

TANTALUM ELECTROLYTIC CAPACITORS

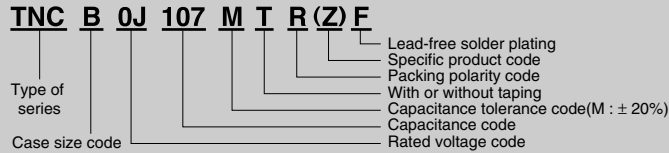
TNC Series

(High Performance Polymer type Chip Tantalum Capacitors)

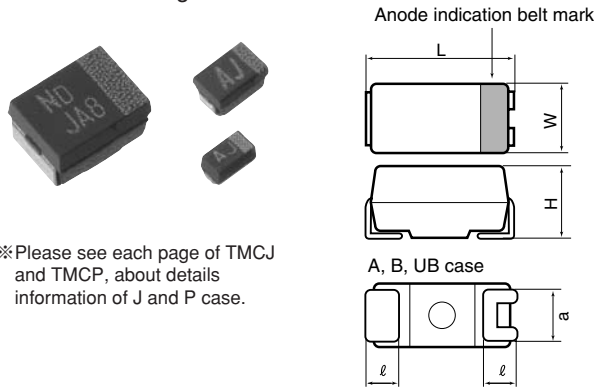
Features

- This type reduces ESR by using high performance polymer based on our original manufacturing process.
- This type is most suitable for an output smoothing circuit that is used, for example, in a DC-DC converter requiring a small size, large capacitance, and low ESR.
- 260°C Reflow compatible for Bcase

Product code: (Example) TNC type B case 6.3 V 100 μF±20% ESR 45mΩ



Outline of drawings and dimensions



※Please see each page of TMCJ and TMCP, about details information of J and P case.

Dimensions

(Unit : mm)

Case code	Case size				
	L	W	H	ℓ	a
J	1.6±0.1	0.8±0.1	0.8±0.1	0.3±0.15	0.6±0.1
P	2.0±0.2	1.25±0.2	1.2 ^{MAX}	0.5±0.2	0.9±0.1
A	3.2±0.2	1.6±0.2	1.6±0.2	0.7±0.3	1.2±0.2
B	3.5±0.2	2.8±0.2	1.9±0.2	0.8±0.3	2.2±0.2
UB	3.5±0.2	2.8±0.2	1.2 ^{MAX}	0.8±0.3	2.2±0.2

Standard value and case size

Capacitance	μF	Code	Rated voltage (V.DC)			
			2.5	4	6.3	10
			0E	0G	0J	1A
3.3	335				J,P	J,P
4.7	475				J,P,A	P,A
6.8	685				P,A	A
10	106		J,P,A	P,A	P,A	A
15	156		P,A	A	A	A
22	226		A,B	A	A	A,UB,B
33	336		A,B	A,UB,B	A,UB,B	A,UB,B
47	476		A,UB,B	A,UB,B	A,UB,B	UB,B
68	686		A,UB,B	UB,B	UB,B	UB,B
100	107		UB,B	B	B	B
150	157		B	B	B	B
220	227	B	B	B	B	B
330	337	B	B	B	B	B

For ratings not covered the table, consult Hitachi AIC.

Product specifications	TNC	Test conditions JIS C5101-1:1998
Operating temperature range	-55°C ~ +105°C	
Rated voltage	DC2.5 ~ 10V	85°C
Surge voltage	DC3V ~ 13V	85°C
Derated voltage	DC1.6 ~ 6.3V	(105°C)
Capacitance	3.3 ~ 330μF	120Hz
Capacitance tolerance	±20%	120Hz
Leakage current	Refer to standard product table	—
tanδ	0.1 or less	120Hz
ESR (100kHz)	J case 500mΩ ^{MAX} P case 200mΩ, 500mΩ ^{MAX} A case 200mΩ, 500mΩ ^{MAX} UB case 70, 200mΩ ^{MAX} B case 15~200mΩ ^{MAX}	100kHz
Maximum permissible ripple current (100kHz, 20°C)	J case 320mArms ^{MAX} P case 360, 560mArms ^{MAX} A case 400, 620mArms ^{MAX} UB case 590, 1000mArms ^{MAX} B case 700~2190mArms ^{MAX}	100kHz
Surge withstanding voltage	△ C/C ±20% or less tanδ Specified initial value or less LC ≤0.1CV or ≤0.3CV	Charge a surge voltage through a protective resistor of 33Ω for 30 seconds and discharge it for 5 minutes and 30 seconds at 85°C. Repeat this operation 1000 times.
Temperature characteristics	Specified initial value	-55 105
	△ C/C	- -20~0% 0~+30%
	tanδ	0.10 0.14 -
	LC	Refer to standard product table - 1CV or 30μA or less
		Measure the specified characteristics in each stage.
Solder heat resistance	△ C/C ±20% or less tanδ Specified initial value or less LC ≤0.1CV or ≤0.3CV	Reflow Board surface peak temperature: 240 ± 5°C 220°C or more: within 30 sec.
Moisture resistance no load	△ C/C +30% ~ -20% or less tanδ Specified initial value or less LC 300% or less Specified initial value or less	Leave at 40°C and 90 to 95%RH for 500 hours.
High-temperature load	△ C/C ±20% or less tanδ Specified initial value or less LC 300% or less Specified initial value or less	85°C. The rated voltage is applied through a protective resistor of 3Ω for 1000 hours.
Thermal shock	△ C/C ±20% or less tanδ Specified initial value or less LC ≤0.1CV or ≤0.3CV	Leave at -55°C, normal temperature, 105°C, and normal temperature for 30 min., 15 min., 30 min., and 15 min. Repeat this operation 5 times running.
Failure rate	1% / 1000hrs	85°C. The rated voltage is applied (through a protective resistor of 1 Ω/V).

※This catalog is designed for providing general information. Please inquire of our Sales Department to confirm specifications prior to use.

Standard product tables - TNC series

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Rated voltage V.DC	Capacitance μF	tan δ	Leakage current μA	Case code	Product name	ESR (100kHz) mΩ	Maximum permissible ripple current (20°C 100kHz) mA rms		
2.5	220	0.10	55.0	B	TNCB0E227MTRF	70	1170		
		0.10	55.0	B	TNCB0E227MTRZF	35	1650		
		0.10	55.0	B	TNCB0E227MTRWF	15/300K	2190		
	330	0.10	82.5	B	TNCB0E337MTRF	70	1170		
		0.10	82.5	B	TNCB0E337MTRZF	35	1650		
		0.10	82.5	B	TNCB0E337MTRWF	15/300K	2190		
4	10	0.10	10.0	J	TNCJ0G106MTRF	500	320		
		0.10	5.0	P	TNCP0G106MTRF	500	360		
		0.10	5.0	P	TNCP0G106MTRXF	200	560		
		0.10	4.0	A	TNCA0G106MTRF	500	400		
		0.10	4.0	A	TNCA0G106MTRXF	200	620		
		0.10	4.0	A	TNCA0G106MTRWF	15/300K	2190		
	15	0.10	10.0	P	TNCP0G156MTRF	500	360		
		0.10	10.0	P	TNCP0G156MTRXF	200	560		
		0.10	6.0	A	TNCA0G156MTRF	500	400		
		0.10	6.0	A	TNCA0G156MTRXF	200	620		
		0.10	8.8	A	TNCA0G226MTRF	500	400		
		0.10	8.8	A	TNCA0G226MTRXF	200	620		
	22	0.10	8.8	A	TNCA0G226MTRF	500	400		
		0.10	8.8	A	TNCA0G226MTRXF	200	620		
		0.10	8.8	B	TNCB0G226MTRF	200	700		
		0.10	13.2	A	TNCA0G336MTRF	500	400		
		0.10	13.2	A	TNCA0G336MTRXF	200	620		
		0.10	13.2	B	TNCB0G336MTRF	200	700		
	33	0.10	18.8	A	TNCA0G476MTRF	500	400		
		0.10	18.8	A	TNCA0G476MTRXF	200	620		
		0.10	18.8	UB	TNCUB0G476MTRF	200	590		
		0.10	18.8	UB	TNCUB0G476MTRXF	70	1000		
		0.10	18.8	B	TNCB0G476MTRF	150	800		
		0.10	18.8	B	TNCB0G476MTRXF	70	1170		
	47	0.10	27.2	A	TNCA0G686MTRF	500	400		
		0.10	27.2	A	TNCA0G686MTRXF	200	620		
		0.10	27.2	UB	TNCUB0G686MTRF	200	590		
		0.10	27.2	UB	TNCUB0G686MTRXF	70	1000		
		0.10	27.2	B	TNCB0G686MTRF	150	800		
		0.10	27.2	B	TNCB0G686MTRXF	70	1170		
	68	0.10	40.0	UB	TNCUB0G107MTRXF	70	1000		
		0.10	40.0	B	TNCB0G107MTRF	70	1170		
		0.10	40.0	B	TNCB0G107MTRZF	45	1460		
		0.10	60.0	B	TNCB0G157MTRF	70	1170		
		0.10	60.0	B	TNCB0G157MTRZF	35	1650		
		0.10	88.0	B	TNCB0G227MTRF	70	1170		
	100	0.10	88.0	B	TNCB0G227MTRZF	35	1650		
		6.3	3.3	0.10	10.0	J	TNCJ0J335MTRF	500	320
				0.10	3.0	P	TNCP0J335MTRF	500	360
			4.7	0.10	10.0	J	TNCJ0J475MTRF	500	320
				0.10	3.0	P	TNCP0J475MTRF	500	360
			6.8	0.10	3.0	A	TNCA0J475MTRF	500	400
	0.10			4.2	P	TNCP0J685MTRF	500	360	
	10	4.7	0.10	4.2	A	TNCA0J685MTRF	500	400	
			0.10	10.0	P	TNCP0J106MTRF	500	360	
		10	0.10	10.0	P	TNCP0J106MTRXF	200	560	
			0.10	6.3	A	TNCA0J106MTRF	500	400	
			0.10	6.3	A	TNCA0J106MTRXF	200	620	
			0.10	9.4	A	TNCA0J156MTRF	500	400	
	15	22	0.10	9.4	A	TNCA0J156MTRXF	200	620	
			0.10	13.8	A	TNCA0J226MTRF	500	400	
		22	0.10	13.8	A	TNCA0J226MTRXF	200	620	
			0.10	20.7	A	TNCA0J336MTRF	500	400	
			0.10	20.7	A	TNCA0J336MTRXF	200	620	
0.10			20.7	UB	TNCUB0J336MTRF	200	590		
33	47	0.10	20.7	UB	TNCUB0J336MTRXF	70	1000		
		0.10	20.7	B	TNCB0J336MTRF	200	700		
	47	0.10	20.7	B	TNCB0J336MTRXF	70	1170		
		0.10	29.6	A	TNCA0J476MTRF	500	400		
		0.10	29.6	A	TNCA0J476MTRXF	200	620		
		0.10	29.6	UB	TNCUB0J476MTRF	200	590		
68	100	0.10	29.6	UB	TNCUB0J476MTRXF	70	1000		
		0.10	29.6	B	TNCB0J476MTRF	150	800		
	68	0.10	29.6	B	TNCB0J476MTRXF	70	1170		
		0.10	42.8	UB	TNCUB0J686MTRF	200	590		
		0.10	42.8	UB	TNCUB0J686MTRXF	70	1000		
		0.10	42.8	B	TNCB0J686MTRF	150	800		
100	100	0.10	42.8	B	TNCB0J686MTRXF	70	1170		
		0.10	63.0	B	TNCB0J107MTRF	100	980		
	100	0.10	63.0	B	TNCB0J107MTRXF	70	1170		
		0.10	63.0	B	TNCB0J107MTRZF	45	1460		

Rated voltage V.DC	Capacitance μF	tan δ	Leakage current μA	Case code	Product name	ESR (100kHz) mΩ	Maximum permissible ripple current (20°C 100kHz) mA rms	
6.3	100	0.10	63.0	B	TNCB0J107MTRVF	35	1650	
		0.10	94.5	B	TNCB0J157MTRF	100	980	
		0.10	94.5	B	TNCB0J157MTRXF	70	1170	
	10	150	0.10	94.5	B	TNCB0J157MTRZF	40	1550
			0.10	10.0	J	TNCJ1A335MTRF	500	320
			0.10	5.0	P	TNCP1A335MTRF	500	360
4.7		3.3	0.10	10.0	P	TNCP1A475MTRF	500	360
			0.10	10.0	P	TNCP1A475MTRXF	200	560
			0.10	4.7	A	TNCA1A475MTRF	500	400
	6.8	10	0.10	4.7	A	TNCA1A475MTRXF	200	620
			0.10	6.8	A	TNCA1A685MTRF	500	400
			0.10	6.8	A	TNCA1A685MTRXF	200	620
15		22	0.10	10.0	A	TNCA1A106MTRF	500	400
			0.10	10.0	A	TNCA1A106MTRXF	200	620
			0.10	15.0	A	TNCA1A156MTRF	500	400
	33	47	0.10	15.0	A	TNCA1A156MTRXF	200	620
			0.10	22.0	A	TNCA1A226MTRF	500	400
			0.10	22.0	A	TNCA1A226MTRXF	200	620
47		22	0.10	22.0	UB	TNCUB1A226MTRF	200	590
			0.10	22.0	UB	TNCUB1A226MTRXF	70	1000
			0.10	22.0	B	TNCB1A226MTRF	200	700
	33	47	0.10	22.0	B	TNCB1A226MTRXF	70	1170
			0.10	33.0	A	TNCA1A336MTRF	500	400
			0.10	33.0	A	TNCA1A336MTRXF	200	620
47		33	0.10	33.0	UB	TNCUB1A336MTRF	200	590
			0.10	33.0	UB	TNCUB1A336MTRXF	70	1000
			0.10	33.0	B	TNCB1A336MTRF	200	700
	100	47	0.10	33.0	B	TNCB1A336MTRXF	70	1170
			0.10	47.0	UB	TNCUB1A476MTRF	200	590
			0.10	47.0	UB	TNCUB1A476MTRXF	70	1000
100		0.10	47.0	B	TNCB1A476MTRF	150	800	
		0.10	47.0	B	TNCB1A476MTRXF	70	1170	

Marking indication TNC series

J,P case

- ① Simplified code of nominal capacitance (S : 4.7 μF)
- ② Simplified code of rated voltage (J : 6.3V)
- ③ Anode indication belt mark

A case

- ① Simplified code of nominal capacitance (A7 : 10 μF)
- ② Simplified code of rated voltage (J : 6.3V)
- ③ Lot indication (A : for manufacturing in January, 2009)
- ④ Anode indication belt mark

B,UB case

- ① Type of series
- ② Lot indication (A : for manufacturing in January, 2009)
- ③ Simplified code of rated voltage (J : 6.3V)
- ④ Simplified code of nominal capacitance (S7 : 47 μF)
- ⑤ Anode indication belt mark

Lot indication

Year \ Month	1	2	3	4	5	6	7	8	9	10	11	12
2009	A	B	C	D	E	F	G	H	J	K	L	M
2010	N	P	Q	R	S	T	U	V	W	X	Y	Z
2011	a	b	c	d	e	f	g	h	j	k	l	m
2012	n	p	q	r	s	t	u	v	w	x	y	z