Surface Mount Type

Series: **FKS** Type: **V**

High temperature Lead-Free reflow

Features

- Endurance : 105 ℃ 2000 h
- 1 size smaller than series FK
- Vibration-proof product (30G guaranteed) is available upon request (φ6.3 ≦)
- RoHS compliant

Specifications

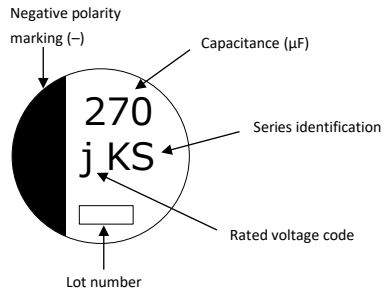
Category temp. range	−55 ℃ to +105 ℃							
Rated voltage range	6.3 V.DC to 50 V.DC							
Capacitance range	10 μF to 1800 μF							
Capacitance tolerance	±20 % (120 Hz / +20 ℃)							
Leakage current	I ≦ 0.01 CV or 3 (μA) After 2 minutes (Whichever is greater)							
Dissipation factor (tan δ)	Please see the attached characteristics list							
Characteristics at low temperature	Rated voltage (V.DC)	6.3	10	16	25	35	50	(Impedance ratio at 120 Hz)
	Z (−25 ℃) / Z (+20 ℃)	2	2	2	2	2	2	
	Z (−40 ℃) / Z (+20 ℃)	3	3	3	3	3	3	
	Z (−55 ℃) / Z (+20 ℃)	4	4	4	3	3	3	
Endurance	After applying rated working voltage for 2000 hours at +105 ℃ ± 2 ℃ and then being stabilized at +20 ℃, capacitors shall meet the following limits.							
	Capacitance change	Within ±30 % of the initial value (6.3 V.DC of B, C size : Within ±40 %)						
	Dissipation factor (tan δ)	≦ 200 % of the initial limit						
	Leakage current	Within the initial limit						
Shelf life	After storage for 1000 hours at +105 ℃ ± 2 ℃ with no voltage applied and then being stabilized at +20 ℃, capacitors shall meet the limits specified in endurance. (With voltage treatment)							
Resistance to soldering heat	After reflow soldering and then being stabilized at +20 ℃, capacitors shall meet the following limits.							
	Capacitance change	Within ±10 % of the initial value						
	Dissipation factor (tan δ)	Within the initial limit						
	Leakage current	Within the initial limit						
AEC-Q200	AEC-Q200 compliant							

Frequency correction factor for ripple current

Frequency (Hz)	120	1 k	10 k	100 k to
Correction factor	0.65	0.85	0.95	1.00

Marking

Example : 6.3 V.DC 270 μF
Marking color : BLACK

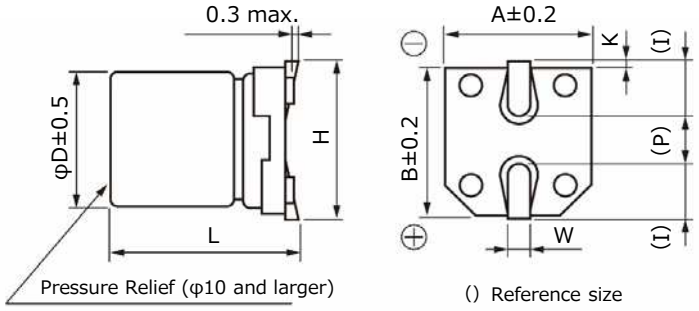


R.voltage code

Unit : V.DC

j	6.3	E	25
A	10	V	35
C	16	H	50

Dimensions



Unit : mm

Size code	φD	L	A、B	H	I	W	P	K
B	4.0	5.8±0.3	4.3	5.5 max.	1.8	0.65±0.1	1.0	$0.35^{+0.15}_{-0.20}$
C	5.0	5.8±0.3	5.3	6.5 max.	2.2	0.65±0.1	1.5	$0.35^{+0.15}_{-0.20}$
D	6.3	5.8±0.3	6.6	7.8 max.	2.6	0.65±0.1	1.8	$0.35^{+0.15}_{-0.20}$
D8	6.3	7.7±0.3	6.6	7.8 max.	2.6	0.65±0.1	1.8	$0.35^{+0.15}_{-0.20}$
F	8.0	10.2±0.3	8.3	10.0 max.	3.4	0.90±0.2	3.1	0.70±0.2
G	10.0	10.2±0.3	10.3	12.0 max.	3.5	0.90±0.2	4.6	0.70±0.2

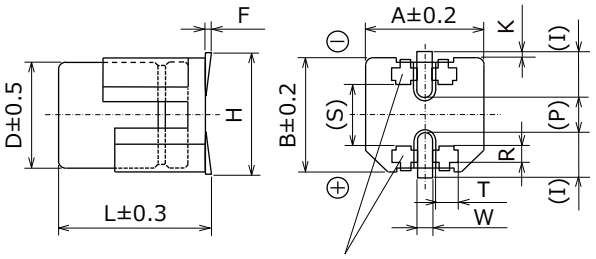
・The dimensions of the vibration-proof products, please refer to the page of the mounting specification.

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.

Dimensions (Vibration-proof products)

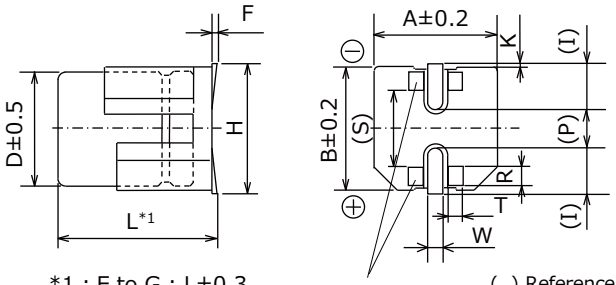
✻ The size and shape are different from standard products. Please inquire details of our company.

< Size code : D, D8 >



Supportive Terminals ( ) Reference size

< Size code : E, F, G, H13, J16, K16, K21 >



*1 : E to G : L±0.3
H13 to K21 : L±0.5

Supportive Terminals ( ) Reference size

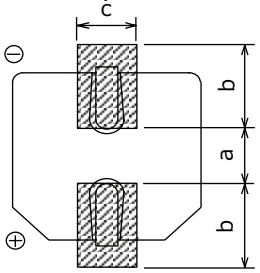
Unit : mm

Size code	φD	L	A, B	H max.	F	I	W	P	K	R	S	T
D	6.3	6.1	6.6	7.8	0 to +0.15	2.4	0.65±0.1	2.2	0.35 $^{+0.15}_{-0.20}$	1.1±0.2	3.3±0.2	1.05±0.2
D8	6.3	8.0	6.6	7.8	0 to +0.15	2.4	0.65±0.1	2.2	0.35 $^{+0.15}_{-0.20}$	1.1±0.2	3.3±0.2	1.05±0.2
E	8.0	6.5	8.3	9.5	0 to +0.15	3.4	0.7±0.1	2.2	0.35 $^{+0.15}_{-0.20}$	0.70±0.2	5.3±0.2	1.7±0.2
F	8.0	10.5	8.3	10.0	0 to +0.15	3.4	1.2±0.2	3.1	0.70±0.2	0.70±0.2	5.3±0.2	1.3±0.2
G	10.0	10.5	10.3	12.0	0 to +0.15	3.5	1.2±0.2	4.6	0.70±0.2	0.70±0.2	6.9±0.2	1.3±0.2
H13	12.5	13.8	13.5	15.0	−0.1 to +0.15	4.7	1.2±0.2	4.4	0.70±0.3	2.2±0.2	7.1±0.2	2.4±0.2
J16	16.0	16.8	17.0	19.0	−0.1 to +0.15	5.5	1.4±0.2	6.7	0.70±0.3	3.0±0.2	9.0±0.2	1.9±0.2
K16	18.0	16.8	19.0	21.0	−0.1 to +0.15	6.7	1.4±0.2	6.7	0.70±0.3	3.0±0.2	11.0±0.2	1.9±0.2
K21	18.0	21.8	19.0	21.0	−0.1 to +0.15	6.7	1.4±0.2	6.7	0.70±0.3	3.0±0.2	11.0±0.2	1.9±0.2

Land / Pad pattern

The circuit board land/pad pattern size for chip capacitors is specified in the following table.
The land pitch influences installation strength and consider it.

● Standard products



Land space

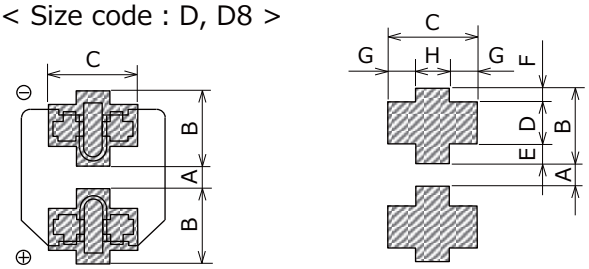
(Table of board land size vs. capacitor size) Unit : mm

Size code	a	b	c
B (φ4)	1.0	2.5	1.6
C (φ5)	1.5	2.8	1.6
D (φ6.3)	1.8	3.2	1.6
D8 (φ6.3x7.7L)	1.8	3.2	1.6
E (φ8x6.2L)	2.2	4.0	1.6
F (φ8x10.2L)	3.1	4.0	2.0
G (φ10x10.2L)	4.6	4.1	2.0
H (φ12.5)	4.0	5.7	2.0
J (φ16)	6.0	6.5	2.5
K (φ18)	6.0	7.5	2.5

When size “a” is wide, back fi llet can be made, decreasing fi tting strength.

● Vibration-proof products

< Size code : D, D8 >

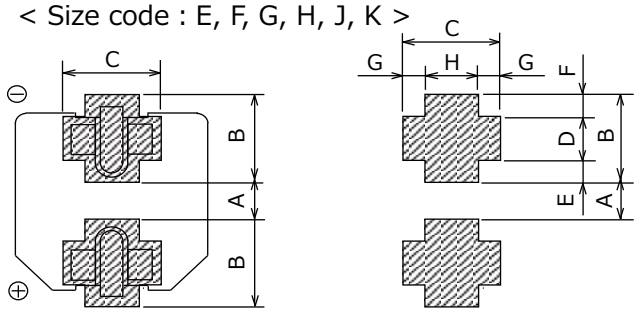


(Table of board land size vs. capacitor size) Unit : mm

Size code	A	B	C	D	E	F	G	H
D (φ6.3xL6.1)	1.2	3.6	3.2	2.0	0.95	0.65	1.0	1.2
D8 (φ6.3xL8.0)	1.2	3.6	3.2	2.0	0.95	0.65	1.0	1.2
E (φ8x6.5L)	1.8	4.2	5.0	1.3	1.5	1.4	1.5	2.0
F (φ8x10.5L)	2.7	4.0	4.7	1.3	1.0	1.7	1.1	2.5
G (φ10)	3.9	4.4	4.7	1.3	1.2	1.9	1.1	2.5
H (φ12.5)	3.9	6.0	6.9	2.8	1.3	1.9	2.2	2.5
J (φ16)	5.8	6.8	6.2	3.6	1.3	1.9	1.7	2.8
K (φ18)	5.8	7.3	6.2	3.6	1.8	1.9	1.7	2.8

When size “A” is wide, back fi llet can be made, decreasing fi tting strength.

< Size code : E, F, G, H, J, K >



∗Take mounting conditions, solderability and fi tting strength into consideration when selecting parts for your company’s design.

∗ The vibration-proof capacitors of size Φ6.3 has support terminals extending from the bottom side to the lead edge. Then, make sure to find appropriate soldering conditions to form fillet on the support terminals if required for appearance inspection.

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Characteristics list

Endurance : 105 ℃ 2000 h

Rated volt. (V.DC)	Cap. (±20 %) (μF)	Case size (mm) φD	Case size (mm) L Standard	Case size (mm) L Vibration-proof	Size code	Specification Ripple current *1 (mA r.m.s.)	Specification ESR*2 (Ω)	Specification tan δ*3	Part No. Standard	Part No. Vibration-proof	Reflow	Min. Packaging Q'ty Taping (pcs)
6.3	68	4	5.8	–	B	90	1.35	0.26	EEEFK0J680SR	–	(5)	2000
	150	5	5.8	–	C	160	0.70	0.26	EEEFK0J151SR	–	(5)	1000
	270	6.3	5.8	6.1	D	240	0.36	0.26	EEEFK0J271SP	EEEFK0J271SV	(5)	1000
	470	6.3	7.7	8.0	D8	280	0.34	0.26	EEEFKJ471XSP	EEEFKJ471XSV	(5)	900
	1800	10	10.2	10.5	G	850	0.08	0.26	EEEFK0J182SP	EEEFK0J182SV	(6)	500
10	56	4	5.8	–	B	90	1.35	0.19	EEEFK1A560SR	–	(5)	2000
	120	5	5.8	–	C	160	0.70	0.19	EEEFK1A121SR	–	(5)	1000
	220	6.3	5.8	6.1	D	240	0.36	0.19	EEEFK1A221SP	EEEFK1A221SV	(5)	1000
	330	6.3	7.7	8.0	D8	280	0.34	0.19	EEEFKA331XSP	EEEFKA331XSV	(5)	900
	820	8	10.2	10.5	F	600	0.16	0.19	EEEFK1A821SP	EEEFK1A821SV	(6)	500
	1200	10	10.2	10.5	G	850	0.08	0.19	EEEFK1A122SP	EEEFK1A122SV	(6)	500
16	47	4	5.8	–	B	90	1.35	0.16	EEEFK1C470SR	–	(5)	2000
	100	5	5.8	–	C	160	0.70	0.16	EEEFK1C101SR	–	(5)	1000
	150	6.3	5.8	6.1	D	240	0.36	0.16	EEEFK1C151SP	EEEFK1C151SV	(5)	1000
	270	6.3	7.7	8.0	D8	280	0.34	0.16	EEEFKC271XSP	EEEFKC271XSV	(5)	900
	560	8	10.2	10.5	F	600	0.16	0.16	EEEFK1C561SP	EEEFK1C561SV	(6)	500
	1000	10	10.2	10.5	G	850	0.08	0.16	EEEFK1C102SP	EEEFK1C102SV	(6)	500
25	27	4	5.8	–	B	90	1.35	0.14	EEEFK1E270SR	–	(5)	2000
	56	5	5.8	–	C	160	0.70	0.14	EEEFK1E560SR	–	(5)	1000
	100	6.3	5.8	6.1	D	240	0.36	0.14	EEEFK1E101SP	EEEFK1E101SV	(5)	1000
	150	6.3	7.7	8.0	D8	280	0.34	0.14	EEEFKE151XSP	EEEFKE151XSV	(5)	900
	180	6.3	7.7	8.0	D8	280	0.34	0.14	EEEFKE181XSP	EEEFKE181XSV	(5)	900
	390	8	10.2	10.5	F	600	0.16	0.14	EEEFK1E391SP	EEEFK1E391SV	(6)	500
	680	10	10.2	10.5	G	850	0.08	0.14	EEEFK1E681SP	EEEFK1E681SV	(6)	500
35	18	4	5.8	–	B	90	1.35	0.12	EEEFK1V180SR	–	(5)	2000
	39	5	5.8	–	C	160	0.70	0.12	EEEFK1V390SR	–	(5)	1000
	68	6.3	5.8	6.1	D	240	0.36	0.12	EEEFK1V680SP	EEEFK1V680SV	(5)	1000
	82	6.3	5.8	6.1	D	240	0.36	0.12	EEEFK1V820SP	EEEFK1V820SV	(5)	1000
	120	6.3	7.7	8.0	D8	280	0.34	0.12	EEEFKV121XSP	EEEFKV121XSV	(5)	900
	270	8	10.2	10.5	F	600	0.16	0.12	EEEFK1V271SP	EEEFK1V271SV	(6)	500
	470	10	10.2	10.5	G	850	0.08	0.12	EEEFK1V471SP	EEEFK1V471SV	(6)	500
50	10	4	5.8	–	B	60	3.50	0.10	EEEFK1H100SR	–	(5)	2000
	22	5	5.8	–	C	85	1.52	0.10	EEEFK1H220SR	–	(5)	1000
	39	6.3	5.8	6.1	D	165	0.88	0.10	EEEFK1H390SP	EEEFK1H390SV	(5)	1000
	82	6.3	7.7	8.0	D8	195	0.68	0.10	EEEFKH820XSP	EEEFKH820XSV	(5)	900
	180	8	10.2	10.5	F	350	0.34	0.10	EEEFK1H181SP	EEEFK1H181SV	(6)	500
	270	10	10.2	10.5	G	670	0.18	0.10	EEEFK1H271SP	EEEFK1H271SV	(6)	500

*1: Ripple current (100 kHz / +105 ℃)
*2: ESR (100 kHz / +20 ℃)
*3: tan δ (120 Hz / +20 ℃)
・If Part number exceeds 12 digits, voltage code is abbreviated as follows; 0J → J, 1A → A, 1C → C, 1E → E, 1V → V, 1H → H
・Please refer to the page of "Reflow Profile" and "The Taping Dimensions".

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