

WL-Series Capacitors



NWL's WL-Series are high energy capacitors used in pulse power and power conditioning applications. With welded metal cases of stainless steel, mild steel, aluminum, or brass, these robust oil-filled capacitors offer the highest energy stored per unit, typically 3-100 kJ. Large diameter, low profile bushings provide minimum inductance for fast discharge and high frequency response compared to Equivalent NWL WF-series capacitors with upright bushings. For maximum peak power, an available option

is a 100 kVDC (under oil) bushing with a coaxial current return ring enabling the capacitor to have less than 40 nH of inductance and deliver up to a 250 kA repetitive peak pulse current. Internal construction is customized for the application and both self-healing and non-self-healing versions are available.

WL-Series capacitors are well suited for high energy storage and discharge in applications including:

- High energy Marx generators
- Pulsed magnetic field generators
- EM forming and impact welding
- Electromagnetic launchers and accelerators
- EMP simulators
- Pulsed X-ray generators
- Lightning simulators
- High energy physics experiments

Unique features of the WL-Series capacitor include:

- **High voltage low profile terminals** – With large diameter plastic insulators, this series of capacitors operates at high voltages while keeping resistance and inductance at a minimum.
- **Large welded metal packages** – Utilizing well-established and proven vacuum-pressure impregnation processes, these fabricated and welded cases of stainless steel, mild steel, aluminum or brass are able to package capacitors ranging from tens of pounds to more than 500 lbs per unit.
- **Live case connection** – For applications requiring minimal inductance, parallel-plate buswork requires low profile high voltage bushings and proximate or coaxial current return connections to the capacitor case. WL-Series offers threaded insert or screw high voltage terminals and either weldnuts or coaxial rings for case connections. A 100 kVdc, 250 kA bushing/terminal with coaxial current return ring is available. Weldnuts and/or brackets can be provided for mounting/securing.
- **Dead case** – For applications requiring an isolated (typically grounded) case and two high voltage terminals at up to +/-50 kV, smaller diameter low profile bushings are available.

WL-Series Capacitors Product Information and Specifications

WL-Series capacitors utilize a welded metal case oil-filled product with the latest technological advancements in polypropylene film dielectric systems.

General Specifications

Capacitance Tolerance	+/- 10% standard, +/- 5% optional
Voltages	DC rating continuous steady state condition DC peak pulse duty, 0 – 100% reversal
Current / Temp Ratings	Ripple RMS current @ 40 °C ambient Peak current @ 40 °C ambient
Inductance	As low as 25 nH, depending on model
Operating Temperature	-40 to +65 °C

Electrical Ratings Overview

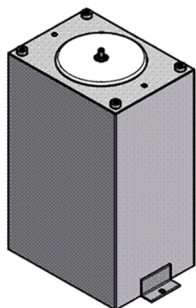
Examples of typical ratings and packages shown above. Consult NWL for specific requirements and additional existing models.

uF	VDC	Vpk	Current	Current	Inductance	Life(hours)	Life(pulses)	Dielectric Technology	Case	Size
+/- 10%	Continuous	Pulse	RMS @ 40°C	Peak	nH	Continuous VDC	20% Voltage Reversal			L x W x H
LOW PROFILE BUSHING(S)										
15800	1,400	2,800	150	75,000	400	1.30E+03	7.50E+05	Metfilm	dead	7.00 x 16.00 x 24.00
2000	4,500	5,000	200	30,000	250	1.00E+03	1.00E+06	Metfilm	live	11.00 x 14.00 x 28.00
500	8,400	10,000	75	100,000	tba	1.00E+05	4.40E+04	Metfilm	live	13.25 x 13.25 x 24.00
826	11,000	12,000	50	100,000	tba	2.00E+02	5.00E+03	Metfilm	live	13.25 x 18.00 x 27.25
1000	8,000	11,000	50	50,000	100	5.00E+01	2.00E+03	Metfilm	live	11.50 x 16.00 x 23.00
55	16,000	17,600	50	2,500	200	1.00E+05	1.00E+06	Metfilm	live	7.00 x 14.00 x 16.00
11.5	17,000	20,000	25	5,000	100	5.00E+04	2.50E+04	Metfilm	live	8.50 x 13.50 x 7.00
255	19,000	20,000	75	25,000	800	1.00E+04	2.50E+04	Metfilm	dead	11.00 x 13.25 x 29.50
20	19,000	25,000	50	5,000	60	1.00E+03	1.00E+05	Metfilm	live	8.00 x 16.00 x 21.00
70	19,000	25,000	100	50,000	60	1.00E+02	1.00E+04	Metfilm	live	12.00 x 16.00 x 22.00
100	18,000	20,000	75	4,000	250	1.00E+05	4.00E+06	Metfilm	dead	11.00 x 13.25 x 22.50

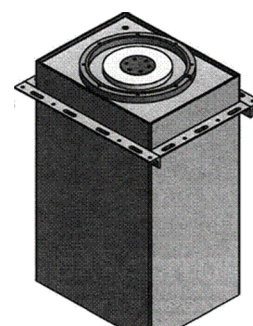
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uF	VDC	Vpk	Current	Current	Inductance	Life(hours)	Life(pulses)	Dielectric Technology	Case	Size
+/- 10%	Continuous	Pulse	RMS @ 40% C	Peak	nH	Continuous VDC	20% Voltage Reversal			L x W x H
100	20,000	25,000	50	8,000	tba	1.00E+04	6.00E+07	Metfilm	live	11.50 x 14.00 x 17.00
200	12,500	15,000	75	4,000	500	1.00E+05	3.00E+07	Metfilm	dead	11.00 x 14.00 x 29.50
10	20,000	25,000	45	50,000	tba	1.00E+05	1.00E+06	Film / Foil	dead	7.25 x 14.00 x 17.50
5	25,000	30,000	45	50,000	tba	1.00E+05	2.00E+06	Film / Foil	live	9.00 x 14.00 x 24.00
10	25,000	30,000	45	50,000	tba	1.00E+05	1.00E+06	Film / Foil	dead	9.00 x 14.00 x 24.00
4.5	32,000	40,000	50	50,000	40	1.00E+04	3.00E+06	Film / Foil	live	8.00 x 14.00 x 22.75
27	36,000	44,000	75	100,000	50	1.00E+02	3.00E+03	Metfilm	live	11.25 x 16.00 x 25.00
3.12	35,000	40,000	50	40,000	75	1.00E+04	5.00E+05	Film / Foil	dead	11.00 x 14.00 x 22.75
2	50,000	60,000	50	30,000	tba	1.00E+04	1.00E+05	Film / Foil	live	11.00 x 15.00 x 24.00
2.2	50,000	60,000	50	75,000	60	1.00E+03	5.00E+04	Film / Foil	live	10.50 x 12.00 x 25.00
5	25,000	30,000	50	50,000	50	1.00E+02	1.00E+04	Film / Foil	live	10.00 x 14.00 x 18.00
6.25	55,000	66,000	75	80,000	70	1.00E+02	4.40E+04	Film / Foil	live	12.00 x 17.75 x 23.00
2	80,000	100,000	50	25,000	tba	2.00E+04	2.00E+04	Film / Foil	live	11.00 x 15.00 x 24.00
COAXIAL TERMINAL / CURRENT RETURN										
500	1,600	3,000	150	100,000	60	5.00E+04	5.00E+07	Film / Foil	live	11.00 x 14.00 x 24.00
8	30,000	35,000	50	60,000	30	1.00E+02	1.00E+04	Film / Foil	live	11.00 x 12.00 x 15.00
12.5	35,000	40,000	75	180,000	40	2.00E+02	2.50E+04	Film / Foil	live	11.00 x 14.00 x 27.00
52	36,000	44,000	75	150,000	70	2.50E+01	3.00E+03	Metfilm	live	13.25 x 16.00 x 31.00
2.2	80,000	100,000	50	250,000	70	2.00E+02	2.00E+04	Film / Foil	live	11.00 x 14.00 x 25.00
2.6	80,000	100,000	50	200,000	40	2.00E+02	2.00E+04	Film / Foil	live	11.50 x 16.00 x 25.00



WL-Series Low Profile Delrin Terminal



WL-Series Coaxial Terminal / Current Return