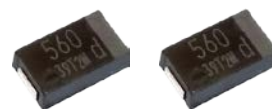


### Surface Mount Type

**SX** series

[Low ESR products]



**SP-Cap**

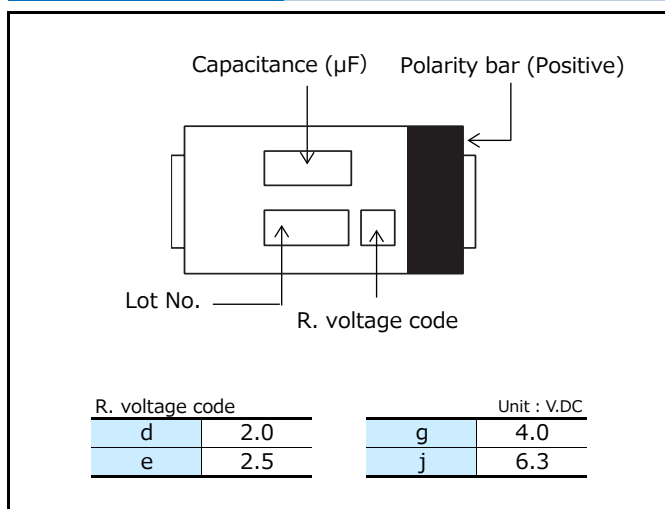
#### Features

- Large capacitance (560  $\mu\text{F}$  max.)
- Low ESR (4.5  $\text{m}\Omega$  to 9  $\text{m}\Omega$  max.)
- High ripple current (8500 mA r.m.s. max.)
- RoHS compliance, Halogen free

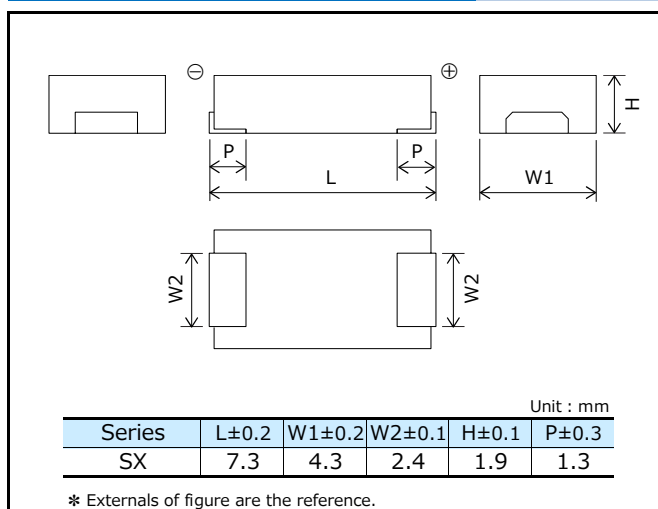
#### Specifications

Series	SX			
Category temp. range	-55 °C to +105 °C			
Rated voltage range	2.0 V.DC to 6.3 V.DC			
Nominal cap. range	82 $\mu\text{F}$ to 560 $\mu\text{F}$			
Capacitance tolerance	$\pm 20\%$ (120 Hz / +20 °C)			
DC leakage current	$I \leq 0.1 \text{ CV}$ ( $\mu\text{A}$ ) 2 minutes			
Dissipation factor (tan $\delta$ )	$\leq 0.06$ (120 Hz / +20 °C)			
Surge voltage (V.DC)	Rated voltage $\times 1.25$ (15 °C to 35 °C)			
Endurance	+105 °C $\pm 2$ °C, 2000 h, rated voltage applied			
	Capacitance change	Within $\pm 20\%$ of the initial value		
	Dissipation factor (tan $\delta$ )	$\leq 2$ times of the initial limit		
	DC leakage current	$\leq 3$ times of the initial limit		
Damp heat (Steady state)	+60 °C, 90 %, 500 h, No-applied voltage			
	Capacitance change of initial measured value	2.0 V.DC to 2.5 V.DC	4.0 V.DC	6.3 V.DC
		+70 %, -20 %	+60 %, -20 %	+50 %, -20 %
	Dissipation factor (tan $\delta$ )	$\leq 2$ times of the initial limit		
	DC leakage current	Within the initial limit		

#### Marking



#### Dimensions (not to scale)



### Characteristics list

Series	Rated voltage (V.DC)	Capacitance (μF)	Case size (mm)			Specification		Part number	Min. Packaging Qty <sup>*3</sup> (pcs)	
			L	W	H	Ripple current <sup>*1</sup> (mA r.m.s.)	ESR <sup>*2</sup> (mΩ max.)			
SX	2.0	180	7.3	4.3	1.9	6300	9	EEFSX0D181ER	3500	
		220	7.3	4.3	1.9	6300	9	EEFSX0D221ER	3500	
		270	7.3	4.3	1.9	6300	9	EEFSX0D271ER	3500	
			7.3	4.3	1.9	7500	6	EEFSX0D271XE	3500	
		330	7.3	4.3	1.9	8500	4.5	EEFSX0D271E4	3500	
			7.3	4.3	1.9	6300	9	EEFSX0D331ER	3500	
			7.3	4.3	1.9	7500	6	EEFSX0D331XE	3500	
		390	7.3	4.3	1.9	8500	4.5	EEFSX0D331E4	3500	
			7.3	4.3	1.9	6300	9	EEFSX0D391ER	3500	
			7.3	4.3	1.9	7500	6	EEFSX0D391XE	3500	
		470	7.3	4.3	1.9	8500	4.5	EEFSX0D391E4	3500	
			7.3	4.3	1.9	6300	9	EEFSX0D471ER	3500	
	7.3		4.3	1.9	7500	6	EEFSX0D471XE	3500		
	560	7.3	4.3	1.9	8500	4.5	EEFSX0D471E4	3500		
	2.5	150	7.3	4.3	1.9	8500	4.5	EEFSX0D561E4	3500	
		150	7.3	4.3	1.9	6300	9	EEFSX0E151ER	3500	
		180	7.3	4.3	1.9	6300	9	EEFSX0E181ER	3500	
		220	7.3	4.3	1.9	6300	9	EEFSX0E221ER	3500	
			7.3	4.3	1.9	7000	7	EEFSX0E221E7	3500	
		270	7.3	4.3	1.9	7000	7	EEFSX0E271E7	3500	
			7.3	4.3	1.9	6300	9	EEFSX0E331ER	3500	
		330	7.3	4.3	1.9	7500	6	EEFSX0E331XE	3500	
			7.3	4.3	1.9	8500	4.5	EEFSX0E331E4	3500	
			7.3	4.3	1.9	6300	9	EEFSX0E391ER	3500	
		390	7.3	4.3	1.9	7500	6	EEFSX0E391XE	3500	
			7.3	4.3	1.9	8500	4.5	EEFSX0E391E4	3500	
	7.3		4.3	1.9	6300	9	EEFSX0E471ER	3500		
	470	7.3	4.3	1.9	7500	6	EEFSX0E471XE	3500		
		7.3	4.3	1.9	8500	4.5	EEFSX0E471E4	3500		
		82	7.3	4.3	1.9	6300	9	EEFSX0G820ER	3500	
	4.0	100	7.3	4.3	1.9	6300	9	EEFSX0G101ER	3500	
		150	7.3	4.3	1.9	6300	9	EEFSX0G151ER	3500	
			7.3	4.3	1.9	7000	7	EEFSX0G151E7	3500	
		180	7.3	4.3	1.9	6300	9	EEFSX0G181ER	3500	
		220	7.3	4.3	1.9	6300	9	EEFSX0G221ER	3500	
		270	7.3	4.3	1.9	6300	9	EEFSX0G271ER	3500	
			7.3	4.3	1.9	6300	9	EEFSX0G331ER	3500	
		330	7.3	4.3	1.9	7500	6	EEFSX0G331XE	3500	
			120	7.3	4.3	1.9	7000	7	EEFSX0J121E7	3500
		6.3	150	7.3	4.3	1.9	6300	9	EEFSX0J151ER	3500
			180	7.3	4.3	1.9	6300	9	EEFSX0J181ER	3500
			220	7.3	4.3	1.9	6300	9	EEFSX0J221ER	3500

\*1: Ripple current (100 kHz / +45 °C)

\*2: ESR (100 kHz / +20 °C)

\*3: Please contact us when 500 pcs packing is necessary.

◆ Please refer to each page in this catalog for "Reflow conditions" and "Taping specifications".

### Temperature coefficient of ripple current

Temperature		T ≤ 45 °C	45 °C < T ≤ 85 °C	85 °C < T ≤ 105 °C
2.0 V.DC to 6.3 V.DC	Coefficient	1.0	0.7	0.25

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

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- When you use the inventory of our products for which it is unclear whether those products are compliant with the RoHS Directive/REACH Regulation, please select "Sales Inquiry" in the website inquiry form and contact us.

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