

Attracting Tomorrow



Product presentation – ModCap HF

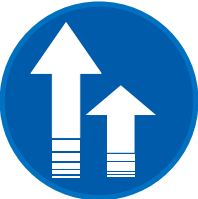
DCR Modular | New Modular High Frequency Series



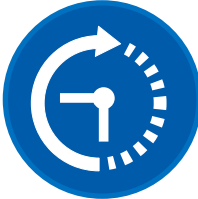
TDK Electronics AG
FILM ESPEC HP
Málaga, Spain
Sept 1st, 2022

Introducing the New Modular HF series Highlights

Switch it faster !!!



The most powered design
with highest power density



Reduce time to market
& lead time



Cost saving solution
Reduce weight & volume

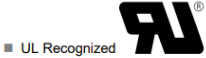


Ultra low ESR vs frequency

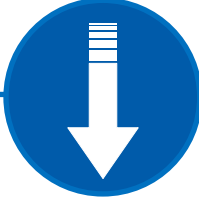


MODCAP HF

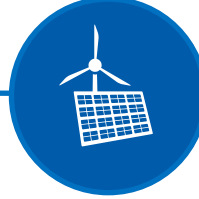
Product developed
fire and smoke compliant



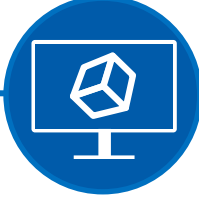
Low inductance (8 nH)
to avoid use of additional
snubbers



Renewable energies &
Traction (SiC)



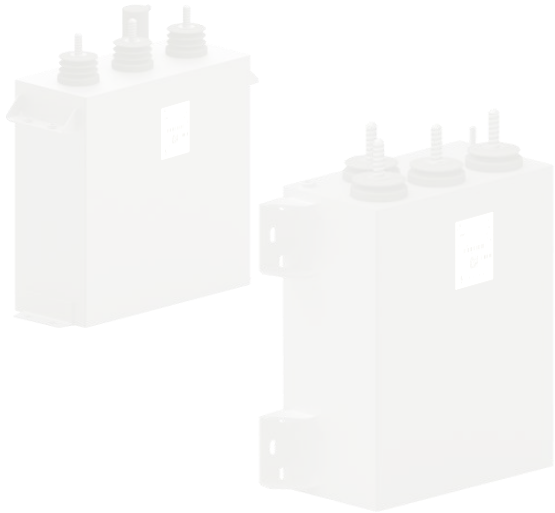
Finite elements analysis



ModCap HF series | B25647

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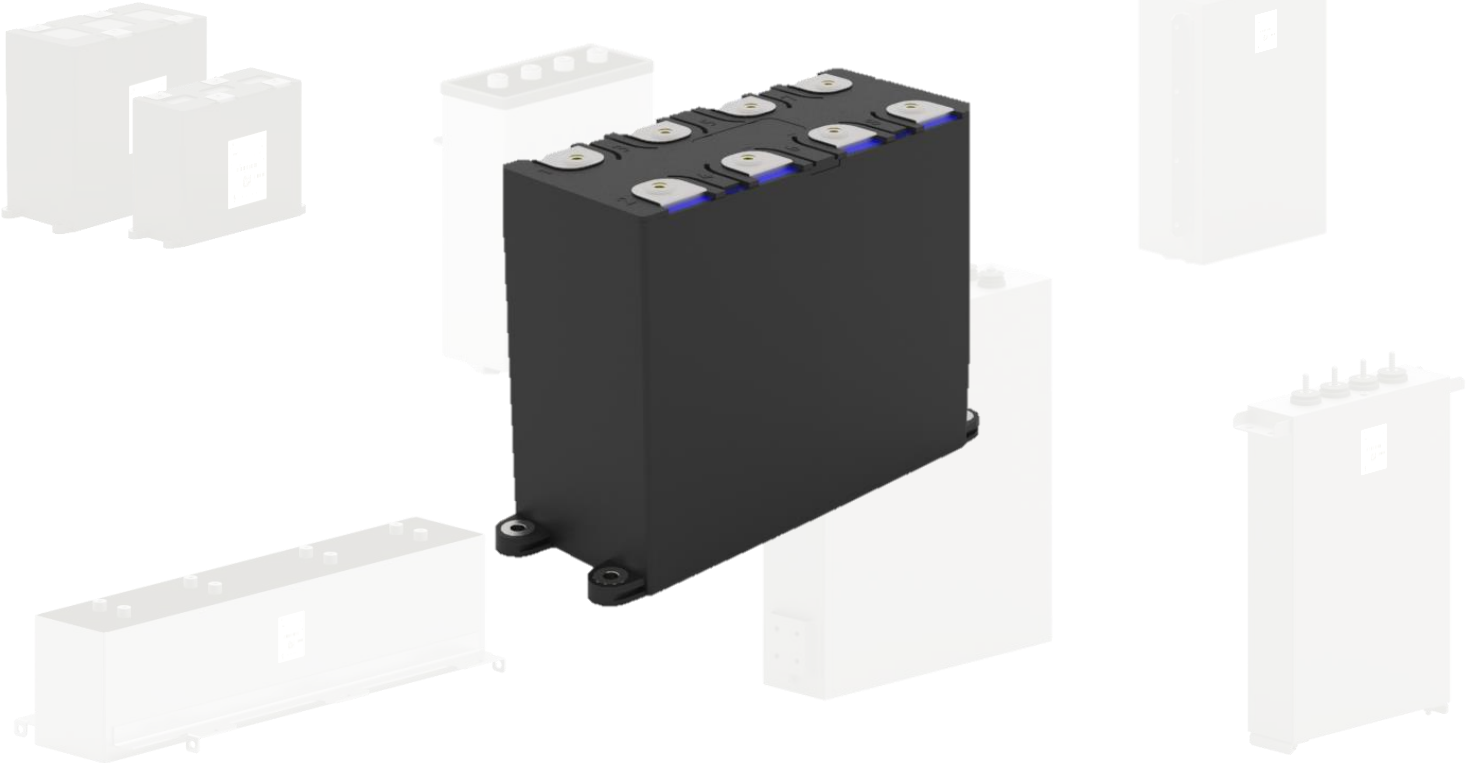
AC FILTER



MKK-HP

=

DC-LINK / DC FILTER

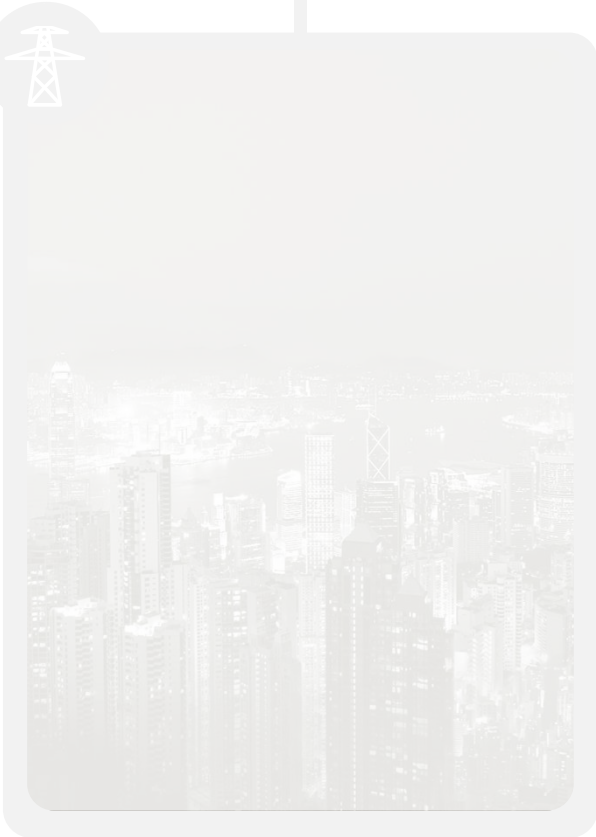


ModCap HF / MKK-DCR / MKK-DCi-R / MKK-DCi-H

ModCa HF series | B25647

DC-Link applications

Energy transmission



Renewable energies



Traction



Industry

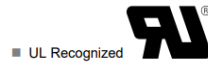


General overview

B25647 series

= ModCap HF (dry-modular-high frequency)

NEW



Features

- Capacitance range from 640 μF up to 1850 μF and voltage from 900 V up to 1,600 V
- Low ESL (8 nH)
- Temperature range up to 90 °C hotspot
- IEC 61071, IEC 61881-1, EN 45545-2 HL3 R23 (fire and smoke), UL recognized
- Filled with polyurethane resin (dry technology)
- Plastic case (opened), 8 terminals construction
- Flat windings

Benefits

- High power density, high frequency performance
- Modular concept for parallelization
- Snubber avoidance / low voltage overshoot
- Lifetime up to 200,000 hours
- Finite elements analysis available for the whole series
- Specially recommended for SiC semiconductors
- Reduced time to market & lead time

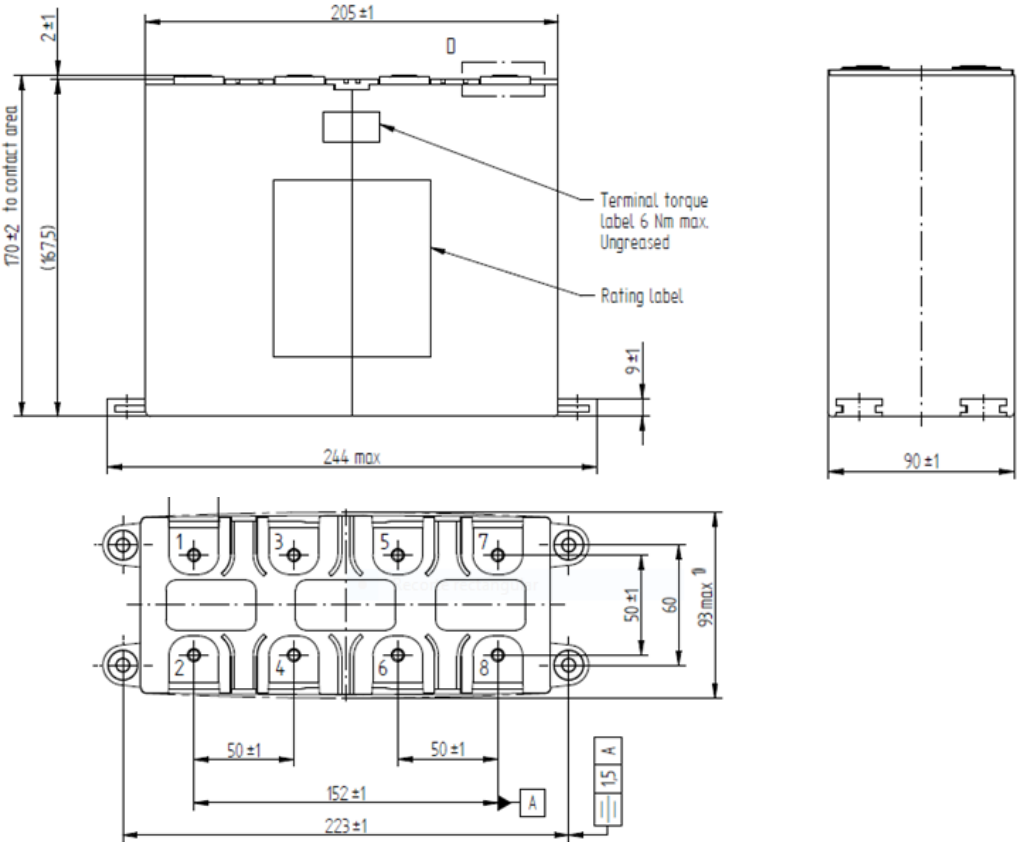


Recommended applications

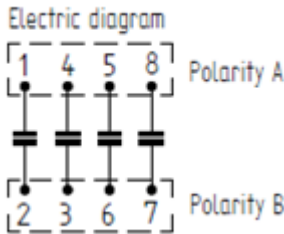
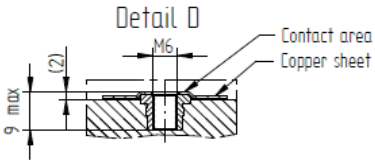
Construction C

Simplified drawing & 3-D

Main dimensions: 243 x 169.5 x 90 mm



Terminal



3D

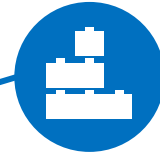


Highlights: HF performance, Ultra low ESL & higher operation temperature

Compact power unit



- Capacitors can be mounted very close to the power modules to reduce loop inductance.

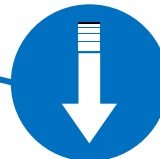


→ **Compact and scalable solution specially designed for SiC semiconductors**



→ **Less investment on cooling**

- Very short connection between capacitor and semi-conductor



→ **Ultra Low inductance (8nH)**

→ **Snubber capacitors avoidance and suppression of HF resonance**

Electromagnetic behavior of Modular HF Series

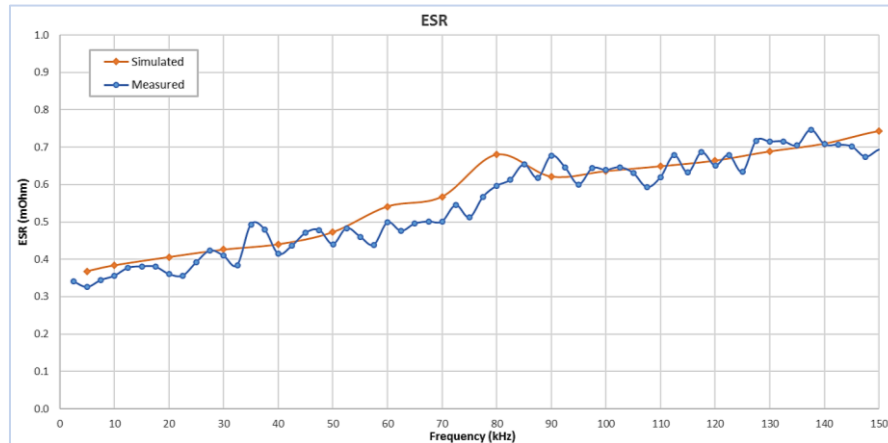
Electromagnetic: modelling

Customer benefits

Customer Input
Current-frequency spectrum

TDK Input
Capacitor design

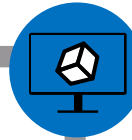
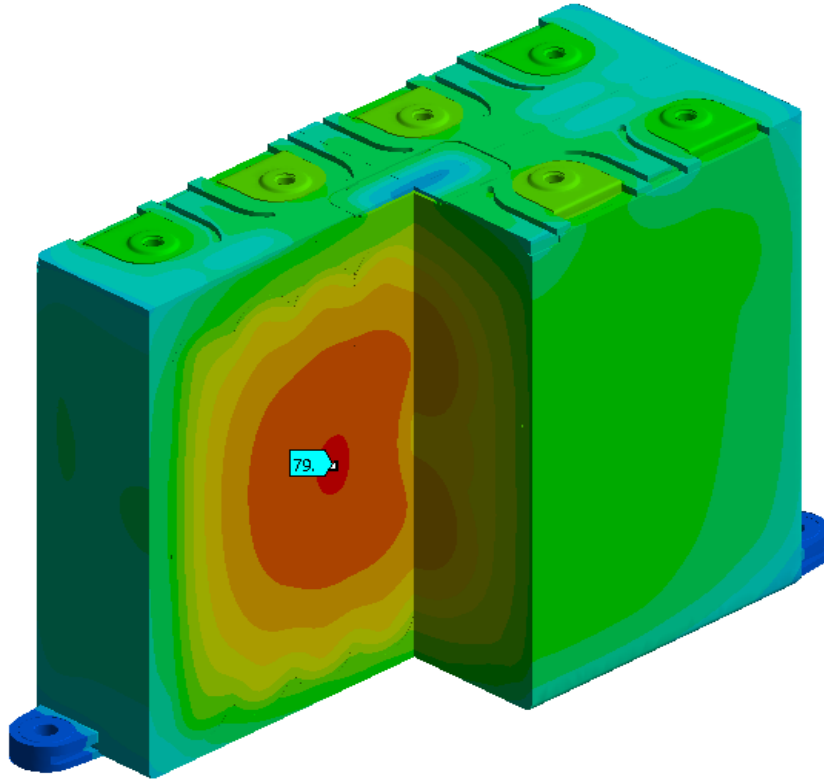
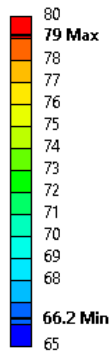
Simulation
Capacitor electrical model: including ESL and ESR Vs Freq
Total losses and its internal distribution (must for accurate thermal simulation)



- Electromagnetic model available for specific simulation according to current-frequency spectrum defined by the customer.
- Capacitor electrical model available in time and frequency domain
- Losses at defined current-frequency spectrum and its internal distribution
- Graphs with simulated ESR fully available for further thermal calculations by calculating losses all along the complete range of frequency

Thermal: hot spot & temperature mapping

B: ModCapHF_75mm
Temperature
Type: Temperature
Unit: °C
Time: 1 s



Customer benefits

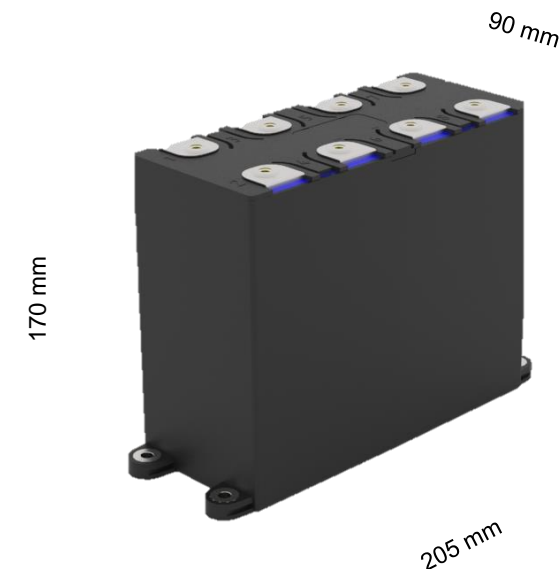
- Thermal model available for specific simulation according to spectrum and boundary conditions defined by the customer.
- Thermal simulations to be integrated as part of the type test report.
- Thermal Simulations may reduce the complexity and time of technical approvals, no further specific thermal stability test on lab.
- Detailed Temperature mapping allows customer to estimate in advance hot spot areas
- Thermal Simulation to be done as per specific customer requirements (customized current spectrum and thermal boundary conditions)
- Heating Transference from bus bar may be analyzed in advance

ModCap HF

Ordering Code System

ModCap HF: Construction C

Nominal voltage (V)	Capacitance ±10% (µF)	Nominal current (A)	Surge current (kA)	Repetitive peak current (kA)	Dimensions (LxWxH, mm)	Construction	Part Number
900	1850	210	225	5	205x90x170	C	B25647A9198K003
1000	1520	200	220	5	205x90x170	C	B25647A1158K003
1100	1200	190	215	5	205x90x170	C	B25647A1128K003
1250	940	180	210	5	205x90x170	C	B25647A1947K003
1350	880	170	205	5	205x90x170	C	B25647A1887K003
1600	640	160	200	5	205x90x170	C	B25647A1647K003



Get more info [here](#)



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