Tantalum Capacitor

■ INTRODUCTION

Tantalum capacitor are designed with excellent performance characteristics for filtering, blocking, and R.C tunning circuits. They are used extensively in industrial, commercial, entertainment and medical electronic equipment. They exhibit the proven characteristics of wide temperature range and long-term stability.

The advantages of tantalum capacitor electrolytic capacitor consist of their chemical stability, the low thickness and high dielectric constant of the tantalum oxide layer, and the capability of sintering anodes with a very large surface from tantalum powder.

The low reactivity of the tantalum oxide layer allows the employment of highly conductive electrolytes, and thus achieves a low series resistance. Capacitance and dissipation factor in relation to temperature and frequency thus prove to be very favourable. Additionally, there is also the wide temperature range of several types form -55℃ to +125℃.

A further advantage of the dielectric being inactive is a leakage current that is smaller than of aluminium electrolytic capacitor which does not rise considerably even at dead storage. Tantalum electrolytic capacitor thus show a very long life during operation and storage.

The capacitance of the tantalum electrolytic capacitor is very high due to the high dielectric constant and the low thickness of tantalum oxide layer. The use of sintered anodes with a large surface allows very small dimensions that cannot be reached or exceeded by any other capacitor.

The tantalum electrolytic capacitor at issue are polarized capacitors. In the case of polarized electrolytic capacitor, the dielectric is structured in such a manner that the flow of current is interrupted in one direction. It is therefore necessary to observe the indications regarding polarity when using these capacitor(positive pole on anode and negative pole on cathode). In the case of tantalum capacitor, a mispolarizing is permissible up to the values indicated in reversal voltage.

The tantalum capacitor is a polar electrolytic capacitor. The anode is a porous body of sintered tantalum powder. A layer of tantalum oxide is formed over the whole sintered anode surface by an electrolytic oxidation process.

This oxide layer, which has a high dielectric constant($\varepsilon \fallingdotseq 27$), functions as the dielectric medium of the capacitor. The final thickness of the layer determines the rated working voltage of the capacitor. Manganese dioxide, a solid semiconducting electrolytic, is deposited in the pores and on the external surface of the formed anode to serve as the cathode. Electrical connection to the cathode is effected by applying a metallic coating to the outer MnO2 layer.

As a result of the high stability of the oxide layer the leakage current to the capacitor is very small, even after prolonged storage. The use of a solid semiconducting electrolytic guarantees high stability of the electrical properties over long periods of time and over a wide range of temperatures and frequencies.

■ FEATURE AND APPLICATION

● Feature

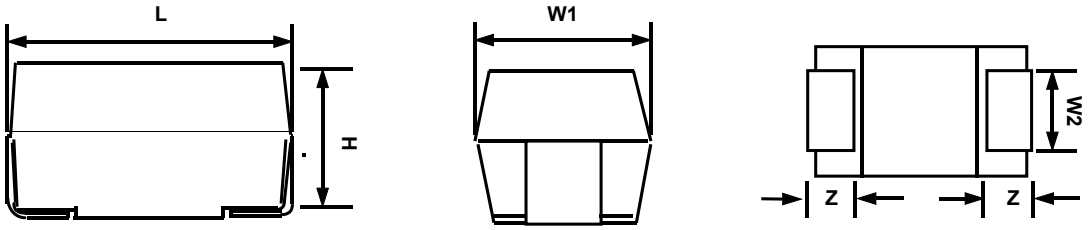
The product is a standard type that has been most widely used among tantalum chip capacitors.

- Molded Case available in six case codes.
- Compatible with automatic pick and place equipment.
- Meets or Exceeds EIA standard 535BAAC .

● Application

- General electronic equipment
- Smoothing Circuit of DC-DC Converters & Output side of AC-DC Converters
- De-Coupling Circuit of High Speed ICs & MPUs
- Various Other High Frequency Circuit Applications

■ APPEARANCE AND DIMENSION



Code	EIA Code	DIMENSION (mm)				
		L	W_1	W_2	H	Z
J	1608	16+0.15 -0.1	0.85+0.15 -0.1	0.6±0.1	0.85+0.15 -0.1	0.4±0.1
P	2012	2012	2.0 ±0.2	1.25 ±0.2	0.9 ±0.1	1.2 MAX
A	3216	3.2 ±0.2	1.6 ±0.2	1.2 ±0.1	1.6 ±0.2	0.8 ±0.3
B	3528	3.5 ±0.2	2.8 ±0.2	2.2 ±0.1	1.9 ±0.2	0.8 ±0.3
C	6032	6.0 ±0.3	3.2 ±0.3	2.2 ±0.1	2.5 ±0.3	1.3 ±0.3
D	7343	7.3 ±0.3	4.3 ±0.3	2.4 ±0.1	2.8 ±0.3	1.3 ±0.3

■ PART NUMBERING

TC	SCN	0J	106	M	B	A	R
❶	❷	❸	❹	❺	❻	❼	❽

❶ Abbriation of Tantalum Capacitor
❷ Type of Series
❸ Rated Voltage Code
❹ Capacitance Code
❺ Capacitance Tolerance Code
❻ Case size Code
❼ Packing Code
❽ Packing polarity Code

❶ Tantalum Capacitor

The symbol shows a simplified character of the tantalum capacitor.

❷ Type of Series

The symbol shows the type of the capacitor. (SCN, SCS)
- SCN : Samsung Capacitor Normal - Standard series
- SVN : Samsung en**V**ironmental capacitor Normal - Pb-free series

❸ Rated Voltage Code

Symbol	DC Rated Voltage	Symbol	DC Rated Voltage
0E	2.5	**1C**	16
0G	4	**1D**	20
0J	6.3	**1E**	25
1A	10	**1V**	35

❹ Capacitance Code

Symbol	Capacitance (㎌)	Pico Farad (pF)	Symbol	Capacitance (㎌)	PicoFarad (pF)
105	1.0	10×10^{5}	**685**	6.8	68×10^{5}
106	10.0	10×10^{6}	**476**	47	47×10^{6}
107	100.0	10×10^{7}	**477**	470	47×10^{7}

❺ Capacitance tolerance Code

Symbol	Tolerance(%)	Symbol	Tolerance(%)
K	±10	**M**	±20

❻ Case size Code

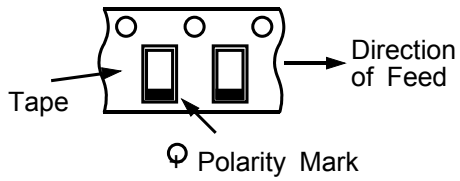
Case	EIA Code	Case	EIA Code
J	1608	**C**	6032
P	2012	**D**	7343
A	3216		
B	3528		

❼ Packing Code

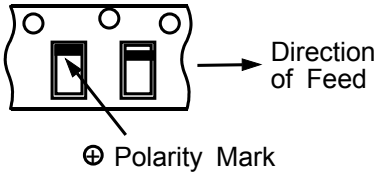
Symbol	Packing Code
A	7 inch
C	13 inch

❽ Packing polarity Code

Taping and Reel for Chip **R**



Taping and Reel for Chip **L**



Bulk **B**