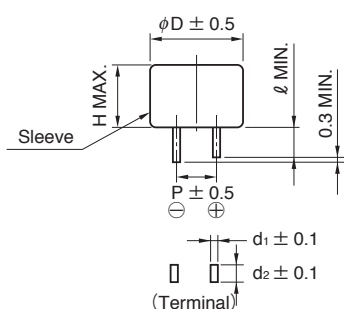
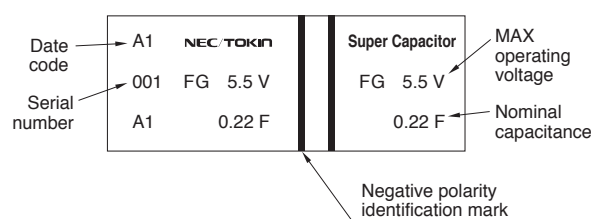


## 6.3 FG Series

### Dimensions



### Markings on sleeve



#### ● FG Type

### Specifications

Part Number	MAX operating voltage (Vdc)	Nominal capacitance		MAX ESR (at 1 kHz) ( $\Omega$ )	MAX current at 30 min. (mA)	Voltage holding characteristics (V)	Dimension (unit:mm)						Weight (g)
		Charge system (F)	Discharge system (F)				$\phi D$	H	P	$\ell$	$d_1$	$d_2$	
FG0H103ZF	5.5	0.010	0.013	300	0.015	4.2	11.0	5.5	5.08	2.7	0.2	1.2	0.9
FG0H223ZF	5.5	0.022	0.028	200	0.033	4.2	11.0	5.5	5.08	2.7	0.2	1.2	1.0
FG0H473ZF	5.5	0.047	0.060	200	0.071	4.2	11.0	5.5	5.08	2.7	0.2	1.2	1.0
FG0H104ZF	5.5	0.10	0.13	100	0.15	4.2	11.0	6.5	5.08	2.7	0.2	1.2	1.3
FG0H224ZF	5.5	0.22	0.28	100	0.33	4.2	13.0	9.0	5.08	2.2	0.4	1.2	2.5
FG0H474ZF	5.5	0.47	0.60	120	0.71	4.2	14.5	18.0	5.08	2.4	0.4	1.2	5.1
FG0H105ZF	5.5	1.0	1.3	65	1.5	4.2	16.5	19.0	5.08	2.7	0.4	1.2	7.0
FG0H225ZF	5.5	2.2	2.8	35	3.3	4.2	21.5	19.0	7.62	3.0	0.6	1.2	12.1
FG0H475ZF	5.5	4.7	6.0	35	7.1	4.2	28.5	22.0	10.16	6.1	0.6	1.4	27.3
FG0V155ZF	3.5	1.5	2.2	65	1.5	—	16.5	14.0	5.08	3.1	0.4	1.2	5.2

#### ● FGH Type

### Specifications

Part Number	MAX operating voltage (Vdc)	Nominal capacitance		MAX ESR (at 1 kHz) ( $\Omega$ )	MAX current at 30 min. (mA)	Voltage holding characteristics (V)	Dimension (unit:mm)						Weight (g)
		Charge system (F)	Discharge system (F)				$\phi D$	H	P	$\ell$	$d_1$	$d_2$	
FGH0H104ZF	5.5	—	0.10	100	0.15	4.2	11.0	5.5	5.08	2.7	0.2	1.2	1.0
FGH0H224ZF	5.5	—	0.22	100	0.33	4.2	11.0	7.0	5.08	2.7	0.2	1.2	1.3
FGH0H474ZF	5.5	—	0.47	65	0.71	4.2	16.5	8.0	5.08	2.7	0.4	1.2	4.1
FGH0H105ZF	5.5	—	1.0	35	1.5	4.2	21.5	9.5	7.62	3.0	0.6	1.2	7.2

#### ● FGR Type

### Specifications

Part Number	MAX operating voltage (Vdc)	Nominal capacitance		MAX ESR (at 1 kHz) ( $\Omega$ )	MAX current at 30 min. (mA)	Voltage holding characteristics (V)	Dimension (unit:mm)						Weight (g)
		Charge system (F)	Discharge system (F)				$\phi D$	H	P	$\ell$	$d_1$	$d_2$	
FGR0H474ZF	5.5	0.47	0.60	120	0.71	4.2	14.5	18.0	5.08	2.4	0.4	1.2	5.1
FGR0H105ZF	5.5	1.0	1.3	65	1.5	4.2	16.5	19.0	5.08	2.7	0.4	1.2	7.0
FGR0H225ZF	5.5	2.2	2.8	35	3.3	4.2	21.5	19.0	7.62	3.0	0.6	1.2	12.1



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**Specifications**

Item	Series name	FG, FGH type	FGR type	Test conditions (conforming to JIS C 5160-1)		
Category temperature range		-25°C to +70°C	-40°C to +85°C			
MAX operating voltage		5.5Vdc, 3.5Vdc	5.5Vdc			
Capacitance		FG : 0.010F to 4.7F FGH : 0.10F to 1.0F	0.47F to 2.2F	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	More than 90% of initial ratings	Surge voltage : 6.3V (5.5V type) : 4.0V(3.5V type) Charge : 30 sec. Discharge : 9min 30sec. Number of cycles : 1000 Series resistance : 0.010F 1500Ω : 0.022F 560Ω : 0.047F 300Ω : 0.10F 150Ω : 0.22F 56Ω : 0.47F 30Ω : 1.0F, 1.5F 15Ω : 2.2F, 4.7F 10Ω Discharge resistance : 0Ω Temperature : 85±2°C (FGR) : 70±2°C (FG, FGH)		
	ESR	Not to exceed 120% of initial ratings	Not to exceed 120% of initial ratings			
	Current (30 minutes value)	Not to exceed 120% of initial ratings	Not to exceed 120% of initial ratings			
	Appearance	No obvious abnormality	No obvious abnormality			
Characteristics in different temperature	Capacitance	Phase 2	50% or higher than initial value	Phase 2	50% or higher than initial value	Conforms to 4.17 Phase1 : +25±2°C Phase2 : -25±2°C Phase3 : -40±2°C (FGR) Phase4 : +25±2°C Phase5 : +70±2°C (FG, FGH) : +85±2°C (FGR) Phase6 : +25±2°C
	ESR	Phase 2	400% or less than initial value	Phase 2	400% or less than initial value	
	Capacitance	Phase 3	30% or higher than initial value	Phase 3	700% or less than initial value	
	ESR	Phase 3	200% or less than initial value	Phase 3	200% or less than initial value	
	Capacitance	Phase 5	Satisfy initial ratings	Phase 5	Satisfy initial ratings	
	ESR	Phase 5	1.5CV (mA) or below	Phase 5	1.5CV (mA) or below	
	Current (30 minutes value)	Phase 5	Within ±20% of initial value	Phase 5	Within ±20% of initial value	
	Capacitance	Phase 6	Satisfy initial ratings	Phase 6	Satisfy initial ratings	
	ESR	Phase 6	Satisfy initial ratings	Phase 6	Satisfy initial ratings	
	Current (30 minutes value)	Phase 6	Satisfy initial ratings	Phase 6	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 Frequency : 10 to 55 Hz Testing time : 6 hours		
	ESR					
	Current (30 minutes value)					
	Appearance				No obvious abnormality	No obvious abnormality
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°C 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 Solder temp : 260±10°C Dipping time : 10±1 sec. 1.6mm from the bottom should be dipped.		
	ESR					
	Current (30 minutes value)					
	Appearance				No obvious abnormality	No obvious abnormality
Temperature cycle	Capacitance	Satisfy initial ratings	Satisfy initial ratings	Conforms to 4.12 Temperature condition : Category MIN temp→Room temp→ Category MAX temp→Room temp Number of cycles : 5 Cycles		
	ESR					
	Current (30 minutes value)					
	Appearance				No obvious abnormality	No obvious abnormality
High temp. and high humidity resistance	Capacitance	Within ±20% of initial value	Within ±20% of initial value	Conforms to 4.14 Temperature : 40±2°C Relative humidity : 90 to 95%RH Testing time : 240±8 hours		
	ESR	Not to exceed 120% of initial ratings	Not to exceed 120% of initial ratings			
	Current (30 minutes value)	Not to exceed 120% of initial ratings	Not to exceed 120% of initial ratings			
	Appearance	No obvious abnormality	No obvious abnormality			
High temperature load	Capacitance	Within ±30% of initial value	Within ±30% of initial value	Conforms to 4.15 Temp : Category MAX temp ±2°C Voltage applied : MAX operating voltage Series protection resistance : 0Ω Testing time : 1000±2Hours		
	ESR	Below 200% of initial ratings	Below 200% of initial ratings			
	Current (30 minutes value)	Below 200% of initial ratings	Below 200% of initial ratings			
	Appearance	No obvious abnormality	No obvious abnormality			
Self discharge characteristics (voltage holding characteristics)		5.5V type: Voltage between terminal leads higher than 4.2V 3.5V type: Not specified	Voltage between terminal leads higher than 4.2V	Charging condition Voltage applied : 5.0Vdc (Terminal at the case's side be negative) Series resistance : 0Ω Charging time : 24 hours		
				Storage Let stand for 24 hours in condition described below with terminals opened. Ambient temperature : Lower than 25°C Relative humidity : Lower than 70%RH		

**Super Capacitors Vol.12 21**



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