

Rubycon

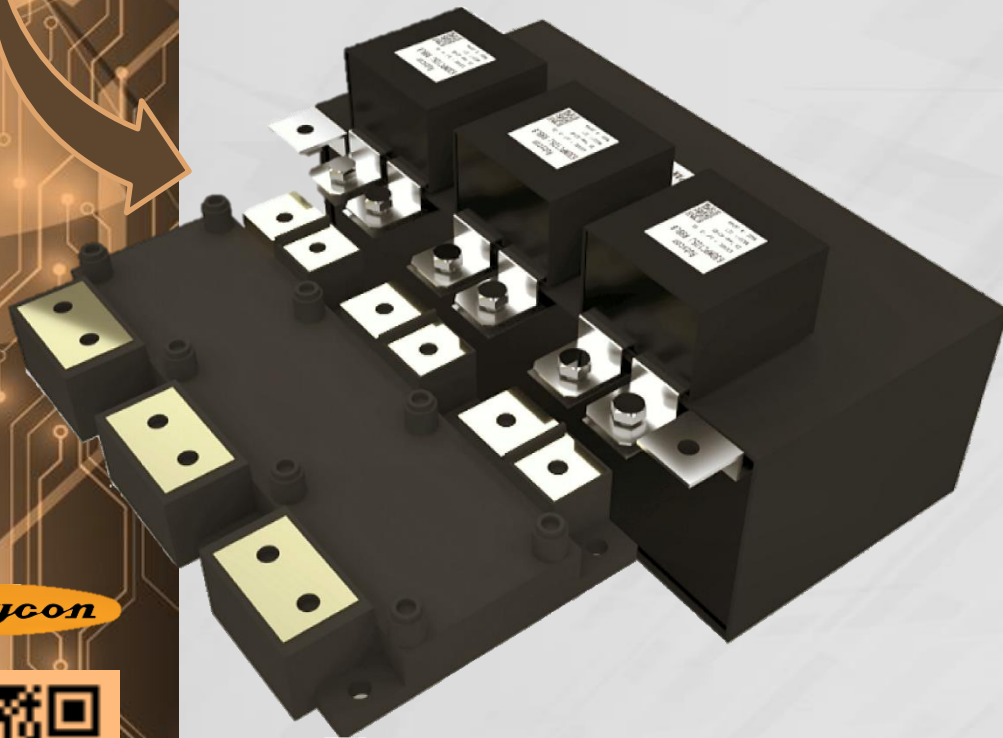
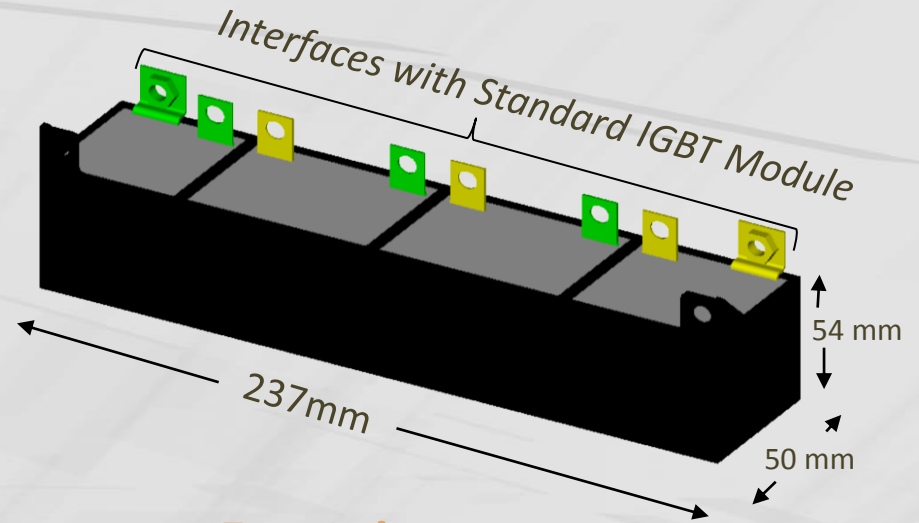
DC LINK CAPACITOR- FOR IGBT MODULE

Applications

Hybrid Electric Vehicle
Electric Vehicle

450HVC507K R81L
HVC Series

DC Link Film Capacitor



Featuring:

- ❑ Metalized Polypropylene Film
- ❑ 450 VDC Input
- ❑ 500 μ F Capacitance
- ❑ +/- 10% Tolerance
- ❑ 120Arms Ripple Current
- ❑ ≤ 25 nH Low ESL (40MHz)
- ❑ -40 ~+105°C Temperature Range
- ❑ Self Healing
- ❑ Power Surge Protection Design
- ❑ RoHS Compliant
- ❑ Non Combustible Epoxy Resin

*Shown with optional Rubycon Snubber Capacitors
& IGBT Module- Not Supplied By Rubycon*

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• Quality • Reliability • Precision

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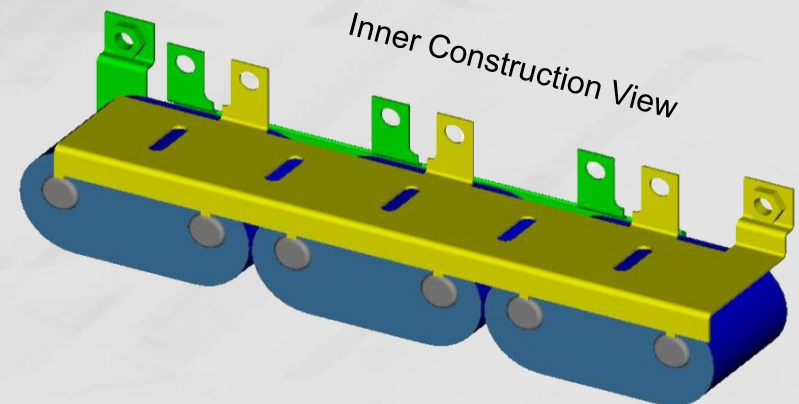


ELECTRICAL SPECS:

Nominal capacitance	500 μ F (1kHz \pm 20%, 25 \pm 5 $^{\circ}$ C)
Capacitance tolerance	\pm 10 %
tan δ	\leq 0.5 % (1kHz \pm 20%, 25 \pm 5 $^{\circ}$ C)
Rating voltage	450 Vdc
Ripple current	120 Arms (10 kHz) Graph-1
E.S.L.	\leq 25 nH (40MHz)
Voltage proof	Between terminals : 675 Vdc (10sec,25 \pm 5 $^{\circ}$ C)
	Between terminals and exterior cladding : 2000 Vac (60sec)
Insulation resistance	Between terminals : 6.0 M Ω min \leq (100VDC,120sec,25 \pm 5 $^{\circ}$ C)
Category temperature range	Temperature: -40 $^{\circ}$ C to 105 $^{\circ}$ C (Hotspot Temperature)

CONSTRUCTION:

Dielectric substance	Metallized polypropylene film
Case	PPS or Phenolic resin
Filling material	Noncombustible epoxy resin
Terminal	Terminal tinned to copper



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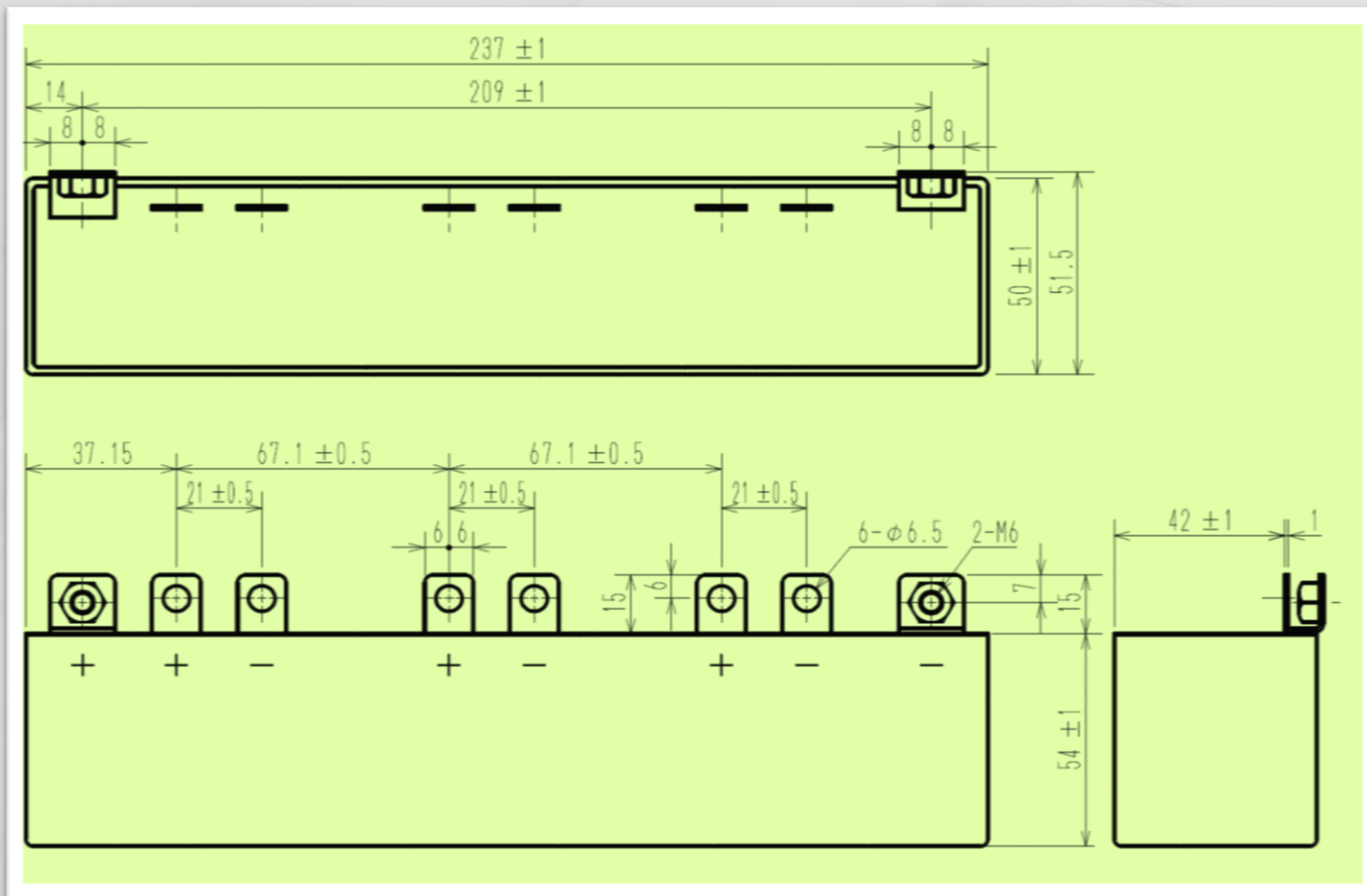
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DIMENSIONS (mm)



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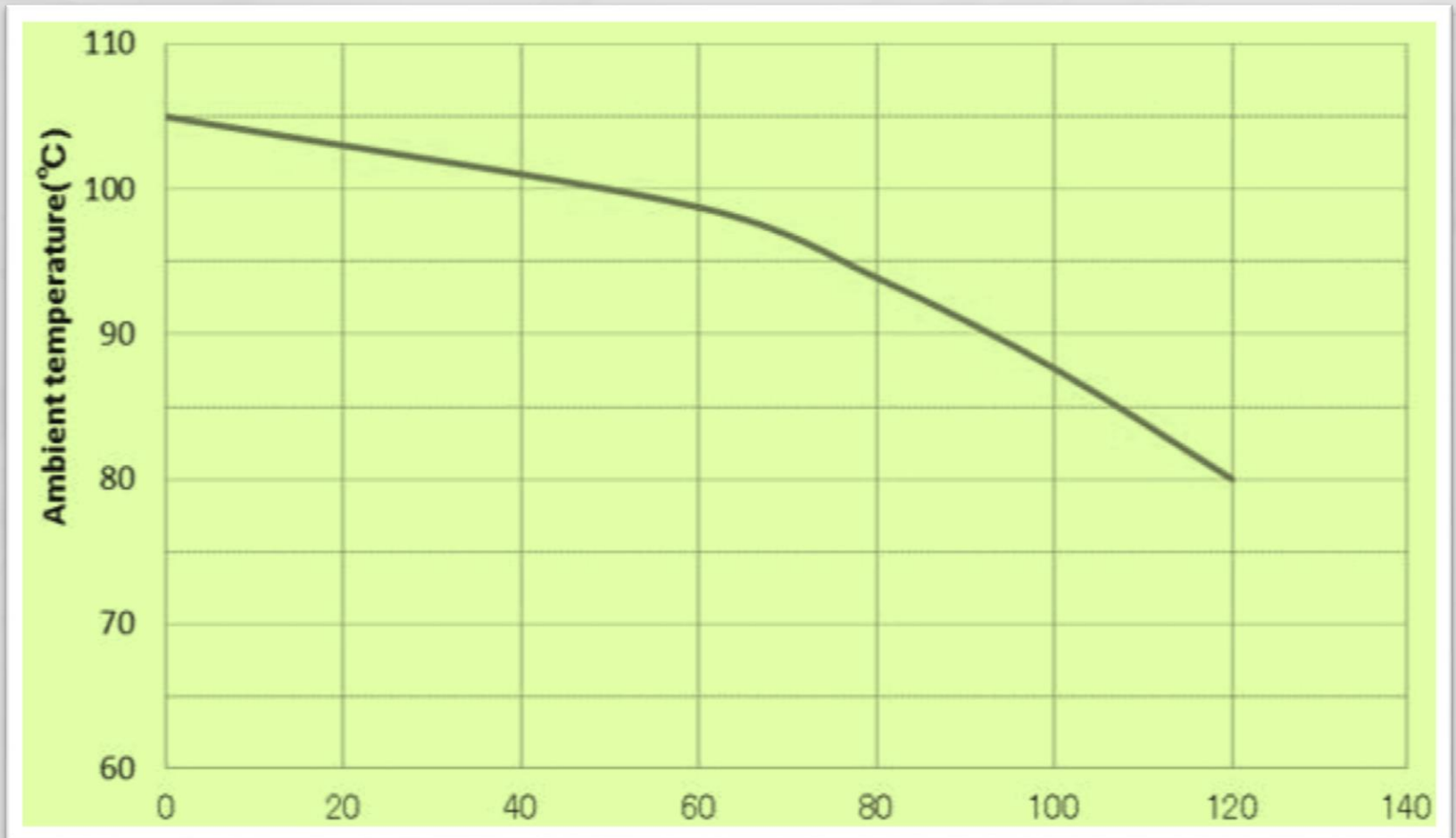
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AMBIENT TEMP. VS MAX CURRENT



Current (Amps)

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Material Technology

Rubycon DC Link Capacitors are designed utilizing our original metallizing technologies. When excessive self healing occurs, there is a potential for short circuit failure. Rubycon's fuse pattern metallization resolves this problem



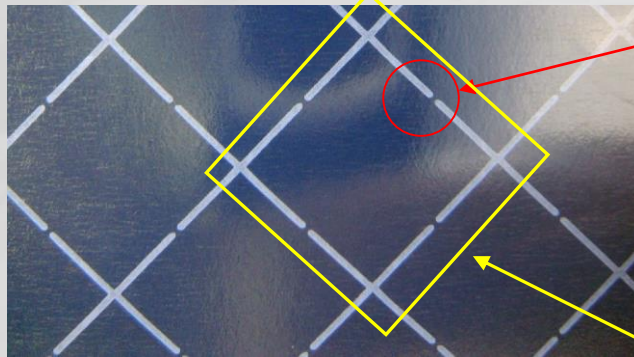
Deposition Apparatus



Deposition film

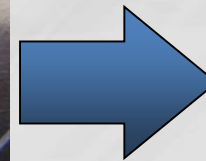
Safety Mechanism

Pattern Protection Device

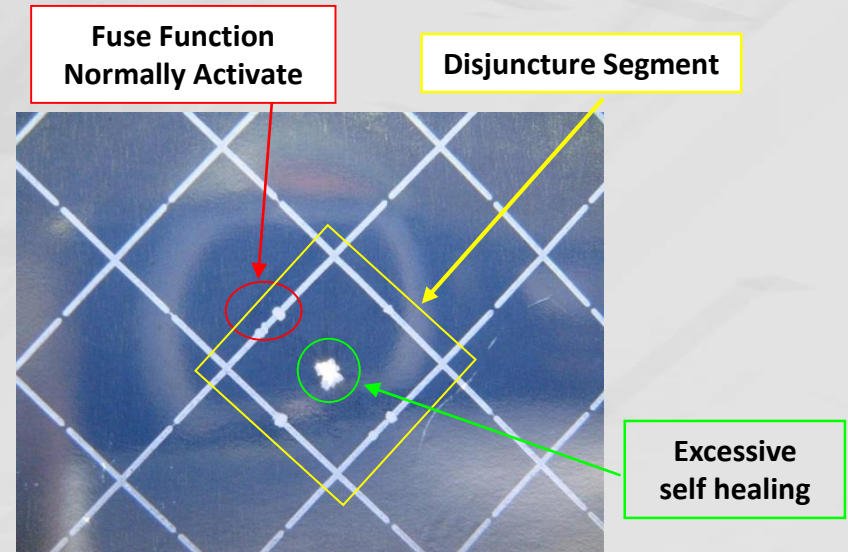


Normal condition

Fuse Mechanism



Segment



Open failure mode by safety disjuncture of electric short circuit position

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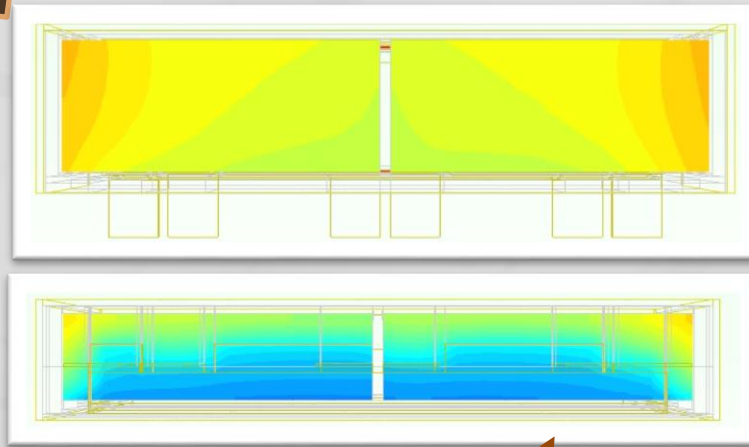
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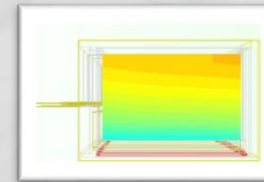


Thermal Analysis



T ambient → 115°C

Element Temperature
Distribution by External
Heat Source



T surface cooling → 85°C

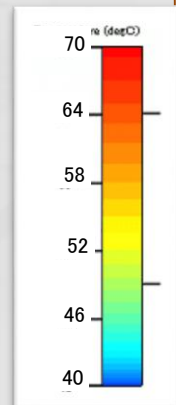
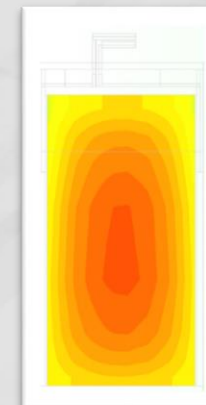
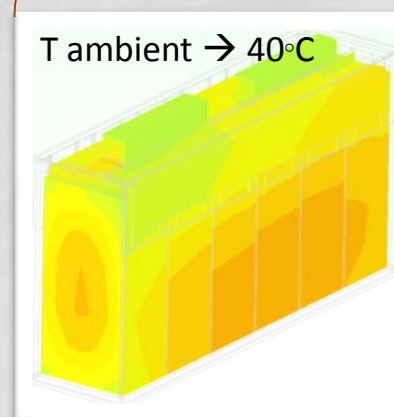
Hot Spot Analysis

Heat Load Applied via
constant current.

Terminal temp rise + 10 °C

Ripple Current Applied →
218 Arms /10KHz

T ambient → 40°C



Higher Ripple Current can be applied with capacitor cooling. Rubycon utilizes FEM
(Finite Element Method) to design capacitor based on customer requirements.

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