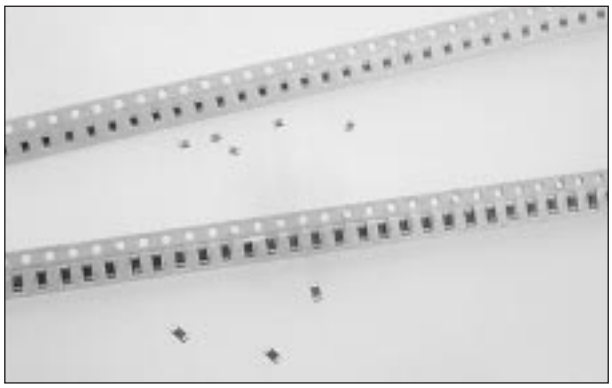
Ceramic Surface Mount Multi-Layer DS



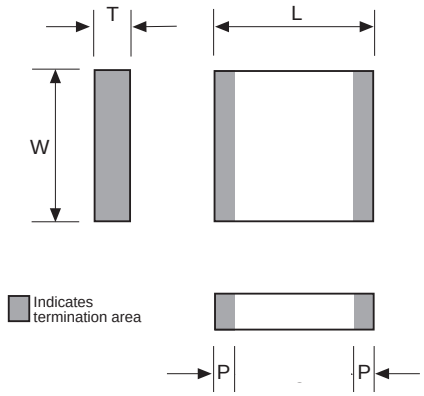
- NPO, X7R, Y5V/Z5U dielectric
- All standard chip sizes
- 13" reel size available

Our range of SMD multi-layer ceramic capacitors compliments the leaded capacitors available in radial and axial form.

All product packaging is fully marked with date and lot traceability information.

Most industry standard sizes are available, including 0603 and 1812.

Outline



Dimensions in mm

Size Code	L mm	T* W mm	P max mm	P max mm
0402	1.0±0.1	0.5±0.1	0.6	0.3
0603	1.6±0.15	0.8±0.15	0.95	0.45
0805	2.0±0.2	1.25±0.2	1.4	0.75
1206	3.2±0.2	1.6±0.2	1.6	0.75
1210	3.2±0.25	2.5±0.25	1.7	0.75
1812	4.5±0.4	3.2±0.3	2.3	1.00
2220	5.7±0.2	3.0±0.2	2.3	1.00

Tolerances

Dielectric materials, capacitance values and tolerances are only available in the following combinations.			
Dielectric	Available Tolerances	Capacitance	Tolerance Codes
COG	± 0.25pF, ± 0.5pF ± 1% ± 2% ± 5%, ± 10%, ± 20%	<10pF >25pF >13pF ≥10pF E12 Values	C = ± 0.25pF D = ± 0.5pF F = ± 1% G = ± 2% J = ± 5% K = ± 10% M = ± 20% Z = -20 + 80%
X7R	± 10%, ± 20%	E12 Values	**
Y5V	± 20%, -20 + 80%	E6 Values	
Z5U	± 20%, -20 + 80%	E6 Values	

Ordering Information

DS	U	0805	C	101	J	N
Part	Voltage	Size	Dielectric	Value	Tolerance	Plating
	U = 50/63V A = 100V F = 200V E = 25V C = 16V B = 10V J = 500V	0402 0603 0805 1206 1210 1812	C = NPO R = X7R G = Y5V W = Z5U	Example 101 = 100pF 102 = 1nF 103 = 10nF 104 = 100nF	See Above ** for code	N = Nickel barrier E = Silver enhanced

RS24077

Ceramic Surface Mount Multi-Layer DS

Ultra Stable Ceramic Chip Capacitors Nickel Barrier Terminations for Flow and Reflow Soldering NPO 25V, 50/63V, 100V

Capacitance Range

IEC/EIA Dielectric Code		NPO																							
Size Code		0402		0603			0805				1206					1210					1812	
Voltage		25	50	25	50	100	25	50	100	200	25	50	100	200	500	25	50	100	200	500	50	100
Cap pF	Cap code																					
1.0	1R0																					
1.2	1R2																					
1.5	1R5																					
1.8	1R8																					
2.2	2R2																					
2.7	2R7																					
3.3	3R3																					
3.9	3R9																					
4.7	4R7																					
5.6	5R6																					
6.8	6R8																					
8.2	8R2																					
10	100																					
12	120																					
15	150																					
18	180																					
22	220																					
27	270																					
33	330																					
39	390																					
47	470																					
56	560																					
68	680																					
82	820																					
100	101																					
120	121																					
150	151																					
180	181																					
220	221																					
270	271																					
330	331																					
390	391																					
470	471																					
560	561																					
680	681																					
820	821																					
1000	102																					
1200	122																					
1500	152																					
1800	182																					
2200	222																					
4700	472																					
5600	562																					
6800	682																					
8200	822																					
10000	103																					

Ceramic Surface Mount Multi-Layer DS

Stable Ceramic Chip Capacitors Nickel Barrier Terminations for Flow and Reflow Soldering X7R 10V, 16V, 25V, 50V/63V, 100V

Capacitance Range

IEC/EIA Dielectric Code	NPO																														
Size Code	0402			0603					0805						1206							1210						1812	
Voltage																													
Cap in pF / code	16	25	50	10	16	25	50	100	10	16	25	50	100	200	10	16	25	50	100	200	500	16	25	50	100	200	500	50	100
270 - 271																													
330 - 331																													
390 - 391																													
470 - 471																													
560 - 561																													
680 - 681																													
820 - 821																													
1000 - 102																													
1200 - 122																													
1500 - 152																													
1800 - 182																													
2200 - 222																													
2700 - 272																													
3300 - 332																													
3900 - 392																													
4700 - 472																													
5600 - 562																													
6800 - 682																													
8200 - 822																													
10,000 - 103																													
12,000 - 123																													
15,000 - 153																													
18,000 - 183																													
22,000 - 223																													
27,000 - 273																													
33,000 - 333																													
39,000 - 393																													
47,000 - 473																													
56,000 - 563																													
68,000 - 683																													
82,000 - 823																													
100,000 - 104																													
120,000 - 124																													
150,000 - 154																													
180,000 - 184																													
220,000 - 224																													
270,000 - 274																													
330,000 - 334																													
470000 - 474																													
1000000 - 105																													
2200000 - 225																													

Ceramic Surface Mount Multi-Layer DS

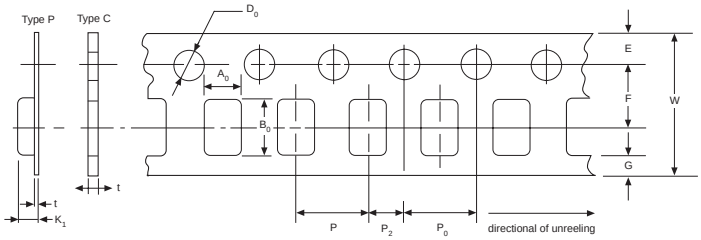
General Purpose Ceramic Chip Capacitors Y5V/Z5U 16V, 25V, 50V/63V Nickel Barrier Terminations for Flow and Reflow Soldering

Capacitance Range

IEC/EIA Dielectric Code	Y5V/Z5U																	
Size Code	0402				0603				0805				1206			1210			1812	
Voltage	10	16	25	50	10	16	25	50	10	16	25	50	16	25	50	16	25	50	25	50
Cap in pF / Cap code																				
10,000 - 103																				
15,000 - 153																				
22,000 - 223																				
33,000 - 333																				
47,000 - 473																				
68,000 - 683																				
100,000 - 104																				
150,000 - 154																				
220,000 - 224																				
330,000 - 334																				
470,000 - 474																				
680,000 - 684																				
1.0µ - 105																				
2.2µ - 225																				
4.7µ - 475																				
10µ - 106																				

Packaging Dimensions

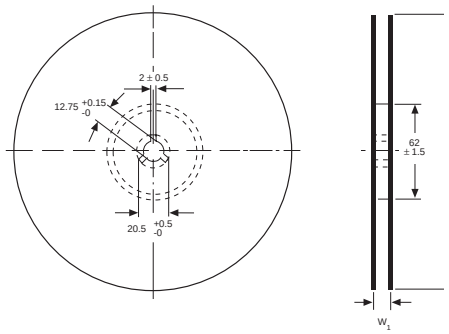
Tape Dimensions (mm)



W	Type	D0	P	P0	P2	E	F	G	t
8.0 ± 0.3	C	1.5 +0.1, -0	4.0 ± 0.1	4.0 ± 0.1	2.0 ± -0.05	1.75 ± 0.1	3.5 ± 0.05	0.75 min	1.1 max
8.0 ± 0.3	P	1.5 +0.1, -0	4.0 ± 0.1	4.0 ± 0.1	2.0 ± 0.05	1.75 ± 0.1	3.5 ± 0.05	0.75 min	0.3 max
12.0 ± 0.3	P	1.5 +0.1, -0	8.0 ± 0.1	4.0 ± 0.1	2.0 ± 0.05	1.75 ± 0.1	5.5 ± 0.05	0.75 min	0.1 max

C = Card P = Plastic

Reel Dimensions (mm)



Nom. Tape Width	A	W1
8	180 or 330 +0-2	8.4 +1.5-0
12	180 or 330 +0-2	12.4 +2-0

Ceramic Surface Mount Multi-Layer DS

Performance Characteristics

1. Electrical

Dielectric Code (IEC/EIA)	COG	X7R	Y5V
General	COG dielectrics are very stable. Temperature, frequency and time vary little.	X7R dielectrics offer higher capacitance for a given case size than COG.	Y5V dielectrics offer the highest capacitance for a given case size than COG.
Examples of Applications	Typical applications are in tuned circuits, timing circuits and fast rise time circuits.	Applications would include bypass, coupling and filtering circuits.	Applications would include bypass and decoupling circuits or where temperature dependence is not of major importance.
Temperature Range	-55 to +125°C (IEC) -55 to +125°C (EIA)	-55 to +125°C (IEC) -55 to +125°C (EIA)	-25 to +85°C (IEC) -30 to +85°C (EIA)
Insulation Resistance (I.R.) after 1 min charging at Rated Voltage	> 100G ohms or 1000 sec whichever is less	> 100G ohms or 1000 sec whichever is less	> 10G ohms or 100 sec whichever is less
Voltage Ratings dc	63/50. 100, 200, 500	25, 63/50, 100, 200, 500	63/50
Proof Voltage	2.5 x rated voltage	2.5 x rated voltage	2 x rated voltage
Max allowable Capacitance Variation over Temperature Range	C > 20pF: 0 ± 300ppm/°C C ≤ 20pF: see CECC 32 101-801	± 20% (IEC 2C1) ± 15% (EIA X7R) ± 15% (IEC 2R1)	+30% to -80% (IEC 2F4) +22% to -82% (EIA Y5V)
Measuring conditions for Capacitance and Tangent of Loss Angle	1MHz, 1Vrms (± 0.2) for C ≤ 1000pF 1KHz, 1Vrms (± 0.2) for C > 1000pF	1KHz, 1Vrms (± 0.2)	1KHz, 0.3Vrms (± 0.1)
Tangent of Loss Angle (tan ∂)	≤ 0.001 for C > 50pF ≤ $(\frac{150}{C}+7)$ X 10-4 for C ≤ 50pF	≤ 0.025	≤ 0.03
Climatic Category (IEC 68)	55/125/56	55/125/56	25/085/56
Ageing Characteristic	Zero	Typ. 1.0% per time decade	Typ. 4% per time decade

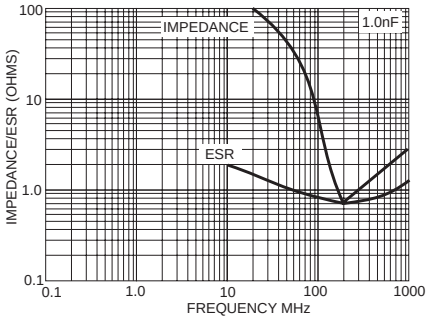
2. Environment

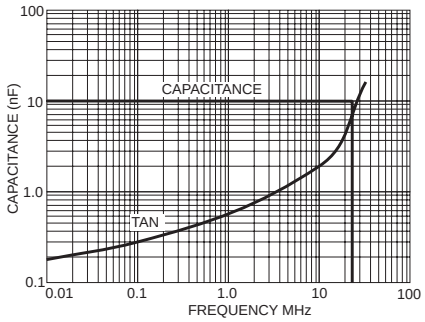
Test	Conditions	Requirement
Solderability	Components completely immersed in a solder bath at 230 ± 10°C for 5 secs.	Terminations to be well tinned
Adhesion	Component mounted to a substrate a force of 5N applied normal to the line joining the termination and in a line parallel to the substrate.	No visible damage
Termination Bond Strength	Tested as shown in diagram	No damage Δ C/C ≤ ± 1% or 1pF COG Δ C/C ≤ ± 10% X7R Δ C/C ≤ ± 20% Y5V
Rapid change or Temperature	-55 to +125°C, 5 cycles (1B, 2C1) -25 to +85°C, 5 cycles (2F4)	No visible damage. After recovery Δ C/C ≤ ± 1% or 1pF COG ≤ ± 10% X7R ≤ ± 20% Y5V Tan ∂ ≤ 1.5 x specified value IR. ≥ 0.25 x specified value
Endurance (1000 hrs)	1000 hrs at maximum temperature with 1.5 X rated voltage applied.	Δ C/C ≤ ± 2% or 2pF COG ≤ ± 10% X7R ≤ ± 20% Y5V Tan ∂ ≤ 1.5 x specified value I.R. ≥ 0.25 x specified value

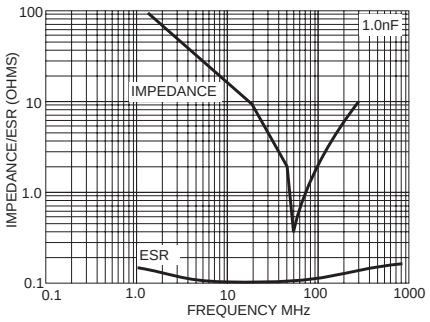
3. Ageing

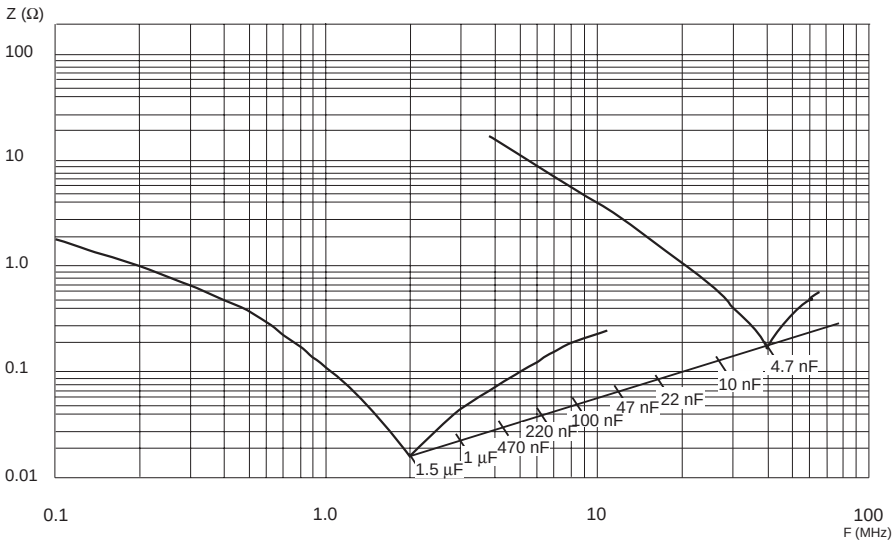
Capacitance and impedance will vary depending on circuit operating conditions and the type of dielectric used - typical performance graphs relating to these materials are shown below.

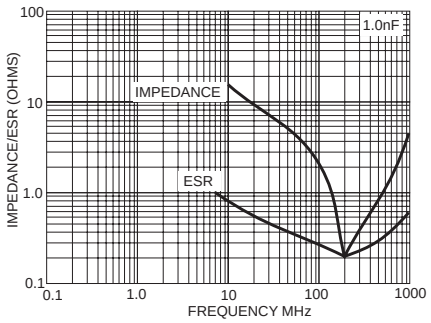
3.1 Frequency

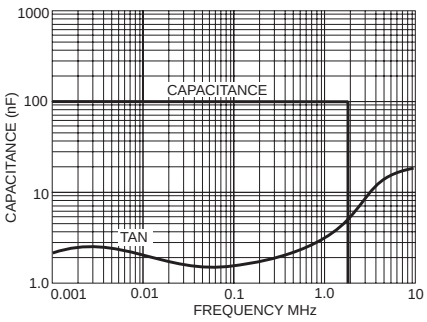




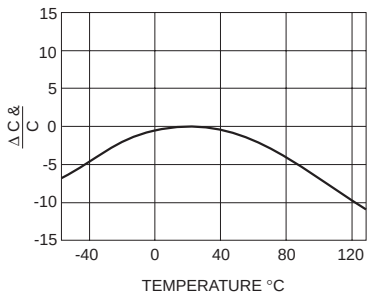


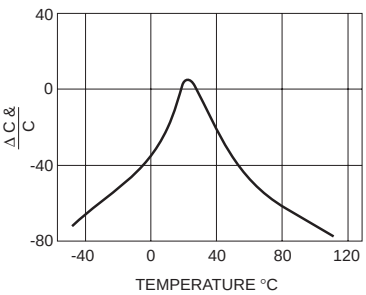


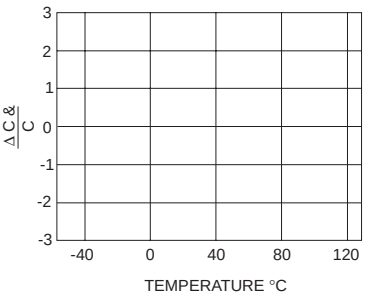




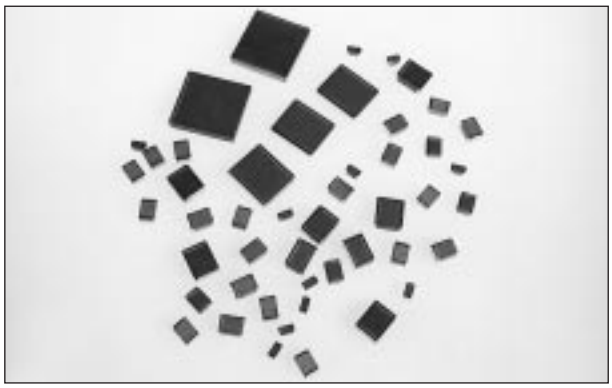
3.2 Temperature







Ceramic SMD Multi-Layer High Voltage DSHV



- Available up to 5kV
- COG(NPO), X7R and Z5U Dielectrics
- Higher voltages possible
- For applications including small modular power supplies
- Excellent for surface mount placement machines

Specification

	COG	X7R	Z5U
Dielectric classification	COG (NPO)	X7R	Z5U
Rated temperature range	-55˚C to +125˚C	-55˚C to +125˚C	+10˚C to +85˚C
Max. capacitance change over temp. range. No DC voltage supplied	0 ± 30ppm/˚C	±15%	+22-56%
Tangent of loss angle (tanδ)	Cr>50pF≤0.0010 Cr≤50pF=0.0010 (15 +0.7) / Cr	≤0.025	≤0.030
Insulation resistance (Ri) Time constant (Ri X Cr) (whichever is less)	100GΩ or 1000s	100GΩ or 1000s	10GΩ or 100s
Dielectric strength	Voltage applied for 5 seconds. Charging current limited to 50mA maximum.		
500V	1.5 times	1.5 times	1.5 times
≥1KV	1.5 times	1.25 times	-
Climate category	55/125/56	55/125/56	25/085/56
Ageing characteristics (Typical)	Zero	1% per time decade	6% per time decade

Tolerances

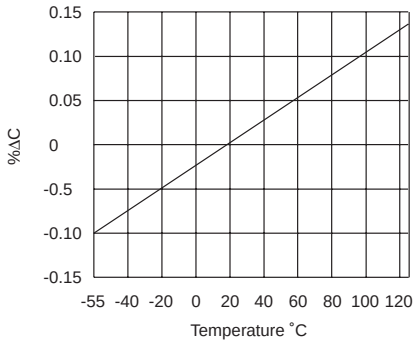
Dielectric	COG	X7R	Z5U
Capacitance Tolerance	Cr<10pF ± 0.10pF (B) ± 0.25pF (C) ± 0.50pF (D) Cr≥10pF ± 1% (F) ± 2% (G) ± 5% (J) ± 10% (K)	± 5% (J) ± 10% (K) ± 20% (M)	± 20% (M) -20+80% (Z)

Ordering Information

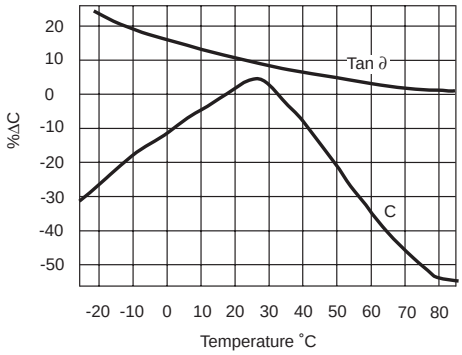
DSHV	J	1206	C	470	J	N
Range	Voltage	Size	Dielectric	Value	Tolerance	Plating
	J = 500V M = 1KV P = 2KV R = 3KV T = 4KV V = 5KV	1206 1210 1812 2220 2225 3640 5550 8060	C = COG (NPO) R = X7R W = Z5U	Example 101 = 100pF 102 = 1nF 103 = 10nF 104 = 100nF	See Above for code	N = Nickel Barrier E = Silver Enhanced

Ceramic SMD Multi-Layer High Voltage DSHV

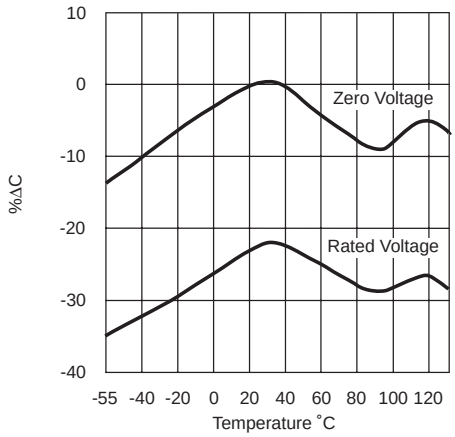
Capacitance Vs Temperature - COG



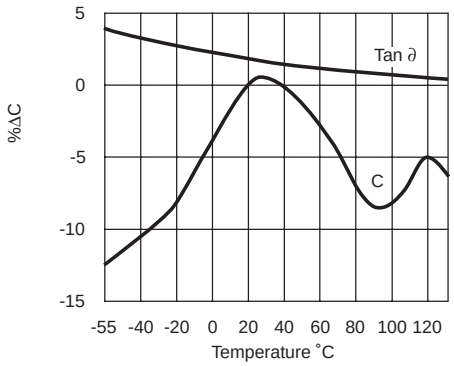
Capacitance & Tan Vs Temperature - Z5U



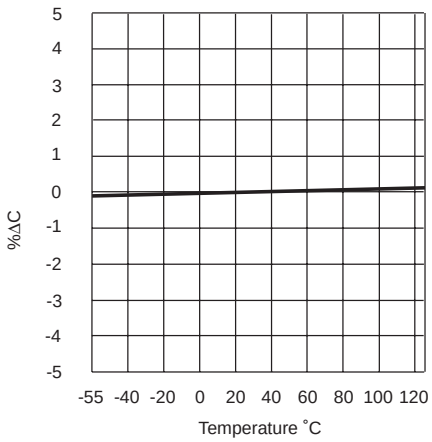
Temperature/Voltage Characteristics - X7R



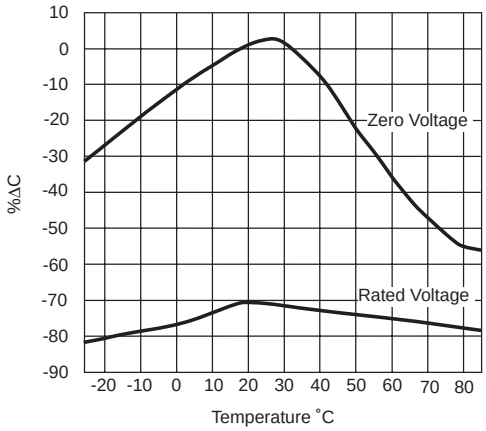
Capacitance & Tan Vs Temperature - X7R



Temperature/Voltage Characteristics - COG



Temperature/Voltage Characteristics - Z5U

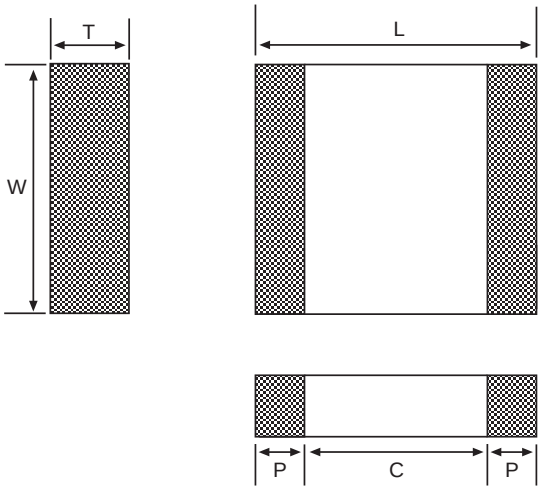


Ceramic SMD Multi-Layer High Voltage DSHV

Dimensions (mm)

Size Code	L (mm)	W (mm)	T max (mm)	P	
				min (mm)	max (mm)
1206	3.2±0.3	1.6±0.2	1.6	0.25	0.75
1210	3.2±0.3	2.5±0.3	2	0.25	0.75
1812	4.5±0.35	3.2±0.3	2.5	0.25	0.75
2220	5.7±0.4	5.0±0.4	2.5	0.25	0.75
2225	5.7±0.4	6.3±0.4	2.5	0.25	0.75
3640	9.2±0.5	10.2±0.5	2.5	0.5	1.5
5550	14.0±0.5	12.7±0.5	2.5	0.5	1.5
8060	20.3±0.5	15.2±0.5	2.5	0.5	1.5

Outline



Capacitance Range - 500V

Capacitance	1206	1210	1812
	COG X7R	COG	COG
1.0pF			
1.2			
1.5			
1.8			
2.2			
2.7			
3.3			
3.9			
4.7			
5.6			
6.8			
8.2			
10			
12			
15			
18			
22			
27			
33			
39			
47			
56			
68			
82			
100			
120			
150			
180			
220			
270			
330			

Ceramic SMD Multi-Layer High Voltage DSHV

Capacitance Range - 500V (contd.)

Capacitance	1206			1210			1812			2220			2225			3640		5550		8060	
	COG	X7R	Z5U	COG	X7R	Z5U	COG	X7R	Z5U	COG	X7R	Z5U	COG	X7R	Z5U	COG	X7R	COG	X7R	COG	X7R
390pF																					
470																					
560																					
680																					
820																					
1.0nF																					
1.2																					
1.5																					
1.8																					
2.2																					
2.7																					
3.3																					
3.9																					
4.7																					
5.6																					
6.8																					
8.2																					
10nF																					
12																					
15																					
18																					
22																					
27																					
33																					
39																					
47																					
56																					
68																					
82																					
100																					
120																					
150																					
180																					
220																					
270																					
330																					
390																					
470																					
560																					
680																					
820																					
1.0µF																					
1.2																					
1.5																					
1.8																					
2.2																					
2.7																					
3.3																					

Ceramic SMD Multi-Layer High Voltage DSHV

Capacitance Range - 1KV, 2KV

Capacitance	1206	1210	1812		2220		2225		3640		5550		8060	
	COG	COG	COG	X7R	COG	X7R	COG	X7R	COG	X7R	COG	X7R	COG	X7R
	1KV	1KV	1KV 2KV	1KV 2KV	1KV 2KV	1KV 2KV	1KV 2KV	1KV 2KV	1KV 2KV	1KV 2KV	1KV 2KV	1KV 2KV	1KV 2KV	1KV 2KV
1.0pF														
1.2														
1.5														
1.8														
2.2														
2.7														
3.3														
3.9														
4.7														
5.6														
6.8														
8.2														
10pF														
12														
15														
18														
22														
27														
33														
39														
47														
56														
68														
82														
100														
120														
150														
180														
220														
270														
330														
390														
470														
560														
680														
820														
1.0nF														
1.2														
1.5														
1.8														
2.2														
2.7														
3.3														
3.9														
4.7														
5.6														
6.8														
8.2														

Ceramic SMD Multi-Layer High Voltage DSHV

Capacitance Range - 1KV, 2KV contd.

Capacitance	1812	2220		2225		3640		5550	8060	
	X7R	X7R		X7R		COG	X7R	X7R	X7R	
	1KV	1KV	2KV	1KV	2KV	1KV	1KV	1KV	1KV	2KV
10										
12										
15										
18										
22										
27										
33										
39										
47										
56										
68										
82										
100										
120										
150										
180										

Capacitance Range - 3KV, 4KV & 5KV

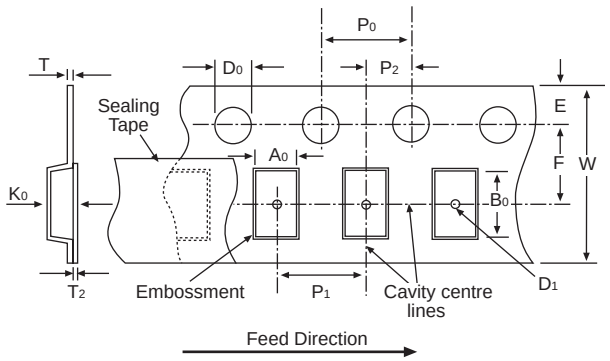
Capacitance	1812	2220	2225	3640		
	COG	COG	COG	COG		
	3KV	3KV	3KV	3KV	4KV	5KV
10pF						
12						
15						
18						
22						
27						
33						
39						
47						
56						
68						
82						
100						
120						
150						
180						
220						

Ceramic SMD Multi-Layer High Voltage DSHV

Capacitance Range - 3KV, 4KV & 5KV

Capacitance	2220	2225	3640					5550						8060					
	COG	COG	COG			X7R		COG			X7R			COG			X7R		
	3KV	3KV	3KV	4KV	5KV	3KV	4KV	3KV	4KV	5KV	3KV	4KV	5KV	3KV	4KV	5KV	3KV	4KV	5KV
220	■	■	■	■	■														
270	■		■	■	■														
330		■	■	■	■														
390			■	■						■									
470			■	■		■	■	■	■	■									
560			■	■		■	■	■	■	■			■						
680			■			■	■	■	■				■	■	■	■			
820			■			■	■	■	■				■	■	■	■			
1.0nF			■			■	■	■	■			■	■	■	■	■			
1.2						■	■	■	■			■	■	■	■	■			
1.5						■	■	■	■			■	■	■	■	■			
1.8						■	■	■	■			■	■	■	■	■			
2.2						■	■	■	■			■	■	■	■	■			
2.7						■	■					■	■	■	■	■			
3.3						■	■					■	■	■	■	■			
3.9						■	■					■	■	■	■	■			
4.7						■	■					■	■	■	■	■			
5.6						■	■					■	■						
6.8						■	■					■	■						
8.2						■	■					■	■						
10						■	■										■	■	■
12											■	■	■				■	■	■
15											■	■	■				■	■	■
18											■	■	■				■	■	■
22											■	■	■				■	■	■
27											■	■	■				■	■	■
33																	■	■	■
39																	■	■	■
47																	■	■	■
56																	■	■	■

Tape Dimensions

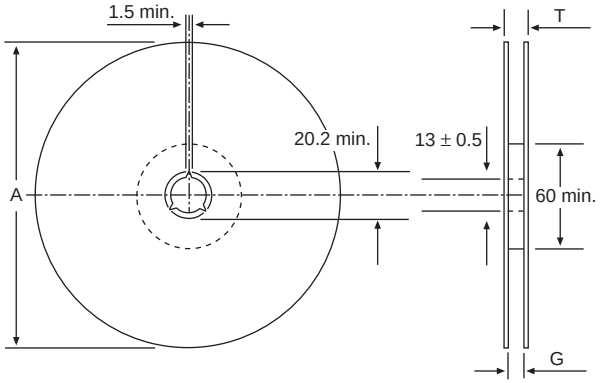


Dimensions (mm)

A_0	Depedant on chip
B_0	size to minimize
K_0	rotation
W	8±0.2
F	3.5±0.05
E	1.75±0.1
P_1	4±0.1
P_2	2±0.05
P_0	4±0.1
D_0	1.5+0.1-0
D_1	1+0.1-0
T	0.3±0.1
T_2	0.1 max.

Ceramic SMD Multi-Layer High Voltage DSHV

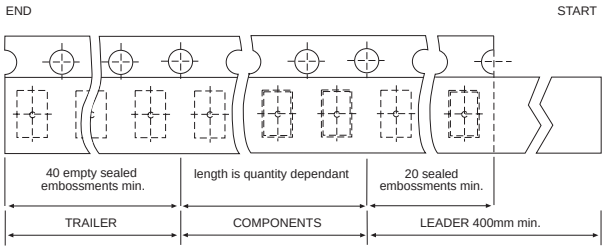
Reel Dimensions (mm)

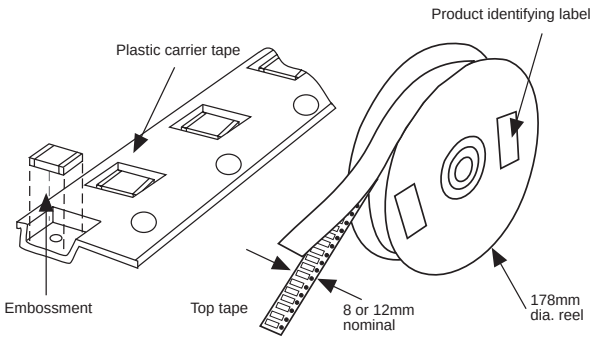


Dimensions (mm)

A	178 ± 2
G	8.4+1.5-0
T	14.4 max.

Leader and trailer





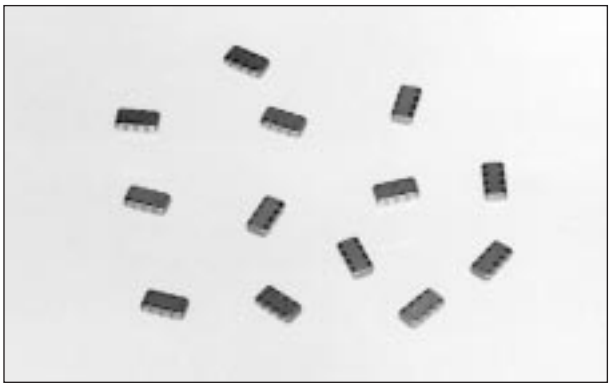
Pack Quantities (all dielectrics)

Chip Size	Pack Quantity
1206	2500 reels
1210	2000 reels
1812	1000 reels
2220	1000 reels
2225	1000 reels
3640	Loose
5550	Loose
8060	Loose

Integrated Capacitor Array

DICA

NEW

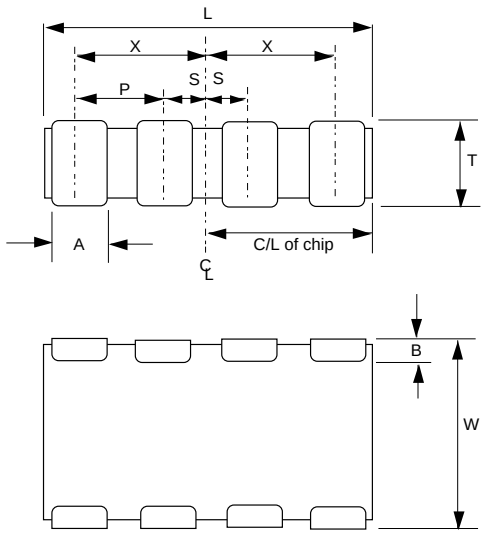


- Available in standard dielectrics
- 0612 size takes less than half the size of four 0603 devices
- Substantial cost savings on placement
- Design ability to reduce PCB size
- Ideal for all applications where multiples of same capacitors used

Specification

	NPO	X7R	Y5V
Capacitance Tolerance (Std)	±10%	±20%	+80% -20%
Dissipation Factor	0.1% max	50 & 100v: 2.5%max 25v:3.0% max 16v:3.5% max	25 & 50v: 5.0% max 16v:7.0% max
Insulation Resistance (+25°C, VDC)	100,000MΩ min. or 1000MΩ-µF min., whichever is less	100,000MΩ min. or 1000MΩ-µF min., whichever is less	10,000MΩmin. or 1000MΩ-µF min., whichever is less
CTE (ppm/°C)	10.5	12.0	9.0
Terminations available	Plated Nickel and Solder		
Thickness (max)	1.3462mm (thickness depends on capacitance value and dielectric)		
Thermal Conductivity	All bodies 4 to 5W / M °K		

Dimensions



Dim	Inches		mm	
	tol	tol		
L	0.126	±0.008	3.2	±0.2
W	0.063	±0.008	1.6	±0.2
T	0.053	max	1.35	max
A	0.016	±0.004	0.41	±0.1
B	0.007	+0.01	0.18	+0.25
			-0.003	-0.08
P	0.030 ref		0.76 ref	
X	0.045	±0.004	1.14	±0.1
S	0.015	±0.004	0.38	±0.1

Ordering Information

DICA	4	U	0612	R	102	K	N
Series	No. of Caps 4	Voltage C = 16v E = 25v U = 50v A = 100v	Case Size 0612	Dielectric C = NPO R = X7R G = Y5V	Value Example 101 = 100pF 102 = 1nF 103 = 10nF	Tolerance K = 10% M = 20% Z = +80-20%	Plating N = Nickel

Integrated Capacitor Array

DICA

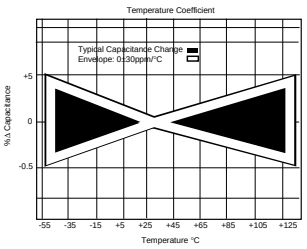
Range

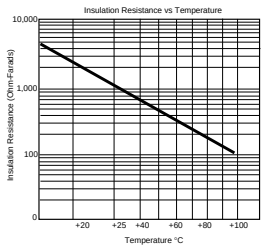
	NPO				X7R				Y5V		
Capacitance	16v	25v	50v	100v	16v	25v	50v	100v	16v	25v	50v
10											
12											
15											
18											
22											
27											
33											
39											
47											
56											
68											
82											
100											
120											
150											
180											
220											
270											
330											
390											
470											
560											
680											
820											
1000											
1200											
1500											
1800											
2200											
2700											
3300											
4700											
5600											
6800											
8200											
10											
12											
15											
18											
22											
27											
33											
39											
47											
56											
68											
82											
100											
120											
150											
180											
220											
270											
330											

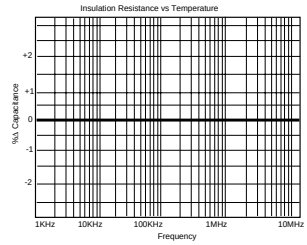
pF

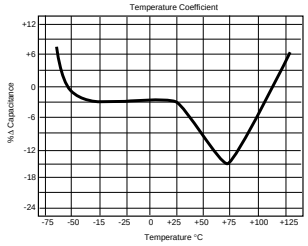
nF

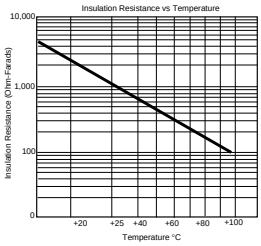
Typical Characteristic Curves NPO Dielectric

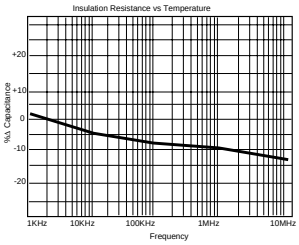




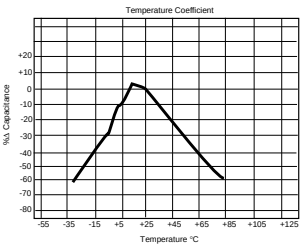


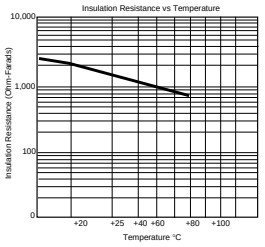


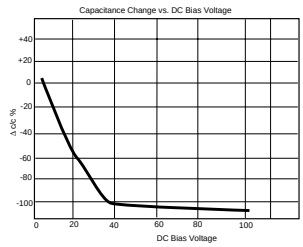




Y5V Dielectric

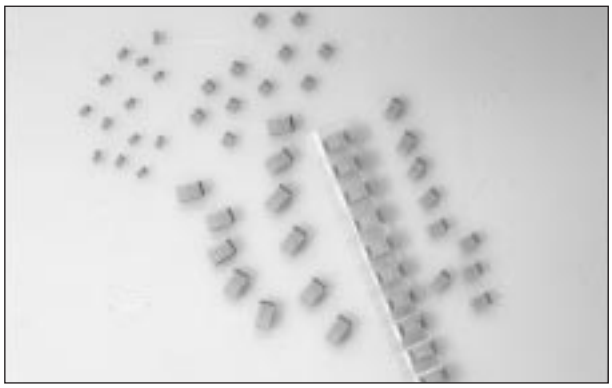


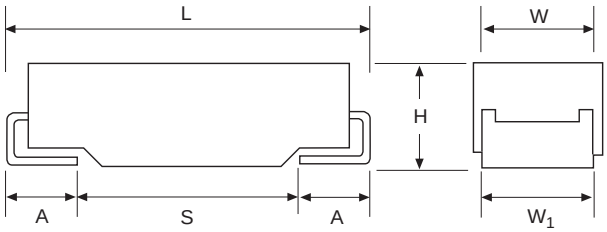




Tantalum Chip

SHJ





Please note that this range is continuously being expanded.
Other case sizes and CV values are available on request.

Case Dimensions

Code	L ± 0.2	W + 0.2-0.1	H + 0.2-0.1	W1 + 0.1-0.2	A + 0.3	S Min.
A	3.2	1.6	1.6	1.2	0.8	1.1
B	3.5	2.8	1.9	2.2	0.8	1.4
C	6.0	3.2	2.6	2.2	1.3	2.9
D	7.3	4.3	2.9	2.4	1.3	4.4
E	7.3	4.3	4.1	2.4	1.3	4.4

All dimensions in mm.
W1 dimension applies to the termination width for A dimensional area only.
Pad Stand-off is 0.1 ± 0.1

Reel Sizes

Case

A	2,000
B	2,000
C	500
D	500
E	400

- Standard footprints
- 125˚C operation (with de-rating)

The SHJ series compliments the well-known SH for users requiring surface-mount.

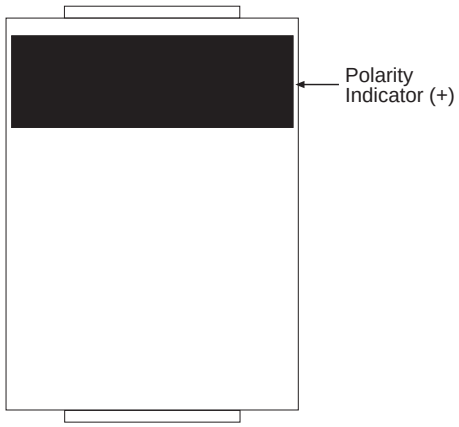
All product is supplied on plastic embossed tape as standard in full reel sizes.

Please note: as technology improves size reduction may be possible. If in doubt please call Sales office.

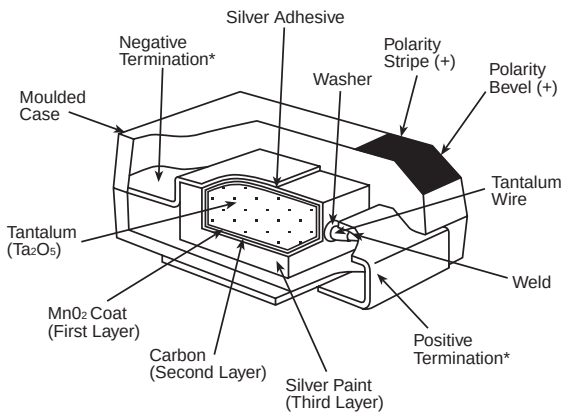
Low profile available.

Temperature	-55 to +125°C (with voltage de-rating)
Life Time	2,000 Hours @ +85˚C
Tolerance	± 10% standard (± 20% available)
Leakage Current	<0.01CV or 0.5µA whichever larger (>5 mins.)

Polarity



Construction Diagram



*Termination Solder Coating 90 Sn/10Pb

Ordering Information

SHJ	B	10	16	K
Dubilier Tant SMT	Case size	µf value	Voltage	Tolerance K = 10% M = 20%

RS24077

Tantalum Chip

SHJ

Range & Case Codes

Capacitance µF	Rated Voltage DC							
	4V std/ext	6.3V std/ext	10V std/ext	16V std/ext	20V std/ext	25V std/ext	35V std/ext	50V std/ext
0.1							A	A
0.15							A	B/A
0.22							A	B/A
0.33							A	B
0.47						A	B/A	C/B
0.68					A	A	B/A	C
1.0				A	A	A	B/A	C
1.5			A	A	A	B/A	C/B	D/C
2.2		A	A	B/A	B/A	B	C/B	D
3.3	A	A	A	B/A	B/A	C/B	C/B	D
4.7	A	A	B/A	B/A	C/B/A	C/B	D/C	D
6.8	A	B/A	B/A	C/B/A	C/B	D/C	D/C	E/D
10	B/A	B/A	C/B/A	C/B	C/B	D/C	D	E
15	B/A	C/B/A	C/B	C/B	D/C	D	D	
22	C/B/A	C/B	C/B	D/C	D/C	D	E	
33	C/B	C/B	D/C	D/C	D	E/D	E	
47	D/C/B	D/C/B	D/C	D	E/D	E		
68	D/C	D/C	D/C	D	E			
100	D/C	D/C	D	E/D	E			
150	D	D	E/D	E				
220	E/D	E/D	E/D	E				
330	E	E/D	E					
470	E	E						

Ratings and Number Reference

Part No.	Case size	Capacitance µF max	IL (µA)	DF % max	ESR max (Ω) @100KHz
4 volts					
SHJA3.34	A	3.3	0.5	6	9.0
SHJA4.74	A	4.7	0.5	6	7.5
SHJA6.84	A	6.8	0.5	6	6.5
SHJA104	A	10	0.5	6	6.0
SHJA154	A	15	0.6	6	4.0
SHJA224	A	22	0.9	6	3.5
SHJB104	B	10	0.5	6	4.0
SHJB154	B	15	0.6	6	3.0
SHJB224	B	22	0.9	6	2.5
SHJB334	B	33	1.4	6	2.8
SHJB474	B	47	1.9	6	2.4
SHJC224	C	22	1.4	6	2.3
SHJC334	C	33	1.9	6	2.0
SHJC474	C	47	1.9	6	1.8
SHJC684	C	68	2.7	6	1.6
SHJC1004	C	100	4	6	1.3
SHJD474	D	47	1.9	6	1.8
SHJD684	D	68	2.7	6	1.1
SHJD1004	D	100	4.0	6	0.9
SHJD1504	D	150	6.0	6	0.9
SHJD2204	D	220	8.8	8	0.9
SHJE4704	E	470	29.6	8	0.9

Part No.	Case size	Capacitance µF max	IL (µA)	DF % max	ESR max (Ω) @100KHz
6.3 volts					
SHJA 2.26.3	A	2.2	0.5	6	9.0
SHJA 3.36.3	A	3.3	0.5	6	7.0
SHJA156.3	A	15	1	6	3.5
SHJB 6.86.3	B	6.8	0.5	6	4.0
SHJD3306.3	D	330	20.8	8	0.9
SHJE 2206.3	E	220	13.2	8	0.9
SHJB 106.3	B	10	0.6	6	3.0
SHJC 156.3	C	15	1.0	6	2.5
SHJC 226.3	C	22	1.4	6	2.0
SHJC1006.3	C	100	6.3	6	1.4
SHJD 476.3	D	47	3.0	6	1.1
SHJD 686.3	D	68	4.3	6	0.9
SHJD2206.3	D	220	13.9	8	0.9
SHJE 330 6.3	E	330	19.8	8	0.9
SHJB336.3	B	33	2.1	6	2.2
SHJB476.3	B	47	3	6	2
SHJE4706.3	E	470	29.6	8	0.9

Ratings and Number Reference - contd.

Part No.	Case size	Capacitance µF max	IL (µA)	DF % max	ESR max (Ω) @100KHz
10 volts					
SHJA 1.510	A	1.5	0.5	6	10.0
SHJA 2.210	A	2.2	0.5	6	7.0
SHJA6.810	A	6.8	0.7	6	4
SHJA1010	A	10	1	6	3
SHJB 4.710	B	4.7	0.5	6	4.0
SHJB 6.810	B	6.8	0.7	6	3.0
SHJC 1010	C	10	1.0	6	2.5
SHJC 1510	C	15	1.5	6	2.0
SHJC6810	C	68	6.8	6	0.9
SHJD 3310	D	33	3.3	6	1.1
SHJD22010	D	220	22	8	0.9
SHJE33010	E	330	33	8	0.9
SHJD 4710	D	47	4.7	6	0.9
SHJE 15010	E	150	15.0	6	0.9
SHJE 22010	E	220	22.0	8	0.9
SHJC4710	C	47	4.7	6	1.2
SHJD15010	D	150	15	8	0.9
16 volts					
SHJA 116	A	1.0	0.5	4	11.0
SHJA 1.516	A	1.5	0.5	6	8.0
SHJA4.716	A	4.7	0.8	6	4
SHJA6.816	A	6.8	1.1	6	2.5
SHJB 2.216	B	2.2	0.5	6	5.5
SHJB 3.316	B	3.3	0.5	6	4.5
SHJB 4.716	B	4.7	0.8	6	3.5
SHJB1516	B	15	2.4	6	2.5
SHJC 6.816	C	6.8	1.1	6	2.5
SHJC 1016	C	10	1.6	6	2.0
SHJC3316	C	33	5.3	6	1.5
SHJD 2216	D	22	3.5	6	1.1
SHJD 3316	D	33	5.3	6	0.9
SHJD10016	D	100	16	6	0.9
SHJE 10016	E	100	16.0	6	0.9
SHJE15016	E	150	24	8	0.9
SHJE22016	E	220	35.2	8	0.9
20 volts					
SHJA 0.6820	A	0.68	0.5	4	12.0
SHJA 120	A	1.0	0.5	4	9.0
SHJA2.220	A	2.2	0.5	6	5.3
SHJA3.320	A	3.3	0.7	6	4.5
SHJA4.720	A	4.7	1	6	4
SHJB 2.220	B	2.2	0.5	6	3.5
SHJB 3.320	B	3.3	0.7	6	3.0
SHJB6.8	B	6.8	1.4	6	2.5
SHJC 4.720	C	4.7	1.0	6	2.8
SHJB1020	B	10	2	6	2.1
SHJC 6.820	C	6.8	1.4	6	2.0
SHJD 1520	D	15	3.0	6	1.1
SHJC2220	C	22	4.4	6	1.6
SHJD 2220	D	22	4.4	6	0.9
SHJD 3320	D	33	6.6	6	0.9
SHJD4720	D	47	9.4	6	0.9
SHJE 4720	E	47	9.4	6	0.9
SHJE 6820	E	68	13.6	6	0.9
SHJE10020	E	100	20	8	0.9

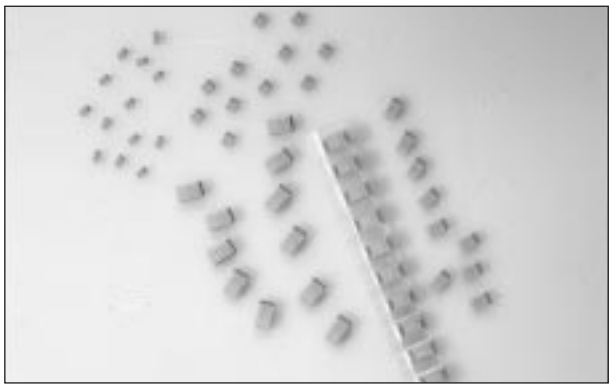
Part No.	Case size	Capacitance µF max	IL (µA)	DF % max	ESR max (Ω) @100KHz
25 volts					
SHJA 0.4725	A	0.47	0.5	4	14.0
SHJA 0.6825	A	0.68	0.5	4	10.0
SHJA1.525	A	1.5	0.5	6	7.5
SHJB 1.525	B	1.5	0.5	6	5.0
SHJB 2.225	B	2.2	0.6	6	4.5
SHJB4.725	B	4.7	1.2	6	2.8
SHJC 3.325	C	3.3	0.9	6	2.8
SHJC 4.725	C	4.7	1.2	6	2.4
SHJD 6.825	D	6.8	1.7	6	1.4
SHJD 1025	D	10	2.5	6	1.2
SHJD 1525	D	15	3.8	6	1.0
SHJD3325	D	33	6.6	6	0.9
SHJE 3325	E	33	8.3	6	0.9
SHJE4725	E	47	11.7	8	0.9
35 volts					
SHJA 0.135	A	0.1	0.5	4	24.0
SHJA 0.1535	A	0.15	0.5	4	21.0
SHJA 0.2235	A	0.22	0.5	4	18.0
SHJA 0.3335	A	0.33	0.5	4	15.0
SHJA135	A	1	0.5	4	7.5
SHJB 0.4735	B	0.47	0.5	4	10.0
SHJB 0.6835	B	0.68	0.5	4	8.0
SHJB 135	B	1.0	0.5	4	6.5
SHJB3.335	B	3.3	1.2	6	3.5
SHJC6.835	C	6.8	2.4	6	1.8
SHJC 1.535	C	1.5	0.5	6	4.5
SHJC 2.235	C	2.2	0.8	6	3.5
SHJC 3.335	C	3.3	1.2	6	2.5
SHJD 4.735	D	4.7	1.6	6	2.2
SHJD 6.835	D	6.8	2.4	6	1.3
SHJD 1035	D	10	3.5	6	1.0
SHJE 2235	E	22	7.7	6	0.9
SHJE3355	E	33	8.3	6	0.9
50 volts					
SHJA 0.150	A	0.1	0.5	4	22.0
SHJB 0.1550	B	0.15	0.5	4	17.0
SHJB 0.2250	B	0.22	0.5	4	14.0
SHJB 0.3350	B	0.33	0.5	4	12.0
SHJB0.4750	B	0.47	0.5	4	10
SHJC 0.4750	C	0.47	0.5	4	8.0
SHJC 0.6850	C	0.68	0.5	4	7.0
SHJC 150	C	1.0	0.5	4	5.5
SHJC1.550	C	1.5	0.8	6	
SHJD 1.550	D	1.5	0.8	6	4.0
SHJD 2.250	D	2.2	1.1	6	2.5
SHJD 3.350	D	3.3	1.7	6	2.0
SHJD 4.750	D	4.7	2.4	6	1.4
SHJE6.850	E	6.8	3.4	6	
SHJE1050	E	10	5	8	

All technical data relates to an ambient temperature of +25˚C measured at 120Hz, 0.5V RMS unless otherwise stated.

DUBILIER RESERVES THE RIGHT TO SUPPLY HIGHER VOLTAGE RATINGS IN THE SAME CASE SIZE WITH THE SAME RELIABILITY STANDARDS.

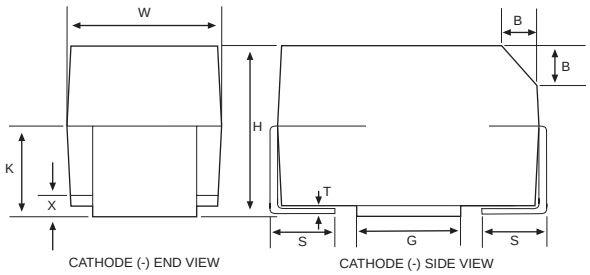
Tantalum Chip

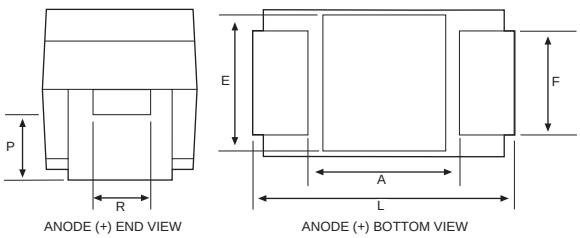
TCJ



- Meets or exceeds EIA Standard 536BAAC
- Taped and reeled per EIA 481-1
- Laser-marked case
- Extended range values
- 125˚C with Derating

Capacitance 0.1µF to 220µF
Tolerance ± 10%, ± 20%
Voltage 4-50 VDC





Case Dimensions

Case Size		Component													
Code	EIA/ IECQ	L*	W*	H*	K* ± 0.20	F* ± 0.1	S* ± 0.3	B (ref) ± 0.15	X (Ref)	P (Ref)	R (Ref)	T (Ref)	A (Min)	G (Ref)	E (Ref)
A	3216	3.2 ± 0.2	1.6 ± 0.2	1.6 ± 0.2	0.9	1.2	0.8	0.4	0.10 ± 0.10	0.4	0.4	0.13	0.8	1.1	1.3
B	3528	3.5 ± 0.2	2.8 ± 0.2	1.9 ± 0.2	1.1	2.2	0.8	0.4	0.10 ± 0.10	0.5	1.0	0.13	1.1	1.8	2.2
C	6032	6.0 ± 0.3	3.2 ± 0.3	2.5 ± 0.3	1.4	2.2	1.3	0.5	0.10 ± 0.10	0.9	1.0	0.13	2.5	2.8	2.4
D	7343	7.3 ± 0.3	4.3 ± 0.3	2.8 ± 0.3	1.5	2.4	1.3	0.5	0.10 ± 0.10	0.9	1.0	0.13	3.8	3.5	3.5
E	7343H	7.3 ± 0.3	4.3 ± 0.3	4.0 ± 0.3	2.3	2.4	1.3	0.5	0.10 ± 0.10	1.7	1.0	0.13	3.8	3.5**	3.5**

All dimensions in mm.
(Ref) - Dimensions provided for reference only.
* - Mil-C-55365/8 Specified Dimensions.
** - Round Glue Pad: 2.9 ± 0.1mm in diameter at manufacturers option.

Ordering Information

TCJ	B	10	16	K
Dubilier Tant SMT	SMT Case size	µf value	Voltage	Tolerance K = 10%

RS24077

Tantalum Chip

TCJ

Capacitance - STANDARD CV Values

Cap.	4V	6V	10V	16V	20V	25V	35V	50V
104							A	A
154							A	B
224							A	B
334						A	A	B
474						A	B	C
684					A	A	B	C
105				A	A	B	B	C
155			A	A	A	B	C	D
225		A	A	A	B	C	C	D
335	A	A	A	B	B	C	C	D
475	A	A	B	B	C	C	D	
685	A	B	B	C	C	C	D	
106	B	B	C	C	C	D		
156	B	C	C	C	D			
226	C	C	C	D	D			
336	C	C	D	D	D			
476	C	D	D	D				
686	D	D	D					
107	D	D						
157	D							

Capacitance - EXTENDED CV Values

Cap.	4V	6V	10V	16V	20V	25V	35V	50V
104								
154								A
224								
334								
474							A	B
684								
105						A		
155								C
225					A	B		
335				A	A			
475			A	A	B		C	D
685		A	A	B	B			E
106	A	A	B	B	B	C	D	
156	A	B	B	B	C		E	
226	B	B	B	C	C	D	E	
336	B	B	C	C		E		
476	B	C	C		D			
686	C	C		D	E			
107	C		D	E	E			
157		D	E	E				
227		E	E					
337		E						
477	E							

Ratings and Number Reference

Part No.	Case size	Cap. µF max.	DC leakage µA @ 25˚C max.	DF % @ 25˚C 120 Hz max.	ESR Ω @ 25˚C 100KHz max.
4 volts @ 85˚C					
TCJA2.24K	A	2.2	0.5	6.0	8.0
TCJA3.34K	A	3.3	0.5	6.0	8.0
TCJA4.74K	A	4.7	0.5	6.0	8.0
TCJA6.84K	A	6.8	0.5	6.0	6.0
TCJA104K	A	10.0	0.5	6.0	6.0
TCJA154K	A	15.0	0.6	6.0	4.0
TCJB6.84K	B	6.8	0.5	6.0	6.0
TCJB104K	B	10.0	0.5	6.0	3.5
TCJB154K	B	15.0	0.6	6.0	3.5
TCJB224K	B	22.0	0.9	6.0	3.5
TCJB334K	B	33.0	1.3	6.0	3.5
TCJC154K	C	15.0	0.9	6.0	3.5
TCJC224K	C	22.0	0.9	6.0	1.8
TCJC334K	C	33.0	1.3	6.0	1.8
TCJC474K	C	47.0	1.9	6.0	1.8
TCJC684K	C	68.0	2.7	6.0	1.6
TCJC1004K	C	100.0	4.0	8.0	1.2
TCJD474K	D	47.0	2.9	6.0	1.6
TCJD684K	D	68.0	2.7	6.0	0.8
TCJD1004K	D	100.0	4.0	8.0	0.8
TCJD1504K	D	150.0	6.0	8.0	0.8
TCJD2204K	D	220.0	13.2	8.0	0.7
TCJE2204K	E	220.0	13.2	8.0	0.7
TCJE3304K	E	330.0	13.2	8.0	0.7

Part No.	Case size	Cap. µF max.	DC leakage µA @ 25˚C max.	DF % @ 25˚C 120 Hz max.	ESR Ω @ 25˚C 100KHz max.
6 volts @ 85˚C					
TCJA2.26K	A	2.2	0.5	6.0	8.0
TCJA3.36K	A	3.3	0.5	6.0	8.0
TCJA4.76K	A	4.7	0.5	6.0	6.0
TCJA6.86K	A	6.8	0.5	6.0	6.0
TCJA106K	A	10.0	0.6	6.0	4.0
TCJB6.86K	B	6.8	0.5	6.0	3.5
TCJB106K	B	10.0	0.6	6.0	3.5
TCJB156K	B	15.0	0.9	6.0	3.5
TCJB226K	B	22.0	1.4	6.0	3.5
TCJC156K	C	15.0	0.9	6.0	1.8
TCJC226K	C	22.0	1.4	6.0	1.8
TCJB336K	B	33.0	2.0	6.0	3.0
TCJC336K	C	33.0	2.0	6.0	1.8
TCJC476K	C	47.0	2.9	6.0	1.6
TCJC686K	C	68.0	4.1	6.0	1.2
TCJD476K	D	47.0	2.9	6.0	0.8
TCJD686K	D	68.0	4.1	6.0	0.8
TCJD1006K	D	100.0	6.0	8.0	0.8
TCJD1506K	D	150.0	9.0	8.0	0.7
TCJD2206K	D	220.0	13.2	8.0	0.7
TCJE2206K	E	220.0	13.2	8.0	0.7
TCJE3306K	E	330.0	19.8	8.0	0.5

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Ratings and Number Reference - contd.

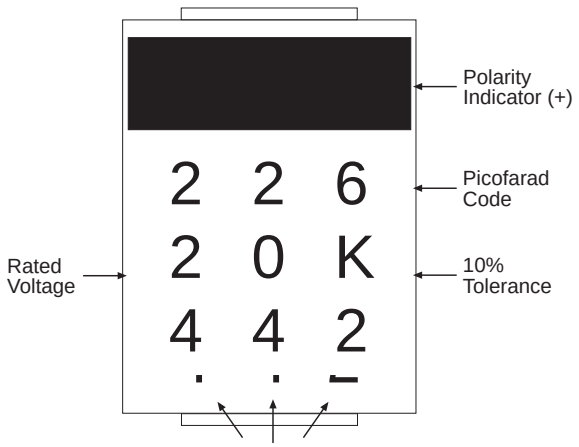
Part No.	Case size	Cap. µF max.	DC leakage µA @ 25˚C max.	DF % @ 25˚C 120 Hz max.	ESR Ω @ 25˚C 100KHz max.
10 volts @ 85˚C					
TCJA1.510K	A	1.5	0.5	6.0	8.0
TCJA2.210K	A	2.2	0.5	6.0	8.0
TCJA3.310K	A	3.3	0.5	6.0	6.0
TCJA4.710K	A	4.7	0.5	6.0	6.0
TCJA6.810K	A	6.8	0.7	6.0	6.0
TCJA1010K	A	10.0	1.0	6.0	4.0
TCJB4.710K	B	4.7	0.5	6.0	3.5
TCJB6.810K	B	6.8	0.7	6.0	3.5
TCJB1010K	B	10.0	1.0	6.0	3.5
TCJB1510K	B	15.0	1.5	6.0	3.5
TCJB2210K	B	22.0	2.2	6.0	3.0
TCJC1010K	C	10.0	1.0	6.0	1.8
TCJC1510K	C	15.0	1.5	6.0	1.8
TCJC2210K	C	22.0	2.2	6.0	1.8
TCJC3310K	C	33.0	3.3	6.0	1.6
TCJC4710K	C	47.0	4.7	6.0	1.2
TCJD3310K	D	33.0	3.3	6.0	0.8
TCJD4710K	D	47.0	4.7	6.0	0.8
TCJD6810K	D	68.0	6.8	6.0	0.8
TCJD10010K	D	100.0	10.0	8.0	0.7
TCJD15010K	D	150.0	15.0	8.0	0.7
TCJE15010K	E	150.0	15.0	8.0	0.7
TCJE22010K	E	220.0	22.0	8.0	0.5
16 volts @ 85˚C					
TCJA116K	A	1.0	0.5	4.0	10.0
TCJA1.516K	A	1.5	0.5	6.0	8.0
TCJA2.216K	A	2.2	0.5	6.0	6.0
TCJA3.316K	A	3.3	0.5	6.0	6.0
TCJA4.716K	A	4.7	0.8	6.0	6.0
TCJB2.216K	B	2.2	0.5	6.0	15.0
TCJB3.316K	B	3.3	0.5	6.0	3.5
TCJB4.716K	B	4.7	0.8	6.0	3.5
TCJB6.816K	B	6.8	1.1	6.0	3.5
TCJB1016K	B	10.0	1.6	6.0	3.5
TCJB1516K	B	15.0	2.4	6.0	3.0
TCJC6.816K	C	6.8	1.1	6.0	1.9
TCJC1016K	C	10.0	1.6	6.0	1.8
TCJC1516K	C	15.0	2.4	6.0	1.8
TCJC2216K	C	22.0	3.6	6.0	1.6
TCJC3316K	C	33.0	5.3	6.0	1.2
TCJD2216K	D	22.0	3.6	6.0	0.8
TCJD3316K	D	33.0	5.3	6.0	0.8
TCJD4716K	D	47.0	7.5	6.0	0.8
TCJD6816K	D	68.0	10.9	6.0	0.7
TCJD10016K	D	100.0	16.0	8.0	0.7
TCJE10016K	E	100.0	16.0	8.0	0.7
TCJE15016K	E	150.0	24.0	8.0	0.5

Part No.	Case size	Cap. µF max.	DC leakage µA @ 25˚C max.	DF % @ 25˚C 120 Hz max.	ESR Ω @ 25˚C 100KHz max.
20 volts @ 85˚C					
TCJA0.6820K	A	0.68	0.5	4.0	12.0
TCJA120K	A	1.0	0.5	4.0	10.0
TCJA1.520K	A	1.5	0.5	6.0	8.0
TCJA2.220K	A	2.2	0.5	6.0	7.0
TCJA3.320K	A	3.3	0.7	6.0	7.0
TCJB2.220K	B	2.2	0.5	6.0	3.5
TCJB3.320K	B	3.3	0.7	6.0	3.5
TCJB4.720K	B	4.7	1.0	6.0	3.5
TCJB6.820K	B	6.8	1.4	6.0	3.5
TCJB1020K	B	10.0	2.0	6.0	3.0
TCJC4.720K	C	4.7	1.0	6.0	2.4
TCJC6.820K	C	6.8	1.4	6.0	1.9
TCJC1020K	C	10.0	2.0	6.0	1.8
TCJC1520K	C	15.0	3.0	6.0	1.7
TCJC2220K	C	22.0	4.4	6.0	1.2
TCJD1520K	D	15.0	3.0	6.0	1.0
TCJD2220K	D	22.0	4.4	6.0	0.8
TCJD3320K	D	33.0	6.6	6.0	0.8
TCJD4720K	D	47.0	9.4	6.0	0.7
TCJE6820K	E	68.0	13.6	6.0	0.7
TCJE10020K	E	100.0	20.0	8.0	0.5
25 volts @ 85˚C					
TCJA0.3325K	A	0.33	0.5	4.0	15.0
TCJA0.4725K	A	0.47	0.5	4.0	14.0
TCJA0.6825K	A	0.68	0.5	4.0	10.0
TCJA125K	A	1.0	0.5	4.0	8.0
TCJB125K	B	1.0	0.5	4.0	5.0
TCJB1.525K	B	1.5	0.5	6.0	5.0
TCJB3.325K	B	3.3	0.9	6.0	3.5
TCJB2.225K	B	2.2	0.6	6.0	4.5
TCJC2.225K	C	2.2	0.6	6.0	3.5
TCJC3.325K	C	3.3	0.9	6.0	2.5
TCJC4.725K	C	4.7	1.2	6.0	2.4
TCJC6.825K	C	6.8	1.7	6.0	1.9
TCJC1025K	C	10.0	2.5	6.0	1.5
TCJD1025K	D	10.0	2.5	6.0	1.0
TCJD1525K	D	15.0	3.8	6.0	1.0
TCJD2225K	D	22.0	5.5	6.0	0.8
TCJE3325K	E	33.0	8.3	6.0	0.7
35 volts @ 85˚C					
TCJA0.1035K	A	0.10	0.5	4.0	20.0
TCJA0.1535K	A	0.15	0.5	4.0	19.0
TCJA0.2235K	A	0.22	0.5	4.0	18.0
TCJA0.3335K	A	0.33	0.5	4.0	15.0
TCJA0.4735K	A	0.47	0.5	4.0	14.0
TCJB0.4735K	B	0.47	0.5	4.0	8.0
TCJB0.6835K	B	0.68	0.5	4.0	6.5

Ratings and Number Reference - contd.

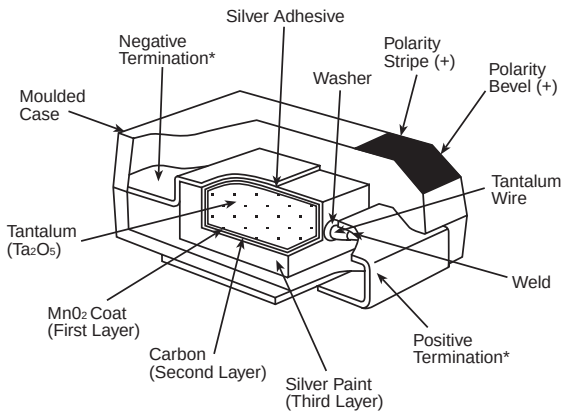
Part No.	Case size	Cap. µF max.	DC leakage µA @ 25˚C max.	DF % @ 25˚C 120 Hz max.	ESR Ω @ 25˚C 100KHz max.
35 volts @ 85˚C - contd.					
TCJB135K	B	1.0	0.5	4.0	5.0
TCJC1.535K	C	1.5	0.5	6.0	4.5
TCJC2.235K	C	2.2	0.8	6.0	3.5
TCJC3.335K	C	3.3	1.2	6.0	2.5
TCJC4.735K	C	4.7	1.7	6.0	2.5
TCJD4.735K	D	4.7	1.7	6.0	1.5
TCJD6.835K	D	6.8	2.4	6.0	1.3
TCJD1035K	D	10.0	3.5	6.0	1.0
TCJD1535K	D	15.0	5.3	6.0	0.8
TCJE1535K	E	15.0	5.3	6.0	0.9
TCJE2235K	E	22.0	7.7	6.0	0.7
50 volts @ 85˚C					
TCJA0.1050K	A	0.10	0.5	4.0	20.0
TCJA0.1550K	A	0.15	0.5	4.0	19.0
TCJB0.1550K	B	0.15	0.5	4.0	16.0
TCJB0.2250K	B	0.22	0.5	4.0	14.0
TCJB0.3350K	B	0.33	0.5	4.0	10.0
TCJB0.4750K	B	0.47	0.5	4.0	9.0
TCJC0.4750K	C	0.47	0.5	4.0	8.0
TCJC0.6850K	C	0.68	0.5	4.0	7.0
TCJC150K	C	1.00	0.5	4.0	5.5
TCJC1.550K	C	1.5	0.8	6.0	4.5
TCJD1.550K	D	1.5	0.8	6.0	3.5
TCJD2.250K	D	2.20	1.1	6.0	2.5
TCJD3.350K	D	3.30	1.7	6.0	2.0
TCJD4.750K	D	4.70	2.4	6.0	1.5
TCJE6.850K	E	6.80	3.5	6.0	1.0

Capacitor Markings



Print Week Code:
1st Digit = Year
2nd & 3rd Digits = Week
i.e. "442" = the 42nd week of 1994

Construction Diagram



*Termination Solder Coating 90 Sn/10Pb

Packaging

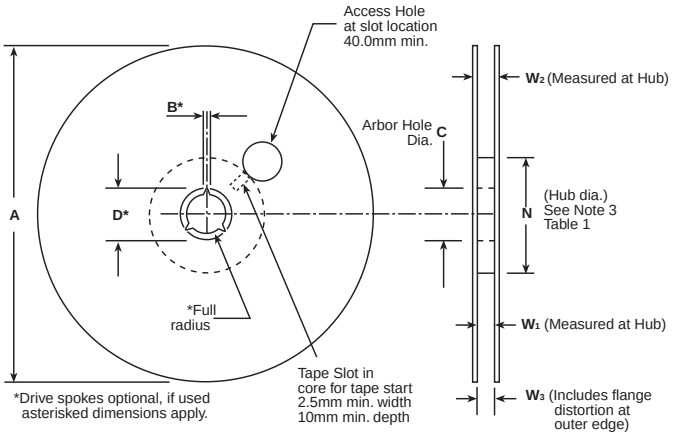
Moulded Tantalum Chip Capacitor families are packaged in 8mm and 12mm plastic tape on 7" and 13" reels, in accordance with EIA Standard 481-1: Taping of Surface Mount Components for Automatic Handling. This packaging system is compatible with all tape and automatic pick and place systems.

1. All moulded tantalum chips shall be oriented in one direction only.
2. Right hand orientation (indicated in diagram below) availableonly.
3. (+) Denotes positive (anode) termination.
4. (–) Denotes negative (cathode) termination.

Quantities Packaged per Reel

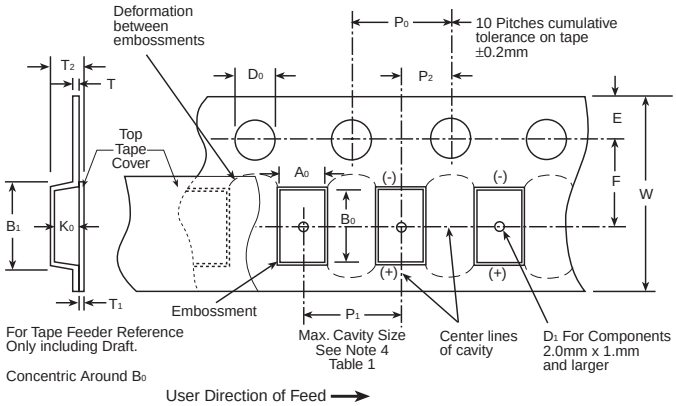
Case Code			
Dubilier	EIA/IECQ	7" Reel	13" Reel
A	3216	2,000	9,000
B	3528	2,000	8,000
C	6032	500	3,000
D	7343	500	2,500
E	7343H	500	2,000

Reel Dimensions



Tape Size	A max.	B min.	C	D min.	N min.	W_1	W_2 max.	W_3
8mm	330.0	1.5	13.0 ± 0.20	20.2	50.0	8.4 + 1.5, –0.0	14.4	7.9 min. 10.9 max.
12mm	330.0	1.5	13.0 ± 0.20	20.2		12.4 + 2.0, –0.0	18.4	11.9min. 15.4 max.

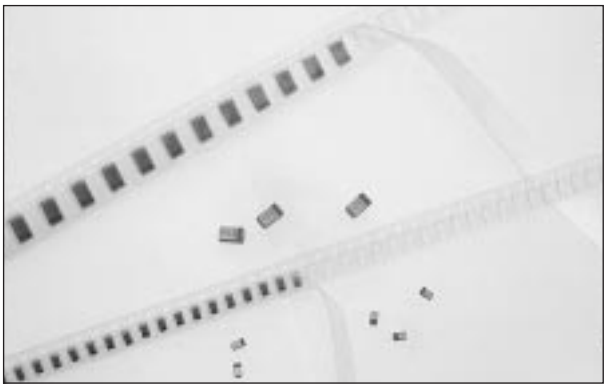
Embossed Tape Dimensions



Constant Dimensions (mm)							
Tape Size	D0	E	P_0	P_2	T max.	T_1 max.	
8mm & 12mm	1.5 + 0.10 – 0.0	1.75 ± 0.10	4.0 ± 0.10	2.0 ± 0.05	0.600	0.100	

Variable Dimensions (mm)								
Tape Size	Pitch	B1 max.	D1 min.	F	P1	R min.	T2 max.	W
8mm	Single (4mm)	4.4	1.0	3.5 ± 0.05	4.0 ± 0.10	25.0	2.5	8.0 + 0.3 – 0.1
12mm	Double (8mm)	8.2	1.5	5.5 ± 0.05	8.0 ± 0.10	30.0	4.6	12.0 ± 0.30

Tantalum Chip - Low ESR — SHJL

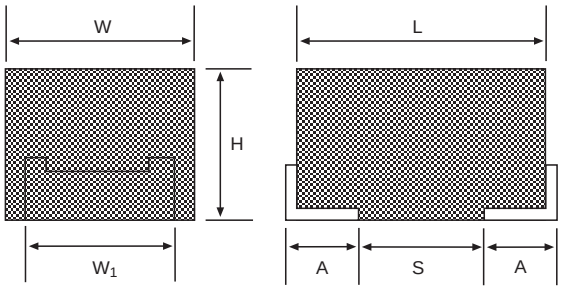


The SHJL surface mount products have inherently low ESR (equivalent series resistance) and is capable of higher ripple current, handling, producing lower ripple voltages, less power and heat dissipation than standard product for the most efficient use of circuit power, and has been particularly designed for typical power supply environments.

SHJL Selection Guide

Cap. (µF)	6.3V	10V	16V	20V	25V	35V
4.7	-	-	-	-	-	C (600mΩ)
10	-	-	-	-	C(500mΩ)	-
15	-	-	-	C(450mΩ)	-	D(300mΩ)
22	-	-	C(375mΩ)	-	D(200mΩ)	E(200mΩ)
33	- -	C(375mΩ) -	- -	D(200mΩ) -	D(200mΩ) E(300mΩ)	- -
47	-	C(350mΩ)	D(200mΩ) D(150mΩ)	E(150mΩ)	-	-
68	-	-	-	E(200mΩ)	-	-
100	C(150mΩ) -	D(100mΩ) D(65mΩ) -	D(150mΩ) E(100mΩ) E(150mΩ)	- -	- -	- -
150	D(125mΩ)	D(100mΩ)	D(100mΩ)	-	-	-
220	D(100mΩ)	E(150mΩ) E(100mΩ)	E(150mΩ)	-	-	-
330	E(150mΩ) D(100mΩ)	-	-	-	-	-

Outline



Dimensions (mm)

Code	EIA Code	L±0.2	W+0.2	H±0.2	W1±0.2	A±0.3	S Min.
C	6032	6.0	3.2	2.6	2.2	1.3	2.9
D	7343	7.3	4.3	2.9	2.4	1.3	4.4
E	7343H	7.3	4.3	4.1	2.4	1.3	4.4

W1 dimension applies to the termination width for A dimensional area only. Pad Stand-off is 0.1±0.1.

Specifications

Technical Data:	All technical data relates to an ambient temperature of +25˚C					
Capacitance Range:	4.7µF to 330µF					
Capacitance Tolerance:	±20%; ±10%					
Rated Voltage DC (VR)≤+85˚C:	6.3	10	16	20	25	35
Category Voltage (VC)≤+125˚C:	4	7	10	13	17	23
Surge Voltage (VS) ≤+85˚C:	8	13	20	26	32	46
≤+125˚C:	5	12	16	20	28	
Temperature Range:	-55˚C to +125˚C					
Environmental Classification:	55/125/56 (IEC 68-2)					
Dissipation Factor:	≤0.06 for E case for CR>10µF					
	≤0.08 for E case with CR≥100µF					

Ordering Information

SHJL	C	10	25	K	XXXX
Range	Case size	µf value	Voltage	Tolerance K=10% M=20%	ESR OHMIC value in mΩ

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Tantalum Chip - Low ESR SHJL

Ratings & Part Number Reference

Dubilier Part No.	ESR Max. mΩ @ 100kHz	Case Size	Capacitance µF	Rated Voltage	DCL Max. µA	DF Max. (%)	100kHz Ripple Current (mA) Ratings		
							25˚C	85˚C	125˚C
SHJLC1006.3	(*)0150	C	100	6.3	6.3	6	753	673	301
SHJLC3310	(*)0375	C	33	10	3.3	6	542	484	217
SHJLC4710	(*)0350	C	47	10	4.7	6	561	501	224
SHJLC2216	(*)0375	C	22	16	3.5	6	542	484	217
SHJLC1520	(*)0450	C	15	20	3	6	494	442	198
SHJLC1025	(*)0500	C	10	25	2.5	6	469	420	188
SHJLC4.735	(*)0600	C	4.7	35	1.6	6	428	383	171
SHJLD1506.3	(*)0125	D	150	6.3	9.5	6	1095	980	438
SHJLD2206.3	(*)0100	D	220	6.3	13.9	6	1049	938	420
SHJLD3306.3	(*)0100	D	330	6.3	20.8	8	1285	1149	514
SHJLD10010	(*)0100	D	100	10	10	6	1225	1095	490
SHJLD10010	(*)065	D	100	10	10	6	1301	1164	520
SHJLD15010	(*)0100	D	150	10	15	6	1049	938	420
SHJLD4716	(*)0200	D	47	16	8.1	6	866	775	346
SHJLD4716	(*)0150	D	47	16	8.1	6	1000	894	400
SHJLD10016	(*)0150	D	100	16	16	6	845	766	343
SHJLD15016	(*)0100	D	150	16	24	8	1033	924	413
SHJLD3320	(*)0200	D	33	20	6.6	6	866	775	346
SHJLD2225	(*)0200	D	22	25	5.5	6	866	775	346
SHJLD3325	(*)0200	D	33	25	8.3	6	908	812	363
SHJLD1535	(*)0300	D	15	35	5.3	6	707	632	283
SHJLE3306.3	(*)0150	E	330	6.3	20.8	8	1049	938	420
SHJLE22010	(*)0150	E	220	10	22	8	1049	938	420
SHJLE22010	(*)0100	E	220	10	22	8	1285	1149	514
SHJLE10016	(*)0150	E	100	16	16	6	1049	938	420
SHJLE10016	(*)0100	E	100	16	16	6	1285	1149	514
SHJLE22016	(*)0150	E	220	16	35.2	8	1033	924	413
SHJLE4720	(*)0150	E	47	20	9.4	6	1000	894	400
SHJLE6820	(*)0200	E	68	20	13.6	6	908	812	363
SHJLE3325	(*)0300	E	33	25	8.3	6	742	663	297
SHJLE2235	(*)0300	E	22	35	7.7	6	908	812	363

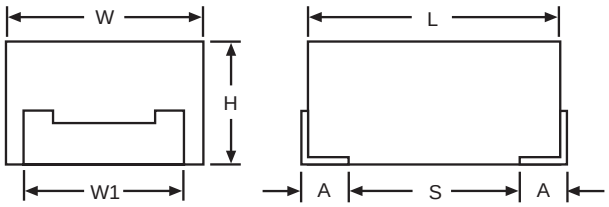
For 10% tolerance, insert 'K' in (*) above. For 20% tolerance, insert 'M' in (*) above.

Note: Voltage ratings are minimum values. We reserve the right to supply higher voltage ratings in the same case size, to the same reliability standards.

Tantalum Chip - Low ESR TCJL

The TCJL surface mount products have inherently low ESR (equivalent series resistance) and is capable of higher ripple voltages, less power and heat dissipation than standard product for the most efficient use of circuit power, and has been particularly designed for typical power supply environments.

Outline



Dimensions (mm)

Code	EIA Code	L±0.3	W±0.3	H±0.3	W1±0.1	A±0.3	S Min.
A	3216	3.2	1.6	1.6	1.2	0.8	0.8
B	3528	3.5	2.8	1.9	2.2	0.8	1.1
C	6032	6	3.2	2.5	2.2	1.3	2.5
D	7343	7.3	4.3	2.8	2.4	1.3	3.8
E	7343H	7.3	4.3	4	2.4	1.3	3.8

W1 dimension refers to the termination width for A dimensional area only.
Pad Stand-off is 0.1±0.1

Technical Data:	All technical data relates to an ambient temperature of +25°C					
Capacitance Range:	10µF to 330µF					
Capacitance Tolerance:	±20%; ±10%					
Rated Voltage DC (VR)≤+85°C:	6.3	10	16	20	25	35
Category Voltage (VC)≤+125°C:	4	7	10	13	17	23
Surge Voltage (VS)≤+85°C:	8	13	20	26	32	46
≤+125°C:	5	12	16	20	28	
Temperature Range:	-55°C to +125°C					
Environmental Classification:	55/125/56 (IEC 68-2)					
Dissipation Factor:	≤0.06 for E case for CR≥10µF					
	≤0.08 for E case with CR≥100µF					

Ordering Information

TCJL	C	10	25	K	XXXX
Range	SMT Case Size	µf value	Voltage	Tolerance K=10% M=20%	ESR OHMIC Value in MΩ

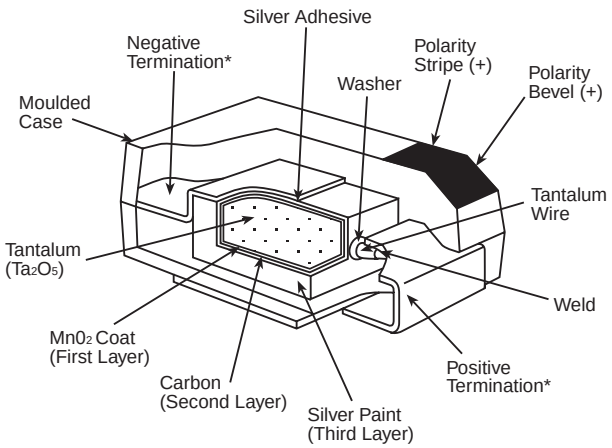
RS24077

Tantalum Chip - Low ESR TCJL

Selection Guide

Capacitance (µF)	6.3v	10v	16v	20v	25v	35v	50v
1	-	-	-	-	A(4000mΩ)	-	C(1600mΩ)
2.2	-	-	-	-	B(1200mΩ)	-	-
4.7	-	-	-	-	-	C(700mΩ)	D(600mΩ)
10	-	-	B(800mΩ)	-	C(600mΩ)	-	-
	-	-	-	-	-	D(300mΩ)	
15	-	-	-	C(400mΩ)	-	D(350mΩ)	-
	-	-	-	D(275mΩ)	D(275mΩ)	D(300mΩ)	
22	-	-	C(350mΩ)	-	D(300mΩ)	E(300mΩ)	-
	-	-	-	-	D(200mΩ)	E(275mΩ)	
33	-	C(300mΩ)	-	D(250mΩ)	E(300mΩ)	-	-
	-	-	-	D(200mΩ)	E(175mΩ)	-	
47	-	C(300mΩ)	D(200mΩ)	D(200mΩ)	-	-	-
	-	-	D(150mΩ)	E(150mΩ)	-	-	
68	-	-	D(150mΩ)	E(200mΩ)	-	-	-
	-	-	-	E(150mΩ)	-	-	
100	-	D(150mΩ)	D(150mΩ)	-	-	-	-
	-	-	D(125mΩ)	-	-	-	-
	-	D(100mΩ)	E(150mΩ)	-	-	-	
	-	-	E(100mΩ)	-	-	-	
150	D(150mΩ)	-	-	-	-	-	-
	-	D(100mΩ)	-	-	-	-	
220	D(150mΩ)	E(150mΩ)	-	-	-	-	-
	D(100mΩ)	E(100mΩ)	-	-	-	-	
330	E(150mΩ)	-	-	-	-	-	-
	E(100mΩ)	-	-	-	-	-	

Construction



*Termination Solder Coating 90 Sn/10Pb

Tantalum Chip - Low ESR TCJL

Ratings & Part Number Reference

Dubilier Part NR	ESR Max mΩ @ 100kHz	Case Size	Capacitance (µF)	Rated Voltage	DCL Max (uA)	DF Max (%)
TCJLD1506.3	(*)0150	D	150	6.3	9	8
TCJLD2206.3	(*)0150	D	220	6.3	13.2	8
TCJLE3306.3	(*)0150	E	330	6.3	19.8	8
TCJLC3310	(*)0300	C	33	10	3.3	6
TCJLC4710	(*)0300	C	47	10	4.7	6
TCJLD10010	(*)0150	D	100	10	10	8
TCJLE22010	(*)0150	E	220	10	22	8
TCJLB1016	(*)0800	B	10	16	1.6	6
TCJLC2216	(*)0350	C	22	16	3.6	6
TCJLD4716	(*)0200	D	47	16	7.5	6
TCJLD6816	(*)0150	D	68	16	10.9	6
TCJLE10016	(*)0150	E	100	16	16	8
TCJLD10016	(*)0150	D	100	16	16	8
TCJLC1520	(*)0400	C	15	20	3	6
TCJLD3320	(*)0250	D	33	20	6.6	6
TCJLD4720	(*)0200	D	47	20	9.4	6
TCJLE6820	(*)0200	E	68	20	13.6	6
TCJLA125	(*)04000	A	1	25	0.5	4
TCJLB2.225	(*)01200	B	2.2	25	0.6	6
TCJLC1025	(*)0600	C	10	25	2.5	6
TCJLD2225	(*)0300	D	22	25	5.5	6
TCJLE3325	(*)0300	E	33	25	8.3	6
TCJLC4.735	(*)0700	C	4.7	35	1.7	6
TCJLD1535	(*)0350	D	15	35	5.3	6
TCJLE2235	(*)0300	E	22	35	7.7	6
TCJLC150	(*)01600	C	1	50	0.5	4
TCJLD4.750	(*)0600	D	4.7	50	2.4	6

Extended Range

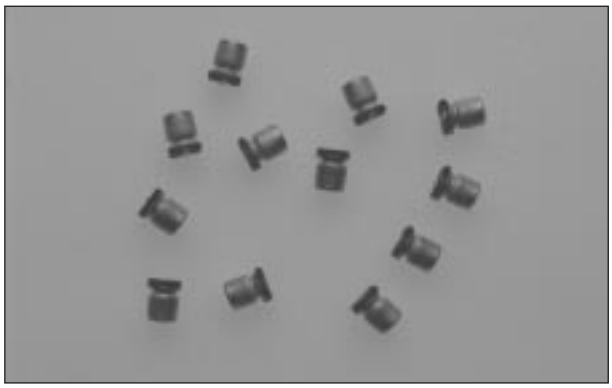
Dubilier Part NR	ESR Max mΩ @ 100kHz	Case Size	Capacitance (µF)	Rated Voltage	DCL Max (uA)	DF Max (%)
TCJLD2206.3	(*)100	D	220	6.3	13.2	8
TCJLE3306.3	(*)100	E	330	6.3	19.8	8
TCJLD10010	(*)100	D	100	10	10	8
TCJLD15010	(*)100	D	150	10	15	8
TCJLE22010	(*)100	E	220	10	22	8
TCJLD4716	(*)150	D	47	16	7.5	6
TCJLD10016	(*)125	D	100	16	16	8
TCJLE10016	(*)100	E	100	16	16	8
TCJLD1520	(*)275	D	15	20	2.4	4
TCJLD3320	(*)200	D	33	20	6.6	6
TCJLE4720	(*)150	E	47	20	7.5	4
TCJLE6820	(*)150	E	68	20	13.6	6
TCJLD1525	(*)275	D	15	25	3.8	6
TCJLD2225	(*)200	D	22	25	5.5	6
TCJLE3325	(*)175	E	33	25	6.6	4
TCJLD1035	(*)300	D	10	35	3.5	6
TCJLD1535	(*)300	D	15	35	5.3	6
TCJLE2235	(*)275	E	22	35	7.7	6

For 10% tolerance, insert 'K' in (*) above. For 20% tolerance, insert 'M' in (*) above.

Note: Voltage ratings are minimum values. We reserve the right to supply higher voltage ratings in the same case size, to the same reliability standards.

Electrolytic - 85˚C

DVC



- 85˚C rated
- Surface-mount
- Standard case-sizes

The DVC allows large capacitance values to be included on a wholly surface-mount board.

The DVC offers a standard footprint, making the product compatible with similar industry-standard devices.

Specifications

Item	Performance Characteristics								
Temperature Range	–40 to +85˚C								
Rated Working Voltage Range	4 to 50V DC								
Nominal Capacitance Range	0.1 to 220µF								
Capacitance Tolerance	± 20% (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								
Dissipation Factor (120Hz, +20˚C)	Working voltage [V]	4	6.3	10	16	25	35	50	
	tan ∂ max.	0.35	0.26	0.20	0.16	0.14	0.12	0.12	
Characteristics at Low Temperature	Impedance Ratio max. at 120Hz								
	Working Voltage [V]	4	6.3	10	16	25	35	50	
	–25˚C / +20˚C	7	4	3	2	2	2	2	
	–40˚C / +20˚C	15	8	6	4	4	3	3	
Endurance	Test Conditions Duration: 2000 hours Applied Voltage: Rated DC working voltage Ambient Temperature: +85˚C Post test requirements at +20˚C Leakage Current: ≤ Initial specified value Capacitance Change: ± 30% of initial measured value tan ∂: ≤ 200% of initial specified value								
Shelf Life	Test Conditions Duration: 1000 hours Ambient Temperature: +85˚C Applied Voltage: (None) Post test requirements at +20˚C Leakage Current: ≤ Initial specified value Capacitance change: ± 30% of initial measured value tan ∂: ≤ 150% of initial specified value								
Resistance to Soldering Heat	Test Conditions Capacitors shall be placed for 30 seconds (termination face down) on a plate heated to +250˚C. Post test requirements at +20˚C Leakage Current: ≤ Initial specified value Capacitance Change: ± 10% of initial measured value tan ∂: ≤ Initial specified value								

Ordering Information

DVC	10	35
Range	Capacitance	Voltage

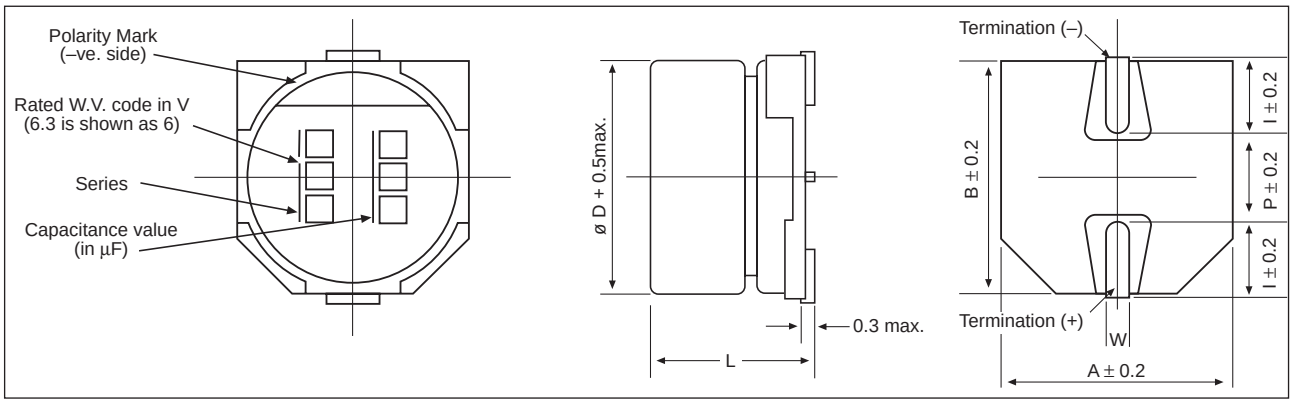
RS24077

Electrolytic - 85˚C

Standard Products

W.V. [V.DC]	Cap. [µF]	Part No.	D.C.L. (+20˚C/2min.) [µA] max.	tan ∂ (120Hz/+20˚C) max.	Ripple Current (120Hz/+85˚C) [mA] rms max.	Size dia./height
4	22	DVC 22 4	3.0	0.35	19	3 x 5.4
	33	DVC 33 4	3.0	0.35	26	4 x 5.4
	47	DVC 47 4	3.0	0.35	34	4 x 5.4
	100	DVC 100 4	4.0	0.35	61	5 x 5.4
	220	DVC 220 4	8.8	0.35	82	6.3 x 5.4
6.3	22	DVC 22 6.3	3.0	0.26	29	4 x 5.4
	47	DVC 47 6.3	3.0	0.26	46	5 x 5.4
	100	DVC 100 6.3	6.3	0.26	71	6.3 x 5.4
	330	DVC 330 6.3	20.7	0.26	300	8 x 6.2
	470	DVC 470 6.3	29.6	0.26	380	8 x 10.2
	680	DVC 680 6.3	42.8	0.26	550	10 x 10.2
	820	DVC 820 6.3	51.7	0.26	660	10 x 10.2
	1000	DVC 1000 6.3	63.0	0.26	700	10 x 10.2
10	33	DVC 33 10	3.3	0.20	43	5 x 5.4
	47	DVC 47 10	4.7	0.20	65	6.3 x 5.4
	100	DVC 100 10	10.0	0.20	73	6.3 x 5.4
	220	DVC 220 10	22.0	0.20	280	8 x 6.2
	330	DVC 330 10	33.0	0.20	330	8 x 10.2
	470	DVC 470 10	47.0	0.20	400	10 x 10.2
16	10	DVC 10 16	3.0	0.16	20	3 x 5.4
	10	DVC 10 16D4	3.0	0.16	28	4 x 5.4
	22	DVC 22 16	3.5	0.16	39	5 x 5.4
	47	DVC 47 16	7.5	0.16	70	6.3 x 5.4
	100	DVC 100 16	16.0	0.16	200	8 x 6.2
	220	DVC 220 16	35.2	0.16	280	8 x 10.2
	330	DVC 330 16	52.8	0.16	380	10 x 10.2
	470	DVC 470 16	75.2	0.16	420	10 x 10.2
25	4.7	DVC 4.7 25	3.0	0.14	12	3 x 5.4
	4.7	DVC 4.7 25D4	3.0	0.14	22	4 x 5.4
	10	DVC 10 25	3.0	0.14	28	5 x 5.4
	22	DVC 22 25	5.5	0.14	55	6.3 x 5.4
	33	DVC 33 25	8.2	0.14	65	6.3 x 5.4
	100	DVC 100 25	25.0	0.14	180	8 x 10.2
	220	DVC 220 25	55.0	0.14	310	10 x 10.2
35	2.2	DVC 2.2 35	3.0	0.12	8	3 x 5.4
	3.3	DVC 3.3 35	3.0	0.12	10	3 x 5.4
	4.7	DVC 4.7 35	3.0	0.12	22	4 x 5.4
	10	DVC 10 35	3.5	0.12	30	5 x 5.4
	22	DVC 22 35	7.7	0.12	60	6.3 x 5.4
	33	DVC 33 35	11.5	0.12	130	8 x 6.2
	47	DVC 47 35	16.5	0.12	165	8 x 6.2
	100	DVC 100 35	35.0	0.12	210	10 x 10.2
50	0.1	DVC 0.1 50	3.0	0.12	1	3 x 5.4
	0.1	DVC 0.1 50 D4	3.0	0.12	1	4 x 5.4
	0.22	DVC 0.22 50	3.0	0.12	2	3 x 5.4
	0.22	DVC 0.22 50 D4	3.0	0.12	2	4 x 5.4
	0.33	DVC 0.33 50	3.0	0.12	3	3 x 5.4
	0.33	DVC 0.33 50 D4	3.0	0.12	3	4 x 5.4
	0.47	DVC 0.47 50	3.0	0.12	5	3 x 5.4
	0.47	DVC 0.47 50 D4	3.0	0.12	5	4 x 5.4
	0.68	DVC 0.68 50	3.0	0.12	7	4 x 5.4
	1.0	DVC 1.0 50	3.0	0.12	8	3 x 5.4
	1.0	DVC 1.0 50 D4	3.0	0.12	8	4 x 5.4
	2.2	DVC 2.2 50	3.0	0.12	10	3 x 5.4
	2.2	DVC 2.2 50 D4	3.0	0.12	10	4 x 5.4
	3.3	DVC 3.3 50	3.0	0.12	18	4 x 5.4
	4.7	DVC 4.7 50	3.0	0.12	23	5 x 5.4
	10	DVC 10 50	5.0	0.12	35	6.3 x 5.4
	22	DVC 22 50	11.0	0.12	120	8 x 6.2
	33	DVC 33 50	16.5	0.12	110	8 x 10.2
	47	DVC 47 50	23.5	0.12	130	10 x 10.2

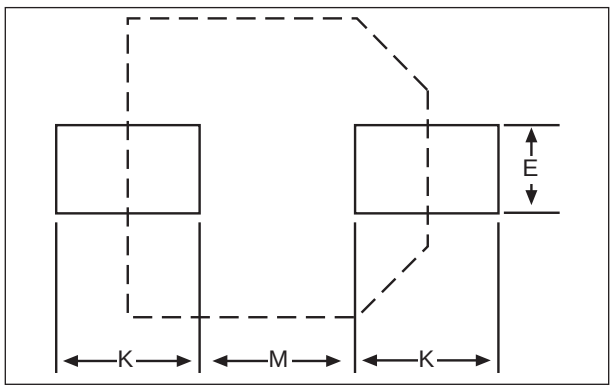
Electrolytic - 85°C DVC



Dimensions in mm

Dia. D	L	A	B	I	P	W
3.0	5.4	3.3	3.3	1.5	0.6	0.45 ~ 0.75
4.0	5.4	4.3	4.3	1.8	1.0	0.5 ~ 0.8
5.0	5.4	5.3	5.3	2.2	1.5	0.5 ~ 0.8
6.3	5.4	6.6	6.6	2.4	2.2	0.5 ~ 0.8
8.0	6.2	8.3	8.3	3.4	2.2	0.5 ~ 0.8
8.0*	10.2	8.3	8.3	2.9	3.2	0.7 ~ 1.0
10.0	10.2	10.3	10.3	3.2	4.6	0.7 ~ 1.0

* - 8.0mm dia. low-profile version is available



Dimensions in mm

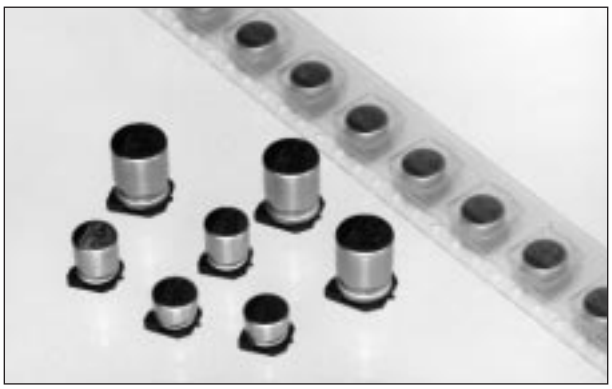
Dia. D	M	K	E
3.0	0.6	2.2	1.5
4.0	1.0	2.5	1.6
5.0	1.5	2.8	1.6
6.3	2.2	3.0	1.6
8.0	2.2	4.5	1.6
8.0*	3.2	4.0	2.0
10.0	4.6	4.3	2.0

* - 8.0mm dia. low-profile version is available

SMD - 85°C Reduced Size

DVCR

NEW



- Cylindrical leadless type for surface mounting
- Low cost, general purpose, 2000 hours at 85°
- New expanded CV Range
- Anti-solvent (2 minutes)
- Designed for automatic mounting and reflow soldering

Specification

Rated Voltage Range	4.0 - 100 Vdc									
Rated Capacitance Range	0.1 - 3300µF									
Operating Temperature Range	-40° - +85°C									
Capacitance Tolerance	±20%(M), ±10%(K)*									
Max. Leakage Current after 2 minutes at 20°C	0.01CV or 3µA, whichever is greater									
Max. Tanδ at 120Hz & 20°C	W.V. (Vdc)		4.0	6.3	10	16	25	35	50	63	100
	3Ø		0.40	0.30	0.24	0.19	0.16	0.14	0.14		
	4~ 6.3Ø		0.35	0.26	0.20	0.16	0.14	0.12	0.10	0.10	0.10
	8Ø ~	C≤1000µF	0.40	0.30	0.24	0.20	0.16	0.14	0.12		
		C=1500µF		0.31	0.25	0.21					
		C=2200µF		0.32	0.32						
		C=3300µF		0.34							
Low Temperature stability (Impedance Ratio at 120Hz)	W.V. (Vdc)		4.0	6.3	10	16	25	35	50	63	100
	Z-40°C/Z +20°C		7	3	3	2	2	2	2	2	2
	Z-55°C/Z +20°C		15	8	6	4	4	3	3	3	3
Load Life Test 85°C 2,000 Hours	Capacitance Change		Within ±25% of initial measured value								
	Tanδ		Less than 200% of specified value								
	Leakage Current		Less than specified value								

Optional ±10%(K) tolerance available on most values. Contact sales office for details.

Maximum Permissable Ripple Current (mA rms @ 120kHz at 85°C)

W.V. (Vdc) /Cap (µF)	4.0	6.3	10	16	25	35	50	63	100
0.1							1.0	1.0	
0.22							2.3	2.3	
0.33							3.5	3.5	
0.47							4.0 5.5	5.0	
1.0							8.0 10	10	10
2.2						8.0	15	15	20
3.3						10	18	20	28
4.7					12 19	20	23	23	35
10				20 25	28	30	34	34	50
22	19	31	35	39	52	54	58	70	120
33	26	39	43	57	63	60	85	160	190
47	34	47	59	68	68	70	90	170	
68					68				
82							200		
100	61	71	76	86	130	130	200	280	
150	74	78	88	135	200	220 220			
220	82	95	150	150	250 250	270	320		
330	102	150	280	280 280	310	340			
390							550		
470	150	300	300 300	330	430				
680		300		450		610			
1000	330	330	450		660				
1500		450		710					
2200			730						
3300		750							

Note the purple figures are optional sizes

Maximum E.S.R. (Ω) at 20°C an 120Hz

W.V. (Vdc) /Cap (µF)	4.0	6.3	10	16	25	35	50
0.1							1660
0.22							754
0.33							503
0.47							353
1.0							166
2.2						90.4	75.4
3.3						60.3	50.3
4.7					4.94	42.3	35.3
10				26.5	23.2	19.9	16.6
22	21.1	18.1	15.1	12.1	10.6	9.05	7.54
33	17.6	12.6	10.1	8.04	7.04	6.04	5.03
47	12.4	8.47	7.06	5.65	4.95	4.24	3.53
100	5.80	3.98	3.32	2.66	2.32	1.99	1.66
150	3.87	2.66	2.21	1.77	1.55	1.33	
220	2.64	1.81	1.51	1.21	1.06	0.91	0.91
330	1.76	1.21	1.01	0.81	0.71		
470	1.24	0.85	0.71	0.57	0.57		
680				0.49			
820		0.40	0.48				
1000		0.40	0.40				
1500		0.33					

Ordering Information

DVCR	47	6.3
Range	Capacitance µF	Voltage

Tel:01371 875758 Fax: 01371 875075
www.dubilier.co.uk

SMD - 85°C Reduced Size DVCR

Range and Case Size DØ X Lmm

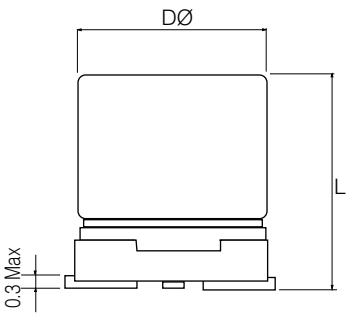
W.V. (Vdc) /Cap (µF)	4.0	6.3	10	16	25	35	50	63	100
0.1							3x5.5 4x5.5	4x5.5	4x6.3
0.22							3x5.5 4x5.5	4x5.5	4x6.3
0.33							3x5.5 4x5.5	4x5.5	4x6.3
0.47							3x5.5 4x5.5	4x5.5	4x6.3
1.0							3x5.5 4x5.5	4x5.5	4x6.3
2.2						3x5.5	4x5.5	4x5.5	6.3x6.3
3.3						3x5.5	4x5.5	5x5.5	6.3x6.3
4.7					3x5.5 4x5.5	4x5.5	5x5.5	5x5.5	6.3x6.3
10				3x5.5 4x5.5	5x5.5	5x5.5	6.3x5.5	6.3x5.5	6.3x8
22	3x5.5	4x5.5	5x5.5	5x5.5	6.3x5.5	6.3x5.5	6.3x6.3	6.3x8	8x10.8
33	4x5.5	5x5.5	5x5.5	6.3x5.5	6.3x5.5	6.3x6.3	6.3x8	8x10.8	10x10.8
47	4x5.5	5x5.5	6.3x5.5	6.3x5.5	6.3x6.3	6.3x6.3	6.3x8	8x10.8	
68					6.3x6.3				
82							10x8		
100	5x5.5	6.3x5.5	6.3x5.5	6.3x5.5	6.3x8	6.3x8	8x10.8	10x10.5	
150	6.3x5.5	6.3x5.5	6.3x6.3	6.3x8	8x10.8	8x10.8 10x8			
220	6.3x5.5	6.3x6.3	6.3x8	6.3x8	8x10.8 10x8	8x10.8	10x10.8		
330	6.3x6.3	6.3x8	8x10.8	8x10.8 10x8	8x10.8	10x10.8			
390							12.5x14		
470	6.3x8	8x10.8	8x10.8 10x8	8x10.8	10x10.8				
680		10x8		10x10.8		12.5x14			
1000	10x8	8x10.8	10x10.8		12.5x14				
1500		10x10.8		12.5x14					
2200			12.5x14						
3300		12.5x14							

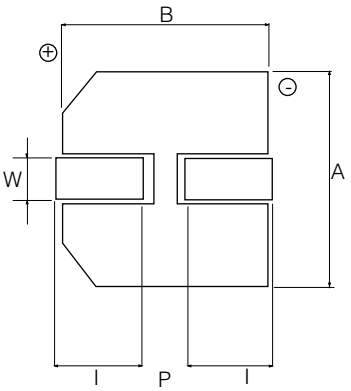
Note the purple figures are optional sizes

Dimensions mm and Standard Reel quantities

Case size	DØ±0.5	L max.	A±0.2	B±0.2	H±0.2	W	P±0.2	Q'ty per Reel
3x5.5	3.0	5.5	3.3	3.3	1.5	0.45 - 0.75	0.6	1,500pcs
4x5.5	4.0	5.5	4.3	4.3	1.8	0.5 - 0.8	1.0	1,500pcs
5x5.5	5.0	5.5	5.3	5.3	2.1	0.5 - 0.8	1.4	1,000pcs
6.3x5.5	6.3	5.5	6.6	6.6	2.5	0.5 - 0.8	2.2	1,000pcs
6.3x6.3	6.3	6.3	6.6	6.6	2.5	0.5 - 0.8	2.2	800pcs
6.3x8	6.3	8.0	6.6	6.6	2.5	0.5 - 0.8	2.2	500pcs
8x10.8	8.0	10.8	8.3	8.3	2.9	0.7 - 1.0	3.2	300pcs
10x10.8	10.0	10.8	10.3	10.3	3.2	0.7 - 1.0	4.6	300pcs
12.5x14	12.5	14	12.8	12.8	4.5	0.7 - 1.0	4.6	200pcs

Outline



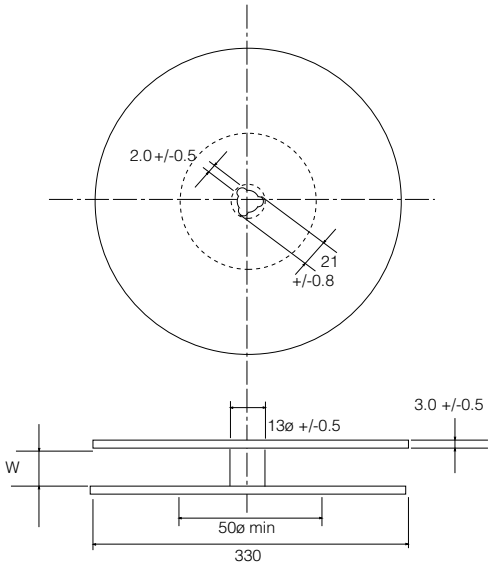


Ripple Current Correction Factor

Frequency Hz	100<F≤1K	1k<F≤10K	10K<F≤100K	F≥100K
C≤4.7µF	1.0	1.3	1.5	2.0
4.7µF<C≤33µF	1.0	1.2	1.3	1.45
C>33µF	1.0	1.1	1.2	1.3

Taping Spec for DVCR and DVJL DVCR and DVJL

Taping Spec

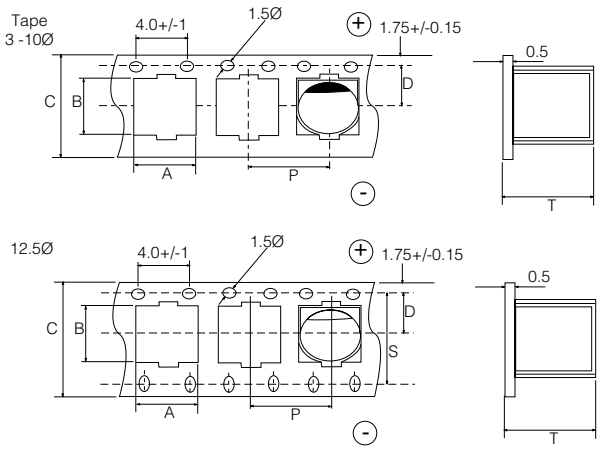


Quantity per Reel

Case size	W ± 1
3x5.5	14.0
4x5.5	14.0
5x5.5	14.0
6.3x5.5	18.0
6.3x6.3	18.0
6.3x8	18.0
8x10.8	26.0
10x8	26.0
10x10.8	26.0
12.5x14	34.0

Tape Dimensions

Case Size	A/B ±0.2	C ±0.3	D ±0.1	P ±0.1	T ±0.2	S ±0.1
3x5.5	3.7	12.0	5.5	8.0	5.8	
4x5.5	4.7	12.0	5.5	8.0	5.8	
5x5.5	5.7	12.0	5.5	12.0	5.8	
6.3x5.5	7.0	16.0	7.5	12.0	5.8	
6.3x6.3	7.0	16.0	7.5	12.0	6.5	
6.3x8	7.0	16.0	7.5	12.0	8.2	
8x10.8	8.7	24.0	11.5	16.0	11.1	
10x8	10.7	24.0	11.5	16.0	8.3	
10x10.8	10.7	24.0	11.5	16.0	11.2	
12.5x14	13.2	32.0	14.2	24.0	14.2	28.4



The carrier tape for 12.5x14mm is standard 32mm embosed plastic tape with a hole perforation at anode side and an oval one at cathode side.

Electrolytic Non Polarised DVCNP

NEW

- Non Polarised SMT Electrolytic 85°C
- Designed for Automatic Insertion and Reflow Soldering
- 5.5mm High

Specification

Rated Voltage Range	6.3 ~ 50Vdc						
Rated Capacitance Range	0.1 ~ 47µF						
Operating Temperature Range	-40° ~+85°C						
Capacitance Tolerance	±20% (M)						
Maximum Leakage Current After 2 minutes At 20°C	0.05CV, or 10µA, whichever is greater						
	W.V. (Vdc)	6.3	10	16	25	35	50
Max. Tanδ @ 120 Hz/20°C	Tanδ @ 120Hz/20°C	0.24	0.2	0.17	0.17	0.15	0.15
Low Temperature.	W.V. (Vdc)	6.3	10	16	25	35	50
Stability	Z-25°C/Z +20°C	4	3	2	2	2	2
Impedance Ratio @ 120Hz	Z-40°C/Z +20°C	8	6	4	4	3	3
Load Life Test	Capacitance Change	Within ±25% of initial measured value					
85°C, 1,000 Hours	Tanδ	Less than 200% of specified value					
(Reverse polarity every 250 hours)	Leakage Current	Less than specified value					

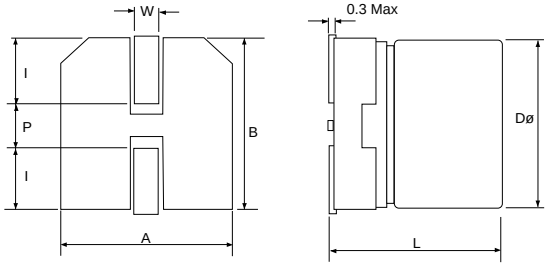
Range and Case Sizes

W.V. (dc)	6.3	10	16	25	35	50
Cap (uF)	dxl	dxl	dxl	dxl	dxl	dxl
0.1						4x5.5
0.22						4x5.5
0.33						4x5.5
0.47						4x5.5
1						4x5.5
2.2					4x5.5	5x5.5
3.3				4x5.5	5x5.5	5x5.5
4.7			4x5.5	5x5.5	5x5.5	6.3x5.5
10		4x5.5	5x5.5	6.3x5.5	6.3x5.5	6.3x5.5
22	5x5.5	6.3x5.5	6.3x5.5			
33	6.3x5.5	6.3x5.5	6.3x5.5			
47	6.3x5.5					

Maximum Permissible Ripple Current (mA rms at 120Hz and 85°C)

W.V.(dc)	6.3	10	16	25	35	50
Cap (uF)						
0.1						1
0.22						2
0.33						2.8
0.47						4
1						8.4
2.2					8.4	13
3.3				12	16	17
4.7			12	16	18	20
10		17	27	29	23	
22	28	33	37			
33	37	41	49			
47	45					

Outline



Dimensions

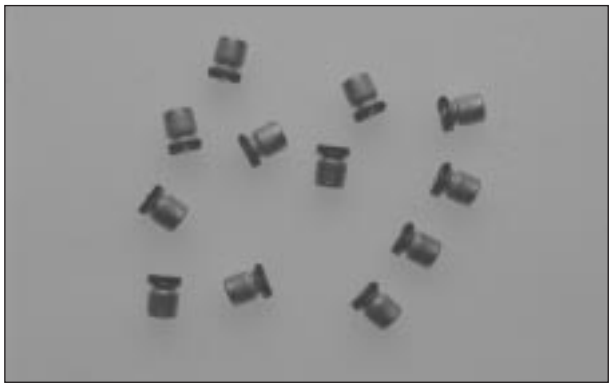
Case Size	DØ ± 0.5	L MAX	A ± 0.2	B ± 0.2	I ± 0.2	W	P ± 0.2
4X5.5	4	5.5	4.3	4.3	1.8	0.5~0.8	
5x5.5	5	5.5	5.3	5.3	2.1	0.5~0.8	1.4
6.3x5.5	6.3	5.5	6.6	6.6	2.5	0.5~0.8	2.2

Ordering Information

DVCNP	4.7	35
Series	Capacitance	Voltage

Electrolytic - 105˚C

DVJ



- 105˚C rated
- Surface-mount
- Standard case-sizes

The DVJ allows large capacitance values to be included on a wholly surface-mount board.

The DVJ offers a standard footprint, making the product compatible with similar industry-standard devices.

Specifications

Item	Performance Characteristics							
Operating Temperature Range	−40 to +105˚C							
Rated Working Voltage Range	6.3 to 50V DC							
Nominal Capacitance Range	0.1 to 100µF							
Capacitance Tolerance	± 20% (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							
Dissipation Factor (120Hz, +20˚C)	Working voltage [V]	6.3	10	16	25	35	50	
	tan ∂ max.	0.30	0.22	0.16	0.14	0.12	0.12	
Characteristics at Low Temperature	Impedance Ratio max. at 120Hz							
	Working Voltage [V]	6.3	10	16	25	35	50	
	−25˚C / +20˚C	4	3	2	2	2	2	
	−40˚C / +20˚C	8	6	4	4	3	3	
Endurance	Test Conditions Duration: 2000 hours Applied Voltage: Rated working voltage Ambient Temperature: +105˚C Post test requirements at +20˚C Leakage Current: ≤ Initial specified value Capacitance Change: ± 20% of initial measured value tan ∂: ≤ 200% of initial specified value							
Shelf Life	Test Conditions Duration: 2000 hours Ambient Temperature: +105˚C Applied Voltage: (None) Post test requirements at +20˚C Leakage Current: ≤ Initial specified value Capacitance change: ± 20% of initial measured value tan ∂: ≤ 200% of initial specified value							
Resistance to Soldering Heat	Test Conditions Capacitors shall be placed for 30 seconds (termination face down) on a plate heated to +230˚C. Post test requirements at +20˚C Leakage Current: ≤ Initial specified value Capacitance Change: ± 10% of initial measured value tan ∂: ≤ Initial specified value							

Ordering Information

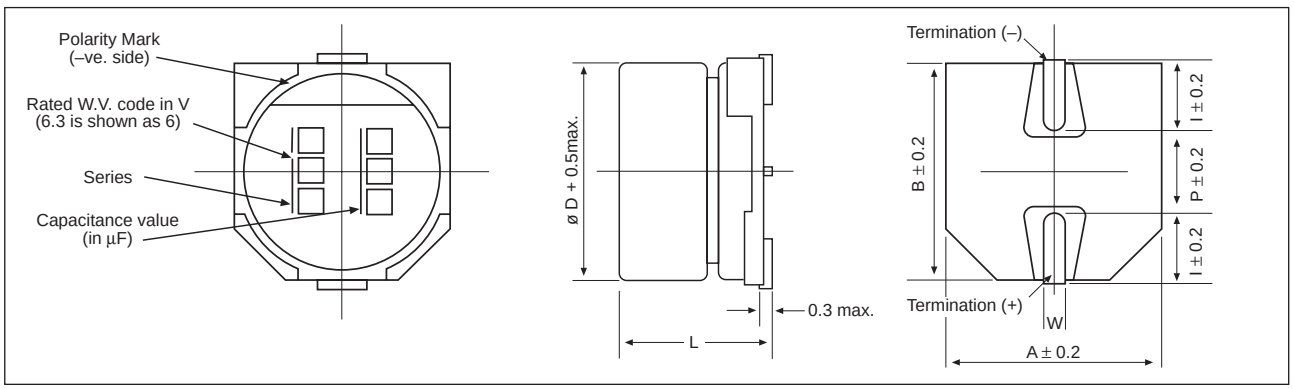
DVJ	10	35
Range	Capacitance	Voltage

RS24077

Electrolytic - 105˚C DVJ

Standard Products

W.V. [V.DC]	Cap. [µF]	Part No.	D.C.L. (+20˚C/2min.) [µA] max.	tan ∂ (120Hz/+20˚C) max.	Ripple Current (120Hz/+105˚C) [mA] rms max.	Size dia./height 95
6.3	22	DVJ 22 6.3	3.0	0.30	29	4 x 5.4
	47	DVJ 47 6.3	3.0	0.30	46	5 x 5.4
	100	DVJ 100 6.3	6.3	0.30	71	6.3 x 5.4
10	33	DVJ 33 10	3.3	0.22	43	5 x 5.4
16	10	DVJ 10 16	3.0	0.16	28	4 x 5.4
	22	DVJ 22 16	3.5	0.16	39	5 x 5.4
	47	DVJ 47 16	7.5	0.16	70	6.3 x 5.4
25	4.7	DVJ 4.7 25	3.0	0.14	22	4 x 5.4
	10	DVJ 10 25	3.0	0.14	28	5 x 5.4
	22	DVJ 22 25	5.5	0.14	55	6.3 x 5.4
	33	DVJ 33 25	8.2	0.14	65	6.3 x 5.4
35	4.7	DVJ 4.7 35	3.0	0.12	22	4 x 5.4
	10	DVJ 10 35	3.5	0.12	30	5 x 5.4
	22	DVJ 22 35	7.7	0.12	60	6.3 x 5.4
50	0.1	DVJ 0.1 50	3.0	0.12	1	4 x 5.4
	0.22	DVJ 0.22 50	3.0	0.12	2	4 x 5.4
	0.33	DVJ 0.33 50	3.0	0.12	3	4 x 5.4
	0.47	DVJ 0.47 50	3.0	0.12	5	4 x 5.4
	1.0	DVJ 1.0 50	3.0	0.12	10	4 x 5.4
	2.2	DVJ 2.2 50	3.0	0.12	16	4 x 5.4
	3.3	DVJ 3.3 50	3.0	0.12	16	4 x 5.4
	4.7	DVJ 4.7 50	3.0	0.12	23	5 x 5.4
	10	DVJ 10 50	5.0	0.12	35	6.3 x 5.4

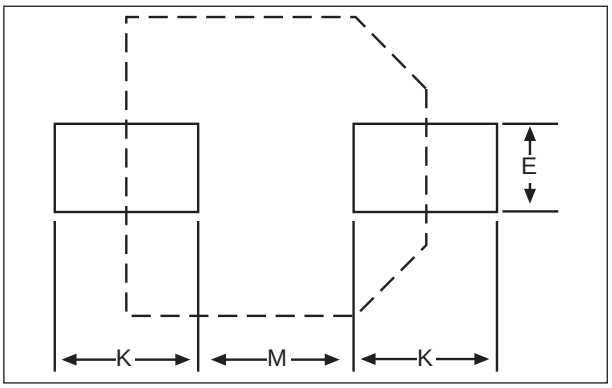


Dimensions

Dia. D	L	A	B	I	P	W
4.0	5.4	4.3	4.3	1.8	1.0	0.5 ~ 0.8
5.0	5.4	5.3	5.3	2.2	.1.5	0.5 ~ 0.8
6.3	5.4	6.6	6.6	2.4	2.2	0.5 ~ 0.8
8.0	6.2	8.3	8.3	3.4	2.2	0.5 ~ 0.8
8.0*	10.2	8.3	8.3	2.9	3.2	0.7 ~ 1.0
10.0	10.2	10.3	10.3	3.2	4.6	0.7 ~ 1.0

* - 8.0mm dia. low-profile version is available

Electrolytic - 105°C DVJ



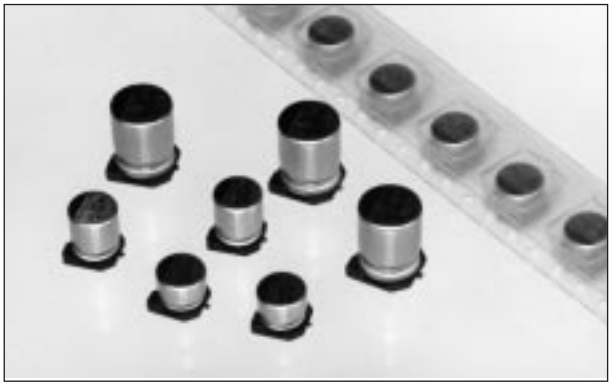
Dimensions in mm

Dia. D	M	K	E
4.0	1.0	2.5	1.6
5.0	1.5	2.8	1.6
6.3	2.2	3.0	1.6
8.0	2.2	4.5	1.6
8.0*	3.2	4.0	2.0
10.0	4.6	4.3	2.0

* - 8.0mm dia. low-profile version is available

NEW

Electrolytic 105°C Reduced Size DVJR



- SMT electrolytic
- Small can sizes
- 105°C temperature 2000 hrs
- New expanded CV range
- Designed for automatic mounting and reflow soldering

Specification

Rated Voltage Range	6.3 ~ 50 Vdc						
Rated Capacitance Range	0.1 ~ 1000µF						
Operating Temperature Range	-55° ~+105°C						
Capacitance Tolerance	±20% (M), ±10%(K) Available on request						
Maximum Leakage Current After 2 minutes At 20°C	0.01CV, or 3µA, whichever is greater						
Surge Voltage	W.V. (Vdc)	6.3	10	16	25	35	50
	S.V. (Vdc)	8.0	13	20	32	44	63
Maximum Tanδ	Ø4 ~ Ø6.3	0.24	0.20	0.16	0.14	0.12	0.10
@ 120Hz/20°C	Ø8	0.28	0.24	0.20	0.16	0.14	0.12
Low Temperature	W.V. (Vdc)	6.3	10	16	25	35	50
Stability	Z-40°C/Z+20°C	3	3	2	2	2	2
Impedance Ratio @ 120Hz	Z-55°C/Z+20°C	8	5	4	3	3	3
Load Life	Capacitance Change	Within ±25% of initial measured value					
Test	tanδ	Less than 200% of specified value					
105°C 1,000 Hrs	Leakage Current	Less than specified value					

Maximum E.S.R. (Ω at 20°C and 120Hz)

W.V. (Vdc) /Cap. (µF)	6.3	10	16	25	35	50
0.1						1660
0.22						754
0.33						503
0.47						353
1.0						166
2.2						75.4
3.3						50.3
4.7				49.4	42.3	35.3
10			26.5	23.2	19.9	16.6
22	18.1	15.1	12.1	10.6	9.05	7.64
33	12.6	10.1	8.04	7.04	6.04	5.03
47	8.47	7.06	5.65	4.95	4.24	3.53
100	3.98	3.32	2.66	2.32	2.32	1.99
150	2.66	2.21	1.77	1.77	1.55	
220	1.81	1.51	1.21	1.21	1.06	
330	1.21	1.21	1.00	0.80		
470	0.99	0.85	0.71			
1000	0.46					

Maximum Permissible Ripple Current (mA rms at 105°C and 120Hz)

W.V. (Vdc) /Cap. (µF)	6.3	10	16	25	35	50
0.1						0.7
0.22						1.6
0.33						2.5
0.47						3.5
1.0						7.0
2.2						11
3.3						13
4.7				13	14	16
10			18	20	21	24
22	22	25	27	36	38	38
33	27	30	40	44	42	59
47	33	41	48	47	49	63
100	50	53	60	91	84	140
150	55	62	95	140	155	
220	66	105	105	175	190	
330	105	195	195	220		
470	210	210	230			
1000	280					

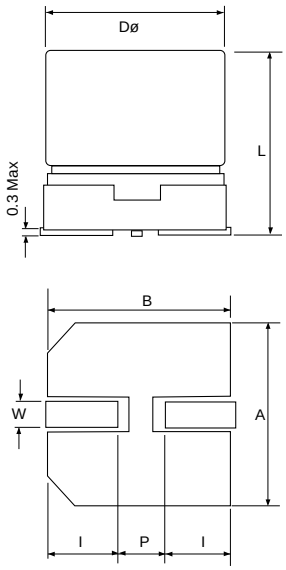
Ordering Information

DVJR	47	35
Series	Capacitance	Voltage

Electrolytic 105°C Reduced Size DVJR

Standard product and case size table DØxL mm

W.V. (Vdc) Cap. (µF)	6.3	10	16	25	35	50
0.1						4x5.5
0.22						4x5.5
0.33						4x5.5
0.47						4x5.5
1.0						4x5.5
2.2						4x5.5
3.3						4x5.5
4.7				4x5.5	4x5.5	5x5.5
10			4x5.5	5x5.5	5x5.5	6.3x5.5
22	4x5.5	5x5.5	5x5.5	6.3x5.5	6.3x5.5	6.3x6.3
33	5x5.5	5x5.5	6.3x5.5	6.3x5.5	6.3x6.3	6.3x8
47	5x5.5	6.3x5.5	6.3x5.5	6.3x6.3	6.3x6.3	6.3x8
100	6.3x5.5	6.3x5.5	6.3x5.5	6.3x8	6.3x8	8x10.8
150	6.3x5.5	6.3x6.3	6.3x8	8x10.8	8x10.8	
220	6.3x6.3	6.3x8	6.3x8	8x10.8	8x10.8	
330	6.3x8	8x10.8	8x10.8	8x10.8		
470	8x10.8	8x10.8	8x10.8			
1000	8x10.8					

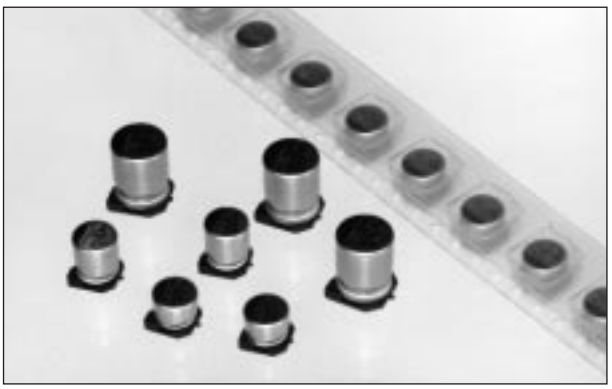


Dimensions mm and standard reel quantities

Case Size	DØ ± 0.5	L max	A ± 0.2	B ± 0.2	I ±0.2	W	P ± 0.2	Q'ty per Reel
4x5.5	4.0	5.5	4.3	4.3	1.8	0.5~0.8	1.0	1,500 pcs
5x5.5	5.0	5.5	5.3	5.3	2.1	0.5~0.8	1.4	1,000 pcs
6.3x5.5	6.3	5.5	6.6	6.6	2.5	0.5~0.8	2.2	1,000 pcs
6.3x6.3	6.3	6.3	6.6	6.6	2.5	0.5~0.8	2.2	800 pcs
6.3x8	6.3	8.0	6.6	6.6	2.5	0.5~0.8	2.2	500 pcs
8x10.8	8.0	10.8	8.3	8.3	2.9	0.7~1.0	3.2	300 pcs

NEW

SMD - 105°C Low Impedance DVJL



- Cylindrical leadless type for surface mounting
- Very low impedance and high ripple current at 100K Hz
- Suitable for DC-DC converter, DC-AC inverter, etc.
- New expanded CV range, up to 1500µF
- Anti-solvent (2 minutes)
- Designed for automatic mounting and reflow soldering

Specification

Rated Voltage Range	6.3 ~ 50 Vdc							
Rated Capacitance Range	4.7 ~ 3300µF							
Operating Temperature Range	-55°~+105°C							
Capacitance Tolerance	±20%(M), ±10%(K)*							
Max. Leakage Current after 2 minutes at 20°C	0.01CV or 3µA, whichever is greater							
Max. Tanδ at 120Hz & 20°C	W.V. (Vdc)		6.3	10	16	25	35	50
	4-6.3 ø		0.24	0.20	0.16	0.14	0.12	0.10
	8Ø ~	C≤1000µF	0.28	0.24	0.20	0.16	0.14	0.12
		C=1500µF	0.29	0.25	0.21			
		C=2200µF	0.30	0.26				
		C=3300µF	0.32					
Low Temperature stability (Impedance Ratio at 120Hz)	W.V. (Vdc)		6.3	10	16	25	35	50
	Z-40°C/Z +20°C		3	2	2	2	2	2
	Z-55°C/Z +20°C		5	4	4	3	3	3
Load Life Test 105°C 1,000 Hours (4-8ø) 105°C 2,000 Hours (10ø)	Capacitance Change		Within ±25% of initial measured value					
	Tanδ		Less than 200% of specified value					
	Leakage Current		Less than specified value					

* Optional ± 10% (K) Tolerance available on most values. Contact Sales Office for details

Maximum Permissable Ripple Current (mA rms @ 100kHz at 105°C)

W.V. (Vdc) / Cap (µF)	6.3	10	16	25	35	50
4.7					80	
10				80	150	165
15			80	150	150	
22		80	150	150	150	165
27	80					
33		150		230	230	185
47	150		230	230	230	185
56	150			230		
68		230	230	230	280	300
100	230		230	280		300
120		230				
150	230		280	450	450	670
220	230	280	280	450	450	670
330	280	450	450	450	670	
470	450	450	450	670		
680	450		670		900	
820		670				
1000	450			900		
1500	870		900			
2200		900				
3300	900					

Maximum Impedance (Ω @ 20° 100kHz)

W.V. (Vdc) / Cap (µF)	6.3	10	16	25	35	50
4.7					1.80	
10				1.80	0.76	0.88
15			1.80	0.76	0.76	
22		1.80	0.76	0.76	0.76	0.88
27	1.80					
33		0.76		0.44	0.44	0.75
47	0.76		0.44	0.44	0.44	0.75
56	0.76			0.44		
68		0.44	0.44	0.44	0.34	0.40
100	0.44		0.44	0.34		0.40
120		0.44				
150	0.44		0.34	0.17	0.17	0.22
220	0.44	0.34	0.34	0.17	0.17	0.22
330	0.34	0.17	0.17	0.17	0.09	
470	0.17	0.17	0.17	0.09		
680	0.17		0.09		0.066	
820		0.09				
1000	0.17	0.09		0.066		
1500	0.09		0.066			
2200		0.066				
3300	0.066					

SMD - 105°C Low Impedance DVJL

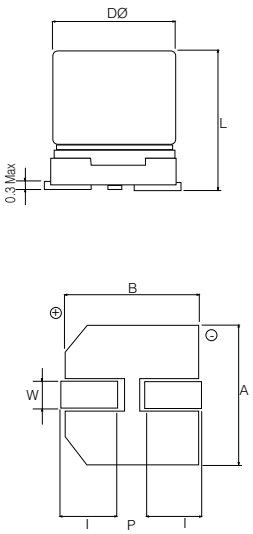
Dimensions mm and Standard reel quantities

Case Size	DØ±0.5	L max	A±0.2	B±0.2	I±0.2	W	P±0.2	Qty per Reel
4x6.3	4.0	6.3	4.3	4.3	1.8	0.5-0.8	0.6	1,200 pcs
5x6.3	5.0	6.3	5.3	5.3	2.1	0.5-0.8	1.0	800 pcs
6.3x6.3	6.3	6.3	6.6	6.6	2.5	0.5-0.8	2.2	800 pcs
6.3x8	6.3	8.0	6.6	6.6	2.5	0.5-0.8	2.2	500 pcs
8x10.8	8.0	10.8	8.3	8.3	2.9	0.7-1.0	3.2	300 pcs
10x8	10.0	8.0	10.3	10.3	3.2	0.7-1.0	4.6	400 pcs
10x10.8	10.0	10.8	10.3	10.3	3.2	0.7-1.0	4.6	300 pcs
12.5x14	12.5	14.0	12.8	12.8	4.5	0.7-1.0	4.6	200 pcs

Range and Case Size DØ x Lmm

W.V.(Vdc) Cap.(µF)	6.3	10	16	25	35	50
4.7					4x6.3	
10				4x6.3	5x6.3	6.3x6.3
15			4x6.3	5x6.3	5x6.3	
22		4x6.3	5x6.3	5x6.3	5x6.3	6.3x6.3
27	4x6.3					
33		5x6.3		6.3x6.3	6.3x6.3	6.3x8
47	5x6.3		6.3x6.3	6.3x6.3	6.3x6.3	6.3x8
56	5x6.3			6.3x6.3		
68		6.3x6.3	6.3x6.3	6.3x6.3	6.3x8	8x10.8
100	6.3x6.3		6.3x6.3	6.3x8		8x10.8
120		6.3x6.3				
150	6.3x6.3		6.3x8	8x10.8	8x10.8 10x8	10x10.8
220	6.3x6.3	6.3x8	6.3x8	8x10.8 10x8	8x10.8	10x10.8
330	6.3x8	8x10.8	8x10.8 10x8	8x10.8	10x10.8	
470	8x10.8	8x10.8 10x8	8x10.8	10x10.8		
680	10x8		10x10.8		12.5x14	
820		10x10.8				
1000	8x10.8	10x10.8		12.5x14		
1500	10x10.8		12.5x14			
2200		12.5x14				
3300	12.5x14					

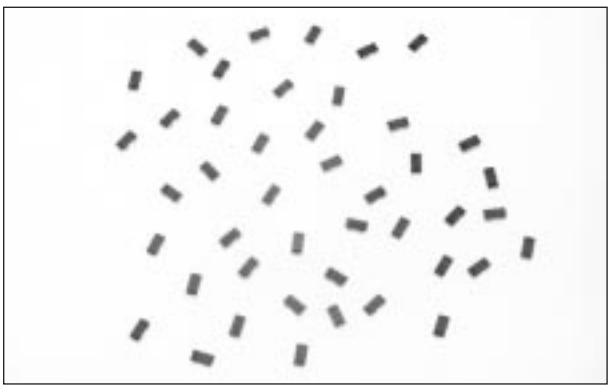
Outline



Ordering Information

DVJL	47	6.3
Range	Capacitance µF	Voltage

EMI Filters - 3 Terminal Chip TFC



The three terminal chip capacitors are ideally suited for EMI supression in digital circuits. Available in two sizes, 1206 and 1806, these devices suppress unwanted noise by grounding the high frequency component.

Manufactured in C0G and X7R dielectrics, the capacitance range offered is 22pF to 22nF, thereby giving the design engineer a wide choice of insertion loss characteristics.

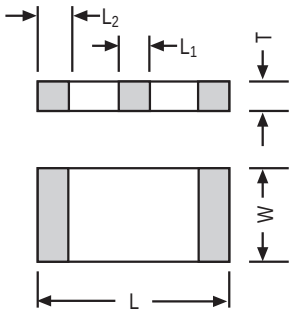
Specifications

Capacitance Tolerance	±20%
Rated voltage	50V DC, 100V DC
Rated current	300mA DC (1806), 200mA DC (1206)
Insulation Resistance	10000 Mohm minimum
DC Resistance	0.35 ohm maximum
Operating Temperature	-55˚C to +125˚C

Range

1206		1806	
C0G	**X7R**	**C0G**	**X7R**
22pF	2.2nF	22pF	2.2nF
47pF	4.7nF	47pF	4.7nF
100pF	10nF/50V	100pF	10nF
220pF	22nF/50V	220pF	22nF
470pF		470pF	
1.0nF		1.0nF	
2.2nF		2.2nF	
All items are 100V DC working except where shown.			

Outline (mm)



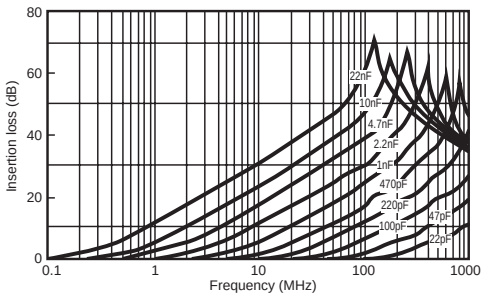
End and side termination material: Ag/Pd or nickel barrier.

	1206	1806
L	3.2±0.3	4.5±0.35
W	1.6±0.2	1.6±0.2
T max	1.3	1.3
L1	0.95±0.3	1.4±0.3
L2	0.5±0.25	

Circuit Configuration

Insertion Loss Characteristics

Typical performance is shown in the graph below.
The actual performance will be influenced by the amount of series inductance added by the interconnections.



Ordering Information

TFC	A	1206	C	221	M	T	E
Range	Voltage U=50V A=100V	Size 1206 1806	Dielectric C=NPO R=X7R	Value 221=220PF 102=INF	Tolerance M=20%	Tape Spec T=Taped	Termination Plating E=Ag/Pd N=Nickel Barrier

RS24077

Tel: 01371 875758 Fax: 01371 875075
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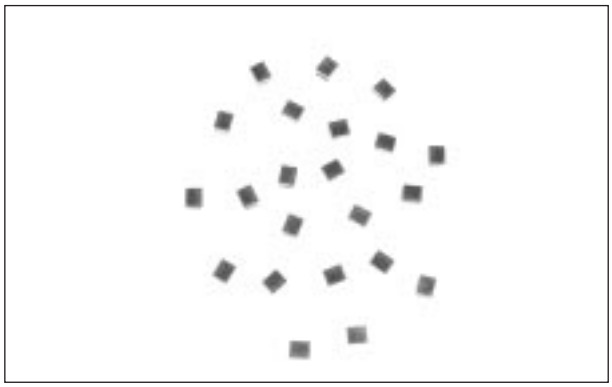
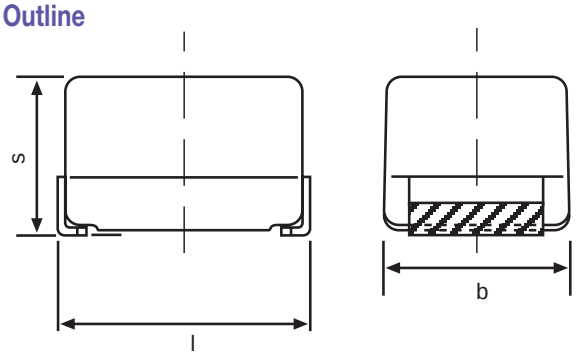
Surface Mount Inductors DCH

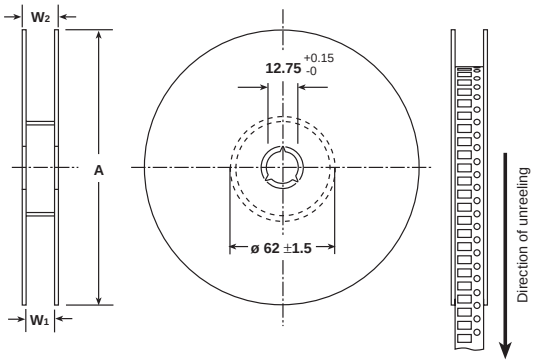


- First class electrical properties
- High packing density
- Flame retardant encapsulation
- Applications include telecoms, automotive, industrial and process control technology

Outline



Taping Specification in accordance with IEC 286-3



Reel Packing Dimensions (mm)

Dim. mm	Sizes/Types		
	0603	0805	1210
A	178 ±2,0	180+0/-4	180+1,5/-0
W1	9 ±0,3	8,4+1,5/-0	8,4 +1,5/-0
W2	-	14,4 max.	14,4 max.
Pieces per reel Ø 180mm	3000	3000	2000

Case size: Dimension	0603	0805	1210
h	0.8	1.25	2.0
l	1.6	2.0	3.2
b	0.8	1.25	2.5
Terminals:	tinned		
Soldering:	IR, vapour phase wave soldering		
Core material:	ceramic or ferrite		
IEC climate category:	55/125/56		
Tolerances available:	±5% (J), ±10% (K), ±20% (M)		

Ordering Information

DCH	1210	150	M
Range	Case Size	Inductance Code	Tolerance J = 5% K = 10% M = 20%

RS24077

Surface Mount Inductors DCH

Range and Specifications

0805

nH	Quality Factor	Measuring Frequency for Inductance	Rated Current mA	DC Resistance Typical	Resonance Frequency Min
10	12	100	540	0,15	2500
12	12	100	535	0,20	2500
15	15	100	535	0,20	2500
18	15	100	510	0,24	2000
22	15	100	495	0,24	2000
27	18	100	460	0,29	1800
33	18	100	430	0,28	1500
39	18	100	410	0,33	1500
47	18	100	390	0,38	1000
56	18	100	380	4,43	1000
68	18	100	370	0,42	800
82	18	100	350	0,53	800
100	10	25,2	300	0,58	800
120	10	25,2	280	0,74	600
150	10	25,2	235	1,12	600
180	10	25,2	210	1,23	600
220	10	25,2	200	1,41	500
270	10	25,2	165	1,50	300
330	10	25,2	185	1,67	200
390	10	25,2	175	1,74	150
470	10	25,2	165	1,67	150
560	10	25,2	150	2,07	100
680	10	25,2	150	2,32	100
820	10	25,2	140	2,60	80
1000	8	7,96	130	2,98	80

0603

nH	Quality Factor	Measuring Frequency for Inductance	Rated Current mA	DC Resistance Typical	Resonance Frequency Min
1,5	8	100	500	0,07	6000
1,8	8	100	500	0,08	6000
2,2	8	100	500	0,09	6000
2,7	8	100	500	0,10	6000
3,3	9	100	500	0,12	5500
3,9	9	100	450	0,15	5500
4,7	9	100	450	0,17	4800
5,6	9	100	430	0,18	4600
6,8	9	100	430	0,20	3550
8,2	9	100	400	0,28	3500
10	10	100	400	0,32	2800
12	10	100	400	0,35	2800
15	10	100	350	0,41	2500
18	10	100	350	0,45	2300
22	10	100	300	0,50	2000
27	10	100	300	0,55	2000
33	10	100	300	0,60	1800
39	11	100	300	0,80	1800
47	11	100	250	0,95	1800
56	12	100	250	1,2	1800
68	12	100	250	1,3	1500
82	12	100	250	1,5	1500
100	12	100	200	1,8	1300

1210

mH	Quality Factor	Measuring Frequency for Inductance	Rated Current mA	DC Resistance Max	Resonance Frequency Min
Core material: ceramics					
0,010	15	100	450	1,10	2500
0,012	17	100	450	1,11	2500
0,015	19	100	450	0,13	2500
0,018	21	100	450	0,14	2000
0,022	23	100	450	0,16	2000
0,027	23	100	450	0,17	1700
0,033	25	100	450	0,18	1700
1,039	25	100	450	0,19	1300
0,047	26	100	450	0,20	1300
0,056	26	100	450	0,21	1100
0,068	27	100	450	0,23	1000
0,082	27	100	450	0,26	1000
0,10	28	100	450	0,31	900
Core material: ferrite					
0,12	30	25,2	450	0,15	900
0,15	30	25,2	450	0,18	700
0,18	30	25,2	450	0,19	500
0,22	30	25,2	450	0,20	500
0,27	30	25,2	450	0,21	500
0,33	30	25,2	450	,23	500
0,39	30	25,2	450	0,25	400
0,47	30	25,2	450	0,30	400
0,56	30	25,2	450	0,31	300
0,68	30	25,2	450	0,34	300
0,82	30	25,2	450	0,38	300
1,0	30	7,96	400	0,6	300
1,2	30	7,96	390	0,7	250
1,5	30	7,96	370	0,7	200
1,8	30	7,96	350	0,8	140
2,2	30	7,96	320	0,8	100
2,7	30	7,96	290	0,9	70
3,3	30	7,96	260	1,2	60
3,9	30	7,96	250	1,3	60
4,7	30	7,96	220	1,5	50
5,6	27	7,96	200	1,6	45
6,8	27	7,96	180	1,8	40
8,2	27	7,96	170	2,0	35
10	27	2,52	150	2,1	30
12	27	2,52	140	2,5	25
15	27	2,52	130	2,8	20
18	27	2,52	120	3,0	20
22	27	2,52	110	3,5	20
27	27	2,52	80	4,5	20
33	27	2,52	70	5,6	17
39	27	2,52	65	6,4	16
47	27	2,52	60	7,0	15
56	27	2,52	55	8,0	12
68	27	2,52	50	9,0	9
82	25	2,52	45	10	9
100	20	0,796	40	11	8