Note 1. This Specifications and Test Methods is downloaded from the website of Murata Manufacturing co., Itd. Therefore, it's specifications are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering.
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ERB Series Specifications and Test Method (1)

No.	Item Specifications Test Method							
1	Operating Temperatu	ire Range	-55 to +125°C	Reference Temperature: 25°C				
2	2 Rated Voltage		See the previous pages.	The rated voltage is defined as the maximum voltage which may be applied continuously to the capacitor. When AC voltage is superimposed on DC voltage, V ^{P,P} or V whichever is larger, should be maintained within the rated voltage range.			ltage which e, V ^{p.p} or V ^{o.p} , the rated	
3	Appearar	ice	No defects or abnormalities	Visual inspection				
4	Dimensions		Within the specified dimension	Using calipers				
5	Dielectric Strength		No defects or abnormalities	No failure should be observed when 300%(*) of the rated volt- age is applied between the terminations for 1 to 5 seconds, provided the charge/discharge current is less than 50mA. (*) 300V: 250%, 500V: 200%			the rated volt- 5 seconds, an 50mA.	
6	Insulation Resistance (I.R.)		1,000,000MΩ min. (C≦470pF) 100,000MΩ min. (C>470pF)	The insulation resistance should be measured with a DC voltage not exceeding the rated voltage at 25°C and standard humidity and within 2 minutes of charging.				
7	Capacitance		Within the specified tolerance	The capacitance/Q should be measured at 25°C at the			at the	
8	Q		C≦ 220pF : Q≥10,000 220pF <c≦ 470pf="" 5,000<br="" :="" q≥="">470pF<c≦1,000pf 3,000<br="" :="" q≥="">C: Nominal Capacitance (pF)</c≦1,000pf></c≦>	frequency and voltage shown in the table. Frequency 1±0.1MHz Voltage 1±0.2Vrms				
		Capacitance Change	Within the specified tolerance (Table A-6)	The temperature coefficient is determined using the capacitance measured in step 3 as a reference. When cycling				
	Capacitance Temperature Characteristics	Temperature Coefficient	Within the specified tolerance (Table A-6)	capacitance should be within the specified tolerance for temperature coefficient and capacitance change as Tab				
9		re re stics Capacitance Drift		The capacitance drift is calculated by dividing the differences between the maximum and minimum measured values in steps 1, 3 and 5 by the capacitance value in step 3.				
			Capacitance Within ±0.2% or ±0.05pF Drift (Whichever is larger)	Step	Ter	nperature (°C	5)	
						25±2		
				3	25+2			
				4	125±3			
				5	25±2			
			No removal of the terminations or other defects should occur.	Solder the capacitor	on the test jig	(glass epoxy	board) shown	
10	10 Adhesive Strength of Termination		PARA FARA FARA PARA FARA FARA FARA PARA FARA FARA FARA PARA FARA FARA PARA FARA FARA PARA FARA FARA FARA PARA FARA FARA PARA FARA FARA FARA PARA FARA FARA FARA PARA FARA FARA FARA PARA FARA FARA FARA FARA FARA PARA FARA FARA FARA FARA FARA PARA FARA FARA FARA FARA FARA FARA PARA FARA FARA FARA FARA FARA PARA FARA FARA FARA FARA FARA FARA FARA	$\begin{tabular}{ c c c c }\hline \hline & \mbox{in Fig. 1 using an eutectic solder.} \\ \hline & \mbox{Then apply 10N* force in parallel with the test jig for 10±1sec.} \\ \hline & \mbox{The soldering should be done either with an iron or using the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock. \\ \hline & \hline & \mbox{Type} & a & b & c \\ \hline & \mbox{ERB18} & 1.0 & 3.0 & 1.2 \\ \hline & \mbox{ERB21} & 1.2 & 4.0 & 1.65 \\ \hline & \mbox{ERB32} & 2.2 & 5.0 & 2.9 \\ \hline \end{tabular}$				
			-	(in mm) *5N (ERB188)				

Continued on the following page.

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ERB Series Specifications and Test Method (1)

Continued from the preceding page.

No.	No. Item		S	pecifications	Test Method						
11		Appearance	No defects or abnormalitie	Solder the capacitor to the test jig (glass epoxy board) in the							
		Capacitance	Within the specified tolera	nce	same manner	and under th	ne same co	onditions as (10).		
	Vibration Resistance	Q	Satisfies the initial value. C≦ 220pF : Q≧1 220pF <c≦ 470pf="" :="" q≧<br="">470pF<c≦1,000pf :="" q≧<br="">C: Nominal Capacitance (</c≦1,000pf></c≦>	0,000 5,000 3,000 pF)	The capacitor should be subjected to a simple harmonic mo having a total amplitude of 1.5mm, the frequency being varie uniformly between the approximate limits of 10 and 55Hz. The frequency range, from 10 to 55Hz and return to 10Hz, should be traversed in approximately 1 minute. This motion should be applied for a period of 2 hours in each of 3 mutua perpendicular directions (total of 6 hours).						
		Appearance	No marking defects								
		Canacitance	Within +5% or +0.5pF	+5% or +0.5pF							
		Change	(Whichever is larger)		Solder the capacitor on the test jig (glass epoxy boa						
	Definetion		R230	I in Fig. 2a using an eutectic solder. Then apply a force in the direction shown in Fig. 3a. The soldering should be done by the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock.							
12	Deneotion	•			Туре)	a	b	C		
					ERB1	8	1.0	3.0	1.2		
				Flexure : S1	ERB2	2	1.2	4.0	2.0		
			Capacitance meter		EKDS		2.2	5.0 (in	2.9		
			45 45	100 t : 1.6mm				(in	mm)		
			Fig.3a	Fig. 2a							
13	13 Solderability of Termination		95% of the terminations are to be soldered evenly and continuously.		After preheating, immerse in an eutectic solder or Sn-3.0Ag-0.5Cu solder solution for 5±0.5 seconds at 245±5°C.						
			The measured and observe specifications in the follow								
			Item	Specifications	Preheat accor	ding to the c	o the conditions listed in the table below.				
			Appearance	No marked defect	Immerse the capacitor in an eutectic solder or Sn-3.0Ag-0.50						
	Resistance to Soldering Heat		Capacitance	Within ±2.5% or ±0.25pF	solder solution	1 at 270±5°C	TOF 10±0.5	seconds. Let s	sit at room		
14			Idering HeatChange(wnichever is larger)Q $C \leq 220 \text{ pF} : Q \geq 10,000$ Q $220 \text{ pF} < C \leq 470 \text{ pF} : Q \geq 5,000$		Chin S		J. Droh	ast Condition			
					2.0×1.25m	m max.	1minute	e at 120 to 150°	С		
			470pF <c≦1,000pf 3,000<="" :="" q≥="" td=""><td colspan="5">3.2×2.5mm Each 1 minute at 100 to 120°C and then 170 to 200°C</td></c≦1,000pf>		3.2×2.5mm Each 1 minute at 100 to 120°C and then 170 to 200°C						
			Dielectric Strength	No failure							
				C: Nominal Capacitance (pF)							
	Temperature Cycle		The measured and observed characteristics should satisfy the specifications in the following table.								
					Fix the capacitor to the supporting jig in the same manner and						
			Item	Item Specifications			under the same conditions as (10). Perform the five cycles				
			Appearance	No marked detect	according to the four heat treatments listed in the following						
			Change	(Whichever is larger)	Let sit for 24±	2 hours at ro	om tempe	ature, then me	asure.		
15			Unange	$C \ge 30 \text{pF}$: $Q \ge 350$	Step	1	2	3	4		
			Q	10pF≦C<30pF : Q≧275+52C	T	Min.	Room	Max.	Room		
				C<10pF : Q≧200+10C	iemp. (°C)	Operating	Temp.		Temp.		
			I.R.	1,000MΩ min.	Time (min.)	30+3	5 may	30+3	5 max		
			Dielectric Strength	No failure		00±0	o max.	00±0	5 max.		
				C: Nominal Capacitance (pF)							

Continued on the following page.



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ERB Series Specifications and Test Method (1)

Continued from the preceding page.

Item	S	pecifications	Test Method				
Humidity	The measured and observed characteristics should satisfy the specifications in the following table. Item Specifications Appearance No marked defect Capacitance Within $\pm 5\%$ or $\pm 0.5 pF$ Change (Whichever is larger) Q $10pF \leq C < 30pF : Q \geq 350$ Q $10pF \leq C < 30pF : Q \geq 275 + \frac{5}{2}C$ C < 10pF : Q \geq 200+10C I.R. I.R. 1,000M\Omega min. C: Nominal Capacitance (pF)		Apply the 24-hour heat (-10 to +65°C) and humidity (80 to 100%) treatment shown below, 10 consecutive times. Remove, let sit for 24±2 hours at room temperature, and measure.				
	The measured and observed characteristics should satisfy the specifications in the following table.						
High Temperature Load	Item Appearance Capacitance Change Q I.R.	SpecificationsNo marked defectWithin $\pm 3\%$ or $\pm 0.3 pF$ (Whichever is larger)C $\geq 30 pF$: Q ≥ 350 10pF $\leq C < 30 pF$: Q $\geq 275 + \frac{5}{2}C$ C<10pF : Q $\geq 200 + 10C$ 1,000M Ω min.	Apply 200% (500V only 150%) of the rated voltage for 1,000±12 hours at 125±3°C. Remove and let sit for 24±2 hours at room temperature, then measure. The charge/discharge current is less than 50mA.				
ŀ	ligh Temperature .oad	Q I.R. I.R. The measured and observery specifications in the follow Item Appearance Capacitance Change Q I.R.	$\begin{tabular}{ c c c c c } \hline Q & 10pF \leq C < 30pF : Q \geq 275 + \frac{5}{2}C \\ \hline C < 10pF : Q \geq 200 + 10C \\ \hline 1.R. & 1,000M\Omega \mbox{ min.} \\ \hline \hline C: \mbox{ Nominal Capacitance (pF)} \\ \hline \hline & C: \mbox{ Nominal Capacitance (pF)} \\ \hline & & & & \\ \hline & & & & \\ \hline & & & & \\ \hline & & & &$				

Table A-6

	Neminal Values	Capacitance Change from 25°C (%))		
Char.	(ppm/°C) Note 1	55		-30		-10	
		Max.	Min.	Max.	Min.	Max.	Min.
5C	0±30	0.58	-0.24	0.40	-0.17	0.25	-0.11

Note 1: Nominal values denote the temperature coefficient within a range of 25 to 125°C (for 5C)

