Avery Dennison
Smartrac

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IC Technology Update

AVERY DENNISON

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IC technology is constantly evolving, responding to growing worldwide demand for chips across multiple industry segments, while offering larger yields from denser wafers.

In order to secure supply chain continuity, resulting from the current semiconductor challenges, we are updating our portfolio by migrating toward the new chip technology offered by 300mm (12”) wafers, and away from the older 200mm (8”) wafers that have historically been used to produce RFID and other chips.

Benefits for the industry

In so doing, we are staying ahead of the game. RFID IC manufacturers are gradually winding down 200mm wafer production to prioritize 300mm wafers, which offer new features and more DPW (Die Per Wafer). 95% of all chips globally are already produced on 300mm wafers, including many RFID chips. The production process also uses more modern manufacturing technologies that yield more chips per square centimeter of wafer than the old 200mm process, enabling greater chip availability in the future.

As an illustration, some chips have been around for more than 10 years, and were designed with older 200mm wafers in mind. Their next generations will be now upgraded onto a 300mm wafer process. They will join the family of M700 and U9 chips, which are already benefiting from the higher densities offered by 300mm wafers. This will in turn increase production of these chips to improve product availability going forward.

Benefits for you

The chips produced by the new process are more sensitive, which will enable better performance for inlays. Some customers will need to adjust their setups due to this increased sensitivity, but the overall inlay performance enhancements will make for even more compelling RFID solutions.

Another benefit of switching to the more modern 300mm technology is that these advanced chips can offer additional features, enabling new use cases for end customers and further benefits such as better data retention and error correction.

Helping you to upgrade

As the world moves away from 200mm wafers towards the more advanced 300mm technology, we would like to help you stay ahead of the curve.

The comparison table on the next pages indicate alternative* products that can be used to replace existing products that you may be using. We can provide samples so that you can evaluate the new products, and to see if they differ in any respect from the chip versions you’re using today. What’s more, our technical sales support team can help you fine-tune the setup of these new products.

If your specific product is not on the list, please contact your Avery Dennison sales account manager or your customer service representative for further information, and for any advice you may need.

We look forward to accompanying you on the journey towards using more advanced chips to offer even more capable solutions to your end customers.

***** *The term ‘alternative’, is referencing potential alternatives based upon attributes found within similar products. It’s not stating that the products are exactly the same in every way. Avery Dennison does not make any warranty or guarantee as to this information. If you have any questions about alternatives or applications, please verify the detailed specifications with your customer representative before ordering.*

Products & Alternative Products

Product Name	IC	Product Code	Product Highlights	Alternative Product	Alter. IC	Product Code	Product Highlights
AD-151	G2iM	RF601451	link	Grille	U7XM	3005984	link
AD-172	U7	RF100310	link	AD-190	U8	RF100600	link
AD-238	U8	RF601010	link	AD-23x	U9	RF101015	link
				AD-23x	U9	RF602327	link
AD-310	U8	RF100711	link	AD-312	U9	RF101041	link
AD-321	R6	3007650	link	Miniweb FCC	M730	3007567	link
				AD-327 FCC	U9	RF101042	link
AD-324 ETSI	U8	RF100792	link	AD-327 ETSI	U9	RF101036	link
AD-324 ETSI	U8	RF601063	link	AD-327 ETSI	U9	RF602248	link
				Miniweb	M730	3007865	link
AD-372 NEL	U8	RF100558	link	AD-374 NEL	U9	RF100982	link
AD-385	U8	RF601296	link	AD-387	U9	RF100973	link
				AD-387	U9	RF602178	link
Belt	G2iL	3001962	link	Belt	U9	3008009	link
				Belt	M730	3008187	link
Belt	G2iL	3005755	link	Belt	U9	3008008	link
				Belt	M730	3007862	link
Belt	G2iL	3001963	link	Belt	U9	3008009	link
				Belt	M730	3008160	link
Belt	G2iM	3006351	link	Belt	U7XM	3005419	link
Belt	G2iM	3002228	link	Belt	U7XM	3005419	link
Belt	R6-P	3007004	link	Belt	M730	3008123	link
Belt	R6-P	3005066	link	Belt	M730	3007861	link
				Belt	U9	3008010	link
Belt	R6-P	3005216	link	Belt	M730	3007863	link
				Belt	U9	3008009	link
Belt	U8	3006806	link	Belt	U9	3008010	link
				Belt	M730	3007861	link
Belt	U8	3006818	link	Belt	U9	3008009	link
				Belt	M730	3007863	link
Belt	R6	3004228	link	Belt	M730	3007862	link
				Longbow	U9	3008001	link
Belt	R6	3006931	link	Belt	M730	3007862	link
				Belt	U9	3008008	link
Belt	R6	3007389	link	Belt	M730	3007863	link
				Belt	U9	3008009	link
Belt	R6	3007907	link	Belt	M730	3007861	link
				Belt	U9	3008010	link

Products & Alternative Products

Product Name	IC	Product Code	Product Highlights	Alternative Product	Alter. IC	Product Code	Product Highlights
Belt	R6-P	3006790	link	Belt	M730	3008160	link
Belt	R6-P	3006852	link	Belt	M730	3007861	link
					U9	3008010	link
Belt	R6-P	3007171	link	Belt	M730	3007862	link
				Longbow	U9	3008001	link
Belt	R6-P	3007231	link	Belt	M730	3007863	link
				Belt	U9	3008009	link
Belt	U7	3003164	link	Longbow	U9	3008001	link
Belt	R6-P	3006412	link	Belt	M730	3007925	link
Belt	R6-P	3005068	link	Belt	M730	3007863	link
				Belt	U9	3008009	link
Belt	R6-P	3005066	link	Belt	M730	3007861	link
				Belt	U9	3008010	link
Dogbone	G2iM	3002241	link	Dogbone	U7XM	3005085	link
Dogbone	M4D	3001878	link	Dogbone	M750	3008195	link
Dogbone	M4D	3004832	link	Dogbone	M750	3007958	link
Dogbone	M4D	3002506	link	Dogbone	M750	3007481	link
Dogbone	R6	3004006	link	Dogbone	M730	3007482	link
Dogbone	R6	3006039	link	Dogbone	M730	3007958	link
Dogbone	R6	3006296	link	Dogbone	M750	3008201	link
Dogbone	R6	3004005	link	Dogbone	M750	3008192	link
Dogbone	R6-P	3006527	link	Dogbone	M750	3008202	link
Dogbone	R6-P	3005073	link	Dogbone	M750	3008195	link
Dogbone	R6-P	3005072	link	Dogbone	M750	3007958	link
Dogbone	M4D	3001874	link	Dogbone	M750	3007958	link
Dogbone	M4D	3002635	link	Dogbone	M750	3007958	link
Dogbone	M4D	3005778	link	Dogbone	M750	3007958	link
Dogbone	R6	3004908	link	Dogbone	M750	3007958	link
Dogbone	R6	3005779	link	Dogbone	M750	3007958	link
Dogbone	R6	3006669	link	Dogbone	M750	3007958	link

Products & Alternative Products

Product Name	IC	Product Code	Product Highlights	Alternative Product	Alter. IC	Product Code	Product Highlights
Dogbone	R6	3006883	link	Dogbone	M750	3008195	link
Dogbone	R6	3007107	link	Dogbone	M750	3008259	link
Dogbone	R6	3007899	link	Dogbone	M730	3008163	link
Dogbone	R6-P	3006616	link	Dogbone	M730	3007995	link
Dogbone	R6-P	3006642	link	Dogbone	M730	3007995	link
Dogbone	R6-P	3006644	link	Dogbone	M750	3007995	link
Dogbone	R6-P	3006880	link	Dogbone	M750	3007958	link
Dogbone	R6-P	3007202	link	Dogbone	M750	3007958	link
Dogbone	R6-P	3005071	link	Dogbone	M730	3008223	link
Dogbone	R6-P	3006917	link	Dogbone	M730	3008054	link
Dogbone	R6-P	3005072	link	Dogbone	M730	3007995	link
Miniweb	R6	3004855	link	Miniweb FCC	M730	3007568	link
				Miniweb FCC	U9	3008005	link
Miniweb	R6	3004858	link	Miniweb FCC	M730	3007567	link
				Miniweb FCC	U9	3008006	link
Miniweb	R6-P	3005075	link	Miniweb Global	M730	3007877	link
Miniweb	R6-P	3005074	link	Miniweb Global	M730	3007866	link
Miniweb	R6-P	3005081	link	Miniweb FCC	M730	3007567	link
				Miniweb FCC	U9	3008006	link
Miniweb	R6-P	3007096	link	Miniweb Global	M730	3008196	link
Miniweb	U8	3007035	link	Miniweb FCC	U9	3008017	link
				Miniweb FCC	M730	3007556	link
Miniweb	U8	3007034	link	Miniweb FCC	U9	3008006	link
				Miniweb FCC	M730	3007567	link
Miniweb	G2iM	3007094	link	Miniweb FCC	U7XM	3008270	link
Miniweb	R6	3004859	link	Miniweb FCC	M730	3007556	link
				Miniweb FCC	U9	3008017	link
Miniweb	R6	3005084	link	Miniweb Global	M730	3007866	link
Miniweb	R6	3005229	link	Miniweb FCC	M730	3007567	link
				Miniweb FCC	U9	3008006	link
Miniweb	R6-P	3006938	link	Miniweb Global	M730	3008131	link

Products & Alternative Products

Product Name	IC	Product Code	Product Highlights	Alternative Product	Alter. IC	Product Code	Product Highlights
Miniweb	R6-P	3007251	link	Miniweb Global	M730	3007877	link
Miniweb	R6-P	3008049	link	Miniweb Global	M730	3008092	link
Miniweb ETSI	R6-P	3005078	link	Miniweb Global	M730	3007865	link
Miniweb FCC	R6-P	3005079	link	Miniweb FCC	M730	3007568	link
				Miniweb FCC	U9	3008005	link
Miniweb FCC	R6-P	3005081	link	Miniweb FCC	U9	3008006	link
					M730	3007567	link
Miniweb FCC	R6-P	3005082	link	Miniweb FCC	M730	3007556	link
				Miniweb FCC	U9	3008017	link
Shortdipole	G2iM	3002236	link	Shortdipole Naked	U7XM	3007203	Coming soon
Shortdipole	G2iM	3002415	link	Shortdipole HighTemp	U7XM	3008116	Coming soon
Shortdipole	G2iM	3002237	link	Shortdipole 2-layer Wet	U7XM	3007204	Coming soon
Shortdipole	G2iM	3002477	link	Shortdipole 2-layer Wet	U7XM	3007204	Coming soon
Shortdipole	G2XM	3001773	link	Shortdipole	U7XM	3007204	Coming soon
Shortdipole	M4D	3002492	link	AD Squarewave	M730	3007901	link
Shortdipole	M4D	3002007	link	AD Squarewave	M730	3007906	link
Shortdipole	M4D	3001974	link	AD Squarewave	M730	3007902	link
Shortdipole	R6	3004232	link	AD Squarewave	M730	3008193	link
Shortdipole	R6	3004273	link	AD Squarewave	M730	3007906	link
Shortdipole	R6-P	3006471	link	AD Squarewave	M730	3007901	link
Shortdipole	R6-P	3006712	link	AD Squarewave	M730	3007902	link
Shortdipole	R6-P	3007030	link	AD Squarewave	M730	3007902	link
Shortdipole	R6-P	3005076	link	AD Squarewave	M730	3008193	link
Shortdipole	R6-P	3006981	link	AD Squarewave	M730	3008243	link
Shortdipole	R6-P	3007030	link	AD Squarewave	M730	3007902	link
Trap	M4D	3006605	link	AD Trap	M750	3007796	link
Web	M4D	3002136	link	Web	M750	3007842	link

Products & Alternative Products

Product Name	IC	Product Code	Product Highlights	Alternative Product	Alter. IC	Product Code	Product Highlights
Web	U7	3005226	link	Web	U9	3008208	link
					M730	3007973	link
Web	U7	3006649	link	Web	U9	3008204	link
					M730	3008203	link
Web	U7	3002977	link	Web	U9	3008013	link
				Web	M730	3008257	link
Web	U8	3007190	link	Web	U9	3008014	link
				Web	M730	3007808	link
Web	U8	3007189	link	Web	U9	3008013	link
				Web	M730	3007807	link
Web	R6	3006074	link	Web	M730	3007808	link
				Web	U9	3008014	link
Web	R6-P	3006082	link	Web	M730	3007806	link
				Web	U9	3008012	link
Web	R6-P	3006083	link	Web	M730	3007807	link
				Web	U9	3008013	link
Web	R6-P	3006084	link	Web	M730	3007808	link
				Web	U9	3008014	link
Web	R6-P	3006408	link	Web	M730	3007806	link
				Web	U9	3008012	link
Web	R6-P	3006411	link	Web	M730	3007808	link
				Web	U9	3008014	link
Web	R6-P	3006776	link	Web	M730	3008255	link
Web	R6-P	3007002	link	Web	M730	3008348	link
Web	U7	3006292	link	Web	U9	3008013	link
				Web	M730	3007807	link
Web NEL	R6-P	3006699	link	Web NEL	M730	3008146	link
Web NEL	R6-P	3006648	link	Web NEL	M730	3008203	link
				Web NEL	U9	3008204	link

IC Characteristics

	UCode 7	UCode 7XM	UCode 8	UCode 9
EPC Memory	128-bit	448-bit	128-bit	96-bit
User Memory	Nil	2048 bit	Nil	Nil
Sensitivity	-21 dBm	-19 dBm	-23 dbm	-24 dbm
Write Sensitivity	-16 dBm	-12 dBm	-17.8 dbm	-22.1 dbm
Special Commands and Features	(Perma) Lock, Kill, Access, BlockWrite, Product Status Flag, Tag Power Indicator, Parallel Encoding	Product Status Flag, BlockWrite, BlockPermalock, EPC Pre-Serialization, Parallel Encoding, Backscatter Strength Reduction, Tag Power Indicator, Untraceable feature, Access, Digital Signature	Lock Permalock Kill Access BlockWrite Untraceable Product Status Flag Self Adjust Memory Safeguard Brand Identifier	Self Adjust Memory Safeguard Dynamic BS Pre-serialized EPC

	R6	R6-P	M730	M750
EPC Memory	96-bit	96-bit / 128-bit	128-bit	96-bit
User Memory	Nil	64-bit / 32-bit	Nil	32-bit
Sensitivity	-22 dbm	-22 dbm	-24 dbm	-24 dbm
Write Sensitivity	-17 dbm	-17 dbm	-17.8 dbm	-22.1 dbm
Special Commands and Features	AutoTune™ TagFocus™ FastID™ BlockWrite PermaLock	AutoTune™ TagFocus™ FastID™ Access BlockWrite BlockPermalock Lock	AutoTune™ Short-Range Mode TagFocus™ FastID™ Access BlockWrite Lock Untraceable Protected Mode	AutoTune™ Short-Range Mode TagFocus™ FastID™ Access BlockWrite Lock Untraceable Protected Mode

	M4D	G2IL	G2IM	G2XM
EPC Memory	128-bit	128-bit	256-bit	240-bit
User Memory	32-bit	Nil	512 bit	512-bit
Sensitivity	-19.5 dBm	-18 dBm	17.5 dBm	-15 dBm
Write Sensitivity	-16.7 dBm	-	-	-
Special Commands and Features	TagFocus ™, FastID™, Access, BlockWrite, BlockPermaLock, True3D™	Read Protection, Built-In Product Status Flag, Backscatter Strength Reduction, Access, BlockWrite, Lock	Read Protection, Built-In Product Status Flag, Backscatter Strength Reduction, Access,BlockWrite, BlockPermalock, Lock, User TID (112 bit)	Read Protection, Block perma lock, Built-In Product Status Flag

Our capabilities include the most experienced RFID inlays and tags team in the industry. We offer the broadest portfolio of high-quality inlays and tags including many ARC certified products and ARC quality certification.

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