

Cust: <b>FINEPITCH/A FLEXTRONICS CO</b>				Total Layers: <b>12</b>			
Part #: <b>140-0321002-A1</b>	Rev <b>A</b>	Finished Thickness: <b>0.0660 +/- 0.0060</b>			Finished Over: <b>Soldermask</b>		
		Lam Thickness: <b>0.0610 +/- 0.0030</b>			Material Type: <b>Isola 370HR</b>		

Impedance Requirements:		Orig Line	Fin. Line	Ref Pln	2nd Ref Pln	Targeted Desired Impedance	Impedance Tolerance	Actual Calculated Impedance	Diff Line Centers	Diff Line Space	Original Coplanar Spacing	Finished Coplanar Spacing
L#	Impedance Type											
1	DIF-Coated Microstrip Edg Cpld	.00325	.00340	2		100.00 $\Omega$	+/- 10%	101.14 $\Omega$	.00950	.00610		
1	SE-Coated Microstrip	.00430	.00450	2		50.00 $\Omega$	+/- 10%	50.57 $\Omega$				
3	DIF-Dual Stripline Edg Cpld	.00320	.00340	2	5	100.00 $\Omega$	+/- 10%	102.88 $\Omega$	.01050	.00710		
3	SE-Dual Stripline	.00370	.00390	2	5	50.00 $\Omega$	+/- 10%	51.30 $\Omega$				
4	DIF-Dual Stripline Edg Cpld	.00320	.00340	2	5	100.00 $\Omega$	+/- 10%	102.88 $\Omega$	.01050	.00710		
4	SE-Dual Stripline	.00370	.00390	2	5	50.00 $\Omega$	+/- 10%	51.30 $\Omega$				
9	DIF-Dual Stripline Edg Cpld	.00320	.00340	8	11	100.00 $\Omega$	+/- 10%	102.88 $\Omega$	.01050	.00710		
9	SE-Dual Stripline	.00370	.00390	8	11	50.00 $\Omega$	+/- 10%	51.30 $\Omega$				
10	DIF-Dual Stripline Edg Cpld	.00320	.00340	8	11	100.00 $\Omega$	+/- 10%	102.88 $\Omega$	.01050	.00710		
10	SE-Dual Stripline	.00370	.00390	8	11	50.00 $\Omega$	+/- 10%	51.30 $\Omega$				
12	DIF-Coated Microstrip Edg Cpld	.00325	.00340	11		100.00 $\Omega$	+/- 10%	101.14 $\Omega$	.00950	.00610		
12	DIF-Coated Microstrip Edg Cpld	.00410	.00425	11		90.00 $\Omega$	+/- 10%	91.46 $\Omega$	.01000	.00575		
12	SE-Coated Microstrip	.00430	.00450	11		50.00 $\Omega$	+/- 10%	50.57 $\Omega$				

## Controlled Impedance Notes:

90 ohm .0041 TRACES DO NOT EXIST ON LAYER 1.

**REVISED STACKUP AS DISCUSSED WITH SZU ZHEN GOAY  
PLEASE ADVISE IF WE ARE OK TO RELEASE WITH THIS STACK**

Lamination Stackup:			Thickness and Tolerances:		Base Material Rqmts:	
L#/Type	Description:		Cu+:	Laminate/PrePreg:	Type:	Description:
1 Mix	Foil ( T oz )		.00053			
	Pre-Preg ( 1 x 1080 )			.0029 +/- 0.0003		Isola 370HR
2 Pln	Core 0.0030 1/H		.00120	.0030		Isola 370HR
3 Mix			.00060			
	Pre-Preg ( 1 x 2113 )			.0087 +/- 0.0009		Isola 370HR
	Pre-Preg ( 2 x 1080 )					
4 Mix	Core 0.0030 H/1		.00060	.0030		Isola 370HR
5 Pln			.00120			
	Pre-Preg ( 1 x 1080 )			.0026 +/- 0.0003		Isola 370HR
6 Pln	Core 0.0100 1/1		.00120	.0100		Isola 370HR
7 Pln			.00120			
	Pre-Preg ( 1 x 1080 )			.0026 +/- 0.0003		Isola 370HR
8 Pln	Core 0.0030 1/H		.00120	.0030		Isola 370HR
9 Mix			.00060			
	Pre-Preg ( 2 x 1080 )			.0087 +/- 0.0009		Isola 370HR
	Pre-Preg ( 1 x 2113 )					
10 Mix	Core 0.0030 H/1		.00060	.0030		Isola 370HR
11 Pln			.00120			
	Pre-Preg ( 1 x 1080 )			.0028 +/- 0.0003		Isola 370HR
12 Mix	Foil ( T oz )		.00053			

Target Post-Lam Thickness: **0.0610 +/- 0.0030**

Copper Oz Legend: H=1/2oz T=3/8oz Q=1/4oz E=1/8oz S=1/16oz

## Stackup Notes:

**PLEASE RETURN APPROVED STACK-UP TO DDI WITH DATA SET PRIOR TO MANUFACTURING**

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Part #: <b>140-0321002-A1</b>	Rev <b>A</b>	Finished Thickness: <b>0.0660 +/- 0.0060</b>	Finished Over: <b>Soldermask</b>
		Lam Thickness: <b>0.0610 +/- 0.0030</b>	Material Type: <b>Isola 370HR</b>

\* The Controlled Impedance Stackup and tables were calculated utilizing ApsimRLGC from Applied Simulation Technology  
 \* Impedance value tolerances shall be +/- 10% or customer required tolerance.

Designed Artwork Spacing Requirements: (Based On Starting Copper Weight)

External Layers:

- \* 1/4 oz. Copper = .003 Min.
- \* 3/8 oz. Copper = .0035 Min.
- \* 1/2 oz. Copper = .004 Min.
- \* 1 oz. Copper = .005 Min.
- \* 2 oz. Copper = .007 Min.

Internal Layers:

- \* 3/8 oz. Copper = .00325 Min.
- \* 1/2 oz. Copper = .0035 Min.
- \* 1 oz. Copper = .004 Min.
- \* 2 oz. Copper = .006 Min.

Note: Min. spacing outside of the parameters above will require DDI's engineering approval.

Finished Copper Thickness On External Layers:

Conductor thickness calculated in RLGC includes base copper and additional copper plating (*assuming hole plating requirement is .001 min.*) - Finished surface conductor thickness is as follows:

- \* 1/4 oz. Base Copper + Copper Plating = .0016
- \* 3/8 oz. Base Copper + Copper Plating = .0017
- \* 1/2 oz. Base Copper + Copper Plating = .0019
- \* 1 oz. Base Copper + Copper Plating = .0024
- \* 2 oz. Base Copper + Copper Plating = .0036

Note: Soldermask thickness over the conductor calculated on RLGC is .8 mils.

\* If written authorization is required, please sign below and Fax back to (408) 719-4175

Approved By: \_\_\_\_\_ Date: \_\_\_\_\_