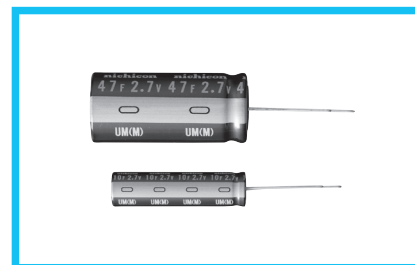
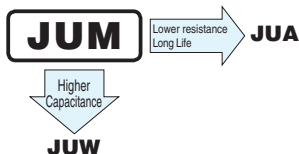


# JUM

Radial Lead Type, Standard

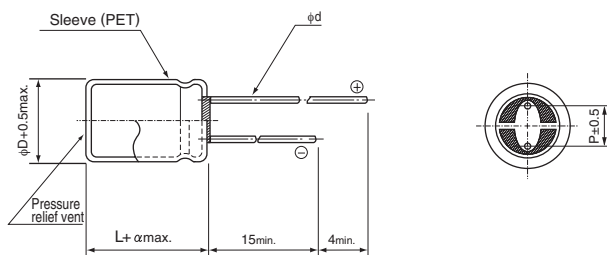
- Standard type (2.7V).
- Suitable for quick charge and discharge.
- Wide temperature range (− 25 to +70°C).
- Compliant to the RoHS directive (2011/65/EU,(EU)2015/863).



## Specifications

Item	Performance Characteristics	
Category Temperature Range	− 25 to +70°C	
Rated Voltage Range	2.7V	
Rated Capacitance Range	1 to 47F See Note	
Capacitance Tolerance	±20% , 20°C	
Stability at Low Temperature	Capacitance (− 25°C) / Capacitance (+20°C) ×100 ≥ 70% ESR (− 25°C) / ESR (+20°C) ≤ 4	
ESR, DCR*	Refer to the table below (20°C). *DC internal resistance	
Endurance	Capacitance change	Within ±30% of the initial capacitance value
	ESR	300% or less than the initial specified value
Shelf Life	Capacitance change	Within ±30% of the initial capacitance value
	ESR	300% or less than the initial specified value
Humidity Endurance	Capacitance change	Within ±30% of the initial capacitance value
	ESR	300% or less than the initial specified value
Marking	Printed with white color letter on black sleeve.	

## Drawing

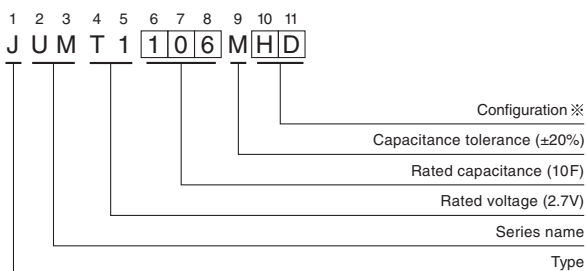


	(mm)				
φD	8	10	12.5	16	18
P	3.5	5.0	5.0	7.5	7.5
φd	0.6	0.6	0.6*	0.8	0.8

※ In case L>25 for the φ12.5 dia unit, lead dia φd=0.8

α	(φD < 10) 1.5
	(φD ≥ 10) 2.0

## Type numbering system (Example : 2.7V 10F)



※ Configuration

φ D	Pb-free lead finishing Pb-free PET sleeve
8 · 10	PD
12.5 to 18	HD

- Please refer to the Guidelines for Aluminum Electrolytic Capacitors for end seal configuration information.

## Dimensions

Rated Voltage ( Code )	Rated Capacitance (F)	Code	ESR (Ω) (at 1kHz)	DCR※ Typical (Ω)	Case size φ D × L (mm)
2.7V (T1)	1	105	1.8	3	8 × 11.5
	2.2	225	1.0	1.3	8 × 20
	3.3	335	0.6	1.0	10 × 20
	4.7	475	0.4	0.6	12.5 × 20
	10	106	0.2	0.25	12.5 × 31.5
	22	226	0.07	0.13	16 × 31.5
	33	336	0.06	0.08	18 × 31.5
	47	476	0.05	0.06	18 × 40

Note :

The capacitance calculated from discharge time (ΔT) with constant current ( i ) after 30minute charge with rated voltage (2.7V).

The discharge current ( i ) is 0.01 × rated capacitance (F).

The discharge time (ΔT) measured between 2V and 1V with constant current.

The capacitance calculated below.

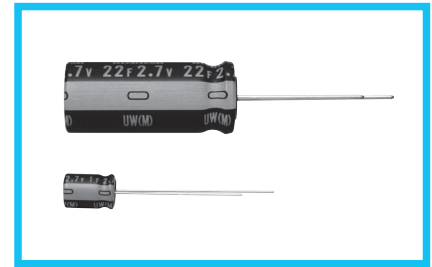
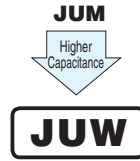
$$\text{Capacitance (F)} = i \times \Delta T$$

※ The listed DCR value is typical and therefore not a guaranteed value.

# JUW

Radial Lead Type, High Capacitance

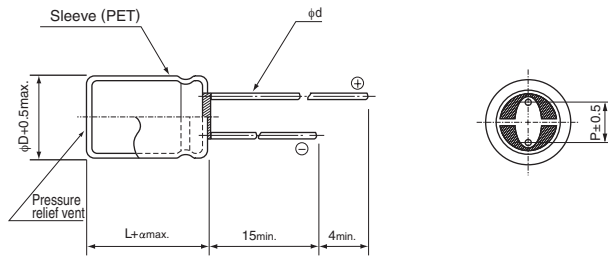
- High Capacitance type (2.7V).
- Higher capacitance than JUM.
- Wide temperature range (−25 to +70°C).
- Compliant to the RoHS directive (2011/65/EU,(EU)2015/863).



## Specifications

Item	Performance Characteristics					
Category Temperature Range	−25 to +70°C					
Rated Voltage	2.7V					
Rated Capacitance Range	1 to 82F See Note					
Capacitance Tolerance	±20% , 20°C					
Stability at Low Temperature	Capacitance (−25°C) / Capacitance (+20°C) ×100 ≥ 70% ESR (−25°C) / ESR (+20°C) ≤ 4					
ESR, DCR*	Refer to the table below (20°C). *DC internal resistance					
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 70°C.	<table border="1"> <tr> <td>Capacitance change</td> <td>Within ±30% of the initial capacitance value</td> </tr> <tr> <td>ESR</td> <td>300% or less than the initial specified value</td> </tr> </table>	Capacitance change	Within ±30% of the initial capacitance value	ESR	300% or less than the initial specified value
	Capacitance change	Within ±30% of the initial capacitance value				
ESR	300% or less than the initial specified value					
Shelf Life	The specifications listed at right shall be met when the capacitors are restored to 20°C after storing the capacitors under no load for 1000 hours at 70°C.	<table border="1"> <tr> <td>Capacitance change</td> <td>Within ±30% of the initial capacitance value</td> </tr> <tr> <td>ESR</td> <td>300% or less than the initial specified value</td> </tr> </table>	Capacitance change	Within ±30% of the initial capacitance value	ESR	300% or less than the initial specified value
	Capacitance change	Within ±30% of the initial capacitance value				
ESR	300% or less than the initial specified value					
Humidity Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 500 hours at 40°C 90%RH.	<table border="1"> <tr> <td>Capacitance change</td> <td>Within ±30% of the initial capacitance value</td> </tr> <tr> <td>ESR</td> <td>300% or less than the initial specified value</td> </tr> </table>	Capacitance change	Within ±30% of the initial capacitance value	ESR	300% or less than the initial specified value
	Capacitance change	Within ±30% of the initial capacitance value				
ESR	300% or less than the initial specified value					
Marking	Printed with white color letter on black sleeve.					

## Drawing



	φD	6.3	8	10	12.5	16	18
P	2.5	3.5	5.0	5.0	7.5	7.5	
φd	0.5	0.6	0.6 <sup>※</sup>	0.6 <sup>※</sup>	0.8	0.8	

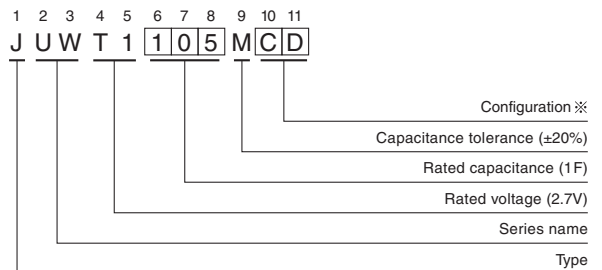
(mm)

α	(φD < 10) 1.5
	(φD ≥ 10) 2.0

※ In case L>25 for the φ10 and φ12.5 dia unit, lead dia φd=0.8

- Please refer to the Guidelines for Aluminum Electrolytic Capacitors for end seal configuration information.

## Type numbering system (Example : 2.7V 1F)



※ Configuration

φ D	Pb-free lead finishing Pb-free PET sleeve
6.3	CD
8 - 10	PD
12.5 to 18	HD

## Dimensions

Rated Voltage (Code)	Rated Capacitance (F)	Code	ESR (Ω) (at 1kHz)	DCR※ Typical (Ω)	Case size φ D × L (mm)
2.7V (T1)	1.0	105	1.8	4	6.3 × 9
	1.5	155	1.2	2.5	8 × 11.5
	2.7	275	0.6	1.2	8 × 20
	3.3	335	0.5	1.1	10 × 12.5
	4.7	475	0.4	0.8	10 × 20
	6.8	685	0.3	0.7	12.5 × 20
	12	126	0.3	0.6	10 × 31.5
	22	226	0.2	0.4	12.5 × 31.5
	33	336	0.12	0.28	16 × 31.5
	47	476	0.1	0.22	18 × 31.5
82	826	0.06	0.13	18 × 40	

※ The listed DCR value is typical and therefore not a guaranteed value.

### Note :

The capacitance calculated from discharge time (ΔT) with constant current (i) after 30minute charge with rated voltage (2.7V).

The discharge current (i) is 0.01 × rated capacitance (F).

The discharge time (ΔT) measured between 2V and 1V with constant current.

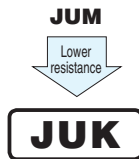
The capacitance calculated below.

$$\text{Capacitance (F)} = i \times \Delta T$$

# JUK

Radial Lead Type, Lower Resistance

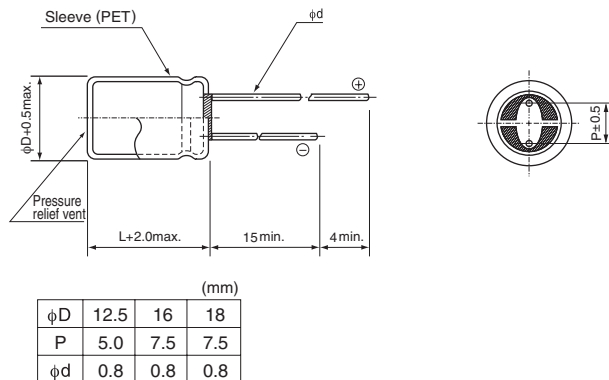
- Lower resistance type of JUM.
- Suited for Smart Meters.
- Lower temperature range (− 40 to +70°C).
- Compliant to the RoHS directive (2011/65/EU,(EU)2015/863).



## Specifications

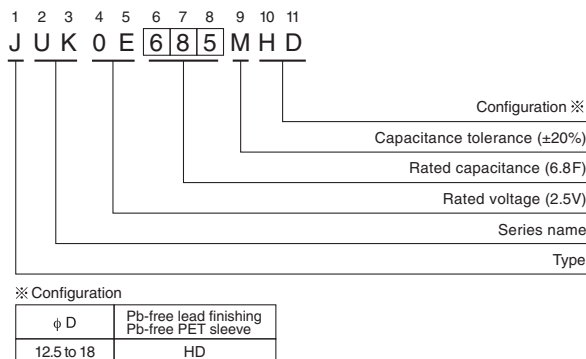
Item	Performance Characteristics					
Category Temperature Range	− 40 to +70°C					
Rated Voltage	2.5V					
Rated Capacitance	6.8 to 27F See Note					
Capacitance Tolerance	±20% , 20°C					
Stability at Low Temperature	Capacitance (− 40°C) / Capacitance (+20°C) ×100 ≥ 70% ESR (− 40°C) / ESR (+20°C) ≤ 7					
ESR, DCR*	Refer to the table below (20°C). *DC internal resistance					
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 70°C.	<table border="1"> <tr> <td>Capacitance change</td> <td>Within ±30% of the initial capacitance value</td> </tr> <tr> <td>ESR</td> <td>300% or less than the initial specified value</td> </tr> </table>	Capacitance change	Within ±30% of the initial capacitance value	ESR	300% or less than the initial specified value
	Capacitance change	Within ±30% of the initial capacitance value				
ESR	300% or less than the initial specified value					
Shelf Life	The specifications listed at right shall be met when the capacitors are restored to 20°C after storing the capacitors under no load for 1000 hours at 70°C.	<table border="1"> <tr> <td>Capacitance change</td> <td>Within ±30% of the initial capacitance value</td> </tr> <tr> <td>ESR</td> <td>300% or less than the initial specified value</td> </tr> </table>	Capacitance change	Within ±30% of the initial capacitance value	ESR	300% or less than the initial specified value
	Capacitance change	Within ±30% of the initial capacitance value				
ESR	300% or less than the initial specified value					
Humidity Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 500 hours at 40°C 90%RH.	<table border="1"> <tr> <td>Capacitance change</td> <td>Within ±30% of the initial capacitance value</td> </tr> <tr> <td>ESR</td> <td>300% or less than the initial specified value</td> </tr> </table>	Capacitance change	Within ±30% of the initial capacitance value	ESR	300% or less than the initial specified value
	Capacitance change	Within ±30% of the initial capacitance value				
ESR	300% or less than the initial specified value					
Marking	Printed with white color letter on black sleeve.					

## Drawing



- Please refer to the Guidelines for Aluminum Electrolytic Capacitors for end seal configuration information.

## Type numbering system (Example : 2.5V 6.8F)



## Dimensions

Rated Voltage (Code)	Rated Capacitance (F)	Code	ESR (Ω) (at 1kHz)	DCR※ Typical (Ω)	Case size φ D × L (mm)
2.5V (0E)	6.8	685	0.075	0.085	12.5 × 31.5
	12	126	0.060	0.065	16 × 31.5
	18	186	0.055	0.055	18 × 31.5
	27	276	0.040	0.035	18 × 40

Note :

The capacitance calculated from discharge time (ΔT) with constant current (i) after 30minute charge with rated voltage (2.5V).

The discharge current (i) is 0.01 × rated capacitance (F).

The discharge time (ΔT) measured between 2V and 1V with constant current.

The capacitance calculated below.

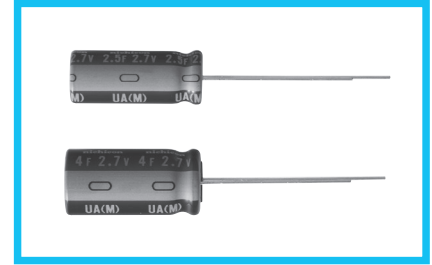
$$\text{Capacitance (F)} = i \times \Delta T$$

※ The listed DCR value is typical and therefore not a guaranteed value.



Radial Lead Type, Lower Resistance, Long Life

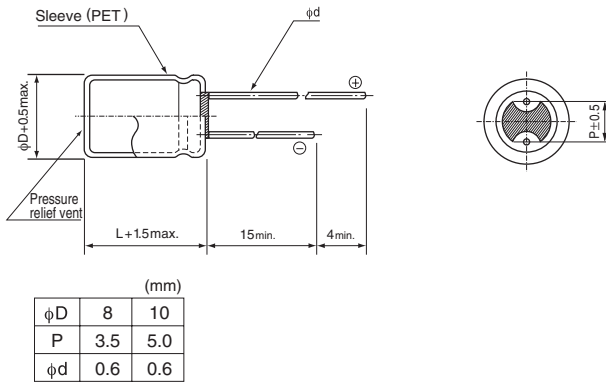
- Lower resistance and long life type of JUM.
- Lower temperature range (− 40 to +70°C).
- Load life of 2000hours at 70°C.
- Compliant to the RoHS directive (2011/65/EU,(EU)2015/863).



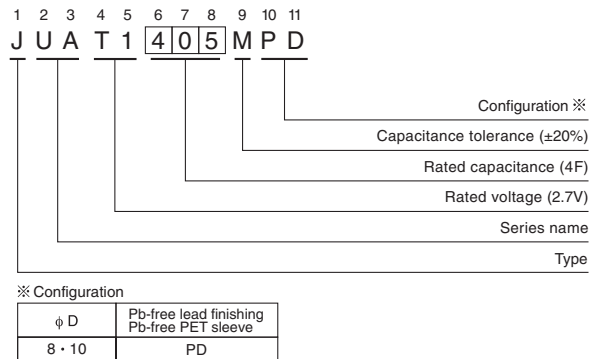
## Specifications

Item	Performance Characteristics					
Category Temperature Range	− 40 to +70°C					
Rated Voltage	2.7V					
Rated Capacitance	1.2 to 4.7F See Note					
Capacitance Tolerance	±20% , 20°C					
Stability at Low Temperature	Capacitance (− 40°C) / Capacitance (+20°C) ×100 ≥ 70% ESR (− 40°C) / ESR (+20°C) ≤ 7					
ESR	Refer to the table below (20°C).					
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 70°C.	<table border="1"> <tr> <td>Capacitance change</td> <td>Within ±30% of the initial capacitance value</td> </tr> <tr> <td>ESR</td> <td>400% or less than the initial specified value</td> </tr> </table>	Capacitance change	Within ±30% of the initial capacitance value	ESR	400% or less than the initial specified value
	Capacitance change	Within ±30% of the initial capacitance value				
ESR	400% or less than the initial specified value					
Shelf Life	The specifications listed at right shall be met when the capacitors are restored to 20°C after storing the capacitors under no load for 1000 hours at 70°C.	<table border="1"> <tr> <td>Capacitance change</td> <td>Within ±30% of the initial capacitance value</td> </tr> <tr> <td>ESR</td> <td>400% or less than the initial specified value</td> </tr> </table>	Capacitance change	Within ±30% of the initial capacitance value	ESR	400% or less than the initial specified value
	Capacitance change	Within ±30% of the initial capacitance value				
ESR	400% or less than the initial specified value					
Humidity Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 500 hours at 40°C 90%RH.	<table border="1"> <tr> <td>Capacitance change</td> <td>Within ±30% of the initial capacitance value</td> </tr> <tr> <td>ESR</td> <td>300% or less than the initial specified value</td> </tr> </table>	Capacitance change	Within ±30% of the initial capacitance value	ESR	300% or less than the initial specified value
	Capacitance change	Within ±30% of the initial capacitance value				
ESR	300% or less than the initial specified value					
Marking	Printed with white color letter on black sleeve.					

## Drawing



## Type numbering system (Example : 2.7V 4F)



## Dimensions

Rated Voltage ( Code )	Rated Capacitance (F)	Code	ESR (Ω) (at 1kHz)	DCR※ Typical (Ω)	Case size φ D × L (mm)
2.7V (T1)	1.2	125	0.40	0.40	8 × 11.5
	2.0	205	0.25	0.25	10 × 12.5
	2.5	255	0.15	0.15	8 × 20
	4.0	405	0.10	0.10	10 × 20
	4.7	475	0.15	0.13	10 × 20

Note :

The capacitance calculated from discharge time (ΔT) with constant current ( i ) after 30minute charge with rated voltage (2.7V).

The discharge current ( i ) is 0.01 × rated capacitance (F).

The discharge time (ΔT) measured between 2V and 1V with constant current.

The capacitance calculated below.

$$\text{Capacitance (F)} = i \times \Delta T$$

※ The listed DCR value is typical and therefore not a guaranteed value.



Snap-in Terminal Type

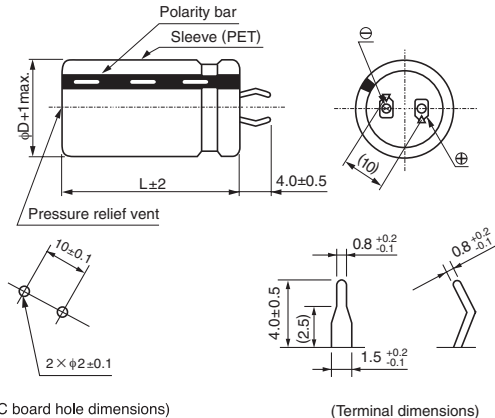
- Excellent in voltage holding property.
- Suitable for quick charge and discharge.
- Wide temperature range (− 25°C to + 60°C).
- Compliant to the RoHS directive (2011/65/EU,(EU)2015/863).



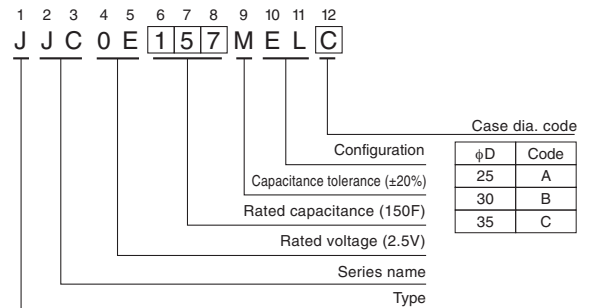
## Specifications

Item	Performance Characteristics					
Category Temperature Range	− 25 to +60°C					
Rated Voltage Range	2.5V					
Rated Capacitance Range	56 to 200F See Note					
Capacitance Tolerance	±20% (20°C)					
Stability at Low Temperature	Capacitance (− 25°C) / Capacitance (+20°C) ×100 ≥ 70% ESR (− 25°C) / ESR (+20°C) ≤ 7					
ESR, DCR*	Refer to the table below (20°C). *DC internal resistance					
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 60°C.	<table border="1"> <tr> <td>Capacitance change</td> <td>Within ±30% of the initial capacitance value</td> </tr> <tr> <td>ESR</td> <td>300% or less than the initial specified value</td> </tr> </table>	Capacitance change	Within ±30% of the initial capacitance value	ESR	300% or less than the initial specified value
	Capacitance change	Within ±30% of the initial capacitance value				
ESR	300% or less than the initial specified value					
Shelf Life	The specifications listed at right shall be met when the capacitors are restored to 20°C after storing the capacitors under no load for 2000 hours at 60°C.	<table border="1"> <tr> <td>Capacitance change</td> <td>Within ±30% of the initial capacitance value</td> </tr> <tr> <td>ESR</td> <td>300% or less than the initial specified value</td> </tr> </table>	Capacitance change	Within ±30% of the initial capacitance value	ESR	300% or less than the initial specified value
	Capacitance change	Within ±30% of the initial capacitance value				
ESR	300% or less than the initial specified value					
Humidity Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 500 hours at 40°C 90%RH.	<table border="1"> <tr> <td>Capacitance change</td> <td>Within ±30% of the initial capacitance value</td> </tr> <tr> <td>ESR</td> <td>300% or less than the initial specified value</td> </tr> </table>	Capacitance change	Within ±30% of the initial capacitance value	ESR	300% or less than the initial specified value
	Capacitance change	Within ±30% of the initial capacitance value				
ESR	300% or less than the initial specified value					
Marking	Printed with white color letter on black sleeve.					

## Drawing



## Type numbering system (Example : 2.5V 150F)



## Dimensions

Rated Voltage (code)	Cap. (F)	Cap. code	ESR(mΩ) (at 1kHz)	DCR* Typical (mΩ)	Case size φD × L (mm)		
					φ 25 (A)	φ 30 (B)	φ 35 (C)
2.5V (0E)	56	566	70	50	25 × 40	30 × 30	
	68	686	60	45			35 × 30
	82	826	60	35	25 × 50	30 × 40	
	100	107	50	30			35 × 35
	120	127	50	25		30 × 50	35 × 40
	150	157	40	22			35 × 50
	200	207	30	16			35 × 50

Note :

The capacitance calculated from discharge time (ΔT) with constant current (i) after 30minute charge with rated voltage (2.5V).

The discharge current (i) is 0.01 × rated capacitance (F). The discharge time (ΔT) measured between 2V and 1V with constant current.

The capacitance calculated bellow.

$$\text{Capacitance (F)} = i \times \Delta T$$

\* The listed DCR value is typical and therefore not a guaranteed value.



Screw Terminal Type, High Energy Density Type

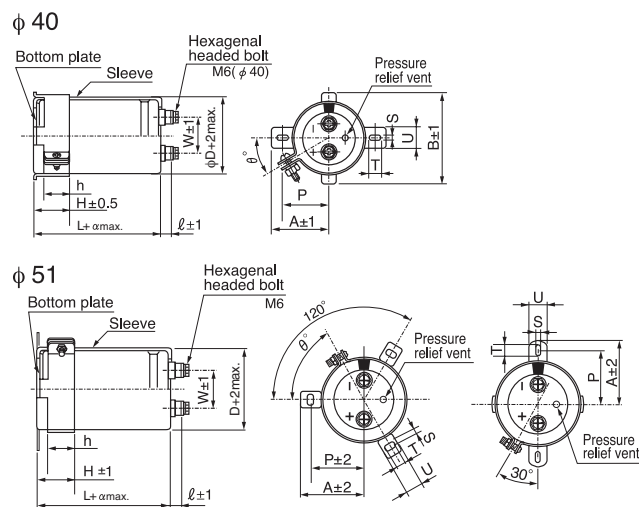
- High energy density.
- Suitable for electric power storage.
- Compliant to the RoHS directive (2011/65/EU, (EU)2015/863).



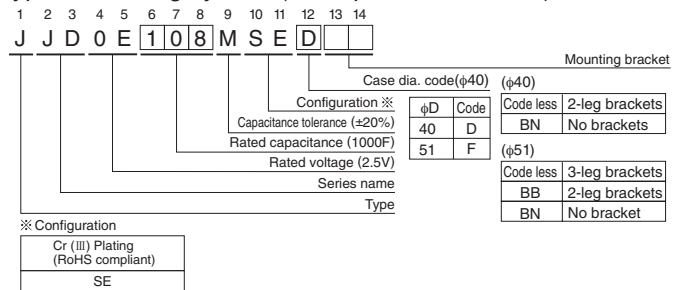
### Specifications

Item	Performance Characteristics					
Category Temperature Range	-25 to +60°C					
Rated Voltage Range	2.5V					
Rated Capacitance Range	1000 to 2500F See Note					
Capacitance Tolerance	±20%, 20°C					
Stability at Temperature	Capacitance (-25°C) / Capacitance (+20°C) × 100 ≥ 70% DCR (-25°C) / DCR(+20°C) ≤ 7					
DCR*	Refer to the table below (20°C). *DC internal resistance					
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 60°C.	<table border="1"> <tr> <td>Capacitance change</td> <td>Within ±30% of the initial capacitance value</td> </tr> <tr> <td>DCR</td> <td>300% or less than the initial specified value</td> </tr> </table>	Capacitance change	Within ±30% of the initial capacitance value	DCR	300% or less than the initial specified value
	Capacitance change	Within ±30% of the initial capacitance value				
DCR	300% or less than the initial specified value					
Shelf Life	The specifications listed at right shall be met when the capacitors are restored to 20°C after storing the capacitors under no load for 2000 hours at 60°C.	<table border="1"> <tr> <td>Capacitance change</td> <td>Within ±30% of the initial capacitance value</td> </tr> <tr> <td>DCR</td> <td>300% or less than the initial specified value</td> </tr> </table>	Capacitance change	Within ±30% of the initial capacitance value	DCR	300% or less than the initial specified value
	Capacitance change	Within ±30% of the initial capacitance value				
DCR	300% or less than the initial specified value					
Humidity Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 500 hours at 40°C 90%RH.	<table border="1"> <tr> <td>Capacitance change</td> <td>Within ±30% of the initial capacitance value</td> </tr> <tr> <td>DCR</td> <td>300% or less than the initial specified value</td> </tr> </table>	Capacitance change	Within ±30% of the initial capacitance value	DCR	300% or less than the initial specified value
	Capacitance change	Within ±30% of the initial capacitance value				
DCR	300% or less than the initial specified value					
Marking	Printed with white color letter on black sleeve.					

### Drawing



### Type numbering system (Example : 2.5V 1000F)



Note :  
 The capacitance calculated from discharge time ( $\Delta T$ ) with constant current ( $i$ ) after 30minuite charge with rated voltage (2.5V).  
 The discharge current ( $i$ ) is  $0.01 \times$  rated capacitance (F).  
 The discharge time ( $\Delta T$ ) measured between 2V and 1V with constant current.  
 The capacitance calculated below.  
 Capacitance (F) =  $i \times \Delta T$

- Dimensions of terminal pitch(W) and length( $\ell$ ) and Normal dia. of bolt (mm)

$\phi D$	W	$\ell$	$\alpha$	Nominal of bolt
40	18.8	9	3	M6
51	26.0	10	3	M6

### Dimensions

Rated Voltage (Code)	Cap. (F)	Cap. code	DCR ※ Typical (mΩ)	Case size		Ref. Weight (g)
				$\phi$ (mm)	L (mm)	
2.5V (0E)	1000	108	8.0	40	105	210
	1300	138	6.0		135	250
	2300	238	4.0	51	135	450
	2500	258	3.5		142	500

※ The listed DCR value is typical and therefore not a guaranteed value.

- Dimensions of mounting bracket (mm)

Symbol	Leg shape φD	3-Legs		2-Legs	
		51	40	51	40
P		32.5	27	33.2	
A		38.5	32	40	
B		-	48	-	
T		7.5	7.0	6.0	
S		5.0	3.5	4.5	
U		12	10	14	
$\theta^\circ$		60	45	30	
H		20	17	25	
h		15	12	15	

Note) The brackets will be supplied in the separate box.