NEC/TOKIN

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Chip Tantalum capacitor E/SV Series ESVA1A476M (A-case: 47uF/10V)

October, 2007

$\underbrace{\begin{array}{c} Out \ view \ design \ (Dimensions: mm) \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & & \\ & & & & \\ & & &$

Polarity stripe(+)

(Marking of production date code)

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
2005	Α	В	С	D	E	F	G	Н	J	K	L	М
2006	Ν	Р	Q	R	S	Т	U	V	W	Х	Y	Z
2007	а	b	С	d	e	f	g	h	j	k		m
2008	n	р	q	r	S	t	u	v	W	Х	у	Z

NOTE: Production date code will resume for beginning in 2009.

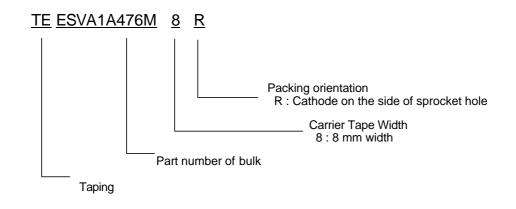
Ratings

Rated Voltage	Capacitance (uF, 120Hz)	Leakage Current		Dissipation Factor (tand ,120Hz)		ESR (100kHz)	ΔC/C (1)	ΔC/C (2)
(V dc.)	(ur, 120112)	(uA)	25deg.C 85deg.C	-55deg.C	125deg.C			
10	47	4.7	0.20	0.36	0.24	Max 5ohm	+/- 20%	+/- 20%



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Tape and Reel



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Performance Characteristics

							TEST CONDITION						
ITEM				PEI	RFOR	MANCE	(JIS C5101-1.1998)						
Operating Temperature		-55 to	+125de	g.C									
Rated Voltage [V.dc]		2.5	4	6.3	10	16	20	25	35	Temperature: 85deg.C			
[V.dc]	1.6	2.5	4	6.3	10	13	16	22	Temperature: 125deg.C				
Surge Voltage	3.3	5.2	8	13	20	26	33	46	Temperature: 85deg.C				
Capacitance		See sp	bec. tabl	е			Frequency: 120Hz						
Capacitance tolerance		+/- 209	%				Frequency: 120Hz						
Tangent of loss angle (tand)		See sp	bec. tabl	е			Frequency: 120Hz						
Leakage Current (L.C.)		0.01C	V (uF x	volts) c	or 0.5u	A, whic	Voltage: Rated voltage for 5 min.						
Equivalent series resistance (ESR)		•					Frequency: 100kHz Temperature: 25deg.C						
Dimensions													
Resistance to Solvent	Visual	Marking shall be legible						Exposure to the following detergent for the duration of 30 +/- 5 sec. - Isopropyl alcohol					
Vibration	Сар.	Shall be stable for period of measurement.							Frequency: 10 to 2kHz Sweep: 1 minute Amplitude of vibration: 1.5 mm Vibration time: Each plane shall be 2				
	Visual	There shall be no evidence of mechanical damage.						hours for a total 4 hours. Within last 30 minutes, capacitance shall be measured several times.					
	?C/C	See spec. table of $\Delta C/C(1)$ Shall be exceed the value No. 7 Shall be exceed the value No. 8											
Shock	Tand									100 G, Saw-tooth wave			
	LC												
	Visual		shall be	no ev	idence	of med							
Terminal strength	Visual	There	shall be	no ev	idence	ce of mechanical damage.				Strength: 4.9 N Time: 10 +/- 0.5 sec (Two direction)			
	?C/C	See si	See spec. table of $\Delta C/C(1)$							Temperature: 85 +/- 2 deg.C			
							,			Applied voltage: No.3			
Surge										Series resistance: 330hm			
Voltage	Visual								age.	Duration of surge: 30 +/- 5 sec. Time between surge: 5.5 min. Number of cycles: 1000			
	Operating Temperature Rated Voltage Category Volt [V.dc] Surge Voltage Capacitance Capacitance t Tangent of los (tand) Leakage Curr (L.C.) Equivalent se resistance (ES Dimensions Resistance to Solvent Vibration	Operating TemperatureRated Voltage [V.dc]Category Voltage [V.dc]Surge Voltage [V.dc]CapacitanceCapacitanceCapacitance toleranceTangent of loss angle (tand)Leakage Current (L.C.)Equivalent series resistance (ESR)DimensionsResistance to SolventVibrationVibrationShockTerminal strengthSurge ValtageSurge Valtage	Operating Temperature-55 toRated Voltage [V.dc]2.5Category Voltage1.6Surge Voltage [V.dc]3.3CapacitanceSee sgCapacitance tolerance+/- 200Tangent of loss angle (tand)See sgLeakage Current (LC.)0.01CEquivalent series resistance (ESR)See sgDimensionsMecha RequireResistance to SolventVisualMarkin Vibration?C/CShock?C/CTerminal strengthVisualTerminal strengthVisualCapacitanceYisualYoisualThereSurge Loc?C/CSee sgTandSurge Loc?C/CShall to LCShall to Shall to 	Operating Temperature-55 to +125 detRated Voltage [V.dc]2.54Category Voltage1.62.5Surge Voltage [V.dc]3.35.2CapacitanceSee spec. tablCapacitance tolerance+/- 20%Tangent of loss angle (tand)See spec. tablLeakage Current (L.C.)0.01 CV (uF x)Equivalent series resistance (ESR)See spec. tablDimensionsMechanical dir RequirementsResistance to SolventVisualMarking shallMarking shallVibrationCap.ShockTandTerminal strengthYisualTerminal strengthVisualCapacitance (LCShall be exceed (LCSurge LC2.5Surge LC2.5Surge LC2.5Surge LC2.5Surge LC2.5Surge LC2.5Surge LCSurge LCSurge LCSurge LCSurge LCSurge LCSurge LCSurge LCSurge LCSurge LCSurge LCSurge LCSurge LCSurgeSurgeSurgeSurgeSurgeSurgeSurgeSurgeSurgeSurgeSurgeSurgeSurgeSurgeSurgeSurge <td>Operating Temperature-55 to +125deU.CRated Voltage [V.dc]2.546.3Category Voltage1.62.54V.dc]3.35.28CapacitanceSee spec. tableCapacitanceCapacitance tolerance+/- 20%</td> <td>Operating Temperature55 to +125deg.CRated Voltage [V.dc]2.546.310Category Voltage [V.dc]1.62.546.310Category Voltage [V.dc]3.35.281313CapacitanceSee spec. table81313Capacitance tolerance+/- 20%</td> <td>Operating Temperature-55 to +125deg.CRated Voltage [V.dc]2.546.31016Category Voltage [V.dc]1.62.546.310Surge Voltage [V.dc]3.35.281320CapacitanceSee spec. tableCapacitance tolerance+/- 20%Capacitance tolerance+/- 20%</td> <td>Operating Temperature-55 to +125deg.CRated Voltage [V.dc]2.546.3101620Category Voltage (V.dc]1.62.546.31013Surge Voltage [V.dc]3.35.28132026CapacitanceSee spec. tableSee spec. tableCapacitance tolerance+/- 20%Tangent of loss angle (tand)See spec. tableSee spec. tableSee spec. tableLeakage Current (L.C.)0.01CV (uF x volts) or 0.5uA, whichever if See spec. tableSee spec. tableDimensionsMechanical dimensions shall meet the Requirements specified on drawing.Resistance to SolventVisualMarking shall be legibleVibrationVisualThere shall be no evidence of mechanicaVibration$\frac{? 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No ITEM			PERFORMANCE	TEST CONDITION				
					(JIS C 5101-1.1998)			
		?C/C	-20 to 0%	Step2	Step			
		tand	See spec. table		Temperature			
		?C/C	0 to +20%	Step4	1			
		tan	See spec. table		20 +/- 2 deg.C			
		L.C.	0.1CV (uF x volts) or 5uA, whichever is greater		20 +/- 2 deg.C			
	Temperature	?C/C	0 to +20%	Step5	2			
		tan	See spec. table		-55 +0/-3 deg.C			
	Stability	L.C.	0.125CV (uF x volts) or 6.25uA, whichever is greater		3			
16					3 20 +/- 2 deg.C			
10					, , , , , , , , , , , , , , , , , , ,			
					4			
					85 +3/-0 deg.C			
I					5 125 +3/-0 deg. C			
		?C/C	See spec. table of $\Delta C/C(1)$		soldering method			
17	Resistance	tand	Shall not exceed the value in No.7	260deg. C,10sec				
17	to soldering	LC	Shall not exceed the value in No.8.					
	2	Visual	There shall be no evidence of mechanical damage.					
				The flux	shall be a solution containing			
			Over 95% of the terminal surface shall be covered by	25% by weight of water while rosin and				
18	Solderability		continuous new solder coating after immersion.		75% by weight of methyl alcohol.			
					temp: 210 +/- 5 deg.C			
		20/0	$\rho_{\rm rescale}$ (able of $\lambda O / O / A$)		ion time: 2 +/- 0.5 sec.			
	Dense hard	?C/C	See spec. table of $\Delta C/C(1)$	Temper Moiotur	rature: 40 +/- 2 deg.C			
19	Damp heat	tand	Shall not exceed 150% of the value in No.7.	Duratio	e:90 to 95%R.H. n:500 ⁺²⁴ - ₀ hours			
	steady state	LC	Shall not exceed the value in No.8.	Duratio				
		Visual ?C/C	There shall be no evidence of mechanical damage. See spec. table of $\Delta C/C(1)$	Dort ch	all be temperature cycled over			
			Shall not exceed the value in raring table		erature range of –55 to			
		tand LC	Shall not exceed the value in rating table		.C, five times continuously as			
		Visual	There shall be no evidence of mechanical damage.	follows.				
		VISUAI	mere shan be no evidence of mechanical damage.		Step			
					Temp.			
					Time			
					1			
	D				-55+3/-3deg.C			
20	Rapid change of				30 +/- 3 min			
20	temperature				2			
	tompolataro				room temp.			
					3 min			
					3			
					125+2/-2deg.C			
					30 +/- 3 min			
					4			
					4 room temp.			
					3 min			
		?C/C	See spec. table of $\Delta C/C(2)$	Temper	ature: 85 +/- 2 deg.C			
21	Life test	tand	Shall not exceed the value in No.7.	Duration	n: 1000 +48/-0 hours			
21		LC	Shall not exceed 125% of the value in No.8.	Applied voltage: The value in No.2				
		Visual	There shall be no evidence of mechanical damage.		resistance: 30hm			
					ature: 85 +/-2 deg.			
22	Falurerate		Shall not exceed 1%/1000hr	Applied voltage: The value in No.2				
				Series r	resistance: 30hm			

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