

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 *12 mm 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 cleaners

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

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

VOLTAGE RANGE

1000 V_{DC} to 70 000 V_{DC}

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.

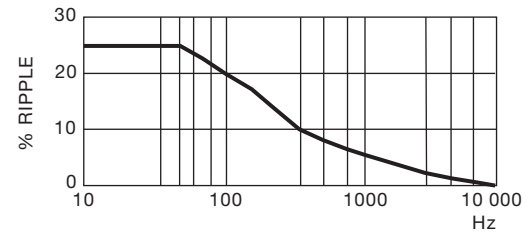


Fig. 1

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

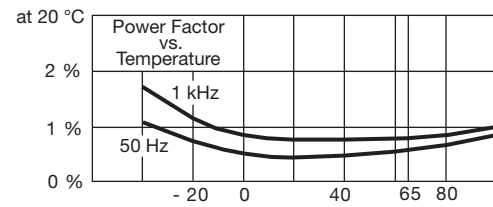


Fig. 2

DIELECTRIC RESISTANCE

(Parallel resistance) is indicated by the graph of insulation ($M\Omega \times \mu F$) vs temperature fig. 3. The insulation ($M\Omega \times \mu F$) is nominally 10 000 s at + 20 °C. (Measurements taken after 1 minute with an applied voltage of 500 V)

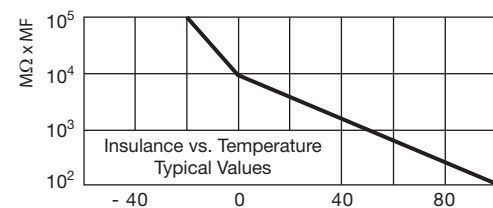


Fig. 3

LIFE EXPECTANCY

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

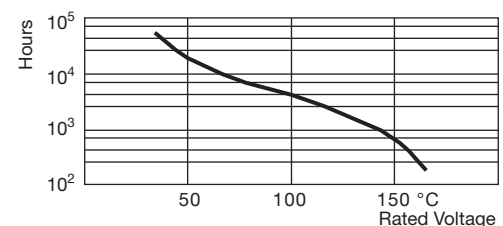


Fig. 4

TEST VOLTAGE

Terminal/terminal (Vt/t)

For DC rating < 20 kV

 $V_t/t = 2.0 \times \text{rated voltage } 60 \text{ s}$

For DC rating > 20 kV

 $V_t/t = 1.5 \times \text{rated voltage } 60 \text{ s}$ **WEIGHT**

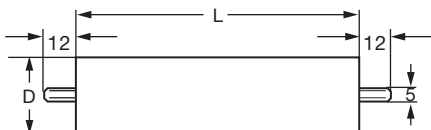
The approximate weight in grams may be calculated by multiplying the volume of the capacitor container by 1.2×10^{-3} .

TERMINATIONS

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

CAPACITANCE

Capacitance tolerance of 20 % is standard with those marked.

DIMENSIONS in millimeters

TYPE DESCRIPTION			
PART NUMBER	CAP. [μF]	L [mm]	D [mm]
1000 V_{DC} WKG			
ET10-103	0.01 ⁽¹⁾	42	17
ET10-203	0.02 ⁽¹⁾	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
1500 V_{DC} WKG			
ET15-103	0.01 ⁽¹⁾	42	17
ET15-203	0.02 ⁽¹⁾	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
2000 V_{DC} WKG			
ET20-103	0.01 ⁽¹⁾	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
3000 V_{DC} WKG			
ET30-502	0.005 ⁽¹⁾	42	17
ET30-103	0.01 ⁽¹⁾	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
4000 V_{DC} WKG			
ET40-102	0.001 ⁽¹⁾	42	17
ET40-502	0.005 ⁽¹⁾	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
5000 V_{DC} WKG			
ET50-102	0.001 ⁽¹⁾	42	17
ET50-202	0.002 ⁽¹⁾	42	17
ET50-502	0.005 ⁽¹⁾	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

Notes⁽¹⁾ Capacitance tolerance of 20 % is standard

- Non standard size containers can be supplied on request

TYPE DESCRIPTION			
PART NUMBER	CAP. [μF]	L [mm]	D [mm]
6000 V_{DC} WKG			
ET60-102	0.001 ⁽¹⁾	55	17
ET60-202	0.002 ⁽¹⁾	55	17
ET60-502	0.005 ⁽¹⁾	65	17
ET60-103	0.01	65	20
ET60-203	0.02	80	20
ET60-503	0.05	100	25
ET60-104	0.10	100	35
ET60-254	0.25	135	42
8000 V_{DC} WKG			
ET80-502	0.005 ⁽¹⁾	65	20
ET80-103	0.01	80	20
ET80-503	0.05	105	35
ET80-104	0.10	105	42
ET80-254	0.25	170	42
10 000 V_{DC} WKG			
ET100-102	0.001 ⁽¹⁾	65	17
ET100-502	0.005 ⁽¹⁾	65	22
ET100-103	0.01	80	22
ET100-203	0.02	80	30
ET100-503	0.05	105	35
ET100-104	0.10	170	35
ET100-254	0.25	205	42
12 000 V_{DC} WKG			
ET120-202	0.002 ⁽¹⁾	95	20
ET120-502	0.005 ⁽¹⁾	95	30
ET120-103	0.01	115	30
ET120-203	0.02	115	35
ET120-503	0.05	180	35
ET120-104	0.10	180	42
15 000 V_{DC} WKG			
ET150-102	0.001 ⁽¹⁾	95	17
ET150-202	0.002 ⁽¹⁾	95	20
ET150-502	0.005 ⁽¹⁾	110	20
ET150-103	0.01	110	30
ET150-203	0.02	110	35
ET150-503	0.05	150	42
ET150-104	0.10	245	42
20 000 V_{DC} WKG			
ET200-102	0.001 ⁽¹⁾	115	22
ET200-502	0.005 ⁽¹⁾	145	25
ET200-103	0.01	145	30
ET200-203	0.02	195	30
ET200-503	0.05	245	42
ET200-104	0.10	320	42

TYPE DESCRIPTION			
PART NUMBER	CAP. [μF]	L [mm]	D [mm]
25 000 V_{DC} WKG			
ET250-501	0.0005 ⁽¹⁾	145	17
ET250-102	0.001 ⁽¹⁾	145	20
ET250-502	0.005	175	30
ET250-103	0.010	175	35
ET250-503	0.05	300	42
30 000 V_{DC} WKG			
ET300-501	0.0005 ⁽¹⁾	170	17
ET300-102	0.001 ⁽¹⁾	170	20
ET300-202	0.002	170	25
ET300-502	0.005	205	30
ET300-103	0.010	205	35
ET300-203	0.02	280	35
ET300-303	0.03	280	42
40 000 V_{DC} WKG			
ET400-102	0.001 ⁽¹⁾	210	20
ET400-202	0.002	275	20
ET400-103	0.010	275	42
50 000 V_{DC} WKG			
ET500-501	0.0005 ⁽¹⁾	275	22
ET500-102	0.001 ⁽¹⁾	275	22
ET500-202	0.002	340	22
ET500-502	0.005	340	35
ET500-103	0.010	340	42
60 000 V_{DC} WKG			
ET600-102	0.001 ⁽¹⁾	330	25
ET600-152	0.0015	330	30

Notes
⁽¹⁾ Capacitance tolerance of 20 % is standard

- Non standard size containers can be supplied on request



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk and agree to fully indemnify and hold Vishay and its distributors harmless from and against any and all claims, liabilities, expenses and damages arising or resulting in connection with such use or sale, including attorneys fees, even if such claim alleges that Vishay or its distributor was negligent regarding the design or manufacture of the part. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.