FE Series for Large Backup Current Capacitors

The FE series offers small, high-capacitance electric double-layer capacitors suitable for supplying a large current in a short time.
These capacitors are ideal for momentarily backing up a large-current, short-time load in an electronic system (in the event of momentary power failure)

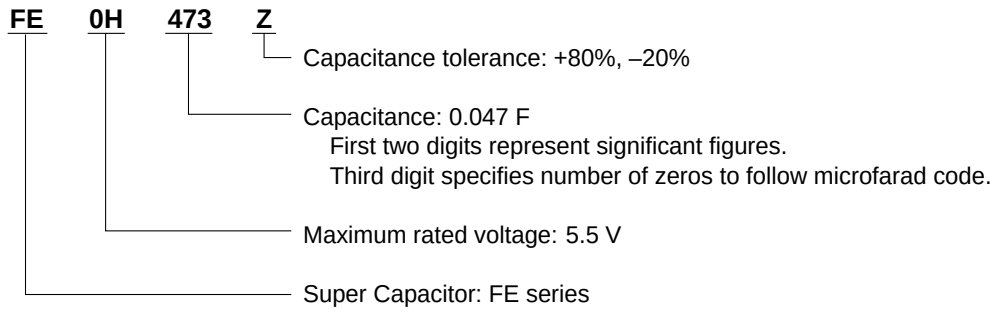
Features

- Extremely low equivalent series resistance (ESR), ideal for supplying several 10 mA to 1 A for short periods of time (about 1/2 the CV value when compared to the ESR of FA series)
- Small (about 1/4 in volume of aluminum electrolytic capacitor and 3/5 of FA series at same CV value)
- Product variety, including low-capacitance and high-capacitance models (0.047 F to 1.5 F)

Applications

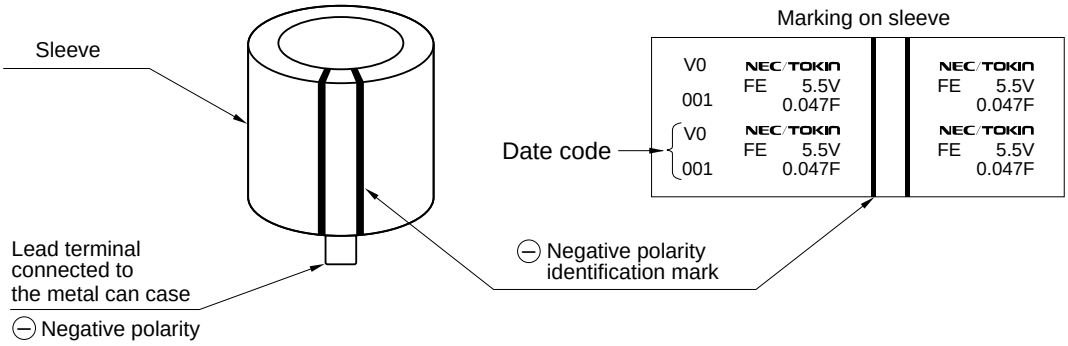
Momentary backup sources for microcomputers, SRAMs, and DRAMs, and auxiliary power source for mechanical systems (motors, relays, electromagnetic valves).

Part Number System

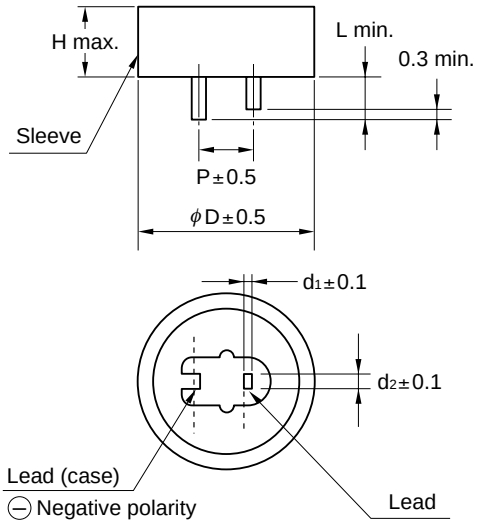


Markings

Markings are made with black ink on the green sleeve.



Dimensions And Standard Ratings



Part No.	Dimensions mm (inch)						Weight
	D	H	P	d_1	d_2	L	g (oz)
FE0H473Z	14.5 (0.57)	14.0 (0.55)	5.1 (0.2)	0.4 (0.016)	1.2 (0.047)	2.2 (0.087)	3.9 (0.138)
FE0H104Z	16.5 (0.65)	14.0 (0.55)	5.1 (0.2)	0.4 (0.016)	1.2 (0.047)	2.7 (0.106)	5 (0.177)
FE0H224Z	21.5 (0.85)	15.5 (0.61)	7.6 (0.3)	0.6 (0.024)	1.2 (0.047)	3.0 (0.118)	9.5 (0.336)
FE0H474Z	28.5 (1.12)	16.5 (0.65)	10.2 (0.4)	0.6 (0.024)	1.4 (0.055)	6.1 (0.240)	16 (0.565)
FE0H105Z	36.5 (1.44)	18.5 (0.73)	15.0 (0.59)	0.6 (0.024)	1.7 (0.067)	6.1 (0.240)	38 (1.343)
FE0H155Z	44.5 (1.75)	18.5 (0.73)	20.0 (0.79)	1.0 (0.039)	1.4 (0.055)	6.1 (0.240)	72 (2.544)

Part Number	Max. Rated Voltage (V)	Nominal Capacitance		Max. Current at 30 minutes (mA)	Max. ESR (at 1 kHz) (Ω)
		Charge System (F)	Discharge System (F)		
FE0H473Z	5.5	0.047	0.075	0.071	14.0
FE0H104Z	5.5	0.10	0.16	0.15	6.5
FE0H224Z	5.5	0.22	0.35	0.33	3.5
FE0H474Z	5.5	0.47	0.75	0.71	1.8
FE0H105Z	5.5	1.0	1.4	1.5	1.0
FE0H155Z	5.5	1.5	2.1	2.3	0.6

Specifications

Item		Specification		Test Conditions Conforming to JIS C 5102-1994
Operating Temperature Range		–40˚C to 70˚C		
Maximun Rated Voltage		5.5 VDC		
Nominal Capacitance Range		0.047 to 1.5 F (Refer to standard ratings)		
Capacitance Allowance		+80 %, –20 %		See characteristics measuring conditions
Equivalent Series Resistance		See standard list		See characteristics measuring conditions
Current (30-minute value)		See standard list		See characteristics measuring conditions
Surge Voltage		Capacitance	More than 90 % of initial requirement	Conforms to 7.14 At 70˚C Surge voltage 6.3 V Temperature : 70±2˚C Charge: 30 sec. Discharge: 9 min. 30 sec. 1 000 cycles Charge resistance : 0.047 F 300 Ω 0.10 F 150 Ω 0.22 F 56 Ω 0.47 F 30 Ω 1.0, 1.5 F 15 Ω Discharge resistance: Not applicable (0 Ω)
		Equivalent Series Resistance	Not to exceed 120 % of initial requirement	
		Current at 30 minutes	Not to exceed 120 % of initial requirement	
Temperature Variation of Characteristics	Phase 3	Capacitance	More than 40 % of initial value	Conforms to 7.12 Phase 1: +25 ± 2˚C Phase 2: –25 ± 2˚C Phase 3: –40 ± 2˚C Phase 4: +25 ± 2˚C Phase 5: +70 ± 2˚C Phase 6: +25 ± 2˚C
		Equivalent Series Resistance	Not to exceed 4 times initial value	
	Phase 5	Capacitance	Not to exceed 200 % of initial value	
		Equivalent Series Resistance	Not to exceed initial requirement	
		Current at 30 minutes	Not to exceed 1.5 CV (mA)	
	Phase 6	Capacitance	Within ±20 % of initial value	
		Equivalent Series Resistance	Not to exceed initial requirement	
		Current at 30 minutes	Not to exceed initial requirement	
Lead Strength (Tensile)		No loosening nor permanent damage of the leads		Conforms to 8.1.2 (1) 0.047 to 0.47 F: 1 kg, 10 sec. 1 F, 1.5 F : 2.5 kg, 10 sec.
Vibration Resistance		Capacitance	Meet initial requirement	Conforms to 8.2.3 Frequency: 10 to 55 Hz Test duration: 6 hours
		Equivalent Series Resistance	Meet initial requirement	
		Current at 30 minutes	Meet initial requirement	
Solderability		3/4 or more of the pin surface should be covered with new solder		Conforms to 8.4 230 ±5˚C Immersion depth: 5 ±0.5 sec. 1.6 mm from body
Soldering Heat Resistance		Capacitance	Meet initial requirement	Conforms to 8.5 260 ±10˚C, 10 ±1 sec. Immersion depth : 1.6 mm from body
		Equivalent Series Resistance	Meet initial requirement	
		Current at 30 minutes	Meet initial requirement	
Temperature Cycle		Capacitance	Shall meet initial requirement	Conforms to 9.3 Temperature condition: –40˚C → normal temperture → +70˚C → normal temperture Number of cycles : 5 cycles
		Equivalent Series Resistance	Meet initial requirement	
		Current at 30 minutes	Meet initial requirement	
Humidity Resistance		Capacitance change	Within ±20 % of initial value	Conforms to 9.5 40 ± 2˚C, 90 to 95 % RH 240 hours 240 ± 8 hours
		Equivalent Series Resistance	Not to exceed 120 % of initial requirement	
		Current at 30 minutes	Not to exceed 120 % of initial requirement	
High Temperature Load		Capacitance change	Within ±30 % of initial value	Conforms to 9.10 70 ± 2˚C 5.5 V applied 1 000 $^{+48}_{-0}$ hours
		Equivalent Series Resistance	Not to exceed 300 % of initial requirement	
		Current at 30 minutes	Not to exceed 200 % of initial requirement	