

A FEATURES

- Low impedance for high frequency
- Long life: 2,000~8,000 hours at 105°C
- High ripple current capability
- Operating Temperature range from -40°C to +105°C (Including Self-heating)
- 260°C reflow peak temperature qualified



B GENERAL SPECIFICATIONS

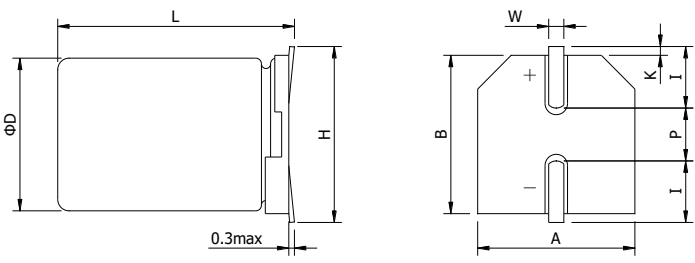
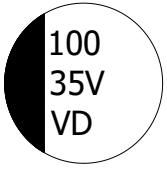
Item	Performance Characteristics									
Operating Temperature	-55°C ~ +105°C									
Working Voltage Range	6.3V ~ 100V									
Capacitance Range	1 ~ 8200μF									
Capacitance Tolerance	±20% at 120Hz, +20°C									
Leakage Current	I ≤ 0.01CV or 3 (μA)									
	whichever is greater measured after 2 minutes application of rated working voltage at +20°C									
Tan δ (120Hz, +20°C)	Working Voltage (V)	6.3	10	16	25	35	50	63	80	100
	Tan δ (Max)	0.3	0.26	0.22	0.16	0.13	0.1	0.08	0.08	0.07
Low Temperature Characteristics	Impedance ratio max. at 120Hz									
	Rated Voltage (V)	6.3	10	16	25	35	50	63	80	100
	Z-25°C / Z+20°C	3	2	2	2	2	2	2	2	2
	Z-55°C / Z+20°C	5	4	4	3	3	3	3	3	3
High Temperature Loading	Diameter(mm)	4	5	6.3	8	10	12.5	16	18	
	Test time	2000	2000	2000	5000	5000	8000	8000	8000	
	Test Conditions	Rated DC working voltage with rated ripple current at +105°C ±2°C								
	Cap. Change	within ±30% of the initial measured value								
	Tan δ	≤300% of the initial specified value								
	Leakage current	≤Initial specified value								
High Temperature Storage	At +105°C no voltage applied after 1,000 hours and then being stabilized at +20°C the capacitors shall meet the following limits:									
	Cap. Change	within ±30% of the initial measured value								
	Tan δ	≤300% of the initial specified value								
	Leakage current	≤Initial specified value								
Soldering Stability	After reflow process, returned to ambient temperature, the capacitors shall meet the following limits:									
	Cap. Change	within ±10% of the initial measured value								
	Tan δ	≤initial specified value								
	Leakage current	≤Initial specified value								
Ripple Current Multiplier	Frequency	50Hz	120Hz	1KHz	10KHz	100KHz				
	Coefficient	0.64	0.80	0.93	1.00	1.00				

C PART NUMBER SYSTEM

VD 1V 101 M F 105 000LP0
 ① ② ③ ④ ⑤ ⑥ ⑦

①	Series	②	Voltage Code		
VD	Series Code		0J – 6.3V	1A – 10V	1C – 16V
			1E – 25V	1V – 35V	1H – 50V
			1J – 63V	1K – 80V	2A – 100V
③	Capacitance Code	⑤	Diameter(Ø) Code		
e.g.	Calculation		B – 4mm	C – 5mm	E – 6.3mm
101	$10 \times 10^1 \mu\text{F} = 100 \mu\text{F}$		F – 8mm	G – 10mm	I – 12.5mm
			J – 16mm	K – 18mm	
④	Inductance Tolerance	⑥	Height Code		
M	±20%		054 – 5.4mm	065 – 6.2mm	077 – 7.7mm
			105 – 10.5mm	125 – 12.5mm	135 – 13.5mm
			165 – 16.5mm	215 – 21.5mm	
⑦	Internal Code				

D DRAWINGS AND DIMENSIONS

Drawing	Marking
	<p>E.g.: VD Series, 35V, 100uF</p> 

Case Code	Dimensions (mm)							
	ΦD	L	A,B	H	I	W	P	K
B054	4.0±0.5	5.4±0.3	4.3	5.5	1.8	0.5~0.8	1.0	0.35±0.15
C054	5.0±0.5	5.4±0.3	5.3	6.5	2.1	0.5~0.8	1.5	0.35±0.15
E054	6.3±0.5	5.4±0.3	6.6	7.8	2.4	0.5~0.8	2.2	0.35±0.15
E077	6.3±0.5	7.7±0.3	6.6	7.8	2.4	0.5~0.8	2.2	0.35±0.15
F065	8.0±0.5	6.2±0.3	8.3	9.5	3.4	0.8~1.1	2.2	0.7±0.2
F105	8.0±0.5	10.5±0.5	8.3	10.0	3.4	0.8~1.1	3.1	0.7±0.2
F125	8.0±0.5	12.5±0.5	8.3	10.0	3.4	0.8~1.1	3.1	0.7±0.2
G077	10.0±0.5	7.7±0.3	8.3	8.3	3.5	0.7~1.3	4.7	0.7±0.2
G105	10.0±0.5	10.5±0.5	10.3	12.0	3.5	0.7~1.3	4.7	0.7±0.2
G125	10.0±0.5	12.5±0.5	10.3	12.0	3.5	0.7~1.3	4.7	0.7±0.2
I135	12.5±0.5	13.5±0.5	13.5	15.0	4.7	1.1~1.4	4.4	0.7±0.2
I165	12.5±0.5	16.5±0.5	13.5	15.0	4.7	1.1~1.4	4.4	0.7±0.2
J165	16.0±0.5	16.5±0.5	17.0	19.0	5.5	1.1~1.4	6.4	0.7±0.2
J165	16.0±0.5	21.5±0.5	17.0	19.0	5.5	1.1~1.4	6.4	0.7±0.2
K165	18.0±0.5	16.5±0.5	19.0	21.0	6.7	1.1~1.4	6.4	0.7±0.2
K215	18.0±0.5	21.5±0.5	19.0	21.0	6.7	1.1~1.4	6.4	0.7±0.2

E SPECIFICATIONS

Part Number	Voltage _R	Capacitance	Tolerance	Ripple ¹ _R	Impedance ²	ΦD	L	SPQ
/	V	μF	/	mA(rms)	Ω(Max)	mm	mm	PCS/Reel
VD0J270MB054000LP0	6.3	27	±20%	80	1.800	4.0	5.4	2000
VD0J330MC054000LP0	6.3	33	±20%	150	0.760	5.0	5.4	1000
VD0J470MC054000LP0	6.3	47	±20%	150	0.760	5.0	5.4	1000
VD0J560MC054000LP0	6.3	56	±20%	150	0.760	5.0	5.4	1000
VD0J680ME054000LP0	6.3	68	±20%	230	0.440	6.3	5.4	1000
VD0J101ME054000LP0	6.3	100	±20%	230	0.440	6.3	5.4	1000
VD0J151ME054000LP0	6.3	150	±20%	230	0.440	6.3	5.4	1000
VD0J221ME054000LP0	6.3	220	±20%	230	0.440	6.3	5.4	1000
VD0J331ME077000LP0	6.3	330	±20%	280	0.340	6.3	7.7	1000
VD0J331MF065000LP0	6.3	330	±20%	280	0.360	8.0	6.2	1000
VD0J471MF105000LP0	6.3	470	±20%	450	0.170	8.0	10.5	500
VD0J681MF105000LP0	6.3	680	±20%	450	0.170	8.0	10.5	500
VD0J102MF105000LP0	6.3	1000	±20%	450	0.170	8.0	10.5	500
VD0J152MG105000LP0	6.3	1500	±20%	670	0.090	10.0	10.5	500
VD0J222MI135000LP0	6.3	2200	±20%	820	0.070	12.5	13.5	200
VD0J332MI165000LP0	6.3	3300	±20%	950	0.060	12.5	16.5	200
VD0J472MJ165000LP0	6.3	4700	±20%	1260	0.054	16.0	16.5	125
VD0J682MK165000LP0	6.3	6800	±20%	1500	0.048	18.0	16.5	125
VD0J822MK215000LP0	6.3	8200	±20%	1750	0.038	18.0	21.5	125
VD1A220MB054000LP0	10	22	±20%	80	1.800	4.0	5.4	2000
VD1A270MC054000LP0	10	27	±20%	150	0.760	5.0	5.4	1000
VD1A330MC054000LP0	10	33	±20%	150	0.760	5.0	5.4	1000
VD1A470ME054000LP0	10	47	±20%	230	0.440	6.3	5.4	1000
VD1A560ME054000LP0	10	56	±20%	230	0.440	6.3	5.4	1000
VD1A680ME054000LP0	10	68	±20%	230	0.440	6.3	5.4	1000
VD1A101ME054000LP0	10	100	±20%	230	0.440	6.3	5.4	1000
VD1A151ME054000LP0	10	150	±20%	230	0.440	6.3	5.4	1000
VD1A221ME077000LP0	10	220	±20%	280	0.340	6.3	7.7	1000
VD1A221MF065000LP0	10	220	±20%	280	0.340	8.0	6.2	1000

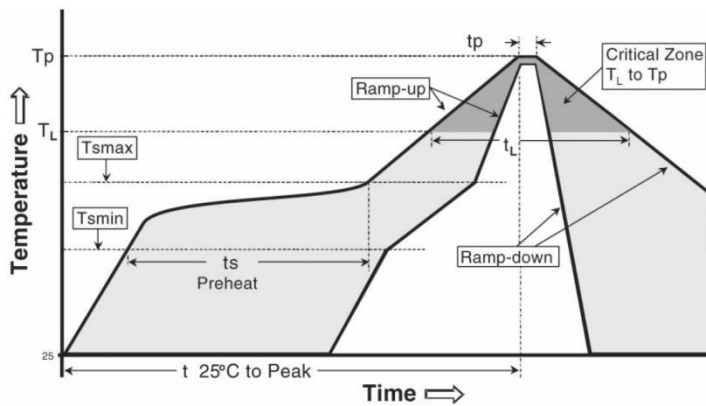
Part Number	Voltage _{ER}	Capacitance	Tolerance	Ripple ¹ _R	Impedance ²	ΦD	L	SPQ
/	V	μF	/	mA(rms)	Ω(Max)	mm	mm	PCS/Reel
VD1A331MF105000LP0	10	330	±20%	450	0.170	8.0	10.5	500
VD1A471MF105000LP0	10	470	±20%	450	0.170	8.0	10.5	500
VD1A681MG105000LP0	10	680	±20%	670	0.090	10.0	10.5	500
VD1A102MG105000LP0	10	1000	±20%	670	0.090	10.0	10.5	500
VD1A152MI135000LP0	10	1500	±20%	820	0.070	12.5	13.5	200
VD1A222MI165000LP0	10	2200	±20%	950	0.060	12.5	16.5	200
VD1A332MJ165000LP0	10	3300	±20%	1260	0.054	16.0	16.5	125
VD1A472MJ165000LP0	10	4700	±20%	1260	0.054	16.0	16.5	125
VD1A682MK165000LP0	10	6800	±20%	1500	0.048	18.0	16.5	125
VD1A822MK215000LP0	10	8200	±20%	1750	0.038	18.0	21.5	125
VD1C150MB054000LP0	16	15	±20%	80	1.800	4.0	5.4	2000
VD1C220MC054000LP0	16	22	±20%	80	0.760	5.0	5.4	1000
VD1C270MC054000LP0	16	27	±20%	150	0.760	5.0	5.4	1000
VD1C330ME054000LP0	16	33	±20%	230	0.440	6.3	5.4	1000
VD1C470ME054000LP0	16	47	±20%	230	0.440	6.3	5.4	1000
VD1C560ME054000LP0	16	56	±20%	230	0.440	6.3	5.4	1000
VD1C680ME054000LP0	16	68	±20%	230	0.440	6.3	5.4	1000
VD1C101ME054000LP0	16	100	±20%	230	0.440	6.3	5.4	1000
VD1C151MF065000LP0	16	150	±20%	280	0.360	8.0	6.2	1000
VD1C151MF105000LP0	16	150	±20%	280	0.340	8.0	10.5	500
VD1C221ME077000LP0	16	220	±20%	280	0.340	6.3	7.7	1000
VD1C331MF105000LP0	16	330	±20%	450	0.170	8.0	10.5	500
VD1C471MF105000LP0	16	470	±20%	450	0.170	8.0	10.5	500
VD1C681MG105000LP0	16	680	±20%	670	0.090	10.0	10.5	500
VD1C102MG105000LP0	16	1000	±20%	670	0.090	10.0	10.5	500
VD1C152MI135000LP0	16	1500	±20%	820	0.070	12.5	13.5	200
VD1C222MI165000LP0	16	2200	±20%	1260	0.060	12.5	16.5	200
VD1C332MJ165000LP0	16	3300	±20%	1260	0.054	16.0	16.5	125
VD1C472MK165000LP0	16	4700	±20%	1260	0.048	18.0	16.5	125
VD1E100MB054000LP0	25	10	±20%	80	1.800	4.0	5.4	2000
VD1E150MC054000LP0	25	15	±20%	150	0.760	5.0	5.4	1000
VD1E220MC054000LP0	25	22	±20%	80	0.760	5.0	5.4	1000
VD1E270ME054000LP0	25	27	±20%	230	0.440	6.3	5.4	1000
VD1E330ME054000LP0	25	33	±20%	230	0.440	6.3	5.4	1000
VD1E470ME054000LP0	25	47	±20%	230	0.440	6.3	5.4	1000
VD1E560ME054000LP0	25	56	±20%	230	0.440	6.3	5.4	1000
VD1E680ME054000LP0	25	68	±20%	230	0.440	6.3	5.4	1000
VD1E101ME077000LP0	25	100	±20%	280	0.340	6.3	7.7	1000
VD1E101MF065000LP0	25	100	±20%	280	0.360	8.0	6.2	1000
VD1E151ME077000LP0	25	150	±20%	450	0.170	6.3	7.7	1000
VD1E221MF105000LP0	25	220	±20%	450	0.170	8.0	10.5	500
VD1E331MF105000LP0	25	330	±20%	450	0.170	8.0	10.5	500
VD1E471MG105000LP0	25	470	±20%	670	0.090	10.0	10.5	500
VD1E681MG105000LP0	25	680	±20%	670	0.090	10.0	10.5	500
VD1E102MI135000LP0	25	1000	±20%	820	0.070	12.5	13.5	200
VD1E152MI165000LP0	25	1500	±20%	950	0.060	12.5	16.5	200
VD1E222MJ165000LP0	25	2200	±20%	1260	0.054	16.0	16.5	125
VD1E332MK215000LP0	25	3300	±20%	1260	0.038	18.0	21.5	125
VD1V4R7MB054000LP0	35	4.7	±20%	80	1.800	4.0	5.4	2000
VD1V100MC054000LP0	35	10	±20%	150	0.760	5.0	5.4	1000
VD1V150MC054000LP0	35	15	±20%	150	0.760	5.0	5.4	1000
VD1V220MC054000LP0	35	22	±20%	80	0.760	5.0	5.4	1000
VD1V270ME054000LP0	35	27	±20%	230	0.440	6.3	5.4	1000

Part Number	Voltage _{ER}	Capacitance	Tolerance	Ripple ¹ _R	Impedance ²	ΦD	L	SPQ
/	V	μF	/	mA(rms)	Ω(Max)	mm	mm	PCS/Reel
VD1V330ME054000LP0	35	33	±20%	230	0.440	6.3	5.4	1000
VD1V470ME054000LP0	35	47	±20%	230	0.440	6.3	5.4	1000
VD1V560ME077000LP0	35	56	±20%	280	0.340	6.3	7.7	1000
VD1V680ME077000LP0	35	68	±20%	280	0.340	6.3	7.7	1000
VD1V680MF065000LP0	35	68	±20%	280	0.360	8.0	6.2	1000
VD1V101MF105000LP0	35	100	±20%	300	0.170	8.0	10.5	500
VD1V151MF105000LP0	35	150	±20%	300	0.170	8.0	10.5	500
VD1V221MF105000LP0	35	220	±20%	450	0.170	8.0	10.5	500
VD1V331MG105000LP0	35	330	±20%	670	0.090	10.0	10.5	500
VD1V471MG105000LP0	35	470	±20%	670	0.090	10.0	10.5	500
VD1V681MI135000LP0	35	680	±20%	820	0.070	12.5	13.5	200
VD1V102MJ165000LP0	35	1000	±20%	1260	0.054	16.0	16.5	125
VD1V152MK165000LP0	35	1500	±20%	1500	0.048	18.0	16.5	125
VD1V222MK215000LP0	35	2200	±20%	1750	0.038	18.0	21.5	125
VD1H1R0MB054000LP0	50	1.0	±20%	30	5.000	4.0	5.4	2000
VD1H2R2MB054000LP0	50	2.2	±20%	30	5.000	4.0	5.4	2000
VD1H3R3MB054000LP0	50	3.3	±20%	30	5.000	4.0	5.4	2000
VD1H4R7MC054000LP0	50	4.7	±20%	85	1.520	5.0	5.4	1000
VD1H100ME054000LP0	50	10	±20%	165	0.880	6.3	5.4	1000
VD1H150ME054000LP0	50	15	±20%	165	0.880	6.3	5.4	1000
VD1H220ME054000LP0	50	22	±20%	165	0.880	6.3	5.4	1000
VD1H270ME077000LP0	50	27	±20%	185	0.680	6.3	7.7	1000
VD1H330ME077000LP0	50	33	±20%	185	0.680	6.3	7.7	1000
VD1H470ME077000LP0	50	47	±20%	185	0.680	6.3	7.7	1000
VD1H470MF065000LP0	50	47	±20%	185	0.680	8.0	6.2	1000
VD1H560MF105000LP0	50	56	±20%	300	0.340	8.0	10.5	500
VD1H680MF105000LP0	50	68	±20%	300	0.340	8.0	10.5	500
VD1H101MF105000LP0	50	100	±20%	300	0.340	8.0	10.5	500
VD1H105MG105000LP0	50	150	±20%	550	0.180	10.0	10.5	500
VD1H221MG105000LP0	50	220	±20%	550	0.180	10.0	10.5	500
VD1H331MG125000LP0	50	330	±20%	550	0.180	10.0	12.5	500
VD1H471MI135000LP0	50	470	±20%	650	0.120	12.5	13.5	200
VD1H681MJ165000LP0	50	680	±20%	1000	0.073	16.0	16.5	125
VD1H102MK165000LP0	50	1000	±20%	1500	0.066	18.0	16.5	125
VD1H152MK215000LP0	50	1500	±20%	1620	0.050	18.0	21.5	125
VD1J4R7MC054000LP0	63	4.7	±20%	70	1.900	5.0	5.4	1000
VD1J100ME054000LP0	63	10	±20%	130	1.200	6.3	5.4	1000
VD1J220ME077000LP0	63	22	±20%	150	0.900	6.3	7.7	1000
VD1J330MF105000LP0	63	33	±20%	280	0.500	8.0	10.5	500
VD1J470MF105000LP0	63	47	±20%	280	0.500	8.0	10.5	500
VD1J101MF105000LP0	63	100	±20%	290	1.000	8.0	10.5	500
VD1J101MG105000LP0	63	100	±20%	450	0.250	10.0	10.5	500
VD1J151MI135000LP0	63	150	±20%	700	0.150	12.5	13.5	200
VD1J221MI135000LP0	63	220	±20%	700	0.150	12.5	13.5	200
VD1J331MJ165000LP0	63	330	±20%	900	0.082	16.0	16.5	125
VD1J471MJ165000LP0	63	470	±20%	900	0.082	16.0	16.5	125
VD1J681MJ215000LP0	63	680	±20%	1150	0.080	16.0	21.5	125
VD1J681MK165000LP0	63	680	±20%	1150	0.080	18.0	16.5	125
VD1J102MK215000LP0	63	1000	±20%	1250	0.060	18.0	21.5	125
VD1K220MF105000LP0	80	22	±20%	130	1.300	8.0	10.5	500
VD1K330MF105000LP0	80	33	±20%	130	1.300	8.0	10.5	500
VD1K470MG105000LP0	80	47	±20%	200	0.700	10.0	10.5	500
VD1K101MG105000LP0	80	100	±20%	200	0.700	10.0	10.5	500

Part Number	Voltage ^{eR}	Capacitance	Tolerance	Ripple ^{1R}	Impedance ²	ΦD	L	SPQ
/	V	μF	/	mA(rms)	Ω(Max)	mm	mm	PCS/Reel
VD1K151MI135000LP0	80	150	±20%	450	0.320	12.5	13.5	200
VD1K221MI165000LP0	80	220	±20%	550	0.260	12.5	16.5	200
VD1K331MJ165000LP0	80	330	±20%	650	0.170	16.0	16.5	125
VD1K471MJ215000LP0	80	470	±20%	900	0.150	16.0	21.5	125
VD1K681MK215000LP0	80	680	±20%	950	0.150	18.0	21.5	125
VD2A220MF105000LP0	100	22	±20%	130	1.300	8.0	10.5	500
VD2A330MG105000LP0	100	33	±20%	200	0.700	10.0	10.5	500
VD2A470MG105000LP0	100	47	±20%	200	0.700	10.0	10.5	500
VD2A101MI135000LP0	100	100	±20%	450	0.320	12.5	13.5	200
VD2A151MI165000LP0	100	150	±20%	550	0.260	12.5	16.5	200
VD2A221MJ165000LP0	100	220	±20%	650	0.170	16.0	16.5	125
VD2A221MK215000LP0	100	220	±20%	950	0.150	18.0	21.5	125
VD2A331MJ215000LP0	100	330	±20%	900	0.150	16.0	21.5	125
VD2A331MK165000LP0	100	330	±20%	850	0.150	18.0	16.5	125
VD2A471MK215000LP0	100	470	±20%	950	0.150	18.0	21.5	125

1. Ripple current measured @ 100KHz at 105°C temperature.
2. Impedance measured @ 100KHz at 25°C temperature.
3. Specifications subject to change without notice please check our website for latest information.

F RECOMMENDED SOLDERING PROFILE



Profile Feature	Recommended Conditions
Average ramp-up rate (T _{smax} to T _p)	3°C/second max.
Preheat	
Temperature Min (T _{smin})	150°C
Temperature Max (T _{smax})	200°C
Time (T _{smin} to T _{smax})(t _s)	60-180 seconds
Time maintained above:	
Temperature (T _L)	217°C
Time (t _L)	60-150 seconds
Peak Temperature (T _p)	See Table2
Time within 5°C of actual Peak Temperature (t _p) ²	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max

Table 1

Package Thickness	Volume mm ³ <350	Volume mm ³ 350 - 2000	Volume mm ³ >2000
< 1.6mm	260°C	260°C	260°C
1.6mm - 2.5mm	260°C	250°C	245°C
>2.5mm	250°C	245°C	245°C

Table 2

1. The above profiles are based on IPC/JEDEC J-STD-020C.
2. Exceeding these conditions may cause lowered product reliability.