

THALES ALENIA SPACE ROADMAD ON PASSIVE COMPONENTS

SPCD 2026 – 6TH SPACE PASSIVE COMPONENTS DAYS

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TABLE OF CONTENTS

1 Key drivers / Market trends

2 Technology roadmap – Common passive

3 Magnetics roadmap

4 Resistors / Capacitors roadmap

5 Fuse / Filter roadmap

6 Connectors roadmap

7 RF passive components roadmap

8 Conclusion

THALES ALENIA SPACE PASSIVE COMPONENTS ROADMAP – KEY DRIVERS / MARKET TRENDS

KEY DRIVERS

SHORTER LEAD-TIME

- Faster development cycles
- More agility

COST REDUCTION

- Standardization
- COTS
- Process efficiency

HIGHER DENSITY

- Miniaturization
- Integration

Hi-REL MAINTAINED

- No compromise on performance
- Reliability & Quality

MARKET TRENDS

CONSTELLATION

- High volume
- Tight schedule
- COTS +++

SATCOM

- Shorter cycles
- Hi-Rel requirements maintained

THALES ALENIA SPACE PASSIVE COMPONENTS ROADMAP – COMMON PASSIVES

TECHNOLOGY ROADMAP – MAGNETICS / CAPACITOR / RESISTOR / FUSE / FILTER

	2026	2027 - 2028	2029 +
	Qualification & ramp-up of integrated solutions	COTS integration & deployment	Standardization & optimization
COTS & DESIGN AGILITY	COTS development & characterization	COTS qualification & deployment	COTS preferred for high-volume applications
MATERIAL / TERMINATIONS	SnPb preferred Sn100 to be mitigated Ni underlayer	Process robustness & qualification optimization	Standardized / optimized termination solutions

THALES ALENIA SPACE PASSIVE COMPONENTS ROADMAP - MAGNETICS

TECHNOLOGY ROADMAP	2026	2027 - 2028	2029 +
MINIATURIZATION & INTEGRATION	0603 qualifed & in use Planar qualifed & expanding	0402 qualification Integrated magnetics development	Embedded solutions replacing discrete planar where applicable
FILTERING / CMC / SESI	Core technologies qualified & in use	Size / value optimization Molded inductor, Nanocrystaline core vs ferrite core,	Standard / COTS solutions where applicable

THALES ALENIA SPACE PASSIVE COMPONENTS ROADMAP – RESISTOR / CAPACITOR

TECHNOLOGY ROADMAP	2026	2027 - 2028	2029 +
MINIATURIZATION & INTEGRATION	R/C 0402 Reverse geometry 0612/1020 (Power) Qualified & in use	0201 evaluation	Embedded solutions replacing discrete SMD where applicable
FILTERING / DECOUPLING BGA / FPGA	Standard technologies qualified & in use Pulse Power Resistor	Size / Value / Voltage optimization New dielectric for capacitors Upgrading COTS to HR Aluminium Polymer CAP & SuperCapacitors	Standard / COTS solutions where applicable

THALES ALENIA SPACE PASSIVE COMPONENTS ROADMAP – FUSE / FILTER

TECHNOLOGY ROADMAP	2026	2027 - 2028	2029 +
MINIATURIZATION & INTEGRATION	SMD Ceramic filter evaluation HiRel and COTS	SMD Qualification Mainly COTS	Integrated solutions replacing discrete SMD where applicable
RF performances / DC filtering Equipment protection	EMI and Ceramic Filter / 1206 fuses qualified & in use	Size / value optimization Thin Film Chip	Standard / COTS solutions where applicable

THALES ALENIA SPACE PASSIVE COMPONENTS ROADMAP – CONNECTORS

TECHNOLOGY ROADMAP	2026 – 2029 +			
GENERAL REQUIREMENTS	Reliable interconnection solutions	High density-integrated solutions	Solderless terminations or SMD terminations for fully Automated assembly	Fast locking solutions
HIGH DATA RATE	High Data Rate connectors up to 28Gbps and 56Gbps (Board to board / Board to Harness configurations)			
FLOATING MOUNTING CONFIGURATION	Board to board interconnection with floating mounting capability			
BOARD TO BOARD CONNECTORS (SMD, pin in paste, Press-fit or Solderless)	Modular/Flexible connectors with a mix of Power / DC /High data rate and RF signals in the housing			
BOARD TO HARNESS CONNECTORS	Power / DC / High data rate and RF signals proposed in the same type of housing Automatable solutions			

THALES ALENIA SPACE PASSIVE COMPONENTS ROADMAP – RF PASSIVE COMPONENTS

TECHNOLOGY ROADMAP	2026 – 2029 +			
GENERAL REQUIREMENTS	Components designed to be Glitch Free	Minimum Shielding effectiveness of 75dBi	Integrated solutions – Fast locking system	High frequency solutions
PHASE STABILITY	RF components (cable assy & ISO/CIRC) with phase stability over temperature			
INTEGRATED SOLUTIONS	Multiport RF connectors / SMD RF connectors for fully automated assembly – Solderless RF connectors			
HIGH FREQUENCY	SMPm & SMPW RF connectors			
EUROPEAN SOLUTIONS	SMD RF filters : - C/Ku/Ka/Q/V band : high Q factor, large RF bandwidth (>10%) / intermediate RF bandwidth (6-10%) - L/S/C band : high voltage, narrow RF bandwidth (<3%)			

THALES ALENIA SPACE PASSIVE COMPONENTS ROADMAP – CONCLUSION

→ As long as needed, for Class 1 programs, TAS uses ESCC / MIL qualified Components or according to ESCC / MIL / NASA standards

→ But TAS is also oriented/focused on COTS solutions (High runners vs High Rel market) for other programs/constellations

- To get solutions in line with its needs and requirements (performances, industrialization, reliability)
- To get competitive solutions (cost, lead time)
- Consequence : implementation of a disruptive approach for the selection/evaluation/ qualification/supply chain to avoid any reliability issues

CONCLUSION **Standardization • COTS adoption • Integration • Manufacturing optimization**

THANK YOU