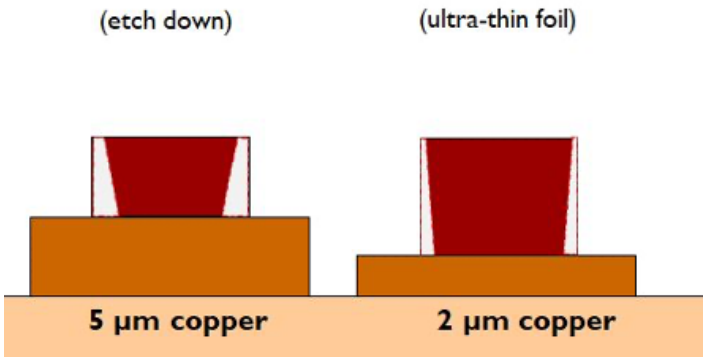
American Standard Circuits
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Ultra High Density Interconnects (UHDI)

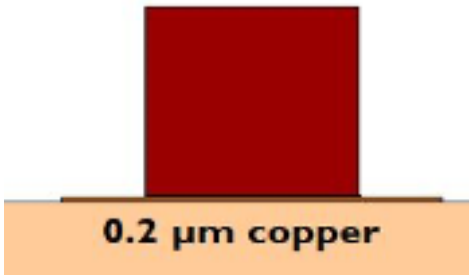
How does Ultra HDI provide signal integrity advantages over traditional processes?

UHDI fabrication technology makes it possible for straight vertical sidewalls with precise controls of trace and space widths. This allows for much tighter control of impedance variations for RF.

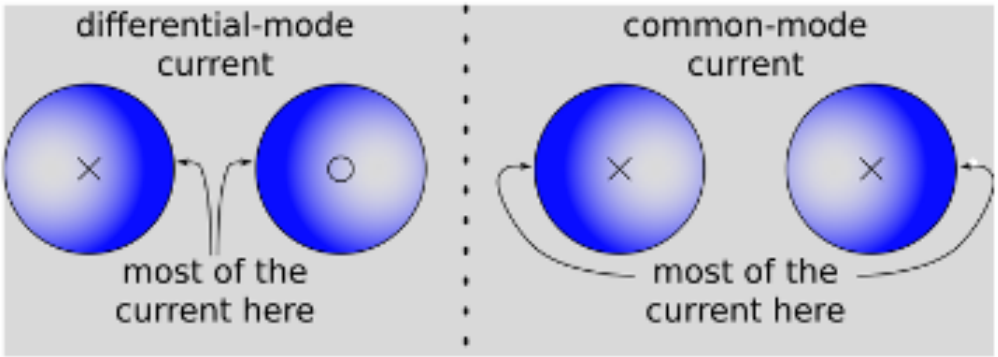
Thin Foil Method



ASC Additive Plate-Up Method



High aspect ratio traces are taller than their width. The ASC Additive method enables taller traces with a 1:1 ratio or better, providing electromagnetic advantages.

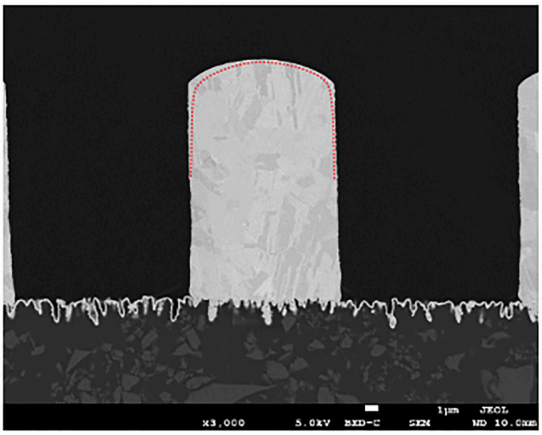


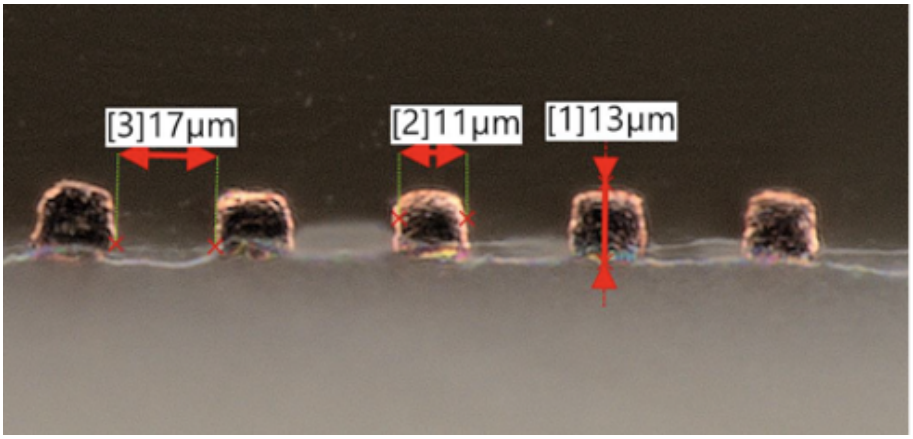
American Standard Circuits
Sunstone Circuits

Ultra High Density Interconnects (UHDI)

How does Ultra HDI provide signal integrity advantages over traditional processes?

These taller traces can reduce insertion loss, enabling fine features with true differential lines. Narrow spacing improves inductive and capacitive coupling.





Ultra HDI technology is compatible with a range of ultra high-speed, low-loss materials, and allows for the use of very thin dielectrics.Copper foils come in many varieties, depending on material type. In terms of signal integrity, the roughness level of the ‘tooth’ is considered important: ultra smooth copper foils are generally classified by roughness in um.

New material offerings: lower Dk/Df materials are on the way for enhanced signal integrity with UHDI. There are several options coming to market, and new FR (Fast Rise) materials in development are focused on Dk values of 2.29 and Df of 0.0018. Coreless Materials have taken Asia by storm as an ultra-thin build up material. An example is ABF (Ajinomoto Build-up Film): highly durable and rigid film that combines organic epoxy resin, hardener, and inorganic particulate filler. They are a type of IC substrate material. Questions about material compatibility? Ask our experts at ASC!

Type	Material	Manufacturer	Base Foil	Peel Strengt (lb/in)
FR4	370 HR	Isola	RTF	4.6
	N4000-29	AGC MM	ACL™	4.6
	EM285 (HF)	EMC	ACL™	4.6
	EM370 (HF)	EMC	ACL™	3.2
Mid Loss	I-Speed	Isola	VLP2	3.5
	N4800-20	AGC MM	RTF	4.5
	EM526 (HF)	EMC	RTF	3.5
Low Loss	I-Tera MT40	Isola	VLP2	3.7
	TerraGreen	Isola	VLP2	4.6
	Megtron 6	Panasonic	HVLP	4.4
	RO4350	Rogers	LP RTF	5.3
	MW2000	AGC MM	VSP	6.3
	EM891	EMC	VSP	5.7

Type	Material	Manufacturer	Base Foil	Peel Strength (lb/in)
BT	N5000	AGC MM	STD	3.9
Flex LCP	R-F705S	Panasonic	ED	5.8
	EXSYLAM -N	Ube Exsymo	ED	5.4
Flex Polyimide	Pyralux AP	DuPont	ED, ACL™	6-9
	Pyralux AG	DuPont	ED	≥ 6[a]
	Pyralux HT	DuPont	ACL™	≥ 6[a]
	R-F755	Panasonic	ED	7-9.5
	PIXEO	Kaneka	ED, ACL™	≥ 6[a]
	UPISEL-N	Ube Exsymo	ED	6-8
	GX92	Ajinomoto	Desmear	4.2
	GL102	Ajinomoto	Desmear	2.6
BU Film	Zaristo125	Taiyo Ink	CBF™	3.6
	Zaristo500	Taiyo Ink	CBF™	3.9
	Zaristo700	Taiyo Ink	CBF™	6.5

Type	Material	Manufacturer	Base Foil	Peel Strength (lb/in)
Very Low Loss	Tachyon100G	Isola	VLP2	3.7
	Astra MT77	Isola	VLP2	4.6
	Megtron 7N	Panasonic	HVLP2	5.6
	MW4000	AGC MM	VSP	4.8
	MW8000	AGC MM	VSP	4.9
	EM890 (HF)	EMC	VSP	7.4
	CS3379M	Risho	VLP	6.5
PTFE	RO3003	Rogers	RA	≥15[a]
	CLTE-AT	Rogers	RA	≥15[a]
	FastRise TC	Taconic	Shiny side	4.3
	FastRise TC	Taconic	RTF	4.6
	EZ-IO F	Taconic	RA	5.0
	F220A	Nippon Pillar	VLP	9.7
	F300AS	Nippon Pillar	VLP	9.2

Did You Know That.....

Ultra HDI is a solution that works with other technologies:

RF/Microwave Products – tight line/width control, low profile copper surfaces, tight impedance control
Embedded Resistor and Capacitors – able to interface with resistive and capacitive materials
Flex Circuits and Rigid-Flex parts – ultra fine line flex circuits, high copper adhesion to flex
Metal Core & Coins – compatible with metal core construction, allows copper plate to coin structures

Additional Resources

Our website: *https://www.asc-i.com/products/ultra-hdi?dm_i=7P2V%2COF7%2CXLUH%2C2ZVS%2C1*
UHDI Newsletter: https://www.asc-i.com/about-us/asc-newsletter
UHDI technology, advantages, design parameters, FAQs in a brochure:
https://www.asc-i.com/application/files/9917/2719/5307/Brochure_-_Ultra-HDI_-_Digital_-_0004-1.pdf