



Impedance Model

Customer:
Part Number:
Rev:
Project: Whizz 7789

Date: July 16, 2016
Whizz Engineer: Muhammad Numan Butt
Material: Megtron4

Notes / Comments:
1- Outer layers have:
a)- 4.7/3.5/4.7 as neck mode of 86-ohm through channel of 20.37mils.
b)- 4.4/3.8/4.4 as neck mode of 90-ohm through channel of 20.37mils.
c)- 3.7/4.4/3.7 as neck mode of 100-ohm through channel of 20.37mils.

Notes / Comments:
2- Similar calculations on L3, 5, 14 and 16. These layers have:
a)- 4.9/3.5/4.9 as neck mode of 86-ohm through channel of 20.37mils.
b)- 4.5/3.6/4.5 as neck mode of 90-ohm through channel of 20.37mils.
c)- 3.9/4.5/3.9 as neck mode of 100-ohm through channel of 20.37mils.
d)- 3.3/3.7/3.3 as neck mode of 100-OHM through BD locations.

		Est. Thick.	Single Ended Model				Differential Model									Dk	
			Original L/W	Modified L/W	Reference Plane	Calculated Impedance	Original L/W	Original space	Modified L/W	Modified space	Reference Plane	Calculated Impedance					
1	S	(1/2 oz+plating) H	2.00	16.3	16.3	2	34	11	4	11	4	2	66				3.44
			15	15	2	36	8.5	4.5	8.5	4.5	2	76					
2	P	2x1067RC 70% PP =>	4.62	13.3	13.3	2	39	6	5	5.9	5.1	2	90				4.1
		Core =>	0.60	8.3	8.3	2	50	5.4	6.6	5.4	6.6	2	100				
			8.00														
3	S	H	0.60	12.5	12	2.4	34	10	4	9.9	4.1	2.4	66				3.59
		2x1080RC 65% PP =>	5.60	11.5	11	2.4	36	8	4.5	7.8	4.7	2.4	76				
4	P	H	0.60	10.2	9.7	2.4	39	5.5	4.6	5.3	4.8	2.4	90				4.1
		Core =>	8.00	6.5	6.1	2.4	50	6	11	5.65	11.35	2.4	100				
5	S	H	0.60					6.1	4.6	6	4.7	2.4	85				3.59
		2x1080RC 65% PP =>	5.60														
6	P	H	0.60														3.82
		Core =>	4.00														
7	S	H	0.60	4.5	4.25	6.8	50	4	6	3.65	6.35	6.8	100				3.59
		2x1080RC 65% PP =>	5.60	8.4	8.4	6.8	34	8.1	6	8.1	6	6.8	66				
8	P	H	0.60	7.5	7.6	6.8	36	6.1	5	6.1	5	6.8	76				3.38
		Core =>	2.00	6.6	6.6	6.8	39	4.5	5.6	4.45	5.65	6.8	90				
9	P	1	1.20					5	5.6	5	5.6	6.8	85				3.59
		1x1080RC 65% PP =>	2.70														
10	P	1	1.20														3.38
		Core =>	2.00														
11	P	H	0.60														3.59
		2x1080RC 65% PP =>	5.60														
12	P	H	0.60														3.82
		Core =>	4.00														
13	P	H	0.60														3.59
		2x1080RC 65% PP =>	5.60														
14	S	H	0.60														4.1
		Core =>	8.00														
15	P	H	0.60														3.59
		2x1080RC 65% PP =>	5.60														
16	S	H	0.60														4.1
		Core =>	8.00					6.8	5	6.8	5	17	85				
17	P	H	0.60	16.3	16.3	17	34	11	4	11	4	17	66				3.44
		2x1067RC 70% PP =>	4.62	15	15	17	36	8.5	4.5	8.5	4.5	17	76				
				13.3	13.3	17	39	6	5	5.9	5.1	17	90				
18	S	(1/2 oz+plating) H	2.00	8.3	8.3	17	50	5.4	6.6	5.4	6.6	17	100				
Thickness After plating			104.34	not including solder mask			Units			Mils							
Target Thickness			103+/-10%	over All			Imp. Tolerance (SE)			+/- 10%			(Diff) +/- 10%				

3- Layer #7 has:
a)- 4.2/3.7/4.2 as neck mode of 86-ohm through channel of 20.37mils.
b)- 3.9/4/3.9 as neck mode of 90-ohm through channel of 20.37mils.
c)- 3.4/5.2/3.4 as neck mode of 100-ohm through channel of 20.37mils.
d)- 3.2/4.2/3.2 as neck mode of 100-OHM (Resulting 98-ohm) through BD locations.

4- Laser drill L1-L2 needs to be copper filled, plated over and planarized ensuring flat surface when finished.