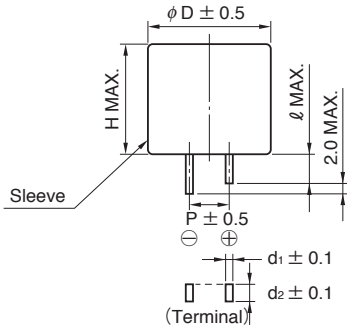


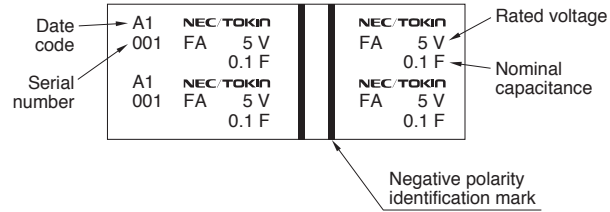
## 6.8 FA Series, FE Series

### ● FA Series

#### Dimensions



#### Markings on sleeve

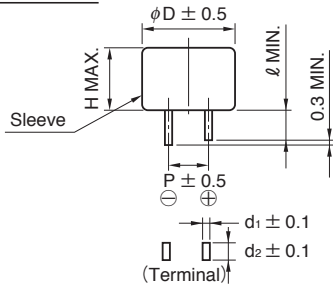


#### Specifications

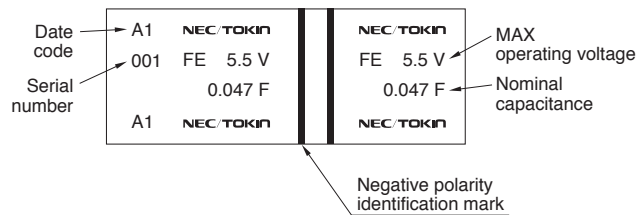
Part Number	MAX operating voltage (Vdc)	Rated voltage (Vdc)	Nominal capacitance		MAX ESR (at 1 kHz) ( $\Omega$ )	MAX current at 30 min. (mA)	Dimension (unit:mm)						Weight (g)
			Charge system (F)	Discharge system (F)			$\phi D$	H	P	$\ell$	$d_1$	$d_2$	
FA0H473ZF	5.5	5	0.047	0.075	20.0	0.071	16.0	15.5	5.1	5.0	0.4	1.2	6.2
FA0H104ZF	5.5	5	0.10	0.16	8.0	0.15	21.5	15.5	7.6	5.5	0.6	1.2	12
FA0H224ZF	5.5	5	0.22	0.35	5.0	0.33	28.5	16.5	10.2	9.5	0.6	1.4	25
FA0H474ZF	5.5	5	0.47	0.75	3.5	0.71	36.5	16.5	15.0	9.5	0.6	1.7	42
FA0H105ZF	5.5	5	1.0	1.6	2.5	1.5	44.5	18.5	20.0	9.5	1.0	1.4	65
FA1A223ZF	11.0	10	0.022	0.035	20.0	0.066	16.0	25.0	5.1	5.0	0.4	1.2	7.5
FA1A104ZF	11.0	10	0.10	0.16	8.0	0.30	28.5	25.5	10.2	9.5	0.6	1.4	32
FA1A224ZF	11.0	10	0.22	0.35	6.0	0.66	36.5	27.5	15.0	9.5	1.0	1.4	55
FA1A474ZF	11.0	10	0.47	0.75	4.0	1.41	44.5	28.5	20.0	9.5	1.0	1.4	83

### ● FE Series

#### Dimensions



#### Markings on sleeve



#### Specifications

Part Number	MAX operating voltage (Vdc)	Nominal capacitance		MAX ESR (at 1 kHz) ( $\Omega$ )	MAX current at 30 min. (mA)	Dimension (unit:mm)						Weight (g)
		Charge system (F)	Discharge system (F)			$\phi D$	H	P	$\ell$	$d_1$	$d_2$	
FE0H473ZF	5.5	0.047	0.075	14.0	0.071	14.5	14.0	5.1	2.2	0.4	1.2	3.9
FE0H104ZF	5.5	0.10	0.16	6.5	0.15	16.5	14.0	5.1	2.7	0.4	1.2	5
FE0H224ZF	5.5	0.22	0.35	3.5	0.33	21.5	15.5	7.6	3.0	0.6	1.2	9.5
FE0H474ZF	5.5	0.47	0.75	1.8	0.71	28.5	16.5	10.2	6.1	0.6	1.4	16
FE0H105ZF	5.5	1.0	1.4	1.0	1.5	36.5	18.5	15.0	6.1	0.6	1.7	38
FE0H155ZF	5.5	1.5	2.1	0.6	2.3	44.5	18.5	20.0	6.1	1.0	1.4	72



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## Specifications

Series name		FA		FE		Test conditions (conforming to JIS C 5160-1)	
Item							
Category temperature range		-25℃ to +70℃		-40℃ to +70℃			
MAX operating voltage		5.5Vdc, 11Vdc		5.5Vdc			
Capacitance		5.5V : 0.047F to 1.0F 11V : 0.022F to 0.47F		0.047F to 1.5F		Refer to "Measurement Conditions"	
Capacitance allowance		+ 80 %, -20 %		+ 80 %, -20 %		Refer to "Measurement Conditions"	
ESR		Refer to standard ratings		Refer to standard ratings		Measured at 1kHz, 10mA ; See also "Measurement Conditions"	
Current (30-minutes value)		Refer to standard ratings		Refer to standard ratings		Refer to "Measurement Conditions"	
Surge	Capacitance			More than 90% of initial ratings		Surge voltage : 6.3V (5.5V type)	
	ESR			Not to exceed 120% of initial ratings		: 12.6V (11V type)	
	Current (30 minutes value)			Not to exceed 120% of initial ratings		Charge : 30 sec.	
	Appearance			No obvious abnormality		Discharge : 9min 30sec.	
						Number of cycles : 1000	
						Series resistance : 0.047F	
						: 0.10F	
						: 0.22F	
						: 0.47F	
						: 1.0F, 1.5F	
						Discharge resistance : 0Ω	
						Temperature : 70±2℃	
Characteristics in different temperature	Capacitance	Phase 2	70% or higher than initial value	Phase 2			
	ESR	2	300% or less than initial value	2			
	Capacitance	Phase 3			Phase 3	40% or higher than initial value	Conforms to 4.17
	ESR	3			3	400% or less than initial value	Phase1 : +25±2℃
	Capacitance	Phase 5	150% or less than initial value	Phase 5	200% or less than initial value	Phase2 : -25±2℃	
	ESR		Satisfy initial ratings		Satisfy initial ratings	Phase3 : -40±2℃ (FE type)	
	Current (30 minutes value)	Phase 6	1.5CV (mA) or below	Phase 6	1.5CV (mA) or below	Phase4 : +25±2℃	
	Capacitance		Within ±20% of initial value		Within ±20% of initial value	Phase5 : +70±2℃	
ESR	Phase 6	Satisfy initial ratings	Phase 6	Satisfy initial ratings	Phase6 : +25±2℃		
Current (30 minutes value)		Satisfy initial ratings		Satisfy initial ratings			
Lead strength (tensile)		No terminal damage		No terminal damage		Conforms to 4.9	
Vibration resistance	Capacitance	Satisfy initial ratings		Satisfy initial ratings		Conforms to 4.13	
	ESR						
	Current (30 minutes value)						
	Appearance	No obvious abnormality		No obvious abnormality		Frequency : 10 to 55 Hz	
						Testing time : 6 hours	
Solderability		Over 3/4 of the terminal should be covered by the new solder		Over 3/4 of the terminal should be covered by the new solder		Conforms to 4.11	
						Solder temp : 245±5℃	
						Dipping time : 5±0.5 sec.	
						1.6mm from the bottom should be dipped.	
Solder heat resistance	Capacitance	Satisfy initial ratings		Satisfy initial ratings		Conforms to 4.10	
	ESR						
	Current (30 minutes value)						
	Appearance	No obvious abnormality		No obvious abnormality		Solder temp : 260±10℃	
						Dipping time : 10±1 sec.	
						1.6mm from the bottom should be dipped.	
Temperature cycle	Capacitance	Satisfy initial ratings		Satisfy initial ratings		Conforms to 4.12	
	ESR						
	Current (30 minutes value)						
	Appearance	No obvious abnormality		No obvious abnormality		Temperature condition : -25℃ (-40℃ for FE type)→	
						Room temperature→	
						+70℃ →Room temperature	
						Number of cycles : 5 Cycles	
High temp. and high humidity resistance	Capacitance	Over 90% of initial value		Within ±20% of initial value		Conforms to 4.14	
	ESR	Not to exceed 120% of initial ratings		Not to exceed 120% of initial ratings		Temperature : 40±2℃	
	Current (30 minutes value)	Not to exceed 120% of initial ratings		Not to exceed 120% of initial ratings		Relative humidity : 90 to 95 %RH	
	Appearance	No obvious abnormality		No obvious abnormality		Testing time : 240±8 hours	
High temperature load	Capacitance	Over 85% of initial value		Within ±30% of initial value		Conforms to 4.15	
	ESR	Below 120% of initial ratings		Below 200% of initial ratings		Temperature : 70±2℃	
	Current (30 minutes value)	Below 200% of initial ratings		Below 200% of initial ratings		Voltage applied : MAX operating voltage	
	Appearance	No obvious abnormality		No obvious abnormality		Series protection resistance : 0Ω	
						Testing time : 1000 <sup>±3</sup> Hours	



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