Surface Mount Type

HX series

[Guaranteed at 125 ℃]

HX series part numbers rated 10 V.DC or above are Not Recommended For New Design.

SP-Cap

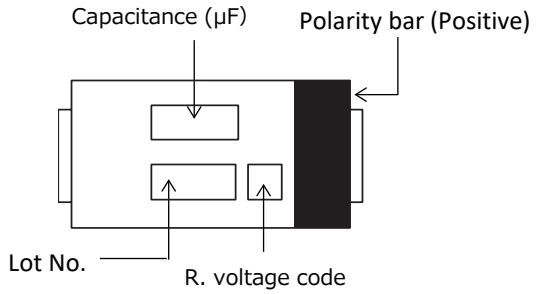
Features

- Endurance 125 ℃ 1000 h
- High voltage & Large capacitance (2.0 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 ℃ to +125 ℃		
Rated voltage range	2.0 V.DC to 2.5 V.DC, 10 V.DC to 25 V.DC		
Category voltage range	1.6 V.DC to 2.0 V.DC, 8.0 V.DC to 20 V.DC		
Nominal cap. range	15 µF to 560 µF		
Capacitance tolerance	±20 % (120 Hz / +20 ℃)		
DC leakage current	I ≦ 0.1 CV(µA) [2.0 V.DC to 2.5 V.DC, 2 min], I ≦ 0.3 CV(µA) [10 V.DC to 25 V.DC, 2 min]		
Dissipation factor (tan δ)	≦ 0.1 (120 Hz / + 20 ℃)		
Surge voltage (V.DC)	Rated voltage × 1.25 [2.0 V.DC to 16 V.DC], × 1.15 [20 V.DC to 25 V.DC] (15 ℃ to 35 ℃)		
Endurance	+125 ℃ ± 2 ℃, 1000 h, category voltage applied		
	Capacitance change	Within ±20 % of the initial value	
	Dissipation factor (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 measurd value	2.0 V.DC to 2.5 V.DC	10 V.DC to 25 V.DC
		+70 %, −20 %	+60 %, −20 %
	Dissipation factor (tan δ)	≦ 2 times of the initial limit	
	DC leakage current	Within the initial limit : 2.0 V.DC to 2.5 V.DC ≦ 3 times of the initial limit : 10 V.DC to 25 V.DC	

Marking



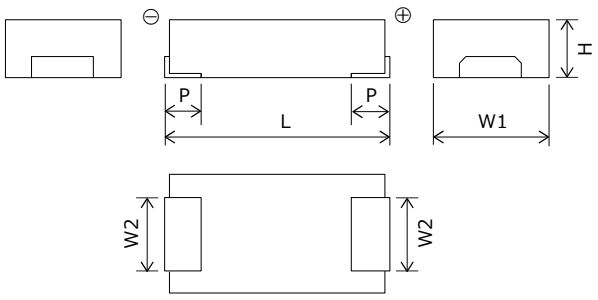
R. voltage code

d	2.0
e	2.5
A	10

Unit : V.DC

C	16
D	20
E	25

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

■ 2.0 V.DC to 2.5 V.DC

Series	Rated voltage [105 ℃] (V.DC)	Category voltage [125 ℃] (V.DC)	Capacitance (μF)	Case size (mm)			Specification		Part number	Min. Packaging Q'ty*3 (pcs)
				L	W	H	Ripple current*1 (mA r.m.s.)	ESR*2 (mΩ max.)		
HX	2.0	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	2.0	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 V.DC to 25 V.DC

Not Recommended for New Design

Series	Rated voltage [105 ℃] (V.DC)	Category voltage [125 ℃] (V.DC)	Capacitance (μF)	Case size (mm)			Specification		Part number	Min. Packaging Q'ty*3 (pcs)
				L	W	H	Ripple current*1 (mA r.m.s.)	ESR*2 (mΩ max.)		
HX	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 ℃) *2: ESR (100 kHz / +20 ℃)
*3: Please contact us when 500 pcs packing is necessary.
◆ Please refer to each page in this catarog for "Reflow conditions" and "Taping specifications".

Temperature coefficient of ripple current

Temperature		T ≦ 45 ℃	45 ℃ < T ≦ 85 ℃	85 ℃ < T ≦ 105 ℃	105 ℃ < T ≦ 125 ℃
2.0 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.

Panasonic

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