM NEMA GRADE FR-4 TG 150 EPOXY LAMINATE WITH 18 UM COPPER + 17 UM PLATING AND 0.8 MM THICKNESS.
2. ALL DIMENSIONS ARE GIVEN IN MILLIMETERS EXCEPT TRACE WIDTH/SPACE.
3. CIRCUIT PATHS ARE FOR REFERENCE ONLY.
4. HOLE SIZES SHOWN ARE FINISHED DIAMETERS AFTER PLATING.
5. BOARD PLATED USING REFLOW OR SIMILAR METHOD.
6. BOARD TO HAVE WHITE SOLDER MASK ON PLATED SURFACES USING WET FILM S1810 OR S1810L EPOXY EQUIVALENT WET OR DRY FILM MAY BE USED.
7. SILKSCREEN BOARD USING BLACK INK. DISTORTION OF SILKSCREEN IS ACCEPTABLE OVER TRACES. EPOXY INK ON PLATED LANDS IS NOT ACCEPTABLE.
8. THE FOLLOWING INFORMATION APPLIES TO THIS BOARD:
  - \* 4 COPPER LAYERS
  - \* 0.8 MM BOARD THICKNESS
  - \* REQUIRES TOP AND BOTTOM SIDE SILKSCREENS

**REVISION HISTORY**

- Rev. A:  
- Initial version
- Rev. B:  
- Correct SZ resistor value  
- Increase test pad diameter to 1 mm  
- Drive LCD RESET from a CPU GPIO  
- Add magnetic Reed switch for cover detection  
- Change speaker mounting  
- Solve mechanical interferences
- Rev. C:  
- Add test pads for MicroSD and USB  
- Correct bug (short) of via on AXP209 QFN exposed pad  
- Change shoulder buttons to Panasonic
- Rev. D:  
- Revert shoulder buttons to Omron
- Rev. E:  
- Change shoulder buttons to Panasonic (larger ones)  
- Add TE signal for LCD sync  
- Trimmed pull-up/down values for LED brightness and lower power consumption
- Rev. F:  
- Lengthen speaker tabs  
- Add drills in the side button corners to make cutout square



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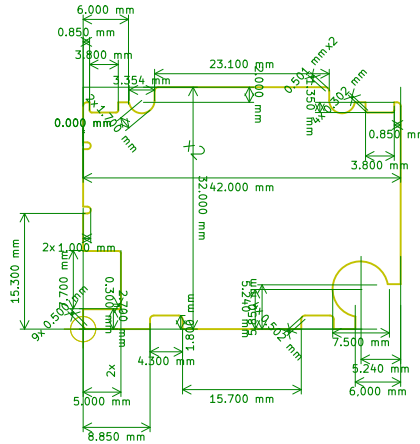
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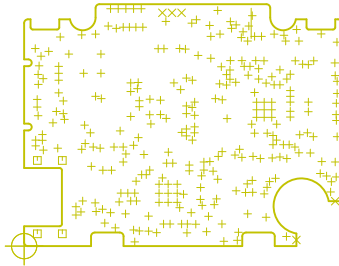
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**DRILL CHART: TOP TO BOTTOM**

Sym	N°	Mils	MM	Qty	Plated
+	1	12	0.30	287	YES
x	2	28	0.71	5	YES
□	3	31	0.80	4	YES



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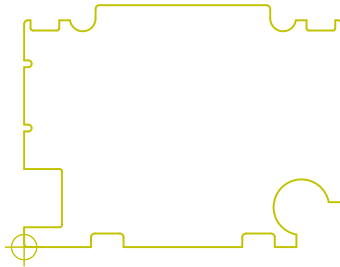
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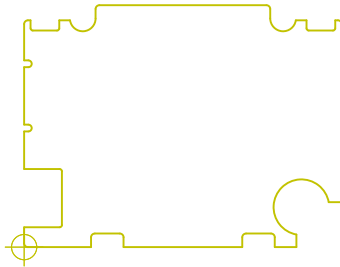
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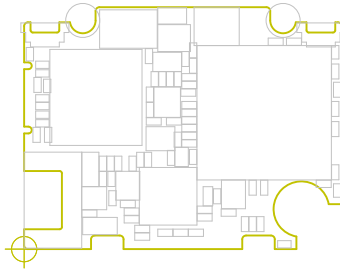
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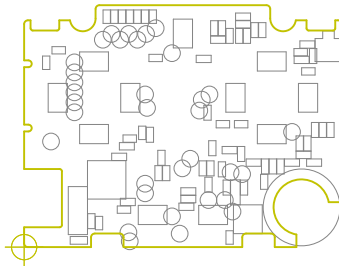
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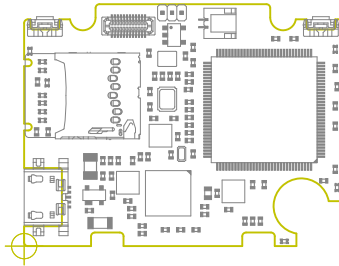
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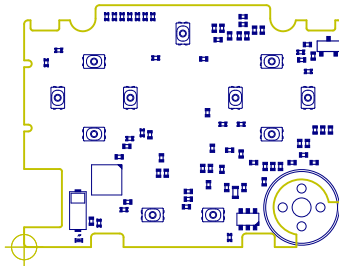


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