

Electric Double Layer Capacitors, Supercapacitors

How to order

<u>TSNV</u>	<u>5R5</u>	<u>N</u>	<u>474</u>	<u>0000</u>
↓	↓	↓	↓	↓
<u>Series Code</u>	<u>Voltage Code</u>	<u>Terminal Code</u>	<u>Capacitance</u>	<u>Internal Code</u>
TSN Series (coin)	2R7: 2.7V	N: coin type	474: 0.47F	Dia+H; or 0000
TSG Series (coin)	3R8: 3.8V	L: leaded type	224: 0.22F	0000 for standard
TST Series (coin)	3R0: 3.0V	M: Module type		
TSV Series (smd)	5R5: 5.5V	V: SMD Type		
TSDV Series (smd)				

Series Table of Electric Double Layer Capacitors

Type	Series Code	Characters	Temperature°C	Voltage range	Load Life	Capacitance (F)
Coin Type Super Capacitors	TSN	Standard	-25~70	5.5V	1000 hours	0.1~1.5F
	TSG	Higher temperature	-25~85	5.5V	1000 hours	0.1~1.5F
	TST	Wide temperature	-40~85	5.5V	1000 hours	0.22~1F
SMD Type Super Capacitors	TSDV	Higher energy	-25~70	5.5V	1000 hours	0.5~7F
	TSV	Higher temperature	-25~85	5.5V	1000 hours	0.047~0.22F

Applications:

- Back-up power: emergency light, smart timer, Car GPS/Tracker, Smart meter, energy meter, water meter, gas meter,
- Provide peak power: advertising lighting, led flash, camera, fire alarm
- Replacement of battery: electrical tools, electric curtain, IoT, solar Lighting

Electric Double Layer Capacitors (Super capacitors) advantages

- Provide peak power and backup power
- Extend battery run time and battery life
- Reduce battery size, weight and cost
- Enable low/high temperature operation
- Improve load balancing when used in parallel with a battery
- Provide energy storage and source balancing when used with energy harvesters
- Cut pulse current noise
- Lessen RF noise by eliminating DC/DC
- Minimize space requirements
- Meet environmental standards

TSN Electric Double Layer Capacitors

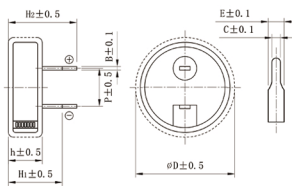
- 70°C 1000 Hours Coin Type 5.5V
- Long Cycle Life
- Large Capacitance, Low ESR, High Monomer Consistency
- RoHS, REACH Compliant



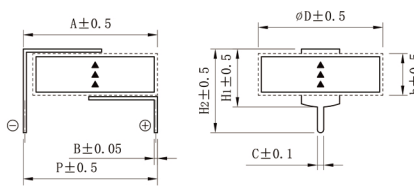
Specification

Item	Characteristics	
Temperature Range	-25°C~+70°C	
Rated Voltage Range	5.5V.DC	
Capacitance Range	0.1F~1.5F	Capacitance Tolerance -10%~+30%(20°C)
Characteristics	Capacitance Change	$ \Delta c/c(+20^{\circ}\text{C}) \leq 30\%$
	ESR	400% or less than the initial value(at -25°C)
Endurance	The specifications should be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000hrs at 70°C	
	Capacitance Change	Within $\pm 30\%$ of the initial capacitance value
Shelf Life	The specifications should be met when the capacitors are restored to 20°C after storing under no load for 1000hrs at 70°C	
	Capacitance Change	Within $\pm 30\%$ of the initial capacitance value
	ESR	300% or less than the initial specified value

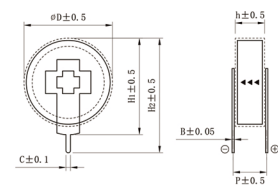
Standard Size



Terminal Type: C (TSNC)



Terminal Type: H (TSNH)



Terminal Type: V (TSNV)

Product Size

Series	Voltage (VDC)	Capacitance (F)	Internal ESR AC(Ω, 1KHz)	Size(mm)				Part Number
				Diameter	Body Height	Pitch	Mount Height1	
TSNC	5.5	0.1	50	13.5	7.0	5.0	7.0	TSNC5R5N1040000
	5.5	0.22	40	13.5	7.0	5.0	7.0	TSNC5R5N2240000
	5.5	0.33	40	13.5	7.0	5.0	7.0	TSNC5R5N3340000
	5.5	0.47	30	13.5	7.0	5.0	7.0	TSNC5R5N4740000
	5.5	1	25	20.5	7.5	5.0	7.5	TSNC5R5N1050000
	5.5	1.5	20	20.5	7.5	5.0	7.5	TSNC5R5N1550000
TSNH	5.5	0.1	50	11.5	4.5	10.0	6.0	TSNH5R5N1040000
	5.5	0.22	40	11.5	4.5	10.0	6.0	TSNH5R5N2240000
	5.5	0.33	40	11.5	4.5	10.0	6.0	TSNH5R5N3340000
	5.5	0.47	40	11.5	4.5	10.0	6.0	TSNH5R5N4740000
	5.5	1	20	19.0	4.5	20.0	7.0	TSNH5R5N1050000
	5.5	1.5	20	19.0	4.5	20.0	7.0	TSNH5R5N1550000
TSNV	5.5	0.1	50	11.5	4.5	5.0	13.0	TSNV5R5N1040000
	5.5	0.22	40	11.5	4.5	5.0	13.0	TSNV5R5N2240000
	5.5	0.33	40	11.5	4.5	5.0	13.0	TSNV5R5N3340000
	5.5	0.47	40	11.5	4.5	5.0	13.0	TSNV5R5N4740000
	5.5	1	20	19.0	4.5	5.0	20.5	TSNV5R5N1050000
	5.5	1.5	20	19.0	4.5	5.0	20.5	TSNV5R5N1550000

TSG Electric Double Layer Capacitors

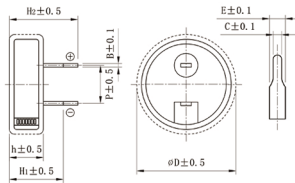
- 85°C 1000 Hours 5.5V
- Long Charge And Discharge Life
- Large Capacitance, High Monomer Consistency
- RoHS, REACH Compliant



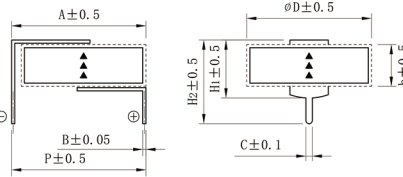
Specification

Item	Characteristics	
Temperature Range	-25°C~+85°C	
Rated Voltage Range	5.5V.DC	
Capacitance Range	0.1F~1.5F	Capacitance Tolerance -10%~+30%(20°C)
Characteristics	Capacitance Change	$ \Delta c/c(+20^\circ\text{C}) \leq 30\%$
	ESR	400% or less than the initial value(at -25°C)
Endurance	The specifications should be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000hrs at 85°C	
	Capacitance Change	Within $\pm 30\%$ of the initial capacitance value
	ESR	300% or less than the initial specified value
Shelf Life	The specifications should be met when the capacitors are restored to 20°C after storing under no load for 1000hrs at 85°C	
	Capacitance Change	Within $\pm 30\%$ of the initial capacitance value
	ESR	300% or less than the initial specified value

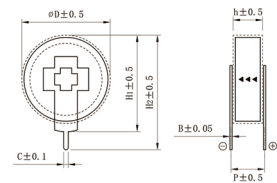
Standard Size



Terminal Type: C (TSGC)



Terminal Type: H (TSGH)



Terminal Type: V (TSGV)

Product Size

Series	Voltage (VDC)	Capacitance (F)	Internal ESR AC(Ω, 1KHz)	Size(mm)				Part Number
				Diameter	Body Height	Pitch	Mount Height1	
TSGC	5.5	0.1	65	13.5	7.0	5.0	7.0	TSGC5R5N1040000
	5.5	0.22	65	13.5	7.0	5.0	7.0	TSGC5R5N2240000
	5.5	0.33	65	13.5	7.0	5.0	7.0	TSGC5R5N3340000
	5.5	0.47	45	13.5	7.0	5.0	7.0	TSGC5R5N4740000
	5.5	1	30	20.5	7.5	5.0	7.5	TSGC5R5N1050000
	5.5	1.5	30	20.5	7.5	5.0	7.5	TSGC5R5N1550000
TSGH	5.5	0.1	65	11.5	4.5	10.0	6.0	TSGH5R5N1040000
	5.5	0.22	65	11.5	4.5	10.0	6.0	TSGH5R5N2240000
	5.5	0.33	65	11.5	4.5	10.0	6.0	TSGH5R5N3340000
	5.5	0.47	65	11.5	4.5	10.0	6.0	TSGH5R5N4740000
	5.5	1	30	19.0	4.5	20.0	7.0	TSGH5R5N1050000
	5.5	1.5	30	19.0	4.5	20.0	7.0	TSGH5R5N1550000
TSGV	5.5	0.1	65	11.5	4.5	5.0	13.0	TSGV5R5N1040000
	5.5	0.22	65	11.5	4.5	5.0	13.0	TSGV5R5N2240000
	5.5	0.33	65	11.5	4.5	5.0	13.0	TSGV5R5N3340000
	5.5	0.47	65	11.5	4.5	5.0	13.0	TSGV5R5N4740000
	5.5	1	30	19.0	4.5	5.0	20.5	TSGV5R5N1050000
	5.5	1.5	30	19.0	4.5	5.0	20.5	TSGV5R5N1550000

TST Electric Double Layer Capacitors

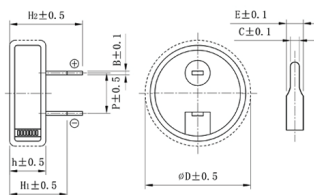
- 85°C 1000 Hours Coin Type 5.5V
- Long Cycle Life, Wide Temperature Range
- Large Capacitance, Low ESR, High Monomer Consistency
- RoHS, REACH Compliant



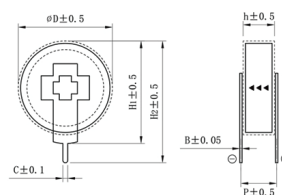
Specification

Item	Characteristics	
Temperature Range	-40°C~+85°C	
Rated Voltage Range	5.5V.DC	
Capacitance Range	0.22F~1.0F	Capacitance Tolerance -10%~+30%(20°C)
Characteristics	Capacitance Change	$ \Delta c/c(+20^\circ\text{C}) \leq 30\%$
	ESR	400% or less than the initial value(at -25°C)
Endurance	The specifications should be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000hrs at 85°C	
	Capacitance Change	Within $\pm 30\%$ of the initial capacitance value
	ESR	300% or less than the initial specified value
Shelf Life	The specifications should be met when the capacitors are restored to 20°C after storing under no load for 1000hrs at 85°C	
	Capacitance Change	Within $\pm 30\%$ of the initial capacitance value
	ESR	300% or less than the initial specified value

Standard Size



Terminal Type: C (TSTC)



Terminal Type: V (TSTV)

Product Size

Series	Voltage (VDC)	Capacitance (F)	Internal ESR AC(Ω, 1KHz)	Size(mm)				Part Number
				Diameter	Body Height	Pitch	Mount Height1	
TSTC	5.5	0.10	65	13.5	9.0	5.0	9.0	TSTC5R5N1040000
	5.5	0.22	65	13.5	9.0	5.0	9.0	TSTC5R5N2240000
	5.5	0.33	65	13.5	9.0	5.0	9.0	TSTC5R5N3340000
	5.5	0.47	45	20.5	9.5	5.0	9.5	TSTC5R5N4740000
	5.5	0.68	45	20.5	9.5	5.0	9.5	TSTC5R5N6840000
	5.5	1.00	30	20.5	9.5	5.0	9.5	TSTC5R5N1050000
TSTV	5.5	0.22	65	11.5	8.0	8.5	13.0	TSTV5R5N2240000
	5.5	0.33	65	11.5	8.0	8.5	13.0	TSTV5R5N3340000
	5.5	0.47	45	19.0	8.0	8.5	20.5	TSTV5R5N4740000
	5.5	0.68	45	19.0	8.0	8.5	20.5	TSTV5R5N6840000
	5.5	1.00	30	19.0	8.0	8.5	20.5	TSTV5R5N1050000

TSDV Electric Double Layer Capacitors

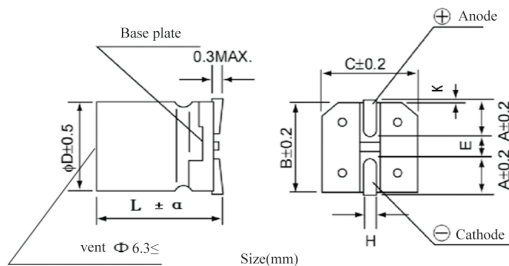
- 70°C 1000 Hours
- Upgrade from SDA series 2.7V- SMD type
- High Energy, High Power, Long Life
- 2 Times Pass 250°C(5s) Reflow Soldering Process
- ROHS, REACH Compliant



Specification

Item	Characteristics	
Temperature Range	-25°C~+70°C	
Rated Voltage Range	2.7V.DC	
Capacitance Range	-10%~+30%(20°C)	
Characteristics	Capacitance Change	$ \Delta c/c(+20^\circ\text{C}) \leq 30\%$
	ESR	400% or less than the initial value(at -25°C)
Endurance	The specifications should be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000hrs at 70°C	
	Capacitance Change	Within $\pm 30\%$ of the initial capacitance value
	ESR	300% or less than the initial specified value
Shelf Life	The specifications should be met when the capacitors are restored to 20°C after storing under no load for 1000hrs at 70°C	
	Capacitance Change	Within $\pm 30\%$ of the initial capacitance value
	ESR	300% or less than the initial specified value
Shelf Life	The specifications should be met when capacitors are restored to 20°C after the rated voltage is applied for 500hrs at +25°C 90%RH.	
	Capacitance Change	Within $\pm 30\%$ of the initial capacitance value
	ESR	300% or less than the initial specified value

Standard Size



ΦD	L	B	C	A	H	E	K	α
5.0	10	5.3	5.3	2.1	0.75±0.10	1.3	0.7 MAX	±0.5
6.3	12	6.6	6.6	2.6	0.75±0.10	1.8	0.7 MAX	±0.5
8.0	12.5	8.3	8.3	3.4	0.9±0.20	3.1	0.7 MAX	±0.5
10	13	10.3	10.3	3.5	0.9±0.20	4.6	0.7 MAX	±0.5
10	21	10.3	10.3	3.5	0.9±0.20	4.6	0.7 MAX	±0.5
12.5	13.5	13.0	13.0	4.7	0.9±0.30	4.4	0.7 MAX	±1.0

Product Size

Series	Voltage (VDC)	Capacitance (F)	Size (mm)	ESR (mΩ/20°C, 1KHz)	Part Number
TSDV	2.7	0.5	5.0 × 10	1500	TSDV2R7V5040510
	2.7	1.0	6.3 × 12	1000	TSDV2R7V1050612
	2.7	2.0	8.0 × 12.5	800	TSDV2R7V2050813
	2.7	3.3	10 × 13	500	TSDV2R7V3351013
	2.7	5.0	12.5 × 13.5	300	TSDV2R7V5051314
	2.7	7.0	10.0 × 21	250	TSDV2R7V7051021

Applications:

- Energy Harvest: Intelligent Instrument, Security Devices, Telecommunication, Rice Cooker, Home Appliances
- Power Back Up: IoT Data Terminal, Driving Recorder, In Car Devices, Vacuum Switch, Fire-Fighting Lamp, 3D Printer, Digital Camera
- Large Current Operating Work: Smart Grid Control, Wireless Transmission

TSV Electric Double Layer Capacitors

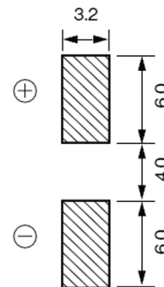
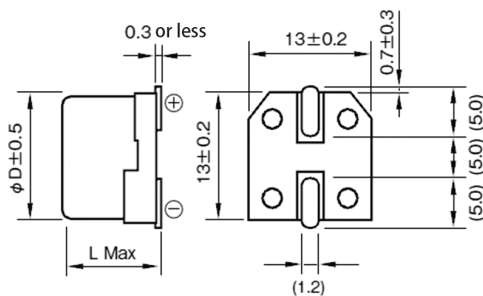
- 85°C 1000 Hours Coin Type 5.5V
- Long Cycle Life, Wide Temperature Range
- Large Capacitance, Low ESR, High Monomer Consistency
- RoHS, REACH Compliant



Specification

Item	Characteristics	
Temperature Range	-25°C ~ +85°C	
Rated Voltage Range	5.5V.DC	
Capacitance Range	-10% ~ +30%	
Characteristics	Capacitance Change	$ \Delta c/c(+20^\circ\text{C}) \leq 30\%$
	ESR	400% or less than the initial value(at -25°C)
Endurance	The specifications should be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000hrs at 85°C	
	Capacitance Change	Within $\pm 30\%$ of the initial capacitance value
	ESR	300% or less than the initial specified value
Shelf Life	The specifications should be met when the capacitors are restored to 20°C after storing under no load for 1000hrs at 85°C	
	Capacitance Change	Within $\pm 30\%$ of the initial capacitance value
	ESR	300% or less than the initial specified value

Standard Size



Soldering Board Size Recommendation:

Product Size

Series	Voltage (VDC)	Capacitance (F)	Size (mm)	ESR (mΩ/20°C, 1KHz)	Part Number
TSDV	5.5	0.047	12.5 × 10.5	75	TSV5R5V4731310
	5.5	0.1	12.5 × 10.5	75	TSV5R5V1041310
	5.5	0.22	12.5 × 10.5	75	TSV5R5V2241310

Applications:

- Video, Audio Devices, Printer, Rice Cooker, Remote Controller
- Industrial Equipment, Smart Instrument, RTC etc.,
- Peak Output Auxiliary Power Supplies For Battery Or Vehicle