Space Passive Components Days
4th SPCD edition

Welcome speech

Dr. Ali Zadeh
Head of the Data Systems, Microelectronics & Component Technology Division TEC-ED

ESA ESTEC

12/10/2022

SPACE PASSIVE COMPONENT DAYS

SPCD 2022

Jointly organized by

Co-sponsored by

Aim of the SPCD Conference

The SPCD international Symposium is the premier technical conference dedicated to Passive components for space applications.

EEE passive components for space applications

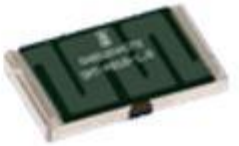

Capacitors & Supercapacitors


Power dividers & Couplers


Connectors & Interconnections


Cable assemblies & Harness


Relays & Switches


Resistors

Fuses


Circulators & Isolators


RF switches & Phase shifters


Loads & Attenuators


SAW devices (SAW Filters, etc.)

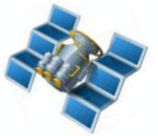

Crystals & Oscillators


Heaters & Thermal Sensors


Magnetics

Aim of the SPCD Conference

Space Agencies



Manufacturers

✓ Promote discussions
✓ Exchange technical expertise
✓ Share information

End-users

~234 Participants
21 Countries
35 Oral Presentations
16 TIC Presentations
1 Interactive Panel
10 Posters
2 Private Roadmap Presentations
29 Booths

SPCD in numbers

SPCD	Participants	Countries
1st edition	212	21
2nd edition	221	19
3rd edition	235	23
4th edition	234	21

4th SPCD programme

Nine technical topics: 35 presentations

- Technology Roadmaps
- Commercial Off-The-Shelf
- Normative System & Standards
- New Developments
- Materials and Processes
- Application, Trends & Needs
- Test, Reliability & Evaluation for space
- Evaluation & Qualification
- Lessons Learned and In-flight Experiences

+ 16 x Technical Introduction of Components (TICs)

+ Interactive Panel session

+ Dedicated Poster session

+ Private Roadmap sessions

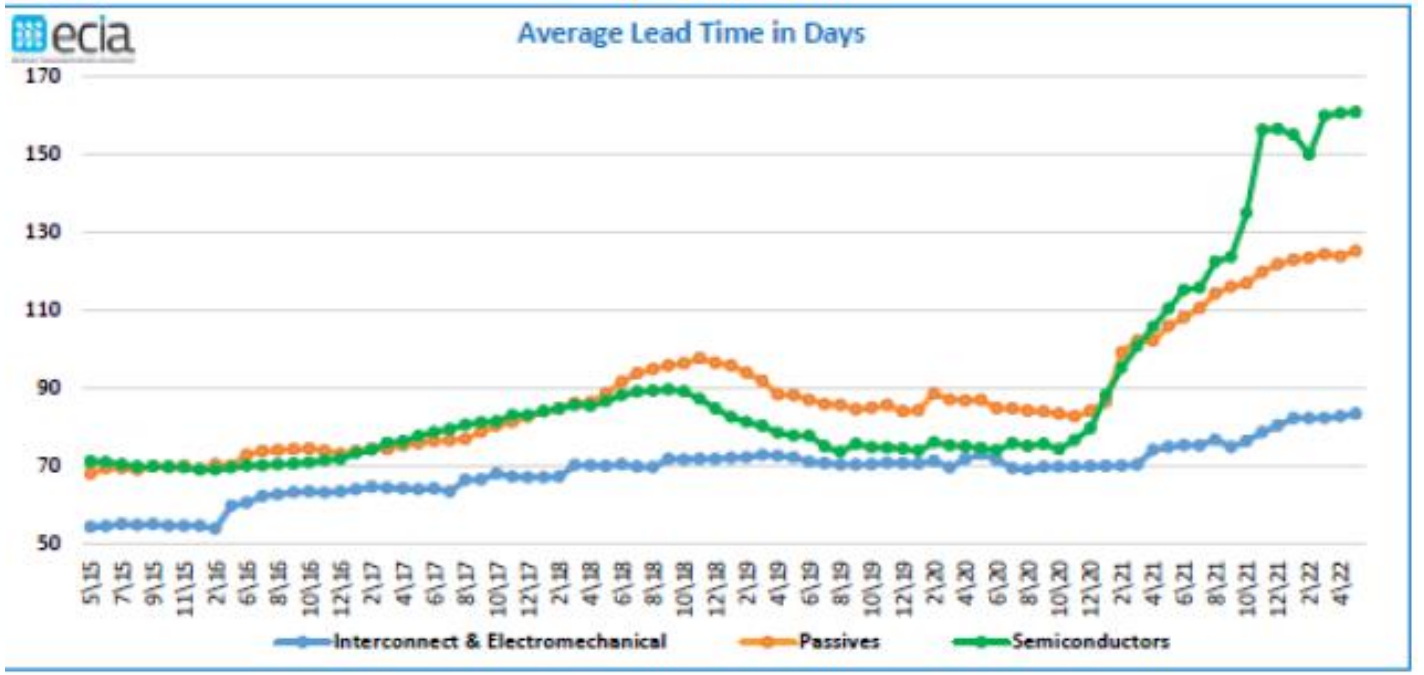
Exhibition Floor Plan

Exhibitors	#
esa	1
JAXA	2
EATON Powering Business Worldwide	3
KEMET a YAGEO company	4
C&K AEROSPACE	5
Positronic	6
Amphenol	7
FLUX power magnetics	8
GORE	9
AXTAL	10
iST Innovative Sensor Technology physical, chemical, biological.	11
MinWave	12
SCHURTER ELECTRONIC COMPONENTS	13
Glenair	14

Exhibitors	#
EXXELIA	15
KYOCERA AVX	16
ALTER TECHNOLOGY	17
MINDREACH	18
smiths interconnect	19
Radiall	20
PRESIDIO	21
COBHAM	22
axon' cable & interconnect	23
Rosenberger	24
VISHAY	25
Coilcraft	26
AirBorn	27
DMTL Distributed Micro Technology Ltd	28
VANGUARD ELECTRONICS High Reliability Inductors & Transformers	29

Lead Time Challenge

The rise of lead times is not exclusively affecting semiconductor/active devices, as it is now also usual to find standard passive parts with lead times beyond 52 weeks!



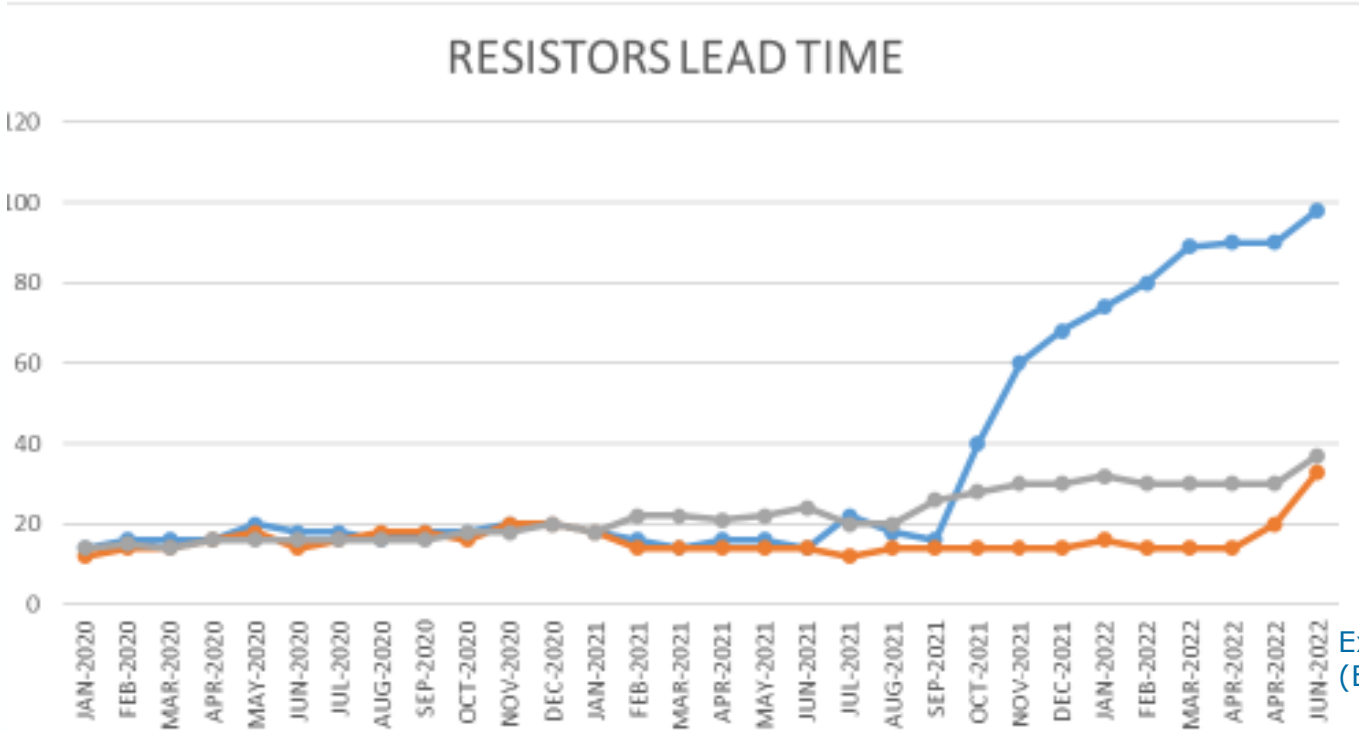
A recent report from ECIA (Electronic Components Industry Association) shows a clear picture of this lead time increase with multiplying factors x3 for commercial active and passive components as well.

Although this figure is related to commercial devices, lead times for EEE space parts is becoming more and more affected by this trend. Lead times of passive components have a faster rising trend than semiconductors devices!

Lead Time Challenge

Today, several EEE Passive Components are considered as Long Lead Items.

As an example, QPL thin film resistors' procurement can take up to 100 weeks (~2 years!) :



Extract from ALTER TN
(ESA contract:000130475/20/NL/FGU)

Procurement of EEE Passive Components parts has a huge impact at Satellite level, mainly in terms of schedule.

More information should be discussed during the Interactive Panel Session, Thursday 13th @17h:

"Long Lead Items: shortage, challenges and potential improvements"

Technology Development Challenge: a success story from TDE to Space

One example of building up the space passive component supply chain in Europe:

The TDE activity "Ka-band SMD isolator development" has helped Cobham in successfully proposing a similar SMD Ka-band isolator technology to TAS Italy for the Telesat program.

Also another order has been also issued through an ARTES activity.

- ✓ Developed in the frame of an ESA funded TDE activity (formerly known as TRP):

« SMD Isolator Development » with additional 3 power variants (up to 10W)

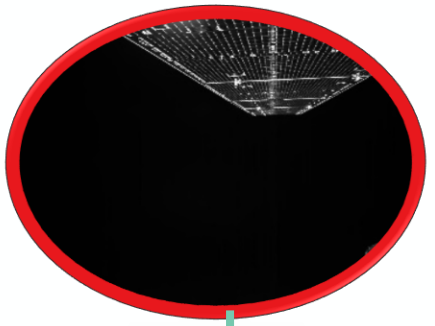
- ✓ Budget:300 K€
- ✓ ESCC Evaluation successfully achieved!

EEE Space Component Sovereignty for Europe

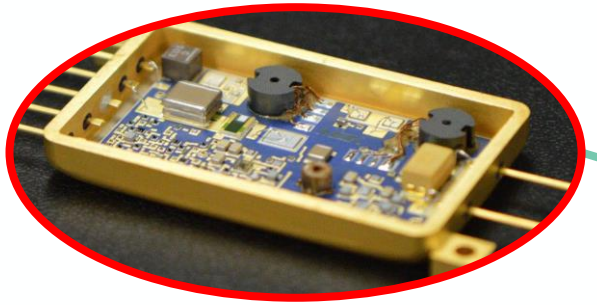
- → Establishing a long-term sustainable and uninterrupted access of state-of-the-art technologies to ESA programmes through long term partnership with European Supply-Chains.
- → Enabling European competitiveness, by ensuring that the right technology, at the right maturity level is available at the right time unhindered by (export) restrictions.
- → Fostering long-term industrial partnerships with strategic EEE-manufacturers allowing continuous access of relevant EEE Components.
- → Pursuing a tight-knit collaborative framework mechanism with supply-chain, end users and ESA programme directorates with flexible development up to qualification, adopting E2E secured funding to achieve time-to-market.
- → Smart verification and qualification approach including flight on IOD/IOV as part of process acceleration (time-to-market)
- → Optional Activity as a GSTP Component

Key Technology Lines

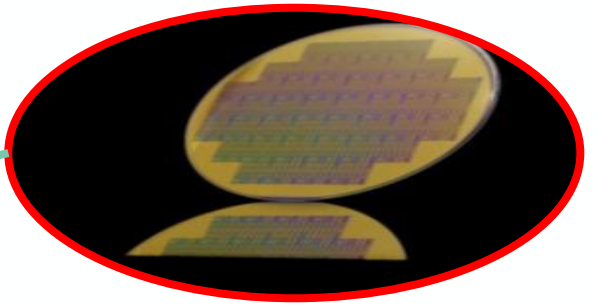
Solar Cells



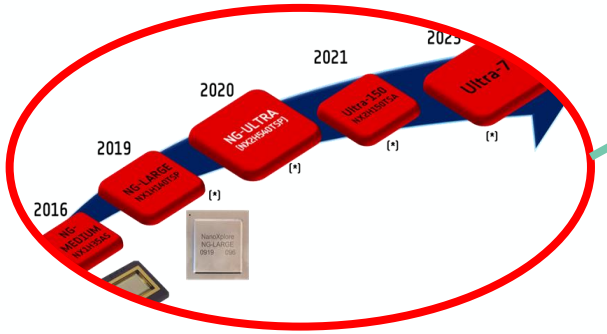
Packaging and Hybrids,
PCB, Electronic assembly



Wide Band Gap: GaN/SiC
Microwave/Power



Test Facilities



(Ultra)Deep Sub Micron

Photonics

Conclusions

In the last years, we have seen exiting evolutions in the industrial landscape:

- Mega-Constellations
- “New Space” with new entrepreneurs and new risk taking
- Cubesats with limited mission duration and reliability requirements
- Terrestrial demand towards high-rel components (safety critical automotive, energy applications etc.)

The observed changes often require new programmatic and normative approach towards the development, qualification and use of EEE-components.

COTS have been used for decades at ESA. However, today, a normative procurement approach is in place in order to allow for a proper procurement, including evaluation and qualification testing of commercial and automotive EEE Passive parts!

Passives EEE Components are key to this change. The SPCD therefore represents a great venue to discuss new technologies and challenges ahead.

Space Passive Components Days
4th SPCD edition

Welcome speech

Dr. Ali Zadeh
Head of the Data Systems, Microelectronics & Component Technology Division TEC-ED

ESA ESTEC

12/10/2022