

LEADED CAPACITORS, NETWORKS & HV CAPACITORS

HIGH VOLTAGE/POWER CAPACITORS

3.5kV to 42kV

DCT & DAT Series



These units are designed for such applications as high frequency heating equipment to which high frequency power or high DC or AC voltage is applied.

FEATURES

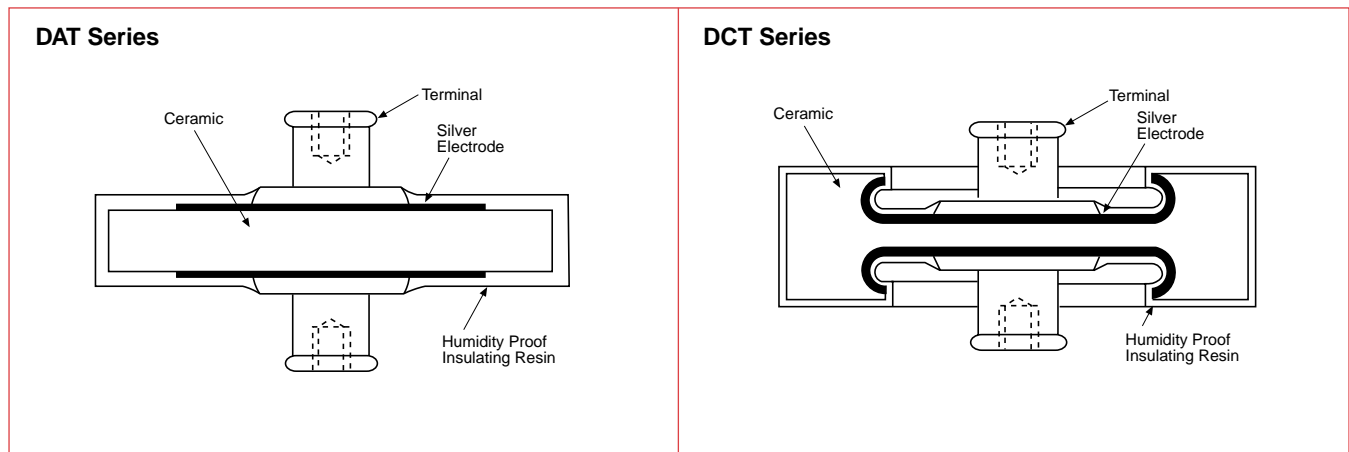
- Small size and high capacitance
- Linear and reversible temperature characteristics
- Very high "Q" and high insulation resistance from low to high frequencies
- No performance deterioration after extended life – excellent humidity and thermal resistance
- Low series inductance and operable to high frequencies
- Large power capability in small packages due to low dielectric loss when high voltage and high frequency is applied

APPLICATIONS

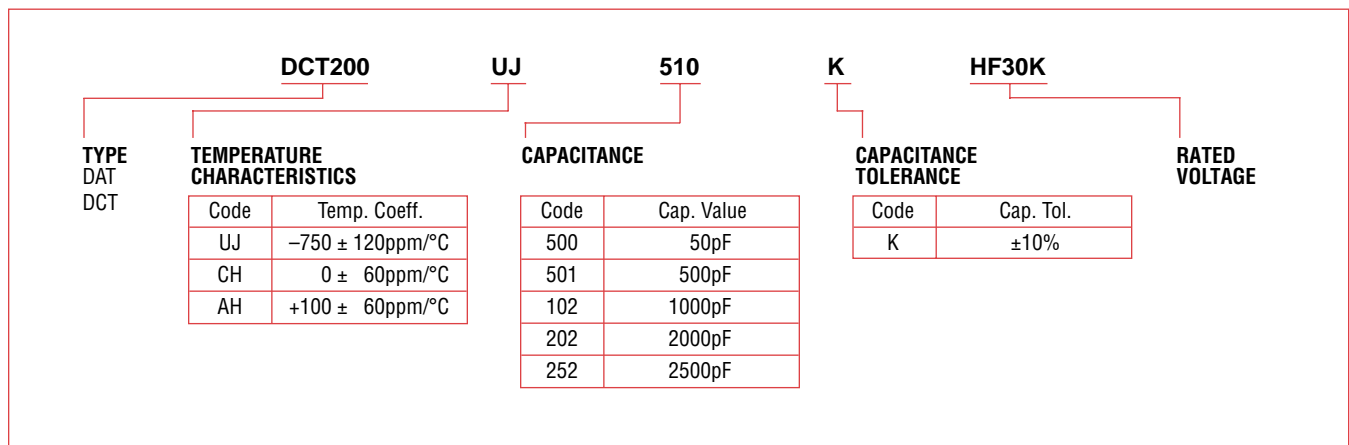
- Oscillator matching, coupling or bypass circuits in broadcast or radio communication equipment, etc.
- Oscillators, coupling circuit or bypass capacitors in industrial or medical high frequency appliances such as high frequency heating equipments or ultra-sonic instruments.
- Coupling capacitors for transmission lines and carrier frequency equipment.

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CONSTRUCTION



PART NUMBERING SYSTEM



LEADED CAPACITORS, NETWORKS & HV CAPACITORS

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DCT & DAT Series

DIMENSIONS: mm

DAT Series		DCT Series								
<p>Fig. 1</p>		<p>Fig. 2</p>			<p>Fig. 3</p>					
DIM: mm	TYPE									
	DAT40	DAT60	DAT80	DCT40	DCT60	DCT80	DCT110	DCT140	DCT160	DCT200
c	4.0	6.0	6.0	4.0	6.0	6.0	8.0	8.0	8.0	10.0
d	10.0	12.0	18.0	10.0	12.0	18.0	17.0	21.0	21.0	34.90
h	8.0	8.0	8.0	8.0	8.0	8.0	15.0	15.0	15.0	20.0
Thread Size	M4	M6	M6	M4	M6	M6	M8	M8	M8	M10

Note: Other dimensions are on following page.

SPECIFICATIONS

Char.	Cap. Tolerance (at 20°C)	Q (at 1MHz)	I.R. (M Ohms)	Temp. Rise (at 1MHz)	Cap. Temp. Coeff.	Operating Temp. Range
UJ	10%	5×10^{-4} max. (Q > 2,000)	10,000 min.	30°C max.	$(-750 \pm 120) \times 10^{-6}/^{\circ}\text{C}$	-10 to +75°C
CH	10%	5×10^{-4} max. (Q > 2,000)	10,000 min.	30°C max.	$(0 \pm 60) \times 10^{-6}/^{\circ}\text{C}$	-10 to +75°C
AH	10%	5×10^{-4} max. (Q > 2,000)	10,000 min.	30°C max.	$(+100 \pm 60) \times 10^{-6}/^{\circ}\text{C}$	-10 to +75°C

MARKING

Type
Normal capacitance and tolerance
Rated voltage (H.F.)
Rated voltage (DC)
Rated power capacity
Prod. lot no.
Manufacturer identification

INSULATION COATING

Capacitor surface is coated with insulating resin except terminals. Temp. coefficient is shown by the following color marking.
UJ: Green, CH: Orange, AH: Blue.

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DCT & DAT Series

Part Number	Cap. (pF)	Rated Voltage (kV)		Rated Allowable Power (kVA)	Allowable Max. Current (A)	Dimensions: mm			Fig.
		R.F. Peak Value	DC			D ± 10%	T ± 2.0	H ± 2.0	
DCT200UJ501KHF30K	500	30	25	300	60	200	33	73	3
DCT200UJ102KHF30K	1000	30	25	300	60	200	33	73	
DCT160UJ152KHF25K	1500	25	21	110	40	160	29	49	
DCT140UJ501KHF30K	500	30	25	90	35	140	25	53	
DCT140UJ601KHF30K	600	30	25	90	35	140	25	53	
DCT140UJ801KHF30K	800	30	25	90	35	140	25	53	
DCT140UJ102KHF25K	1000	25	21	90	35	140	22	50	
DCT140UJ152KHF15K	1500	15	13	90	35	140	19	47	
DCT110UJ301KHF30K	300	30	25	90	27	110	27	53	
DCT110UJ401KHF30K	400	30	25	90	27	110	27	53	
DCT110UJ501KHF16K	500	16	13	30	27	110	19	47	
DCT110UJ102KHF10K	1000	10	8	30	27	110	17	45	
DCT110UJ152KHF9K	1500	9	7	22	27	110	16	44	
DCT110UJ252KHF7K	2500	7	6	22	27	110	15	43	
DCT80UJ301KHF16K	300	16	13	30	20	80	18	33	2
DCT80UJ501KHF14K	500	14	12	15	20	80	16	31	
DCT80UJ601KHF9K	600	9	8	15	20	80	14	29	
DCT80UJ801KHF7K	800	7	6	15	20	80	12	28	
DCT80UJ102KHF7K	1000	7	6	15	20	80	14	28	
DCT60UJ101KHF14K	100	14	12	15	15	60	16	27	
DCT60UJ201KHF14K	200	14	12	15	15	60	16	27	
DCT60UJ301KHF12K	300	12	10	7.5	15	60	15	26	
DCT60UJ501KHF6K	500	6	5	7.5	15	60	12	24	
DCT40UJ500KHF12K	50	12	10	6	10	40	15	29	
DCT40UJ201KHF6K	200	6	5	4.5	10	40	11	25	
DCT40UJ301KHF6K	300	6	5	4.5	10	40	9.5	24	
DAT80UJ102KHF2K	1000	2	6	7	18	80	3 ¹	27	1
DAT80UJ152KHF2K	1500	2	6	7	18	80	3 ¹	27	
DAT60UJ501KHF2K	500	2	6	5	14	60	3 ¹	23	
DAT60UJ102KHF2K	1000	2	6	5	14	60	3 ¹	23	
DAT40UJ301KHF2K	300	2	3.5	2.2	8.5	40	2 ¹	24	
DAT40UJ501KHF2K	500	2	3.5	2.2	8.5	40	2 ¹	23	
DCT160CH301KHF36K	300	36	42	225	40	160	29	49	3
DCT140CH101KHF31.5K	100	31.5	37	135	35	140	26	52	
DCT140CH201KHF27K	200	27	32	135	35	140	24	49	
DCT110CH101KHF22.5K	100	22.5	26	67.5	27	110	22	46	
DCT110CH201KHF22.5K	200	22.5	26	67.5	27	110	22	46	
DCT80CH101KHF16K	100	16	19	30	20	80	17	32	2

CAUTION For DCT80 thru DCT160 styles, there are two different versions:
 DCT140 : tapped terminals
 DCT140-3 : tripod terminals with tapped hole. (Contact your local Murata Electronics Sales Office.)

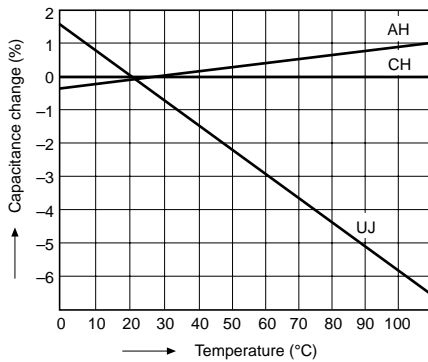
Tapped terminals are suitable in cases where banks of capacitors (series-parallel connection) are required. When operating at frequency above 3MHz, it is advisable to use DCT140-3 style because of the improved current distribution of tripod terminals.

1: ±0.50

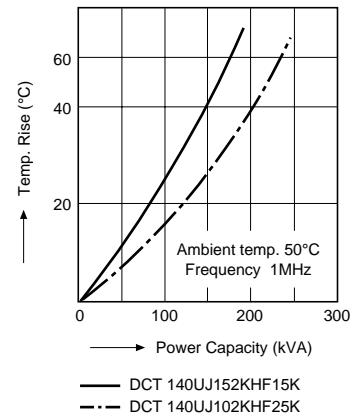
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CHARACTERISTICS

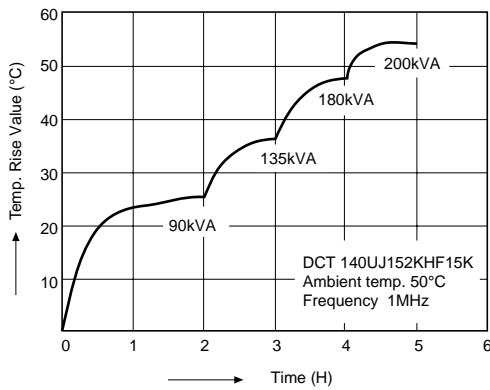
Temperature Coefficient



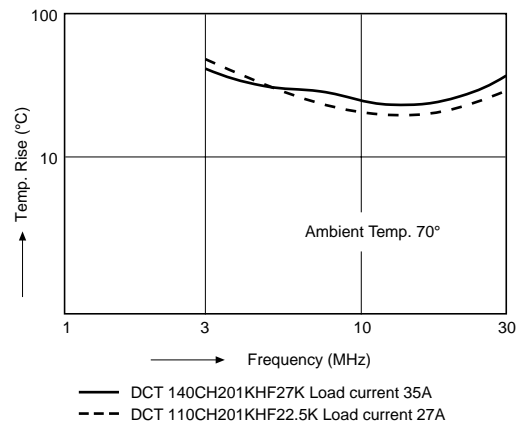
Power Capacity vs. Temperature Rise



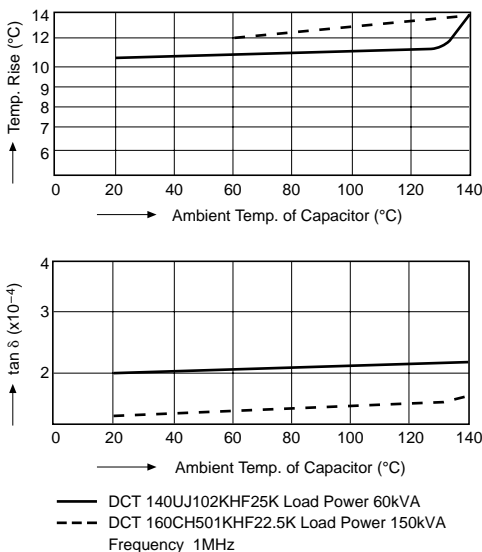
Temperature Rise vs. Time



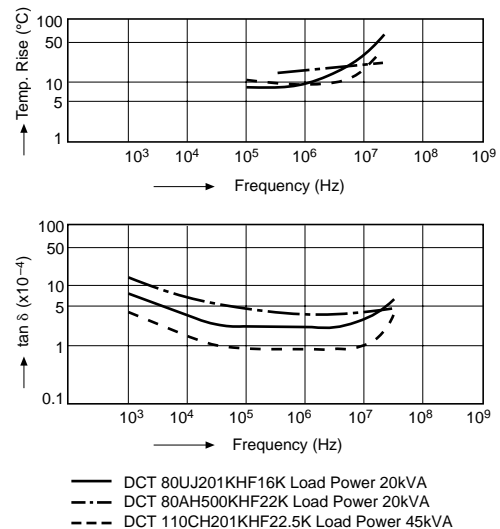
Temperature Rise in Load Current



Temperature Rise and tan δ vs. Ambient Temperature of Capacitor



Temperature Rise and tan δ vs. Frequency



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SPECIFICATIONS

Capacitance

The capacitance shall remain within the specified tolerance when measured at 20°C and at 1MHz ± 100kHz with not more than 5Vrms. (For capacitors with the ZM characteristic, the measurement is performed at 1kHz ± 100Hz with not more than 5Vrms.)

Q and tan δ

UJ, CH, AH, SL

The values of Q shall be as shown below when measured at 20°C and at 1MHz ± 100kHz with not more than 5Vrms.

Char.	Q
UJ	2000 min.
CH	2000 min.
AH	2000 min.

ZM

The value of tan δ shall be max 0.01 when measured at 20°C and at 1kHz ± 100Hz with not more than 5Vrms.

Insulation Resistance

The insulation resistance shall be 10,000M ohms or more when 1kVDC voltage is applied between terminals for 1 min. ± 5 sec.

Withstanding Voltage

There shall be no damage when the test voltage (peak value/ $\sqrt{2}$) of 100kHz to 1MHz is applied between terminals for 1min. ± 5 sec.

Temperature Coefficient

The changes in capacitance shall be within the ranges shown below over a temperature range of +20°C to +85°C, with the value at 20°C being the reference.

Measurement conditions are same as the capacitance.

Char.	Temp. Coeff.
UJ	(-750 ± 120) ppm/°C
CH	(0 ± 60) ppm/°C
AH	(+100 ± 60) ppm/°C
ZM	(-4700 ± 1000) ppm/°C

Power Capacity

The temperature rise at the terminals shall be as shown below when measured at a frequency of 1MHz with the specified rated power capacity applied and after the temperature at each section has stabilized.

Allowable Temp. Rise
30°C max.

NOTICE

Avoid subjecting the capacitors to undue shock such as dropping, etc., as it may cause cracking to the ceramic.

Avoid carrying the capacitors mounted because unnecessary vibration or shock can lead to degradation in terminal strength and cracking of the ceramic.

Avoid installing the capacitors with only one side mounted as it may lead to degradation in terminal strength.

When operating the capacitors at an ambient temperature of 50°C or more, reduce the load power according to Fig. 1 and the formula given below:

$$W_{LT} : K_1 \times W$$

W_{LT} : Permissible power at an ambient temperature T°C (kVA)

W : Rated power capacity (kVA)

K_1 : Load power reduction factor

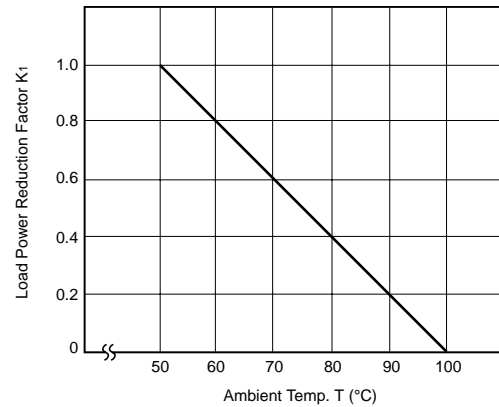


Fig. 1 Reduction Load Power

When subjecting the capacitors to forced-air cooling, avoid cooling locally; this may lead to uneven temperature distribution in the capacitors, resulting in ruptured capacitors.

Protect the capacitor surface from waterdrops or dust which may cause corona discharge or flashover.

When mounting the capacitors on equipment, be sure to mount them within the torque strength values shown in the table below:

Type	Max. Tightening Torque (kgf•cm)
DAT30	12
DAT40	12
DAT60	25
DAT80	25
DAT110	50
DCT30	12
DCT40	12
DCT60	25
DC, DCT80	25
DC, DCT110	50
DC, DCT140	50
DCT160	50
DCT200	100

PRECAUTION

When using the capacitors, strictly observe the rated voltage, current and power. Continued overload use may result in the following failures:

Ceramic cracking

Flashover takes place over the surface, leading to a fire hazard.

The ceramic may produce abnormal heat (200°C or more) if the ceramic incurs feedthrough damage with resultant overcurrent flowing through.