



VISHAY INTERTECHNOLOGY, INC.

INTERACTIVE

data book

ESTA HIGH VOLTAGE DC FILTER CAPACITORS

VISHAY ESTA

VSD-DB0046-0204

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VISHAY INTERTECHNOLOGY, INC.



ESTA High Voltage DC Filter Capacitors

DC-Filter Application

Pass Filter

By-Pass and Coupling

Laser

X-Ray Power Supplies

VISHAY INTERTECHNOLOGY, INC.

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RF TRANSISTORS	Bipolar RF Transistors (AF and RF) Dual Gate MOSFETs MOSMICs®
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RESISTIVE PRODUCTS	Foil Resistors Film Resistors Thin Film Resistors Thick Film Resistors Metal Oxide Film Resistors Carbon Film Resistors Wirewound Resistors Variable Resistors Cermet Variable Resistors Wirewound Variable Resistors Conductive Plastic Variable Resistors Networks/Arrays Non-Linear Resistors NTC Thermistors PTC Thermistors
MAGNETICS	Inductors Transformers

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High Voltage DC Filter Capacitors Vishay ESTA

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The products listed in this catalog are not generally recommended for use in life support systems where a failure or malfunction of the component may directly threaten life or cause injury.

The user of products in such applications assumes all risks of such use and will agree to hold Vishay Intertechnology, Inc. and all the companies whose products are represented in this catalog, harmless against all damages.



Guide to Quotation	2
ETDC Filter Capacitors (tubular).....	3
ECHigh Voltage DC Filter Capacitors	6
ERDC Filter Capacitors (rectangular)	7
EPRHigh Voltage DC Capacitors (plastic, rectangular).....	10
Inquiry Information	12



Capacitor Application

General Information

Capacitance _____ Tolerance _____
Working Voltage _____ DC _____ AC _____ Hz
Maximum Dimensions _____
Quantity Required _____

Application (tick box)

- Energy storage or discharge application
- Filtering application
- AC application
- Other (state) _____

Energy storage or discharge application

Max DC Voltage _____
Charge Time _____
Discharge Time _____
Repetition Rate _____
Voltage Reversal _____
Peak Current _____

Filtering Application

Max DC Voltage _____
Ripple Voltage p-p _____
Ripple frequency _____
Ripple Current _____ rms _____ p-p

AC Application

Peak Voltage _____
RMS Voltage _____
Frequency _____
Other Details _____

Other Application (please state)

Please use the space below for sketches of maximum dimensions, voltage and current waveforms.

DC Filter Capacitors



TYPE ET

These capacitors are manufactured using a mixed dielectric material that consists of polyester/polypropylene film and capacitor tissue. They are impregnated and filled with a mineral oil. The container is a Synthetic Resin Bonded Paper tube sealed at both ends with resin assuring hermetic sealing. The capacitors are terminated with M5 *12mm studs or tinned copper wire. Note: The impregnant used is a non toxic highly refined, purified and inhibited mineral oil.

APPLICATIONS

The ET range is specifically designed for high voltage filters and can be successfully used in the following applications:

- By-pass
- Coupling
- Filter applications
- X-ray power supplies
- Electrostatic air deeners

TEMPERATURE RANGE

Temperature range is - 55°C to + 85°C. Derating is required for operation at higher temperatures.

TEMPERATURE COEFFICIENT

Capacitance will increase by 2% per 100°C temperature rise.

CAPACITANCE RANGE

0.0005μF - 2μF. The tolerance is ± 10%. Other tolerances are available on request. Nominal values measured at 1kHz.

VOLTAGE RANGE

1000VDC - 70kVDC

RIPPLE

The sum of the peak ripple voltage and the DC voltage should not exceed the rated voltage. Refer to graph fig.1 for permissible peak-to-peak ripple voltage as a percentage of rated voltage for various frequencies.

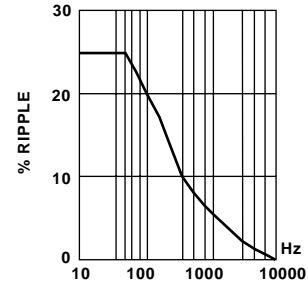


FIG 1

POWER FACTOR

The power factor is variable, and is a function of temperature and frequency see fig.2. Nominal value < 0.5% at 20°C

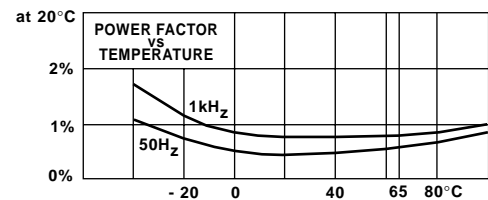


FIG 2

DIELECTRIC RESISTANCE

(Parallel resistance) is indicated by the graph of insulance (MΩ x μF) vs temperature fig.3. The insulance (MΩ x μF) is nominally 10000s at + 20°C. (Measurements taken after 1 minute with an applied voltage of 500V)

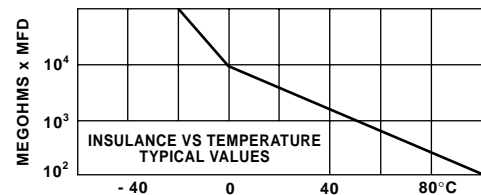


FIG 3

LIFE EXPECTANCY

ET type capacitors are designed for a life expectancy of 5000h at 65 °C. To achieve the same life expectancy at 85°C derate to 60% of rated voltage fig.4.

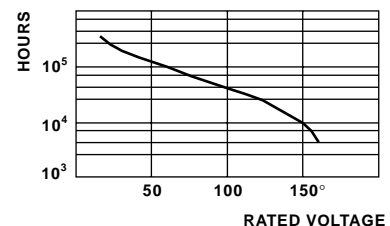


FIG 4

WEIGHT

The approximate weight in grams may be calculated by multiplying the volume of the capacitor container by 1.2 x 10⁻³.



TEST VOLTAGE

Terminal/terminal (Vt/t)

For DC rating < 20kV

Vt/t = 2.0 x rated voltage 60s

For DC rating > 20kV

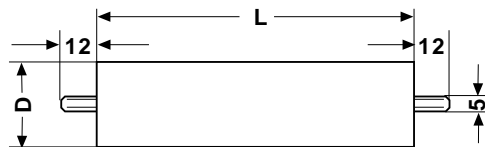
Vt/t = 1.5 x rated voltage 60s

TERMINATIONS

Add suffix W to part No. To indicate wire terminations.

CAPACITANCE

Capacitance tolerance of 20% is standard with those marked *.



• Dimensions in millimeters

PART NUMBER	DIMENSIONS		
	µF	L mm	D mm
1000VDC WKG			
ET10-103	0.01*	42	17
ET10-203	0.02*	42	17
ET10-503	0.05	48	17
ET10-254	0.25	60	22
ET10-504	0.5	70	30
ET10-205	2.0	110	35
1500VDC WKG			
ET15-103	0.01*	42	17
ET15-203	0.02*	42	20
ET15-254	0.25	60	30
ET15-504	0.5	110	25
ET15-105	1.0	110	35
ET15-205	2.0	110	42
2000VDC WKG			
ET20-103	0.01*	48	17
ET20-503	0.05	60	17
ET20-104	0.1	60	22
ET20-254	0.25	60	30
ET20-504	0.5	75	35
3000VDC WKG			
ET30-502	0.005*	42	17
ET30-103	0.01*	42	20
ET30-203	0.02	48	20
ET30-503	0.05	55	25
ET30-104	0.1	55	30
ET30-254	0.25	60	35
ET30-504	0.5	75	42
ET30-105	1.0	110	42
4000VDC WKG			
ET40-102	0.001*	42	17
ET40-502	0.005*	42	17
ET40-503	0.05	60	22
ET40-103	0.01	42	20
ET40-104	0.1	60	30
ET40-504	0.5	95	42
5000VDC WKG			
ET50-102	0.001*	42	17
ET50-202	0.002*	42	17
ET50-502	0.005*	42	20
ET50-103	0.01	48	20
ET50-203	0.02	48	22
ET50-503	0.05	60	25
ET50-104	0.1	75	30
ET50-254	0.25	95	35
ET50-504	0.5	110	42



PART NUMBER	DIMENSIONS		
	µF	L mm	D mm
6000VDC WKG			
ET60-102	0.001*	55	17
ET60-202	0.002*	55	17
ET60-502	0.005*	65	17
ET60-103	0.01	65	20
ET60-203	0.02	80	20
ET60-503	0.05	100	25
ET60-104	0.1	100	35
ET60-254	0.25	135	42
8000VDC WKG			
ET80-502	0.005*	65	20
ET80-103	0.01	80	20
ET80-503	0.05	105	35
ET80-104	0.1	105	42
ET80-254	0.25	170	42
10KVDC WKG			
ET100-102	0.001*	65	17
ET100-502	0.005*	65	22
ET100-103	0.01	80	22
ET100-203	0.02	80	30
ET100-503	0.05	105	35
ET100-104	0.1	170	35
ET100-254	0.25	205	42
12KVDC WKG			
ET120-202	0.002*	95	20
ET120-502	0.005*	95	30
ET120-103	0.01	115	30
ET120-203	0.02	115	35
ET120-503	0.05	180	35
ET120-104	0.1	180	42
15KVDC WKG			
ET150-102	0.001*	95	17
ET150-202	0.002*	95	20
ET150-502	0.005*	110	20
ET150-103	0.01	110	30
ET150-203	0.02	110	35
ET150-503	0.05	150	42
ET150-104	0.1	245	42
20KVDC WKG			
ET200-102	0.001*	115	22
ET200-502	0.005*	145	25
ET200-103	0.01	145	30
ET200-203	0.02	195	30
ET200-503	0.05	245	42
ET200-104	0.1	320	42

PART NUMBER	DIMENSIONS		
	µF	L mm	D mm
25KVDC WKG			
ET250-501	0.0005*	145	17
ET250-102	0.001*	145	20
ET250-502	0.005	175	30
ET250-103	0.01	175	35
ET250-503	0.05	300	42
30KVDC WKG			
ET300-501	0.0005*	170	17
ET300-102	0.001*	170	20
ET300-202	0.002	170	25
ET300-502	0.005	205	30
ET300-103	0.01	205	35
ET300-203	0.02	280	35
ET300-303	0.03	280	42
40KVDC WKG			
ET400-102	0.001*	210	20
ET400-202	0.002	275	20
ET400-103	0.01	275	42
50KVDC WKG			
ET500-501	0.0005*	275	22
ET500-102	0.001*	275	22
ET500-202	0.002	340	22
ET500-502	0.005	340	35
ET500-103	0.01	340	42
60KVDC WKG			
ET600-102	0.001*	330	25
ET600-152	0.0015	330	30

NOTE: Non standard size containers can be supplied on request.

High Voltage DC Filter Capacitors



TYPE EC

The EC range of capacitors are similar in design to the ET range but are housed in a more robust container. They are manufactured using a mixed dielectric material that consists of polyester/polypropylene film and capacitor tissue. They are impregnated and filled with a mineral oil. The container is a Synthetic Resin Bonded Paper (SRBP) tube sealed at both ends with resin assuring a hermetic seal. The capacitors may be used in air, oil or SF6. They are terminated with M6 studs x 15mm long or tinned copper wire.

Note: The impregnant used is a non toxic highly purified and inhibited mineral oil.

APPLICATIONS

The EC range of capacitors are specifically designed for high voltage filters and can be successfully used in the following applications:

- High voltage smoothing
- Induction heating
- RT transmitter power supplies
- X-ray power supplies

TEMPERATURE RANGE

Temperature range is - 40°C to + 85°C. Derating is required for operation at higher temperatures.

TEMPERATURE COEFFICIENT

Capacitance will increase by 2% per 100°C temperature rise.

CAPACITANCE RANGE

0.001µF - 2µF. The tolerance is ± 10%. Other tolerance are available on request. Normal values measured at 1kHz.

VOLTAGE RANGE

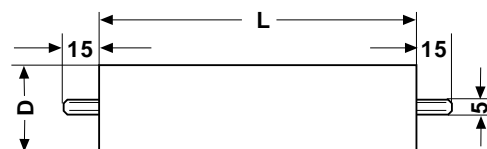
1000VDC - 100kVDC

TEST VOLTAGE

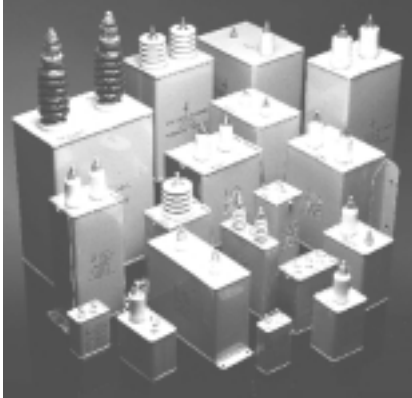
Terminal/terminal (Vt/t)
 For DC rating < 20kV
 Vt/t = 2.0 x rated voltage 60s
 For DC rating > 20kV
 Vt/t = 1.5 x rated voltage 60s

PART NUMBER	µF	KILO-VOLTS	DIMENSIONS	
			L mm	D mm
EC100-104	0.1	10	115	65
EC100-254	0.25	10	140	75
EC100-504	0.5	10	205	95
EC200-503	0.05	20	180	65
EC200-104	0.1	20	230	65
EC200-254	0.25	20	280	75
EC200-504	0.5	20	360	95
EC300-253	0.025	30	245	65
EC300-503	0.05	30	320	65
EC300-104	0.1	30	395	65
EC300-254	0.25	30	510	75
EC400-253	0.025	40	305	65
EC400-503	0.05	40	410	65
EC400-104	0.01	40	345	95
EC400-124	0.12	40	440	95
EC500-103	0.01	50	270	65
EC500-253	0.025	50	335	65
EC500-503	0.05	50	430	75
EC500-104	0.1	50	430	95
EC600-502	0.005	60	310	65
EC600-103	0.01	60	310	75
EC600-253	0.025	60	390	75
EC600-503	0.05	60	500	75
EC600-104	0.1	60	615	95
EC800-502	0.005	80	400	65
EC800-103	0.01	80	400	75
EC800-253	0.025	80	500	95
EC800-503	0.05	80	650	95
EC1000-502	0.005	100	485	65
EC1000-103	0.01	100	485	75
EC1000-253	0.025	100	610	95
EC1200-502	0.005	120	425	75

Dimensions in Millimetres



DC Filter Capacitors



TYPE ER

Capacitors offer unusually good electrical characteristics, coupled with very small size.

The ER range of capacitors are manufactured using a mixed dielectric material that consists of polyester/polypropylene. The container is a rolled seamed tinplate case that is hermetically sealed. The construction is designed to prevent internal movement when subjected to shock and vibration.

Note: The impregnant used is a non toxic highly refined, purified and inhibited mineral oil.

APPLICATIONS

The ER range of capacitors are specifically designed for DC applications.

- Audio coupling
- Pulse forming networks
- Oscillator circuits
- Arc and spark suppression
- RF by-pass
- Tuned filters
- Energy storage
- Integrating circuits
- Low and high pass filters
- High voltage smoothing

Capacitors required for AC applications and High Discharge rates can also be designed from the ER range.

Consult Vishay Electronic GmbH, Division Roederstein ESTA and Hybrids for your specific requirements.

TEMPERATURE RANGE

Temperature range is -55°C to $+85^{\circ}\text{C}$. The nominal voltage rating is applicable from -55°C to $+85^{\circ}\text{C}$. Derating is required for higher operating temperatures.

TEMPERATURE COEFFICIENT

Capacitance will increase by 2% per 100°C temperature change.

RIPPLE

The sum of the peak ripple voltage and the DC voltage should not exceed the rated voltage. Refer to graph fig 1 for permissible peak-to-peak ripple voltage as a percentage of rated voltage for various frequencies.

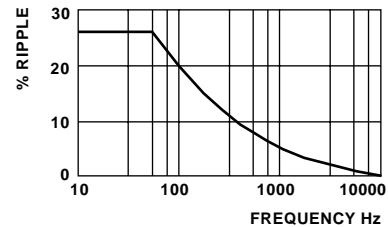


FIG 1

POWER FACTOR

The power factor is variable, and a function of temperature and frequency. See fig 2. Nominal value $<0.5\%$ at 20°C .

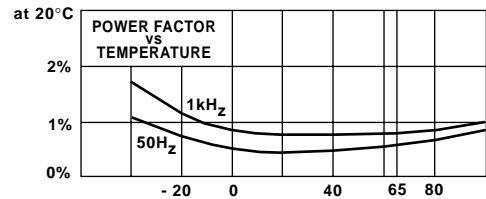


FIG 2

DIELECTRIC RESISTANCE

(Parallel resistance) is indicated by the graph of insulance ($\text{M}\Omega \times \mu\text{F}$) vs temperature fig 3. The insulance ($\text{M}\Omega \times \mu\text{F}$) is nominally 10000s at $+20^{\circ}\text{C}$. (Measurements taken after 1 minute with an applied voltage of 500V).

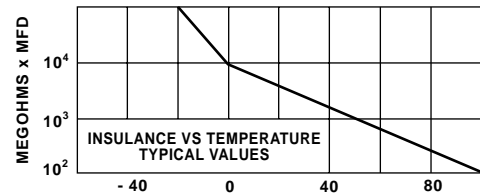


FIG 3

LIFE EXPECTANCY

ER type capacitors are designed for a life expectancy of 50000 hours at 65°C . To achieve the same life expectancy at 85°C derate to 60% of rated voltage fig 4.

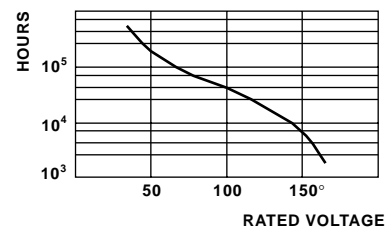


FIG 4

WEIGHT

The approximate weight in kg of capacitors in the ER range can be estimated by multiplying the volume of the capacitor container by 1.45×10^{-6} .

CAPACITANCE RANGE

0.01µF-100µF. The tolerance is ± 10%. Other tolerances are available on request. Nominal values measured at 1kHz.

VOLTAGE RANGE

1000VDC-40kVDC other values on request.

TEST VOLTAGE

Terminal/terminal (Vt/t)
 For DC rating < 20kV
 Vt/t = 2.0 x rated voltage 60s
 For DC rating > 20kV
 Vt/t = 1.5 x rated voltage 60s

TERMINATIONS

Add suffix W to part No. To indicate wire terminations.

CAPACITANCE

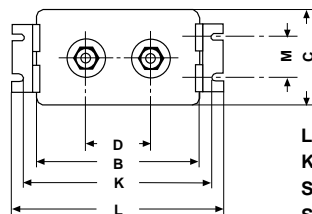
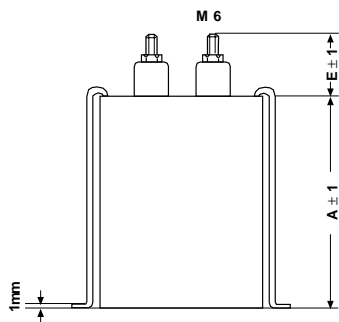
Capacitance tolerance of 20% is standard with those marked *.

FLASHOVER

Up to 5000 volts rating, the capacitor terminals will withstand 125% of the rated voltage without flashover at a pressure of 85mm Hg., equivalent to 50,000 feet altitude. Above 5000 volts rating, the capacitor terminals will withstand 125% of the rated voltage at a pressure of 500mg Hg, equivalent to 10,000 feet altitude.

LIFE TESTS

Conducted at 85°C for 500 hours. The voltage applied will be 140% of the rated voltage.



L = B + 36
 K = L - 25
 SLOT WIDTH 6.35
 SLOT LENGTH 12.7

PART NUMBER	CAP. µF	A	B	C	D	E
1000VDC WKG						
ER10-104	0.1	50	48	28	20	20
ER10-504	0.5	50	48	28	20	20
ER10-105	1.0	75	48	28	20	20
ER10-405	4.0	75	60	54	25	35
ER10-605	6.0	95	60	54	25	35
ER10-106	10.0	115	80	48	40	35
ER10-256	25.0	155	85	67	40	35
ER10-506	50.0	155	130	100	50	35
1500VDC WKG						
ER15-104	0.1	60	48	28	20	20
ER15-504	0.5	60	48	28	20	20
ER15-205	2.0	75	54	48	22	35
ER15-405	4.0	115	54	48	22	35
ER15-805	8.0	95	85	67	40	35
ER15-106	10.0	115	85	67	40	35
ER15-126	12.0	135	85	67	40	35
ER15-256	25.0	115	130	100	50	35
ER15-506	50.0	180	130	100	50	35
2000VDC WKG						
ER20-104	0.1	60	48	28	20	20
ER20-254	0.25	60	48	28	20	20
ER20-504	0.5	60	48	28	20	20
ER20-105	1.0	95	48	28	20	20
ER20-205	2.0	75	54	48	22	35
ER20-405	4.0	115	54	48	22	35
ER20-605	6.0	135	60	54	25	35
ER20-106	10.0	115	85	67	40	35
ER20-126	12.0	135	85	67	40	35
ER20-206	20.0	115	130	100	50	35
3000VDC WKG						
ER30-104	0.1	60	48	28	20	20
ER30-504	0.5	75	48	28	20	20
ER30-105	1.0	115	48	28	20	20
ER30-105X	1.0	75	54	48	22	35
ER30-205	2.0	115	54	48	22	35
ER30-405	4.0	155	60	54	25	35
ER30-605	6.0	180	80	48	40	35
ER30-805	8.0	155	85	67	40	35
ER30-106	10.0	95	130	100	50	35
ER30-206	20.0	155	130	100	50	35
ER30-256	25.0	180	130	100	50	35
ER30-506	50.0	345	130	100	50	35
4000VDC WKG						
ER40-104	0.1	60	48	28	20	20
ER40-254	0.25	75	48	28	20	20
ER40-504	0.5	95	48	28	20	20
ER40-105	1.0	95	54	48	22	35
ER40-205	2.0	135	54	48	22	35
ER40-405	4.0	115	85	67	40	35
ER40-805	8.0	115	130	100	50	35
ER40-106	10.0	135	130	100	50	35
ER40-206	20.0	230	130	100	50	35
ER40-306	30.0	320	130	100	50	35



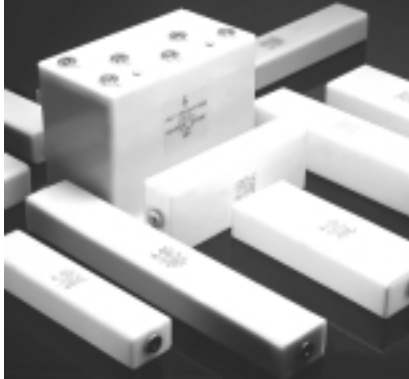
PART NUMBER	CAP. μ F	A	B	C	D	E
5000VDC WKG						
ER50-104	0.1	60	48	28	20	20
ER50-254	0.25	75	48	28	20	20
ER50-105	1.0	115	54	48	22	35
ER50-405	4.0	155	85	67	40	35
ER50-805	8.0	135	130	100	50	35
ER50-106	10.0	155	130	100	50	35
ER50-206	20.0	290	130	100	50	35
ER50-506	50.0	295	180	180	75	35
6000VDC WKG						
ER60-104	0.1	65	54	48	*	35
ER60-254	0.25	80	54	48	*	35
ER60-504	0.5	100	80	48	40	35
ER60-105	1.0	100	85	67	40	35
ER60-205	2.0	100	130	100	50	35
ER60-405	4.0	135	130	100	50	35
ER60-605	6.0	180	130	100	50	35
ER60-805	8.0	250	130	100	50	35
ER60-106	10.0	290	130	100	50	35
ER60-126	12.0	345	130	100	50	35
ER60-206	20.0	180	220	164	125	60
8000VDC WKG						
ER80-503	0.05	58	60	54	*	60
ER80-104	0.1	65	60	54	*	60
ER80-254	0.25	85	60	54	*	60
ER80-504	0.5	140	60	54	*	60
ER80-105	1.0	120	85	67	40	60
ER80-205	2.0	120	130	100	50	60
ER80-405	4.0	200	130	100	50	60
ER80-605	6.0	270	130	100	50	60
ER80-805	8.0	345	130	100	50	60
ER80-156	15.0	280	180	180	75	60
10KVDC WKG						
ER100-503	0.05	58	80	48	40	60
ER100-104	0.1	65	80	48	54	60
ER100-504	0.5	140	80	48	40	60
ER100-105	1.0	160	85	67	40	60
ER100-205	2.0	140	130	100	50	60
ER100-405	4.0	260	130	100	50	60
ER100-605	6.0	350	130	100	50	60
ER100-805	8.0	300	190	120	75	60
ER100-156	15.0	350	180	180	75	60

Dimensions in Millimetres

* These capacitors are fitted with one high voltage terminal and case terminal. An additional terminal for connection to case is available as an optional extra. Add suffix M to Part Number.

PART NUMBER	CAP. μ F	A	B	C	D	E
12KVDC WKG						
ER120-503	0.05	75	85	67	40	60
ER120-104	0.1	100	85	67	40	60
ER120-254	0.25	105	85	67	40	60
ER120-105	1.0	145	130	100	75	60
ER120-205	2.0	240	130	100	75	60
ER120-405	4.0	280	190	120	75	60
15KVDC WKG						
ER150-103	0.01	60	60	54	*	60
ER150-203	0.02	60	60	54	*	60
ER150-503	0.05	85	60	54	*	60
ER150-104	0.1	105	80	48	*	60
ER150-254	0.25	125	85	67	40	60
ER150-504	0.5	190	85	67	40	60
ER150-504X	0.5	105	130	100	75	60
ER150-105	1.0	160	130	100	75	60
ER150-205	2.0	190	159	120	75	60
20KVDC WKG						
ER200-103	0.01	70	80	48	*	60
ER200-503X	0.05	85	85	67	40	60
ER200-104	0.1	105	85	67	40	60
ER200-254	0.25	190	85	67	40	60
ER200-504	0.5	160	130	100	75	60
ER200-105	1.0	300	130	100	75	60
ER200-205	2.0	250	180	180	90	100
ER200-405	4.0	305	240	180	100	100
25KVDC WKG						
ER250-503	0.05	110	85	67	*	70
ER250-104X	0.1	95	130	100	65	70
ER250-254	0.25	130	130	100	65	70
ER250-504	0.5	250	130	100	65	70
30KVDC WKG						
ER300-303	0.03	120	85	67	*	70
ER300-104	0.1	200	85	67	*	70
ER300-104X	0.1	120	130	100	65	70
ER300-504	0.5	315	130	100	65	70
ER300-105	1.0	295	180	180	75	100
40KVDC WKG						
ER400-303	0.03	160	85	67	*	70
ER400-503	0.05	210	85	67	*	70
ER400-503X	0.05	125	130	100	65	70

High Voltage DC Capacitors



TYPE EPR

The EPR range of capacitors are manufactured using a mixed dielectric material that consists of polyester /polypropylene film and capacitor tissue. They are impregnated and filled with a mineral oil. The container is a robust rectangular polypropylene case. The internal construction is designed to prevent movement when the capacitor is subjected to mechanical shock or vibration. An inert welding process ensures hermetic sealing. Standard terminations are M10 threaded inserts which eliminates the necessity for large voltage terminals. The case has an extremely low affinity for moisture and is resistant to virtually all electrical environments. Brackets can be welded on as required.

Note: The impregnant used is a non toxic highly purified and inhibited mineral oil.

APPLICATIONS

The EPR range is designed specifically for DC applications such as filters:

- By-pass
- Coupling
- Rapid discharge
- Pulse forming networks
- Radar
- Laser
- X-ray equipment

TEMPERATURE RANGE

Temperature range is - 40°C to + 85°C. Derating is required for operation at higher temperatures.

TEMPERATURE COEFFICIENT

Capacitance will increase by 2% per 100°C temperature rise.

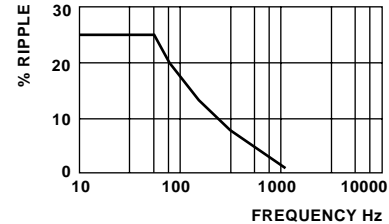
CAPACITANCE RANGE

0.002μF - 2μF. The tolerance is ± 10%. Other tolerance are available on request. Normal values measured at 1kHz.

RIPPLE

The sum of the peak ripple voltage and the DC voltage should not exceed the rated voltage. Refer to graph fig.1 for permissible peak-to-peak ripple voltage as a percentage of rated voltage for various frequencies.

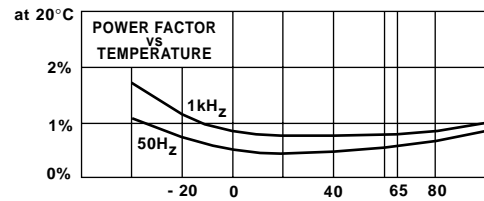
FIG 1



POWER FACTOR

The power factor is variable, and is a function of temperature and frequency see fig.2. Nominal value < 0.5% at 20°C

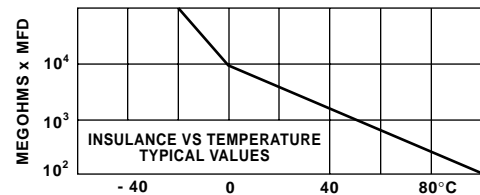
FIG 2



DIELECTRIC RESISTANCE

(Parallel resistance) is indicated by the graph of insulance (MΩ x μF) vs temperature fig.3. The insulance (MΩ x μF) is nominally 10000s at + 20°C. (Measurements taken after 1 minute with an applied voltage of 500V)

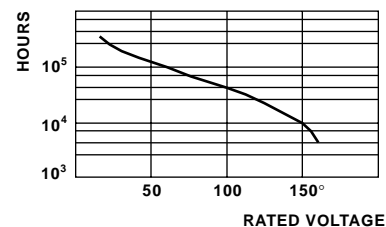
FIG 3



LIFE EXPECTANCY

EPR type capacitors are designed for a life expectancy of 50000 hours at 65 °C. To achieve the same life expectancy at 85°C derate to 60% of rated voltage fig.4.

FIG 4





VOLTAGE RANGE

1kVDC - 300kVDV

TEST VOLTAGE

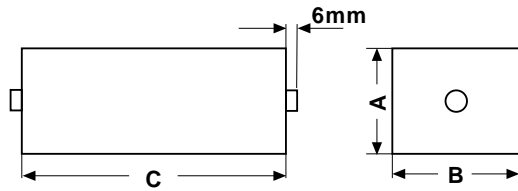
Terminal/terminal (Vt/t)

For DC rating < 20kV

Vt/t = 2.0 x rated voltage 60s

For DC rating > 20kV

Vt/t = 1.5 x rated voltage 60s



PART NUMBER	μF	DC KILO-VOLTS	A	B	C
EPR150-104	0.1	15	75	75	142
EPR300-504	0.5	30	130	220	185
EPR500-103	0.01	50	70	90	245
EPR500-504	0.5	50	175	235	280
EPR750-503	0.05	75	80	110	365
EPR750-104	0.1	75	115	130	365
EPR750-254	0.25	75	175	190	365
EPR1000-253	0.025	100	80	90	420
EPR1000-403	0.04	100	120	200	285
EPR1000-104	0.1	100	125	175	445
EPR2000-502	0.005	200	90	90	385
EPR3000-252	0.0025	300	70	95	555

FLOURESCENT LAMP/MOTOR CAPACITORS



POWER FACTOR CONTROLLER



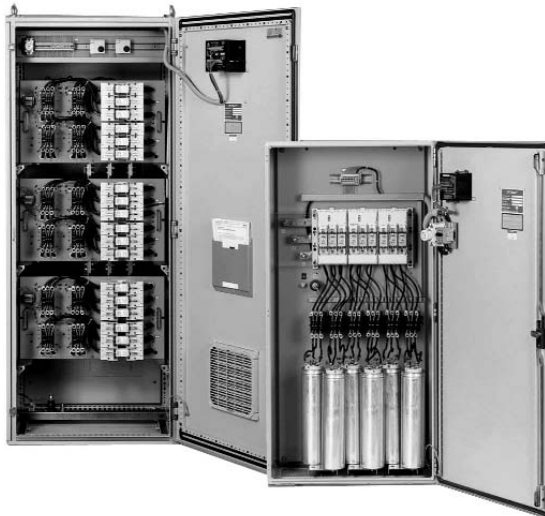
FURNACE CAPACITORS



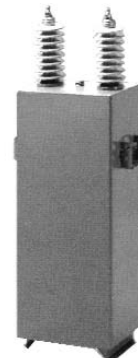
POWER ELECTRONIC CAPACITORS



LOW VOLTAGE CAPACITOR SYSTEMS



HIGH VOLTAGE CAPACITORS





Notes

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