

ET series

- High temperature, low ESR, High ripple current capability
- Rated voltage : 4~50V
- Endurance : 1,000hours at 125°C
- Applications : DC-DC Converters, Voltage Regulators, Decoupling Applications for Computer Motherboards, etc.
- RoHS compliant
- Halogen Free compliant



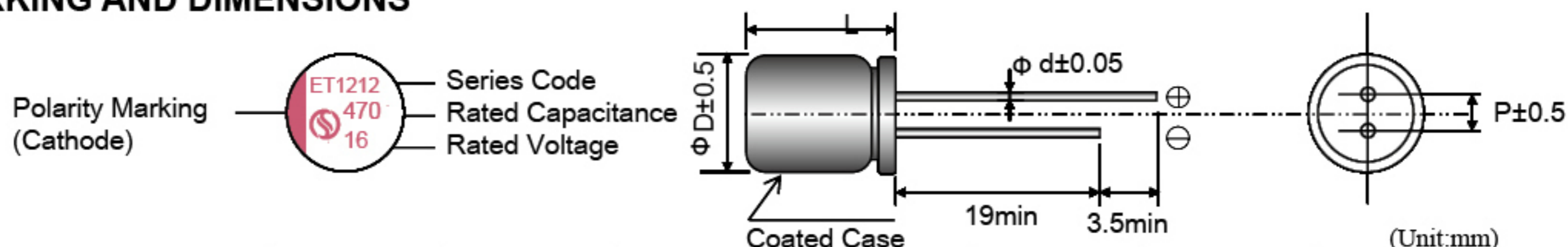
ET

SPECIFICATIONS

Items	Conditions	Characteristics
Category Temperature Range	—	-55 to +125°C
Rated Voltage Range	—	4 ~ 50V
Capacitance Tolerance	at 20°C,120Hz	±20%(M)
Surge Voltage	at 125°C	Rated voltage ×1.15V
Leakage Current	at 20°C after 2 minutes	$I \leq 0.2CV$ or $300(\mu A)$ Whichever is greater measured,after 2minutes application of rated working voltage at +20°C. Please see the attached characteristics list
Dissipation Factor (tan δ)	at 20°C,120Hz	Please see the attached characteristics list
Characteristics of Impedance at low, high temperature	at -55°C,100kHz	$Z(-55^{\circ}C)/Z(+20^{\circ}C) \leq 1.25$
	at -25°C,100kHz	$Z(-25^{\circ}C)/Z(+20^{\circ}C) \leq 1.15$
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 1,000 hours at 125°C.	Appearance NO significant damage.
		Capacitance change $\leq \pm 20\%$ of the initial value.
		DF(tanδ) $\leq 150\%$ of the initial specified value.
		ESR $\leq 150\%$ of the initial specified value.
		Leakage current \leq The initial specified value.
Damp Heag (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours ,without DC applied.	Appearance NO significant damage.
		Capacitance change $\leq \pm 20\%$ of the initial value.
		DF(tanδ) $\leq 150\%$ of the initial specified value.
		ESR $\leq 150\%$ of the initial specified value.
		Leakage current \leq The initial specified value.
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltages specified at 105°C for 30 seconds through a protective resistor (R=1kΩ) and discharge for 5 minutes 30 seconds.	Appearance NO significant damage.
		Capacitance change $\leq \pm 20\%$ of the initial value.
		DF(tanδ) $\leq 150\%$ of the initial specified value.
		ESR $\leq 150\%$ of the initial specified value.
		Leakage current \leq The initial specified value.

※ Note:If any doubt arises,measure the leakage current after following voltage treatment.
Voltage treatment :DC rated voltage are applied to the capacitors for 120 minutes at 125°C.

MARKING AND DIMENSIONS



Size	6.3x6	6.3x8	8x7	8x8	8x12	10x10	10x12
φ D	6.3	6.3	8	8	8	10	10
L	L+1.0 max	L+1.5 max	L+1.0 max	L+1.5 max	L+1.0 max	L+1.0 max	L+1.0 max
φ d	0.45	0.5	0.5	0.6	0.6	0.6	0.6
P	2.5	2.5	3.5	3.5	3.5	5.0	5.0

ET SERIES STANDARD CHARACTERISTICS LIST

Rated voltage (S.V.)	Cap (μF)	Size D×L	Leakage current (uA) max. ※2	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms)		D.F. (tanδ) max. 120Hz / 20°C
					105°C 100kHz	125°C 100kHz	
4 (4.6)	100	6.3×6	300	40	2390	797	0.12
	330	6.3×8	300	20	3200	1067	0.12
	560	6.3×8	448	20	3200	1067	0.12
	1,000	8×8	800	20	3800	1267	0.12
	1,200	8×12	960	16	4200	1400	0.12
	2,500	10×12	2,000	16	5460	1820	0.12
6.3 (7.2)	100	6.3×6	300	40	2100	700	0.12
	470	6.3×8	592	20	3100	1033	0.12
	560	8×8	705	20	4300	1433	0.12
	1,000	8×12	1,260	16	5100	1700	0.12
	1,200	8×12	1,512	16	5100	1700	0.12
	1,500	10×10	1,890	20	5200	1733	0.12
	1,800	10×12	2,268	16	5440	1813	0.12
10 (11.5)	100	6.3×6	300	40	1800	600	0.12
	330	6.3×8	660	20	2360	787	0.12
	330	8×7	660	40	2560	853	0.12
	560	8×8	1,120	20	3200	1067	0.12
	820	8×12	1,640	16	4200	1400	0.12
	1,000	10×10	2,000	20	5120	1707	0.12
	1,200	10×12	2,400	16	5600	1867	0.12
16 (18.4)	47	6.3×6	300	30	1620	540	0.12
	82	6.3×6	300	30	1620	540	0.12
	100	6.3×8	320	20	2120	707	0.12
	330	8×8	1,056	20	4300	1433	0.12
	470	8×12	1,504	16	4500	1500	0.12
	560	10×12	1,792	16	4700	1567	0.12
	820	10×12	2,624	16	4700	1567	0.12
25 (28.8)	47	6.3×6	300	50	2000	667	0.12
	100	6.3×8	500	30	2000	667	0.12
	180	8×8	900	28	3100	1033	0.12
	220	8×12	1,100	26	3600	1200	0.12
	330	10×12	1,650	24	4250	1417	0.12
	470	10×12	2,350	24	4200	1400	0.12
35 (40.3)	22	6.3×6	300	70	1450	483	0.12
	68	6.3×8	476	60	1500	500	0.12
	120	8×8	840	30	2200	733	0.12
	150	8×12	1,050	28	2600	867	0.12
	220	10×10	1,540	28	2950	983	0.12
	270	10×12	1,890	28	3200	1067	0.12
50 (57.5)	10	6.3×6	300	60	1400	467	0.12
	33	6.3×8	330	60	1500	500	0.12
	47	8×8	470	30	2000	667	0.12
	68	8×12	680	28	2200	733	0.12
	100	10×10	1,000	28	2300	767	0.12
	100	10×12	1,000	28	2500	833	0.12

※ 1. Capacitance tolerance : ±20%(M)
 ※ 2. After 2 minutes

FREQUENCY COEFFICIENT FOR RIPPLE CURRENT

Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 10kHz	10kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz
Coefficient	0.05	0.3	0.7	1

