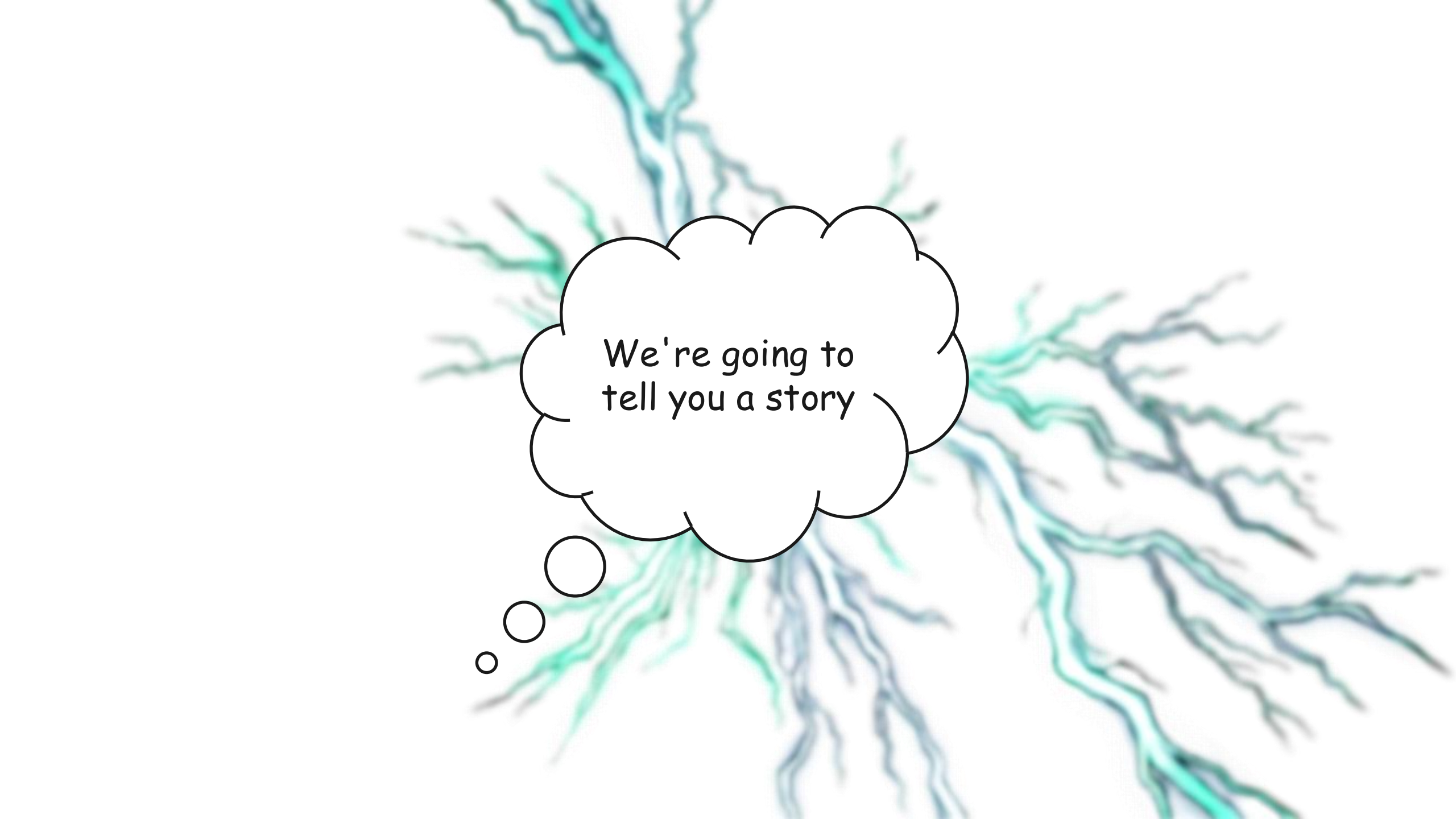
CM-HVLP

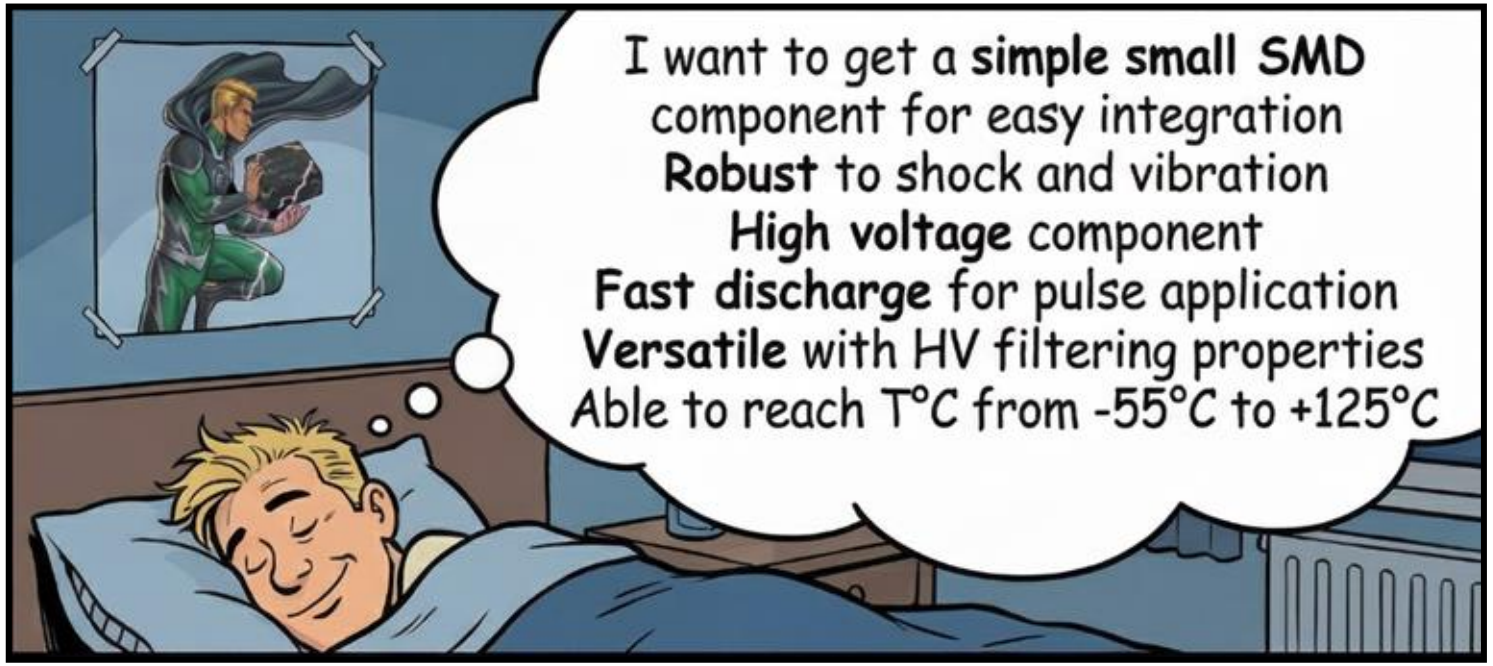
Compact **SMD** package for **high voltage pulse** and **filtering** applications

29/04/2026

www.exxelia.com


We're going to
tell you a story


New Difficult specifications
Even smaller
Even lighter
Even more robust
Easier to integrate

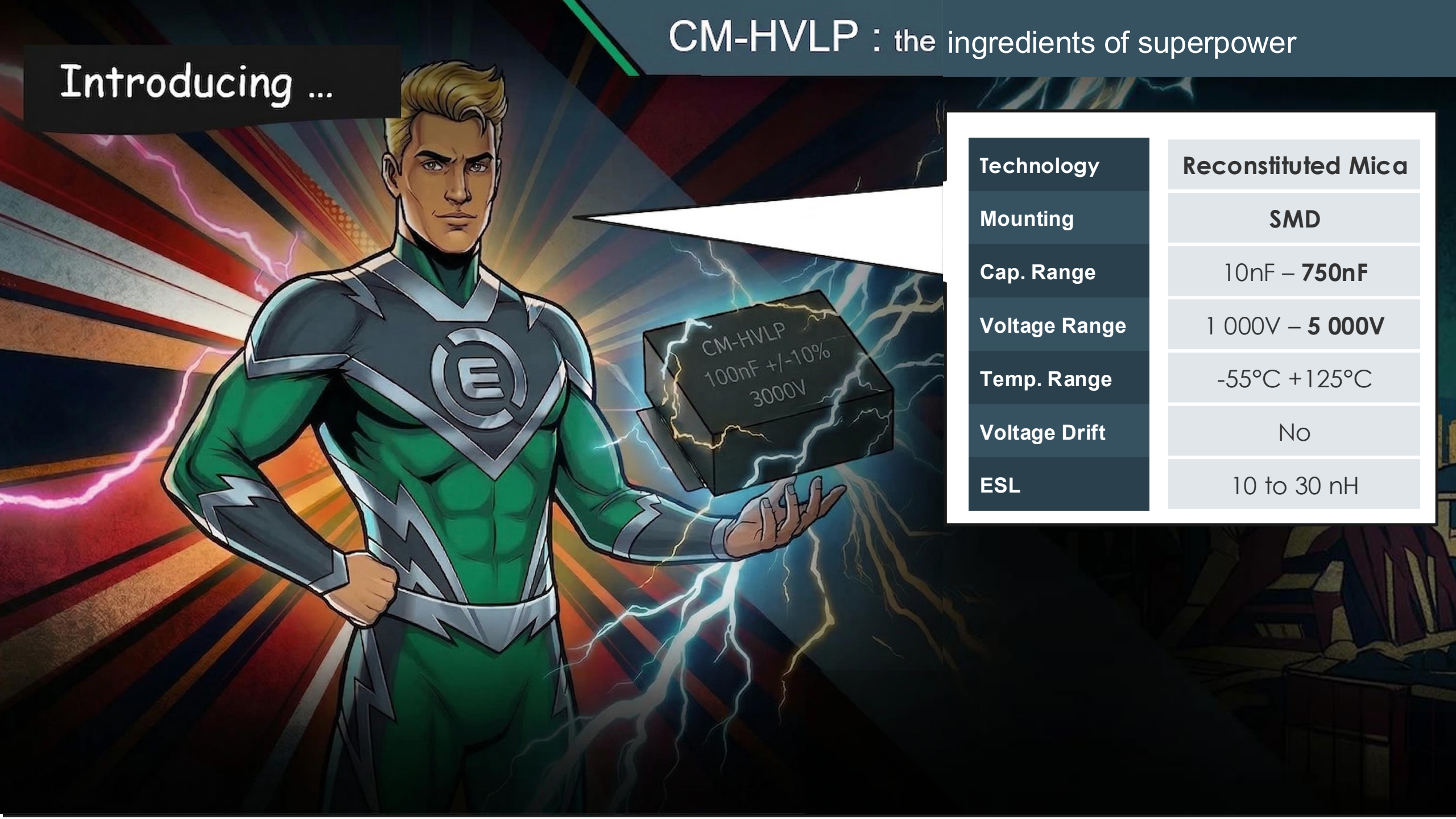

I want to get a **simple small SMD** component for easy integration
Robust to shock and vibration
High voltage component
Fast discharge for pulse application
Versatile with HV filtering properties
Able to reach T°C from -55°C to +125°C


In fact, I need a Super Hero to help me


High voltage,
low profile,
robust
CM-HVLP
100nF +/- 10%
3000V

CM-HVLP : the ingredients of superpower

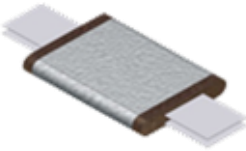
Introducing ...



Technology	**Reconstituted Mica**
Mounting	**SMD**
Cap. Range	10nF – **750nF**
Voltage Range	1 000V – **5 000V**
Temp. Range	-55°C +125°C
Voltage Drift	No
ESL	10 to 30 nH

What is a Reconstituted Mica Capacitor?

A super-stable ‘engineered stone’ dielectric for high-voltage and harsh environments



What it is

- Natural mica (mineral)
- Processed into winding
  + impregnated resin
- Forms a solid dielectric

Why it’s special

- **Stable**
  Minimal drift
- **Heat resistant**
  Operates in harsh environments
- **Handles high voltage**
  kV Range

How it compares

	Ceramic	Film	Mica
Size	Small	Med	Med Large
Stability	Good	Very Good	Excellent
Reliability	Good	Very Good	Excellent

Mica = stability + strength when failure is not an option

Now available in SMD — delivering high-voltage mica performance in a compact footprint

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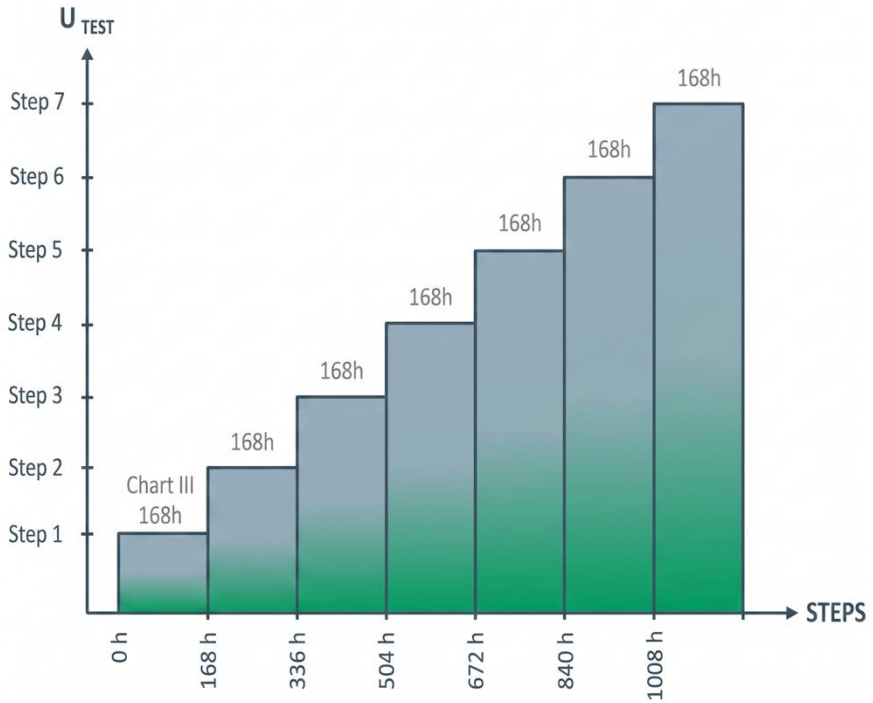
Our experience of the Reconstituted Mica Capacitor?

Space QPL series:

30 Years of Space heritage:
ESA QPL on our series HT86PS/HT97PS

Evaluation test done on the dielectric:

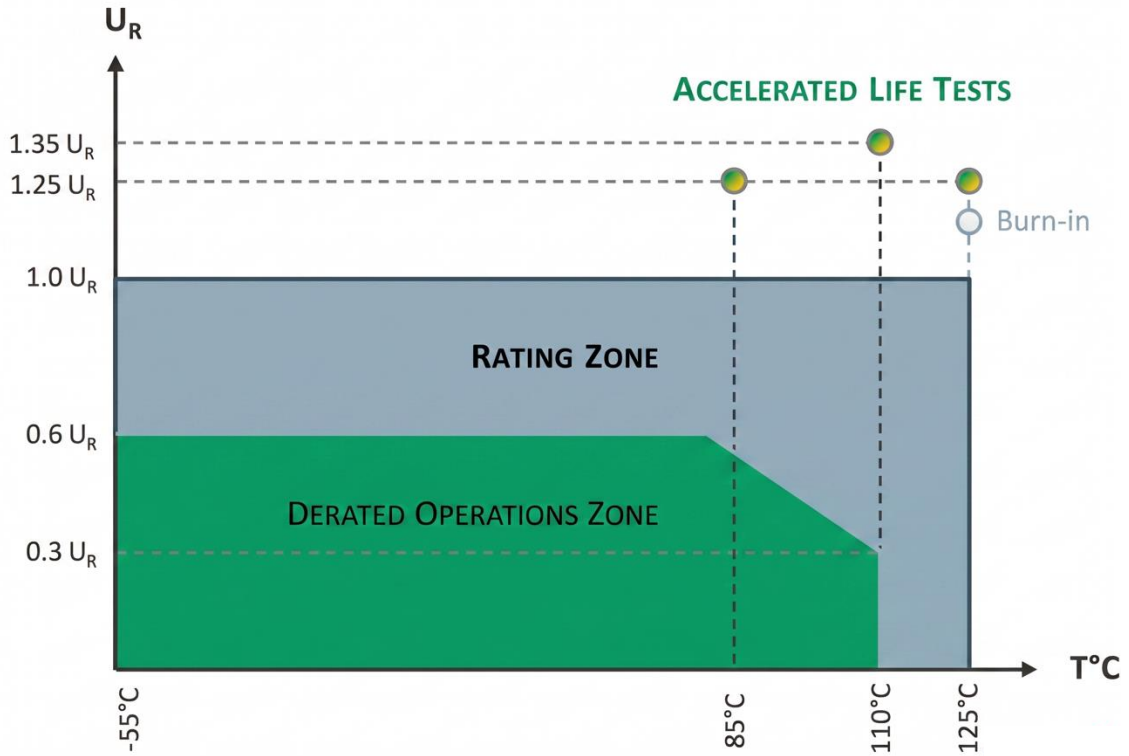
This evaluation helped us to determine a temperature & voltage acceleration factor



Management of the robustness:

Typically in space the operating voltage should be derated for capacitors.

CM-HVLP could be proposed without voltage derating up to 125°C.



CM-HVLP - 2 components in one – Pulse or Filtering

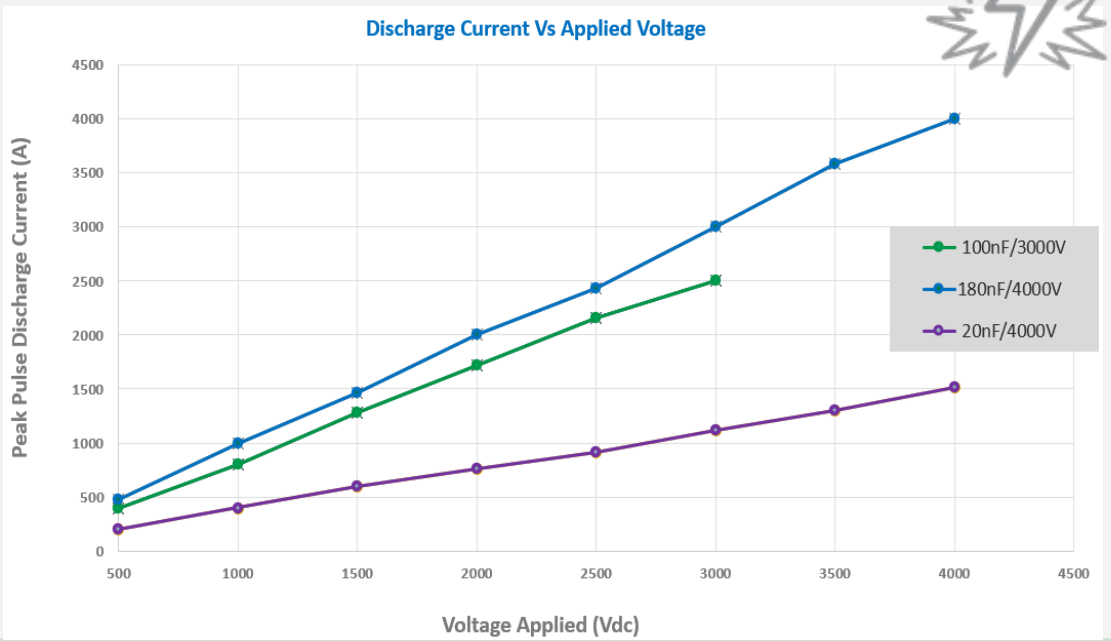
Where Mica Wins: High Voltage Pulse & Filtering

No capacitance drift under DC bias: rated capacitance is maintained in operation

Stable over temperature: (ΔC) −5% at −55 °C / +5% at +125 °C

Pulse Applications

- Up to **5 kV** discharge voltage, qualified for 1k cycles
- Low ESL: **10-30** nH > fast discharge, high peak current
- Low dielectric losses (tan δ ≤ 0.005)
- High peak current capability: Up to **4,000 A**



High Voltage Filtering

- Voltage rating: up to **4 kV**
- Long lifetime: up to **300,000 hours** at 0.6 × Un, 110 °C

Life Test Conditions and Expected Duration	85°C / 1,25 U_{RC} Life Test 5000 h	110°C / 1,35 U_{RC} Life Test 1000 h	125°C / 1,25 U_{RC} Life Test 1000 h
Estimated Equivalnet Life Time	851500 h	840672 h	8668530 h
for Operating under 0.6 U_R at 85°C	97,2 yers	96,0 yers	99,1 yers
Estimated Equivalnet Life Time	295607 h	291900 h	301432 h
for Operating under 0.6 U_R at 110°C	33,7 yers	33,3 yers	34,4 yers

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Where Mica Wins: High Voltage Pulse & Filtering

Designed for high energy, high voltage, and long-life applications

Pulse Applications

- Handles **high-energy surges**
- Withstands **repeated electrical stress**
- No **performance degradation** over the lifetime

Key Applications

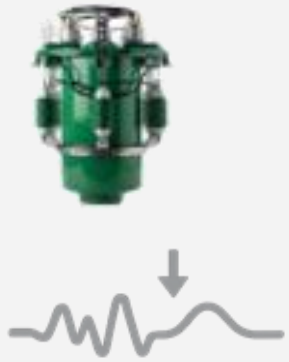
- Radar systems
- TWT / travelling wave tube systems
- Missile ignition
- Power switching
- Laser systems
- Medical pulse equipment

High Voltage Filtering

- **Stable capacitance** at high voltage
- **Low losses** (high efficiency)
- **Long-term** reliability (minimum drift and leakage)

Key Applications

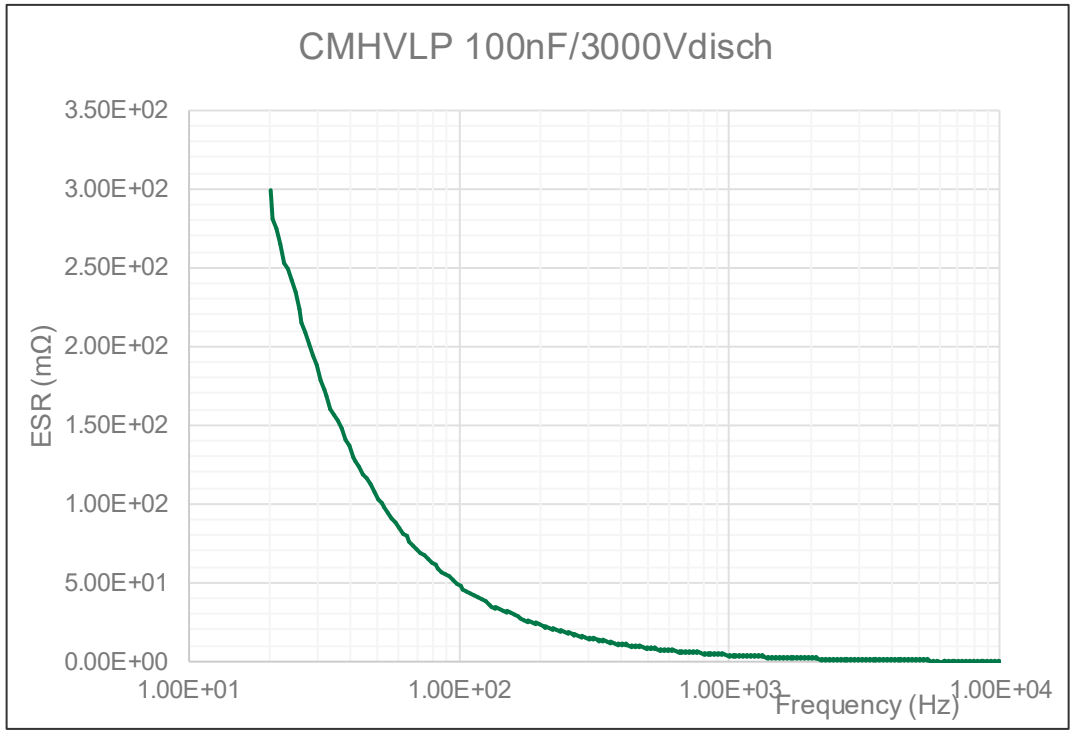
- HV power supplies
- Energy infrastructure
- Aerospace & industrial systems
- EV / charging systems



One solution for both pulse stress and high-voltage filtering

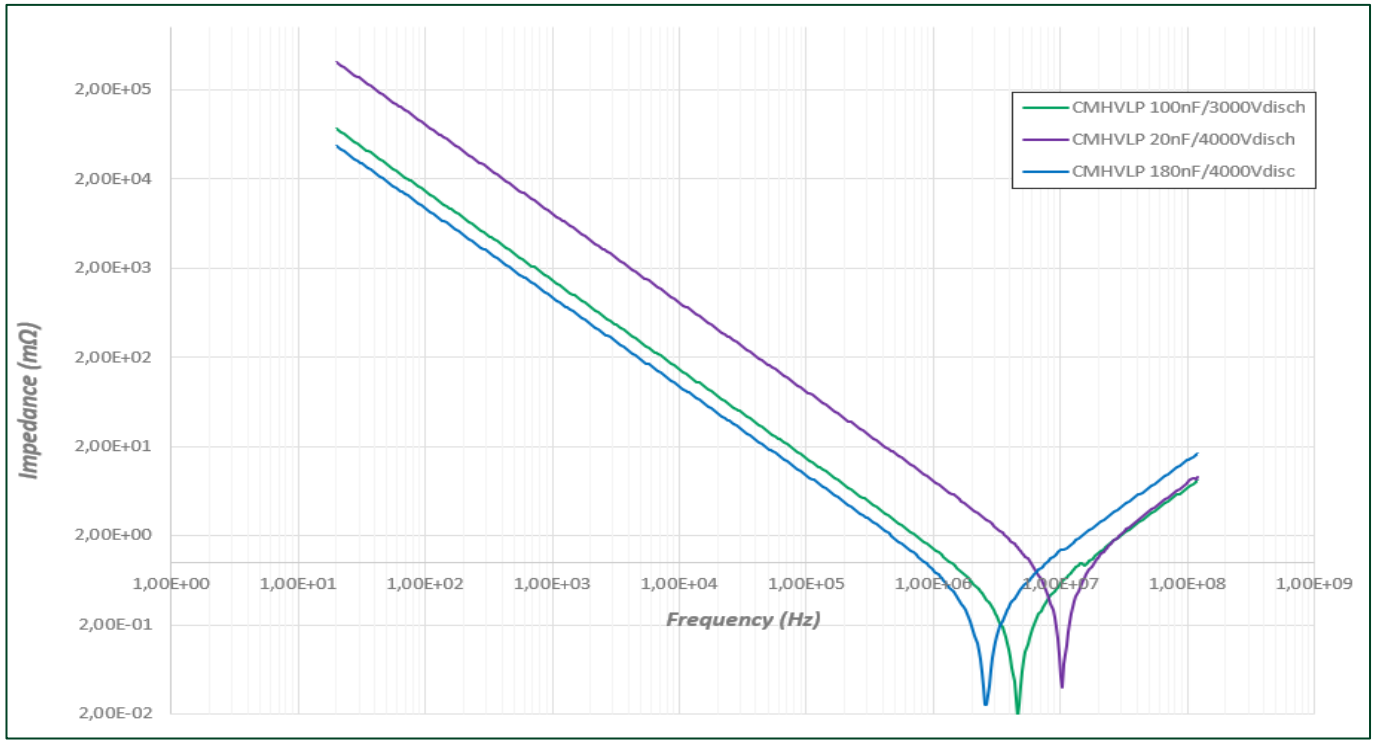
Some data

ESR VS Frequency



Typical cap/V value

Impedance VS Frequency



Resonnance Frequency:

CMHVLP 20nF/4000Vdisch : 10,1MHz

CMHVLP 100nF/3000Vdisch : 4,35MHz

CMHVLP 180nF/4000Vdisch : 2,5MHz

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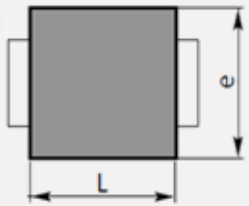
Easy integration – small footprint and low profile

High-Performance Capacitance in a Compact SMD Form

Compact Integration

- Minimum Footprint:
  20 × 20 mm (8080)



- Minimum Height:
  6.5 mm (1/4”)

- Fits dense,
  low-profile designs

Smaller than a stamp

Thiner than a pen **of 8 mm**

Manufacturing Ready

- SMD Assembly
  Compatible with:
  - Reflow Soldering
  - Wave Soldering
  - Manual Soldering
- RoHS Available

Designed for HV Applications

- Controlled lead spacing
- Enable PCB downsizing
- Meets creepage and clearance requirements for HV PCB designs.

Up to 66% smaller than equivalent film capacitor solutions

High-voltage performance in an SMD footprint for space-constrained PCB designs

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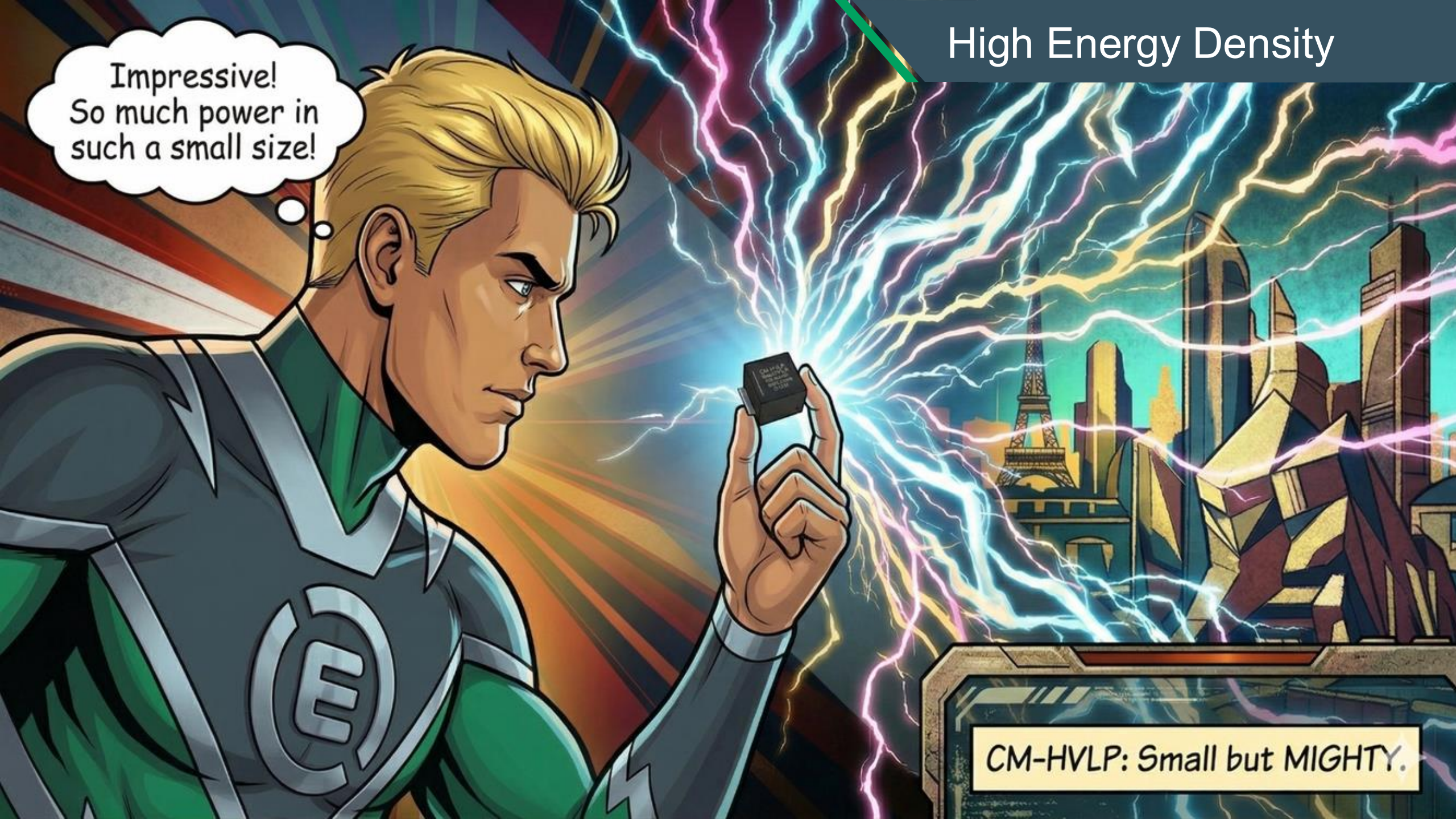
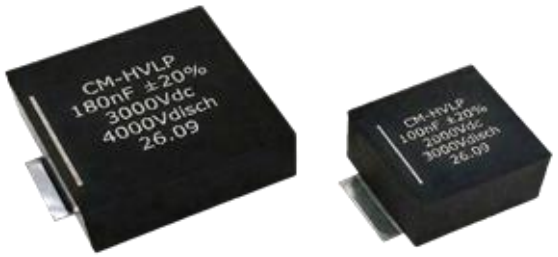
High Energy Density



High Energy Density in Compact SMD Mica



CM-HVLP

- Exxelia's expertise in mica and space-grade designs enabled optimization of construction and manufacturing, reducing size while increasing energy density.
- **Result:** the smallest standard SMD mica capacitor available today.

Up to 3.6× smaller footprint for the same energy

	Exxelia CM-HVLP	Competitor A	Competitor B	Competitor C
Energy Density (J/L)	**126**	52	42	35
Relative Size for Same Energy	**1× (reference)**	2.4× larger	3.0× larger	3.6× larger

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FWOOSH!
CM-HVLP
100nF +/-20%
2000Vdc
3000VDISCH
26.03
KRA-KOOM!
NO STRESS WITH MECHANICAL SHOCKS AND VIBRATION

Robust Under Mechanical Stress & Harsh Environments

Designed for high-reliability environments (aerospace, defense, energy systems)

- MIL-STD-202
- ESA ESCC 3006
- IEC 60068-2-27

Qualification acc. to Standards

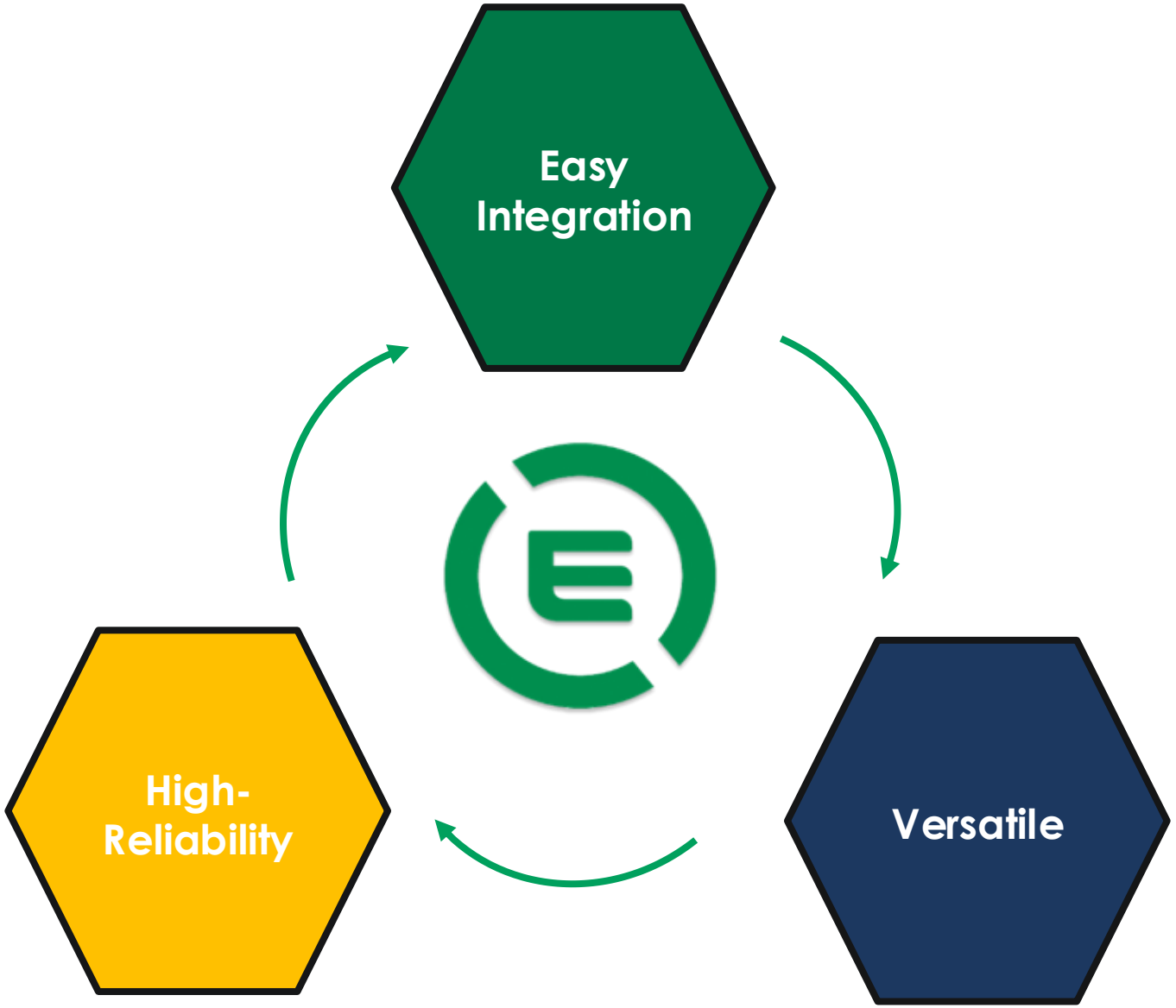
- Shock: 200 G
  Acceleration: 100 G
- Thermal Cycling:
  −55°C to +125°C (500 cycles)
- Epoxy-sealed, mechanically robust construction

Mechanical Performance

- Aircraft & jet engine starters
- High-voltage motor run systems
- Missile systems (TWT, ignition)
- Rocket launch systems
- Satellite propulsion (thrusters)

Target Applications

What you need to know about the CM-HVLP superpower



- **Easy integration :** Small footprint, SMD, low profile
- **Versatile:** Pulse or filtering, good characteristics for multiple applications without any export licence restrictions
- **High-reliability:** strong heritage on space and defense projects. Robust material and strong qualifications

Visit our website **www.exxelia.com**