Vishay Intertechnology, Inc.

VISHAY

The DNA of tech.™

Aluminum and EDLC Capacitors

Highest Reliability for Demanding Applications at 105 °C

299 PHL-4TSI

Enhanced High Temperature Up to 150 °C, High Ripple Current, AEC-Q200 Qualified

160 RLA

Up to 8000 h Useful Life at 125 °C, **Low Impedance**

120 ATC

Compact Solution for **Energy Storage Applications**

501 PGM-ST

Electrical Double Layer Capacitor With **Long Lifetime** Under High Humidity Operation

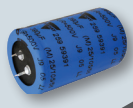
230 EDLC-HV / 235 EDLC-HVR

Hybrid Polymer Technology, **Ultra Low ESR** at High Temperatures Up to 125 °C

183 CPHT

Up to 500 V at 105 °C and **5000 h Lifetime**

193 PUR-SI



Operates in **Harsh Environments** Up to 125 °C, AEC-Q200 Qualified

146 CTI / 246 CTI-V

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ALUMINUM AND EDLC CAPACITORS

Focus Products

Energy Storage

		Product Family	Series	Voltage	Capacitance	Temperature	Useful Life [1]	Case Size	Additional Features
Hybrid Energy Storage	Vishay BCcomponents		196 HVC	1.4 V to 8.4 V	4 F to 90 F	85 °C	Up to 2000 h	7 mm x 2.5 mm to 35 mm x 20 mm	• Highest energy density • RoHS-compliant • Different mounting styles available (STH SMF LTC)
EDLC			220 EDLC	2.7 V	5 F to 100 F	85 °C	Up to 1000 h	10 mm x 20 mm to 20 mm x 40 mm	• High power and energy density • RoHS-compliant • STH mounting
			225 EDLC-R	2.7 V	5 F to 100 F	85 °C	Up to 2000 h	10 mm x 20 mm to 20 mm x 40 mm	• High power and energy density • High humidity operation • RoHS-compliant • STH mounting
			230 EDLC-HV	3.0 V	5 F to 100 F	85 °C	Up to 2000 h	10 mm x 20 mm to 20 mm x 40 mm	• High power and energy density • High voltage • RoHS-compliant • STH mounting
			235 EDLC-HVR	3.0 V	5 F to 100 F	85 °C	Up to 2000 h	10 mm x 20 mm to 20 mm x 40 mm	• High power and energy density • High voltage • High humidity operation • RoHS-compliant • STH mounting

SMD Design

		Product Family	Series	Voltage	Capacitance	Temperature	Useful Life [1]	Case Size	Additional Features
Standard	Vishay BCcomponents		153 CRV	6.3 V to 100 V	0.47 µF to 1 mF	105 °C	Up to 3000 h	4 mm x 5.3 mm to 10 mm x 14 mm	• RoHS-compliant
Low Impedance			150 CRZ [2]	6.3 V to 100 V	4.7 µF to 10 mF	105 °C	Up to 10 000 h	8 mm x 10 mm to 18 mm x 21 mm	• RoHS-compliant • AEC-Q200 qualified • JEDEC® J-STD-020
			146 CTI [2]	16 V to 100 V	10 µF to 4.7 mF	125 °C	Up to 6000 h	8 mm x 10 mm to 18 mm x 21 mm	• RoHS-compliant • AEC-Q200 qualified • JEDEC® J-STD-020 • High temperature
			160 CLA [2]	16 V to 63 V	47 µF to 3.3 mF	150 °C	Up to 2000 h	12.5 mm x 13 mm to 18 mm x 21 mm	• RoHS-compliant • AEC-Q200 qualified • JEDEC® J-STD-020 • Enhanced high temperature
High Voltage			152 CME	400 V to 450 V	2.2 µF to 33 mF	105 °C	Up to 6000 h	10 mm x 10 mm to 18 mm x 21 mm	• RoHS-compliant • AEC-Q200 qualified • JEDEC® J-STD-020
			192 CTX	400 V	2.2 µF to 33 mF	125 °C	Up to 2500 h	10 mm x 10 mm to 18 mm x 21 mm	• RoHS-compliant • AEC-Q200 qualified • JEDEC® J-STD-020 • High temperature
Ultra Low Impedance			183 CPHT	25 V to 80 V	10 µF to 330 µF	125 °C	4000 h	5 mm x 5.8 mm to 10 mm x 10.5 mm	• Hybrid polymer technology • RoHS-compliant • AEC-Q200 qualified on request
			184 CPNS	2.5 V to 100 V	4.7 µF to 3.3 mF	105 °C	2000 h	4 mm x 5.5 mm to 10 mm x 12.4 mm	• Polymer technology • RoHS-compliant
			186 CPNT	6.3 V to 50 V	10 µF to 1.5 mF	125 °C	2000 h	6.3 mm x 5.8 mm to 10 mm x 12.4 mm	• Polymer technology • RoHS-compliant

Axial Design

		Product Family	Series	Voltage	Capacitance	Temperature	Useful Life [1]	Case Size	Additional Features
Standard	Vishay BCcomponents		021 ASM	6.3 V to 100 V	1 µF to 15 mF	85 °C	Up to 8000 h	4.5 mm x 10 mm to 21 mm x 38 mm	• RoHS-compliant
			118 AHT	6.3 V to 200 V	2.2 µF to 10 mF	125 °C	Up to 8000 h	6.5 mm x 18 mm to 21 mm x 38 mm	• RoHS-compliant • High temperature
Low Impedance			120 ATC	16 V to 100 V	47 µF to 68 mF	125 °C	Up to 8000 h	10 mm x 30 mm to 21 mm x 38 mm	• RoHS-compliant • High temperature • AEC-Q200 qualified
			125 ALS	10 V to 63 V	47 µF to 18 mF	105 °C	Up to 10 000 h	6.5 mm x 18 mm to 21 mm x 38 mm	• RoHS-compliant • AEC-Q200 qualified
			126 ALX	10 V to 63 V	33 µF to 12 mF	125 °C	Up to 8000 h	6.5 mm x 18 mm to 21 mm x 38 mm	• RoHS-compliant • High temperature • AEC-Q200 qualified

Notes

[1] At upper category temperature

[2] Products with high vibration capability (vibration-proofed up to 50 *g*) available in separate series (250 CRZ-V, 246 CTI-V, 260 CLA-V, 250 RMI-V, and 246 RTI-V)

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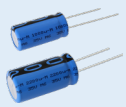
ALUMINUM AND EDLC CAPACITORS

Focus Products

Radial Design

		Product Family	Series	Voltage	Capacitance	Temperature	Useful Life [1]	Case Size	Additional Features
Standard	Vishay BCcomponents		142 RHS	10 V to 450 V	1 µF to 22 mF	105 °C	2500 h	5 mm x 11 mm to 18 mm x 40 mm	• RoHS-compliant
Low Impedance			150 RMI [2]	10 V to 100 V	100 µF to 6.8 mF	105 °C	Up to 10 000 h	8 mm x 12 mm to 18 mm x 31 mm	• RoHS-compliant • AEC-Q200 qualified
			146 RTI [2]	16 V to 63 V	68 µF to 6.8 mF	125 °C	Up to 6000 h	10 mm x 12 mm to 18 mm x 35 mm	• RoHS-compliant • AEC-Q200 qualified • High temperature
			160 RLA	16 V to 50 V	33 µF to 3.3 mF	150 °C	Up to 2000 h	10 mm x 12 mm to 18 mm x 35 mm	• RoHS-compliant • AEC-Q200 qualified • Enhanced high temperature
Very Low Impedance			170 RVZ	10 V to 63 V	100 µF to 6.8 mF	105 °C	Up to 10 000 h	10 mm x 12 mm to 18 mm x 40 mm	• RoHS-compliant • AEC-Q200 qualified
			172 RLX	10 V to 50 V	150 µF to 15 mF	105 °C	Up to 10 000 h	10 mm x 12 mm to 18 mm x 40 mm	• RoHS-compliant • AEC-Q200 qualified
			190 RTL	16 V to 50 V	100 µF to 6.8 mF	125 °C	Up to 6000 h	10 mm x 12 mm to 18 mm x 35 mm	• RoHS-compliant • AEC-Q200 qualified • High temperature
High Voltage			152 RMH	200 V to 400 V	1.5 µF to 220 µF	105 °C	Up to 4000 h	10 mm x 12 mm to 18 mm x 35 mm	• RoHS-compliant • AEC-Q200 qualified

Snap-In Design

		Product Family	Series	Voltage	Capacitance	Temperature	Useful Life [1]	Case Size	Additional Features
Low Voltage	Vishay BCcomponents		256 PMG-SI	16 V to 100 V	820 µF to 47 mF	105 °C	2000 h	20 mm x 25 mm to 35 mm x 45 mm	• RoHS-compliant
High Voltage			259 PHM-SI	200 V to 500 V	39 µF to 2.2 mF	105 °C	3000 h	22 mm x 25 mm to 35 mm x 60 mm	• RoHS-compliant
			257 PRM-SI	200 V to 500 V	56 µF to 3.3 mF	85 °C	5000 h	22 mm x 25 mm to 35 mm x 60 mm	• RoHS-compliant
			096 PLL-4TSI	350 V to 500 V	390 µF to 2.7 mF	85 °C	5000 h	35 mm x 50 mm to 45 mm x 100 mm	• RoHS-compliant
			299 PHL-4TSI	400 V to 450 V	470 µF to 2.2 mF	105 °C	5000 h	35 mm x 50 mm to 45 mm x 100 mm	• RoHS-compliant
			193 PUR-SI	400 V to 500 V	47 µF to 820 µF	105 °C	5000 h	22 mm x 25 mm to 35 mm x 60 mm	• RoHS-compliant
			193 PUR-SI Solar	450 V to 475 V 500 V to 570 V	220 µF to 560 µF	105 °C 60 °C	6000 h	35 mm x 30 mm to 35 mm x 60 mm	• RoHS-compliant

Screw-Terminal Design

		Product Family	Series	Voltage	Capacitance	Temperature	Useful Life [1]	Case Size	Additional Features
Low Voltage	Vishay BCcomponents		101 PHR-ST	25 V to 100 V	2200 µF to 1 F	85 °C	15 000 h	35 mm x 60 mm to 90 mm x 220 mm	• RoHS-compliant
High Voltage			501 PGM-ST	400 V to 500 V	1000 µF to 18 mF	85 °C	5000 h	50 mm x 80 mm to 90 mm x 195 mm	• RoHS-compliant
			202 PML-ST	200 V to 450 V	330 µF to 56 mF	85 °C	10 000 h	35 mm x 60 mm to 90 mm x 220 mm	• RoHS-compliant
			104 PHL-ST	200 V to 450 V	150 µF to 33 mF	105 °C	5000 h	35 mm x 60 mm to 90 mm x 220 mm	• RoHS-compliant

Notes:
[1] At upper category temperature
[2] Products with high vibration capability (vibration-proofed up to 50 *g*) available in separate series (250 CRZ-V, 246 CTI-V, 260 CLA-V, 250 RMI-V, and 246 RTI-V)

Aluminum and EDLC Capacitors Offer **Highest Reliability** at **High Temperatures** for **Long Lifetimes**

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Advantages of Vishay Aluminum and Energy Storage Capacitors

- High temperature ranges
- Long lifetimes
- High vibration resistance
- Automotive qualification

For the Following **Applications**

- DC/DC converters
- Power supplies
- LED drivers
- Inverters
- Energy harvesting
- UPS and backup systems
- Energy recovery
- Smart meters

More than 50 years of experience in various industrial power applications – we have solutions for all your requirements

Aluminum electrolytic capacitors can be used close to engines for efficient motor management

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- Aluminum Electrolytic Capacitors Parametric Search and Gateway Page
  www.vishay.com/capacitors/aluminum
- Engineering Solutions: Aluminum Electrolytic Capacitors in Power Supplies
  www.vishay.com/doc?49663
- Power Management Solution: CV Pulse Charging of Hybrid Capacitors
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  www.vishay.com/capacitors/aluminum/tab/latest-news/

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