



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



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

Series: **FD, CD, UD, UE**

**Old series**



**[Our Requests]**

Since this series is old, we don't recommend you to adopt it but CX & SX series for your new design.

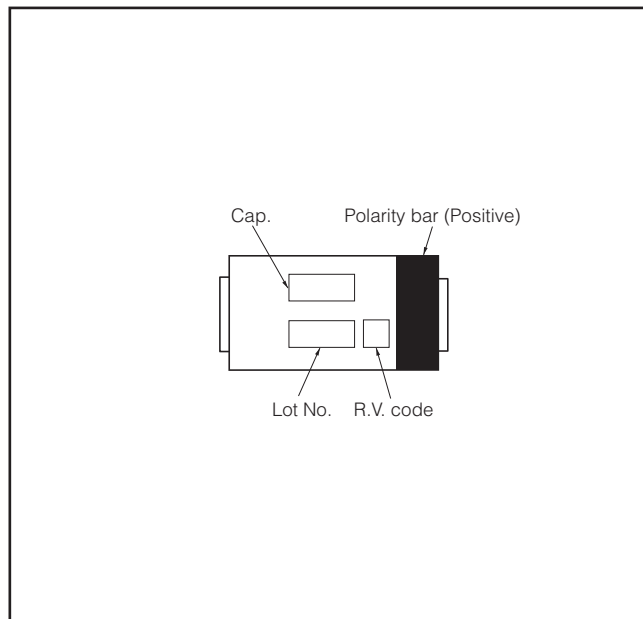
**■ Features**

- Low ESR
- Excellent Noise-absorbent Characteristics
- RoHS directive compliant

**■ Specifications**

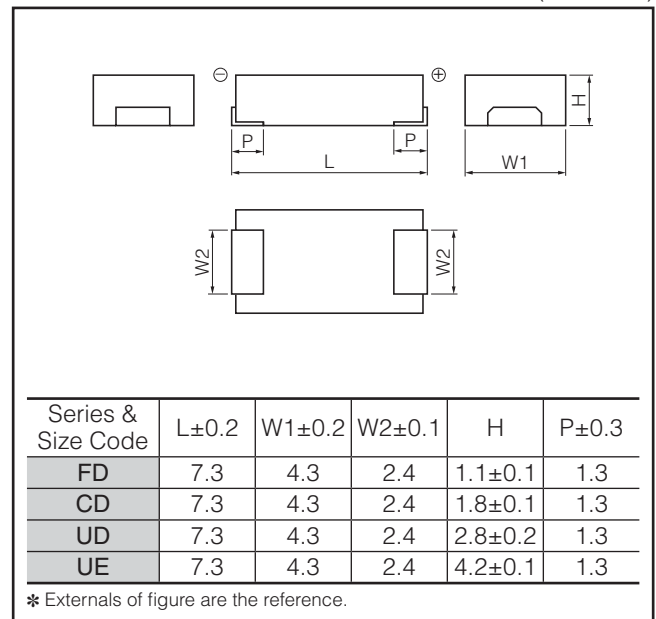
Series & Size Code	FD	CD	UD	UE	
Category Temp. Range	-40 °C to +105 °C				
Rated Voltage Range	2 V.DC to 12.5 V.DC	2 V.DC to 16 V.DC	2 V.DC to 8 V.DC	2 V.DC to 8 V.DC	
Nominal Cap.Range	15 μF to 68 μF	2.2 μF to 220 μF	68 μF to 470 μF	100 μF to 560 μF	
Capacitance Tolerance	±20 %				
DC Leakage Current	Reflow 240 °C : I ≤ 0.06 CV (μA) 2minutes (2 V.DC to 4 V.DC) I ≤ 0.04 CV or 3 (μA) 2 minutes (6.3 V.DC to 16 V.DC) (Whichever is greater) Reflow 260 °C : I ≤ 0.1 CV (μA) 2 minutes				
tan δ	≤ 0.06 (120 Hz/+20 °C)		≤ 0.10 (120 Hz/+20 °C)		
Surge Voltage	Rated Voltage × 1.25 (15 °C to 35 °C)				
Endurance	After applying rated voltage for 1000 hours at 105 °C±2 °C, and then being stabilized at +20 °C, capacitor shall meet the following limits.				
	Capacitance change	±10% of initial measured value			
	tan δ	≤ Initial specified value			
	DC leakage current	≤ Initial specified value			
Moisture resistance	After storing for 500 hours at 60 °C, 90 %				
	Capacitance change of initial measurd value	2, 2.5 V.DC	4 V.DC	6.3 V.DC	8 V.DC to 16 V.DC
		+70, -20 %	+60, -20 %	+50, -20 %	+40, -20 %
	tan δ	≤ 200 % of initial specified value			
DC leakage current	≤ Initial specified value				

**■ Marking**



**■ Dimensions in mm(not to scale)**

(Unit : mm)



Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

### Standard Products

Reflow \*3 <260 °C>

Series & Size Code	Rated Voltage (V.DC)	Capacitance (±20%) (μF)	Case Size			Specification		Part number	Reflow		Min. Packaging Qty (pcs)	
			L (mm)	W (mm)	H (mm)	*1 Ripple current (Ar.m.s.)	*2 ESR (mΩ max.)		*4 240 °C	260 °C		
FD	2	68	7.3	4.3	1.1	2.0	28	EEFFD0D680R	○	—	3500	
	2.5	56	7.3	4.3	1.1	2.0	28	EEFFD0E560R	○	—	3500	
	4	39	7.3	4.3	1.1	2.0	28	EEFFD0G390R	○	—	3500	
		47	7.3	4.3	1.1	2.0	28	EEFFD0G470R	○	—	3500	
	6.3	33	7.3	4.3	1.1	2.0	28	EEFFD0J330R	○	—	3500	
	8	22	7.3	4.3	1.1	2.0	28	EEFFD0K220R	○	—	3500	
	12.5	15	7.3	4.3	1.1	1.4	40	EEFFD1B150R	○	—	3500	
CD	2	100	7.3	4.3	1.8	2.5	18	EEFCD0D101ER	—	○	3500	
			7.3	4.3	1.8	2.7	15	EEFCD0D101XE	—	○	3500	
		120	7.3	4.3	1.8	2.5	18	EEFCD0D121ER	—	○	3500	
			7.3	4.3	1.8	2.7	15	EEFCD0D121XE	—	○	3500	
			150	7.3	4.3	1.8	2.5	18	EEFCD0D151ER	—	○	3500
			180	7.3	4.3	1.8	2.5	18	EEFCD0D181ER	—	○	3500
	2.5	82	7.3	4.3	1.8	2.5	18	EEFCD0E820ER	—	○	3500	
			7.3	4.3	1.8	2.7	15	EEFCD0E820XE	—	○	3500	
		100	7.3	4.3	1.8	2.5	18	EEFCD0E101ER	—	○	3500	
			7.3	4.3	1.8	2.7	15	EEFCD0E101XE	—	○	3500	
			120	7.3	4.3	1.8	2.5	18	EEFCD0E121ER	—	○	3500
			150	7.3	4.3	1.8	2.5	18	EEFCD0E151ER	—	○	3500
	4	56	7.3	4.3	1.8	2.5	18	EEFCD0G560ER	—	○	3500	
			7.3	4.3	1.8	2.7	15	EEFCD0G560XE	—	○	3500	
		68	7.3	4.3	1.8	2.5	18	EEFCD0G680ER	—	○	3500	
			7.3	4.3	1.8	2.7	15	EEFCD0G680XE	—	○	3500	
			82	7.3	4.3	1.8	2.5	18	EEFCD0G820ER	—	○	3500
			7.3	4.3	1.8	2.7	15	EEFCD0G820XE	—	○	3500	
	6.3	100	7.3	4.3	1.8	2.5	18	EEFCD0G101ER	—	○	3500	
		10	7.3	4.3	1.8	1.4	55	EEFCD0J100ER	—	○	3500	
		22	7.3	4.3	1.8	1.6	40	EEFCD0J220ER	—	○	3500	
		33	7.3	4.3	1.8	2.0	28	EEFCD0J330ER	—	○	3500	
		47	7.3	4.3	1.8	2.5	18	EEFCD0J470ER	—	○	3500	
			7.3	4.3	1.8	2.7	15	EEFCD0J470XE	—	○	3500	
		68	7.3	4.3	1.8	2.5	18	EEFCD0J680ER	—	○	3500	
			7.3	4.3	1.8	2.7	15	EEFCD0J680XE	—	○	3500	
		8	8.2	7.3	4.3	1.8	1.4	55	EEFCD0K8R2ER	—	○	3500
			15	7.3	4.3	1.8	1.6	40	EEFCD0K150ER	—	○	3500
	22		7.3	4.3	1.8	2.0	28	EEFCD0K220ER	—	○	3500	
	33		7.3	4.3	1.8	2.5	18	EEFCD0K330ER	—	○	3500	
	47		7.3	4.3	1.8	1.8	25	EEFCD0K470ER	—	○	3500	
	10	22	7.3	4.3	1.8	1.6	30	EEFCD1A220ER	—	○	3500	
		33	7.3	4.3	1.8	1.8	25	EEFCD1A330ER	—	○	3500	
		39	7.3	4.3	1.8	1.8	25	EEFCD1A390ER	—	○	3500	
	12.5	4.7	7.3	4.3	1.8	1.0	80	EEFCD1B4R7R	○	—	3500	
		10	7.3	4.3	1.8	1.0	60	EEFCD1B100R	○	—	3500	
		15	7.3	4.3	1.8	1.3	50	EEFCD1B150R	○	—	3500	
		22	7.3	4.3	1.8	1.6	30	EEFCD1B220R	○	—	3500	
	16	2.2	7.3	4.3	1.8	1.0	110	EEFCD1C2R2R	○	—	3500	
		4.7	7.3	4.3	1.8	1.0	80	EEFCD1C4R7R	○	—	3500	
		6.8	7.3	4.3	1.8	1.0	70	EEFCD1C6R8R	○	—	3500	
		8.2	7.3	4.3	1.8	1.3	45	EEFCD1C8R2R	○	—	3500	
	UD	2	330	7.3	4.3	2.8	3.0	15	EEFUD0D331ER	—	○	2000
				7.3	4.3	2.8	3.3	12	EEFUD0D331XE	—	○	2000
				7.3	4.3	2.8	3.4	9	EEFUD0D331LE	—	○	2000
			390	7.3	4.3	2.8	3.0	15	EEFUD0D391ER	—	○	2000
				7.3	4.3	2.8	3.4	9	EEFUD0D391LE	—	○	2000
470		7.3	4.3	2.8	3.4	9	EEFUD0D471LE	—	○	2000		
2.5		220	7.3	4.3	2.8	3.0	15	EEFUD0E221ER	—	○	2000	
			7.3	4.3	2.8	3.3	12	EEFUD0E221XE	—	○	2000	
			7.3	4.3	2.8	3.4	9	EEFUD0E221LE	—	○	2000	
		270	7.3	4.3	2.8	3.0	15	EEFUD0E271ER	—	○	2000	
	7.3		4.3	2.8	3.4	9	EEFUD0E271LE	—	○	2000		

\*1: Ripple current (100 kHz/ +20 to +105 °C), \*2: ESR (100 kHz/+20 °C)

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

\*4: Please contact Panasonic for details of allowable 240 °C reflow condition.

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

### Standard Products

Reflow \*3 <260 °C>

Series & Size Code	Rated Voltage (V.DC)	Capacitance (±20 %) (μF)	Case Size			Specification		Part number	Reflow		Min. Packaging Qty (pcs)	
			L (mm)	W (mm)	H (mm)	*1 Ripple current (Ar.m.s.)	*2 ESR (mΩ max.)		*4 240 °C	260 °C		
UD	4	120	7.3	4.3	2.8	3.0	15	EEFUD0G121ER	—	○	2000	
			7.3	4.3	2.8	3.4	12	EEFUD0G121XE	—	○	2000	
		150	7.3	4.3	2.8	3.0	15	EEFUD0G151ER	—	○	2000	
			7.3	4.3	2.8	3.3	12	EEFUD0G151XE	—	○	2000	
			7.3	4.3	2.8	3.4	9	EEFUD0G151LE	—	○	2000	
			7.3	4.3	2.8	3.4	9	EEFUD0G181LE	—	○	2000	
	180	7.3	4.3	2.8	2.5	18	EEFUD0G181ER	—	○	2000		
		7.3	4.3	2.8	3.4	9	EEFUD0G181LE	—	○	2000		
	6.3	100	7.3	4.3	2.8	3.0	15	EEFUD0J101ER	—	○	2000	
			7.3	4.3	2.8	3.3	12	EEFUD0J101XE	—	○	2000	
		120	7.3	4.3	2.8	3.0	15	EEFUD0J121ER	—	○	2000	
			7.3	4.3	2.8	3.3	12	EEFUD0J121XE	—	○	2000	
			7.3	4.3	2.8	3.4	9	EEFUD0J121LR	○	—	2000	
			7.3	4.3	2.8	3.4	9	EEFUD0J151LR	○	—	2000	
		150	7.3	4.3	2.8	2.5	18	EEFUD0J151ER	—	○	2000	
			7.3	4.3	2.8	3.4	9	EEFUD0J151LR	○	—	2000	
	8	68	7.3	4.3	2.8	3.0	15	EEFUD0K680ER	—	○	2000	
		100	7.3	4.3	2.8	2.5	18	EEFUD0K101ER	—	○	2000	
UE	2	270	7.3	4.3	4.2	3.3	12	EEFUE0D271ER	—	○	2000	
			7.3	4.3	4.2	3.5	10	EEFUE0D271XE	—	○	2000	
		330	7.3	4.3	4.2	3.3	12	EEFUE0D331ER	—	○	2000	
			7.3	4.3	4.2	3.5	10	EEFUE0D331XE	—	○	2000	
		390	7.3	4.3	4.2	3.3	12	EEFUE0D391ER	—	○	2000	
			7.3	4.3	4.2	3.5	10	EEFUE0D391XE	—	○	2000	
			7.3	4.3	4.2	3.7	7	EEFUE0D391LE	—	○	2000	
			7.3	4.3	4.2	3.7	7	EEFUE0D471LE	—	○	2000	
		470	7.3	4.3	4.2	3.3	12	EEFUE0D471ER	—	○	2000	
			7.3	4.3	4.2	3.5	10	EEFUE0D471XE	—	○	2000	
		560	7.3	4.3	4.2	3.7	7	EEFUE0D561ER	—	○	2000	
			7.3	4.3	4.2	3.7	7	EEFUE0D561LE	—	○	2000	
	2.5	220	7.3	4.3	4.2	3.3	12	EEFUE0E221ER	—	○	2000	
			7.3	4.3	4.2	3.5	10	EEFUE0E221XE	—	○	2000	
		270	7.3	4.3	4.2	3.3	12	EEFUE0E271ER	—	○	2000	
			7.3	4.3	4.2	3.5	10	EEFUE0E271XE	—	○	2000	
		330	7.3	4.3	4.2	3.3	12	EEFUE0E331ER	—	○	2000	
			7.3	4.3	4.2	3.5	10	EEFUE0E331XE	—	○	2000	
			7.3	4.3	4.2	3.7	7	EEFUE0E331LE	—	○	2000	
		390	7.3	4.3	4.2	3.3	12	EEFUE0E391ER	—	○	2000	
			7.3	4.3	4.2	3.7	7	EEFUE0E391LE	—	○	2000	
		470	7.3	4.3	4.2	3.3	12	EEFUE0E471ER	—	○	2000	
			7.3	4.3	4.2	3.7	7	EEFUE0E471LE	—	○	2000	
		4	180	7.3	4.3	4.2	3.3	12	EEFUE0G181ER	—	○	2000
	7.3			4.3	4.2	3.5	10	EEFUE0G181XE	—	○	2000	
	220		7.3	4.3	4.2	3.3	12	EEFUE0G221ER	—	○	2000	
			7.3	4.3	4.2	3.5	10	EEFUE0G221XE	—	○	2000	
			7.3	4.3	4.2	3.7	7	EEFUE0G221LE	—	○	2000	
	270		7.3	4.3	4.2	3.3	12	EEFUE0G271ER	—	○	2000	
			7.3	4.3	4.2	3.7	7	EEFUE0G271LE	—	○	2000	
	330		7.3	4.3	4.2	3.3	12	EEFUE0G331ER	—	○	2000	
			7.3	4.3	4.2	3.7	7	EEFUE0G331LE	—	○	2000	
	6.3		150	7.3	4.3	4.2	3.3	12	EEFUE0J151ER	—	○	2000
				7.3	4.3	4.2	3.5	10	EEFUE0J151XE	—	○	2000
			180	7.3	4.3	4.2	3.3	12	EEFUE0J181ER	—	○	2000
		7.3		4.3	4.2	3.5	10	EEFUE0J181XE	—	○	2000	
		7.3		4.3	4.2	3.7	7	EEFUE0J181LR	○	—	2000	
		7.3		4.3	4.2	3.7	7	EEFUE0J221LR	○	—	2000	
		220	7.3	4.3	4.2	3.0	15	EEFUE0J221ER	—	○	2000	
			7.3	4.3	4.2	3.7	7	EEFUE0J221LR	○	—	2000	
		8	100	7.3	4.3	4.2	3.3	12	EEFUE0K101ER	—	○	2000
			150	7.3	4.3	4.2	3.0	15	EEFUE0K151ER	—	○	2000

\*1: Ripple current (100 kHz/ +20 to +105 °C ), \*2: ESR (100 kHz/+20 °C)

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

\*4: Please contact Panasonic for details of allowable 240 °C reflow condition.