

## Surface Mount Type **SP-Cap**

Series : **HX (Guaranteed at 125 °C)**



### Features

- Endurance 125 °C 1000 h
- High voltage & Large capacitance (2 V.DC 560 μF to 25 V.DC 33 μF)
- Low ESR (4.5 mΩ max.)
- RoHS compliance, Halogen free

### Specifications

Series	HX	
Category temp. range	-55 °C to +125 °C	
Rated voltage range	2 V.DC to 2.5 V.DC, 10 V.DC to 25 V.DC	
Category voltage range	1.6 V.DC to 2 V.DC, 8 V.DC to 20 V.DC	
Nominal cap.range	15 μF to 560 μF	
Capacitance tolerance	±20 % (120 Hz/+20 °C)	
DC leakage current	2 V.DC to 2.5 V.DC : I ≤ 0.1 CV (μA) 2 minutes, 10 V.DC to 25 V.DC : I ≤ 0.3 CV (μA) 2 minutes	
Dissipation factor (tan δ)	≤ 0.1 (120 Hz/+20 °C)	
Surge voltage (V.DC)	Rated voltage × 1.25 [2 V.DC to 16 V.DC], × 1.15 [20 V.DC to 25 V.DC](15 °C to 35 °C)	
Endurance	+125 °C, 1000 h, Category voltage applied	
	Capacitance change	Within ±20 % of the initial value
	tan δ	≤ 2 times of the initial limit
	DC leakage current	Within the initial limit
Damp heat (Steady state)	After storing for 500 hours at +60 °C, 90 %	
	Capacitance change of initial measured value	2 V.DC to 2.5 V.DC : +70 %, -20 % 10 V.DC to 25 V.DC : +60 %, -20 %
	tan δ	≤ 2 times of the initial limit
	DC leakage current	2 V.DC to 2.5 V.DC : Within the initial limit 10 V.DC to 25V DC : ≤ 3 times of the initial limit

### Marking

Rated voltage mark

d	2 V.DC	C	16 V.DC
e	2.5 V.DC	D	20 V.DC
A	10 V.DC	E	25 V.DC

### Dimensions (not to scale)

Unit : mm

Series	L±0.2	W1±0.2	W2±0.1	H±0.1	P±0.3
HX	7.3	4.3	2.4	1.9	1.3

\* Externals of figure are the reference.

## Characteristics list

Reflow \*3 <Standard>

Series	Rated voltage [105 °C] (V.DC)	Category voltage [125 °C] (V.DC)	Capacitance (±20 %) (μF)	Case size (mm)			Specification		Part number	Min.*4 Packaging Q'ty (pcs)
				L	W	H	*1 Ripple current (mAr.m.s.)	*2 ESR (mΩ max.)		
HX	2	1.6	470	7.3	4.3	1.9	5100	15	EEFHX0D471R	3500
				7.3	4.3	1.9	6300	9	EEFHX0D471R9	3500
				7.3	4.3	1.9	7500	6	EEFHX0D471R6	3500
			7.3	4.3	1.9	8500	4.5	EEFHX0D471R4	3500	
			560	7.3	4.3	1.9	5100	15	EEFHX0D561R	3500
				7.3	4.3	1.9	8500	4.5	EEFHX0D561R4	3500
	2.5	2	330	7.3	4.3	1.9	5100	15	EEFHX0E331R	3500
				7.3	4.3	1.9	6300	9	EEFHX0E331R9	3500
				7.3	4.3	1.9	7500	6	EEFHX0E331R6	3500
				7.3	4.3	1.9	8500	4.5	EEFHX0E331R4	3500
			470	7.3	4.3	1.9	5100	15	EEFHX0E471R	3500
				7.3	4.3	1.9	6300	9	EEFHX0E471R9	3500
				7.3	4.3	1.9	7500	6	EEFHX0E471R6	3500
				7.3	4.3	1.9	8500	4.5	EEFHX0E471R4	3500
	10	8	47	7.3	4.3	1.9	3200	40	EEFHX1A470R	3500
			68	7.3	4.3	1.9	3200	40	EEFHX1A680R	3500
			100	7.3	4.3	1.9	3200	40	EEFHX1A101R	3500
	16	12.8	15	7.3	4.3	1.9	3200	40	EEFHX1C150R	3500
			22	7.3	4.3	1.9	3200	40	EEFHX1C220R	3500
			33	7.3	4.3	1.9	3200	40	EEFHX1C330R	3500
			47	7.3	4.3	1.9	3200	40	EEFHX1C470R	3500
			68	7.3	4.3	1.9	3200	40	EEFHX1C680R	3500
	20	16	22	7.3	4.3	1.9	3200	40	EEFHX1D220R	3500
			33	7.3	4.3	1.9	3200	40	EEFHX1D330R	3500
			47	7.3	4.3	1.9	3200	40	EEFHX1D470R	3500
			56	7.3	4.3	1.9	3200	40	EEFHX1D560R	3500
	25	20	15	7.3	4.3	1.9	3200	40	EEFHX1E150R	3500
			22	7.3	4.3	1.9	3200	40	EEFHX1E220R	3500
33			7.3	4.3	1.9	3200	40	EEFHX1E330R	3500	

\*1: Ripple current (100 kHz/ +45°C), \*2: ESR (100 kHz/+20 °C)

\*3: Please refer to the page of "Mounting Specifications".

\*4: Please contact us when 500 pcs packing is necessary.

## Temperature compensation multipliers for ripple current

	Temp.	T ≤ 45 °C	45 °C < T ≤ 85 °C	85 °C < T ≤ 105 °C	125 °C < T
2 V.DC to 2.5 V.DC	Coefficient	1.0	0.7	0.25	0.25
10 V.DC to 25 V.DC		1.0	0.8	0.5	0.25

Ripple current should be controlled so that surface temperature of capacitor does not exceed the category temperature.