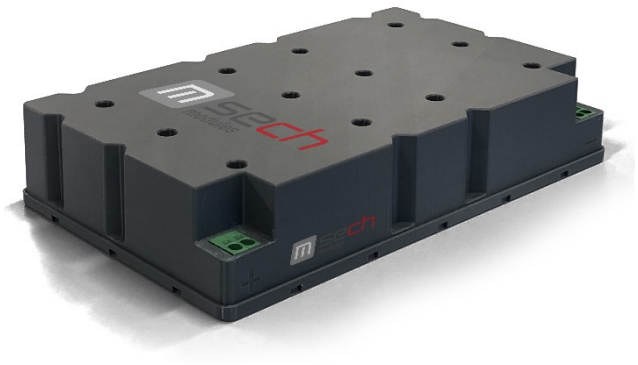
Product Datasheet

174V 6.2F module

- Rated voltage 174VDC
- 6.2F capacitance
- Resistive cell balancing
- Compact and light weight package
- Based on 360F hermetically sealed cells
- PCB push-in connections



ELECTRICAL SPECIFICATIONS	
Type	**M14S-174-0006**
Rated Voltage V_R	174.00 V
Surge Voltage V_S[1]	179.80 V
Rated Capacitance C[2]	6.2 F
Capacitance Tolerance[3]	0% / +20%
DC ESR[2]	<120 mΩ
Leakage Current IL[4]	<25 mA
Constant Current (ΔT = 15°C)[6]	11 A
Max Current I_{Max}[7]	309 A
Short Current I_S[8]	1.5 kA
Stored Energy E[9]	26 Wh
Energy Density E_d[10]	4.9 Wh/kg
Usable Power DensityP_d[11]	6 kW/kg
Impedance Match Power Density P_{dMax}[12]	11.9 kW/kg

THERMAL CHARACTERISTICS	
Type	**M14S-174-0006**
Working Temperature	-40 ~ 65°C
Storage Temperature[13]	-40 ~ 70°C
Thermal Resistance R_{Th}[14]	1°C/W
Thermal Capacitance C_{Th}[15]	5'000 J/°C

LIFETIME CHARACTERISTICS	
Type	**M14S-174-0006**
DC Life at High Temperature[16]	1500 hours
DC Life at RT[17]	10 years
Cycle Life[18]	1'000'000 cycles
Shelf Life[19]	4 years

SAFETY & ENVIRONMENTAL SPECIFICATIONS	
Type	**M14S-174-0006**
Safety	RoHS, REACH
Vibration	IEC60068-2-6
Shock	IEC60068-2-28, 29
Environmental Protection	IP44

MONITORING AND CELL VOLTAGE MANAGEMENT

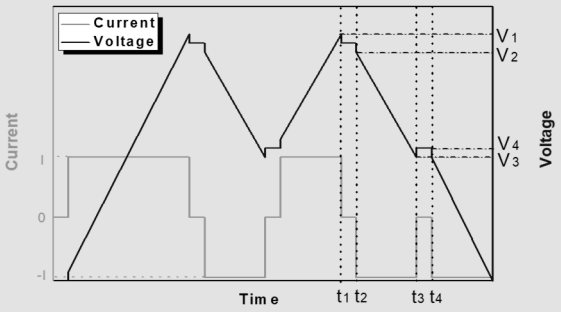
Type	M14S-174-0006
Cell Voltage Management	Passive balancing

PHYSICAL PARAMETERS

Type		M14S-174-0006
Mass M		5.3 kg
Terminals[20]		PCB push-in connections, 0.75 – 16mm^2
Dimensions[21]	Length	391 mm
	Width	234 mm
	Height	77 mm
Module Fixation Holes[21]		12 x ∅6mm x 24mm

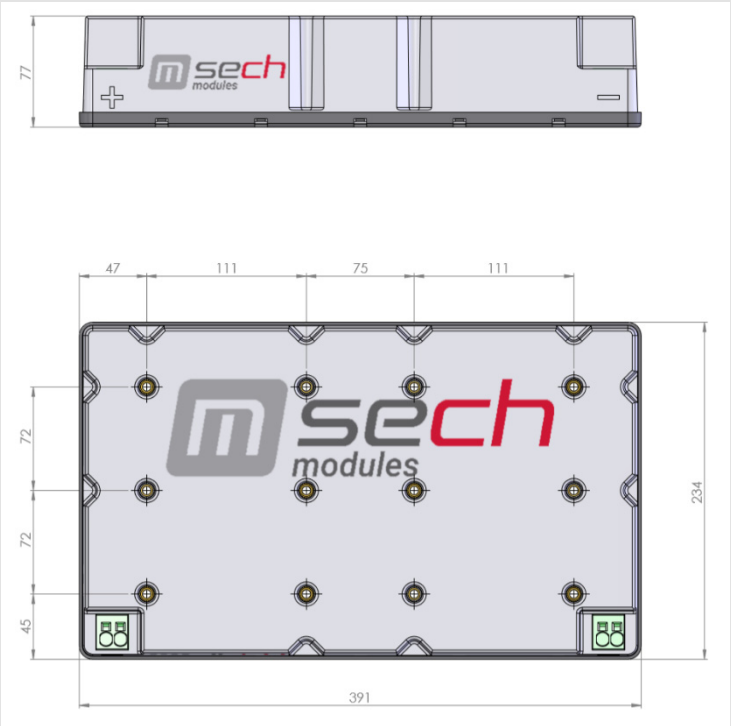
NOTES:

1. Surge voltage V_S: Absolute maximum voltage, non-repetitive. The duration must not exceed 1 second.
2. Capacitance C: The test current is 0.075 A/F, if the calculated current is >100A, then apply 100A.



$V_1=2V_3=V_R$ $\quad t_2-t_1=t_4-t_3=0.1$ s
$C=I*(t_3-t_2)/(V_2-V_3)$ $\quad ESR=(V_4-V_3)/I$

3. Capacitance tolerance: Typical tolerance is +5%~+10%.
4. Leakage current measurement procedure: 1) Charge the capacitor to the V_R with a constant current (0.075 A/F, if the calculated current is >100A, then apply 100A). 2) Hold the voltage at V_R for 72h. 3) The current to maintain V_R after 72 h is the leakage current.
5. Self-discharge rate measurement procedure: 1) Charge the capacitor to V_R with a constant current (0.075 A/F, if the calculated current >100A, then apply 100A). 2) Hold the voltage at V_R for 3h. 3) Floating for 72h. 4) Measure the voltage after 72 h.
6. Max constant working current: $I_{MCC}=\sqrt{\Delta T/(ESR*R_{Th})}$
7. Max current: $I_{Max}=0.5C*V_R/(\Delta t+ESR*C)$, discharge from V_R to $V_R/2$ in 1 second.
8. Short current: $I_S=V_R/ESR$
9. Stored energy: $E=0.5C*V^2/3600$
10. Energy density: $E_d=E/M$
11. Usable power density: $P_d=0.125V_R^2/(ESR*M)$
12. Impedance match power density: $P_{dMax}=0.25V_R^2/(ESR*m)$
13. Storage temperature: Storage in discharge state.
14. Thermal resistance: $R_{Th}=\Delta T/P$, where P=ESR * I²
15. Thermal capacitance is indicated for the whole module.
16. DC life at high temperature: Hold the module charged at rated voltage at 65°C for 1500h. The capacitance shall be >80% of the rated value, the ESR shall be <200% of the rated value.
17. DC life at RT: Hold the module charged at rated voltage at room temperature RT, the capacitance shall be >80% of the rated value, the ESR shall be <200% of the rated value.
18. Cycle life: Charge and discharged the module in the range between V_R and $V_R/2$. 5 seconds waiting period between charge and discharge. The constant test current is 0.075 A/F (if the calculated current >100A, then apply 100A).
19. Shelf life: Discharged and no load applied at RT.
20. Phoenix Contact PCB terminal block – SPT 16/2-V-10.0-ZB - 1735875
21. Dimensions and position of fixation holes: See below drawing



Notes:

Standard markings:
+ Name of manufacturer, part number, serial number
+ Rated voltage and capacitance, negative and positive terminals, warning marking
+ Stored energy in watt-hours

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