製品仕様書 Specification of Crystal Unit

決定年月日 Issue Date : July 19, 2023

1. 品番 Part Number

当社品番 Murata Part Number XRCGA30M000FBA1BR0 (Frequency: 30.0000MHz / Size: 2.0 x 1.6mm)

2. 適用 Scope

当製品仕様書は、車載用マイクロコンピュータ等のクロック発生回路に使用する水晶振動子について規定します。この用途以外にご使用の場合には事前に当社へご連絡ください。

This product specification is applied to the crystal unit used for time base oscillator in a microcomputer for automotive. Please contact us when using this product for any other applications than described in the above.

3. 外観 及び 寸法 Appearance and Dimensions

3-1	外観 Appearance	: 目視によって表示識別可能であり、汚れ等がありません。 : No illegible marking. No visible dirt.
3-2	外形寸法図 Dimensions of component	: 製品単体の形状を項目6に示します。 : Please refer to item 6 for component dimensions.
3-3	構造	: アルミナ基板に、水晶素子を接着し、金属キャップで蓋 をしております。
	Construction	: Crystal element is mounted onto alumina substrate, then metal cap covers over the element.

4.	定格	Rating	
		項 目 Item	規格 Specification
	4-1	動作温度範囲	40 to 125%C
		Operating Temperature Range	-40 to +125°C
	4-2	保存温度範囲	-55 to +125°C
		Storage Temperature Range	-55 10 +125 C
	4-3	励振レベル	300
		Drive Level	
	4-4	直流印加電圧	D.C.6V 以下/max.
		D.C. Voltage	D.C.OV 以下max.
	4-5	入力信号振幅	15Vpp NE/mov
		A.C. Voltage	15Vp-p 以下/max.
	4-6	耐電圧	D.C.100V 以下/max.
		Withstanding Voltage	5s 以内/max.

5. 電気的性能 Electrical Characteristics

\nearrow	項 目 Item	規格 Specification
5-1	公称周波数	30.0000MH-
	Nominal Frequency	30.0000MHz
5-2	周波数許容偏差 *1	±15ppm 以内/max.
	Frequency Tolerance *1	т тэрріп фрунцах.
5-3	周波数温度依存性	±45ppm 以内/max. (-40 to +125°C)
	Frequency Shift by Temperature	(初期値に対し/from initial value)
5-4	周波数エージング	±15ppm 以内/15年
	Frequency aging	max./15 years
5-5	等価直列抵抗 *1	70 Ω 以下/max.
	Equivalent Series Resistance *1	70公以下max.
5-6	絶縁抵抗 * 2	500MΩ 以上/min. (D.C.10V 印加時)
	Insulation Resistance *2	(Applied D.C.10V)
5-7	負荷容量 (Cs) *1	0.0-F
	Load Capacitance *1	8.0pF

*1 周波数および等価直列抵抗の測定方法は項目8を参照ください。 Please refer to item 8 for measuring method of frequency and Equivalent Series Resistance.

*2 端子相互間での抵抗を示します。 This characteristic shows the resistance between terminals.



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9. 機械的性能 Physical Characteristics

項目 Item 試験条件 Test Condition 試験後の規格 Specification After Test 9-1 衝撃 製品を試験用基板に実装した状態で、加速度 大能で、加速度 大能で、加速度 DiC準拠します。 表品を試験用基板に実装した状態で、加速度 表2及び表5を満足しま 100G(980m/s ²), 作用時間6msの衝撃を6面に各3回す。 加えた後、測定します。試験方法はAEC-0200 REV DiC準拠します。 Mechanical Component shall be soldered on the test board. Then it shall be measured after being applied 3 shall meet Table 2 successive shocks, 100G(980m/s ²) for 6ms in the and Table 5. 9-2 振動 製品を試験用基板に実装した状態で、振動周波数 表2及び表5を満足しま 10~2000Hz, 5G(49m/s ²) 数節をX!X203力向にす。 各4時間加えた後、測定します。試験方法はAEC- Q200 REV DIC準拠します。 9-2 振動 製品を試験用基板に実装した状態で、振動周波数 表2及び表5を満足しま 10~2000Hz, 5G(49m/s ²) with 10 to 2000Hz band of non-2000Hz, 5G(49m/s ²) with 10 to 2000Hz band of and Table 5. Vibration The measured after being applied shall meet Table 2 vibration of 5G(49m/s ²) with 10 to 2000Hz band of and Table 5. 9-3 基板たわみ 第 5 図に示サホンみ試験用基板に実装し、たわみ量 Z2mmになるまで毎秒 0.8mm の違さで加圧し60+5 ⁺ す。 9-3 基板たわみ 第 5 図に示サホンみ試験用基板に実装し、たわみ量 Abut 0.5mm/s until ben with reaches 2mm and hold for 60+5 ⁺ 0 seconds. Testing procedure is in accordance with AEC-0200 REV D. 10年度 10年度 10年度 10年度 10年度 10年度 10年度 10年度 10年度 10年度 10年度 10年度	成你们	加生能 Physical		
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9-2 振動 製品を試験用基板に実装した状態で、振動周波数 表2及び表5を満足します。 10~2000Hz、5G(49m/s²)の振動をX,Y,Zの3方向にす。 す。 64時間加えた後、測定します。試験方法はAEC-Q200 REV Dに準拠します。 The measured value Ubration Component shall be soldered on the test board. The measured value Then it shall be measured after being applied vibration of 5G(49m/s²) with 10 to 2000Hz band of and Table 5. The measured value vibration of 5G(49m/s²) with 10 to 2000Hz band of and Table 5. and Table 5. vibration frequency to each of 3 perpendicular direction for 4 hours. Testing procedure is in accordance with AEC-Q200 REV D. ま2及び表5を満足しいたわみ量 9-3 基板たわみ 第 5 図に示すたわみ試験用基板に実装し、たわみ量 表2及び表5を満足しいたりない 9-3 Extract the measured value shown in Figure 5. Then apply pressure in vertical shall meet Table 1. The measured value shown in following figure at a rate of and Table 5. 80ard Flex Component shall be soldered on the test board the concource with AEC-Q200 REV D. The measured value shown in following figure at a rate of and Table 5. 80ard Flex Component with AEC-Q200 REV D. The measured value shown in following figure at a rate of and Table 5. 9.0 ####################################			directions of 6 sides. Testing procedure is in	
10~2000Hz、5G(49m/s²)の振動をX,Y,Zの3方向に 各4時間加えた後、測定します。試験方法はAEC- Q200 REV Dに準拠します。 す。 Vibration Component shall be soldered on the test board. Then it shall be measured after being applied vibration of 5G(49m/s²) with 10 to 2000Hz band of vibration frequency to each of 3 perpendicular direction for 4 hours. Testing procedure is in accordance with AEC-Q200 REV D. The measured value shall meet Table 5. 9-3 基板たわみ 第 5 図に示すたわみ試験用基板に実装し、たわみ量 2mm になるまで毎秒 0.5mm の速さで加圧し、60+5/- す。 表2及び表5を満足し: 2mm になるまで毎秒 0.5mm の速さで加圧し、60+5/- す。 Board Flex Component shall be soldered on the test board shown in Figure 5. Then apply pressure in vertical direction shown in following figure at a rate of about 0.5mm/s until bent width reaches 2mm and hold for 60+5/-0 seconds. Testing procedure is in accordance with AEC-Q200 REV D.			accordance with AEC-Q200 REV D.	
P-3 基板たわみ 第 5 図に示すたわみ試験方法はAEC-Q200 REV Dに準拠します。 P-3 基板たわみ 第 5 図に示すたわみ試験用基板に実装し、たわみ量 Board Flex Component shall be soldered on the test board. The measured value The measured value * 5 xghé * 5 xghé * 5 Supporter The measured value * 5 xghé * 5 xghé	9-2	振動	製品を試験用基板に実装した状態で、振動周波数	表2及び表5を満足しる
VibrationQ200 REV Dに準拠します。 Component shall be soldered on the test board. Then it shall be measured after being applied shall meet Table is and Table 5.9-3基板たわみ第 5 図に示すたわみ試験用基板に実装し、たわみ量 2mm になるまで毎秒 0.5mm の速さで加圧し、60+5/- 0 秒間保持します。 Smg方法は AEC-Q200 REV D に 準拠します。表2及び表5を満足しま つ 秒間保持します。 The measured value shall meet Table 5.9-3基板たわみ第 5 図に示すたわみ試験用基板に実装し、たわみ量 accordance with AEC-Q200 REV D.表2及び表5を満足しま つ 秒間保持します。 The measured value shown in Figure 5. Then apply pressure in vertical direction shown in following figure at a rate of about 0.5mm/s until bent width reaches 2mm and hold for 60+5/-0 seconds. Testing procedure is in accordance with AEC-Q200 REV D.The measured value shall meet Table 5.0MER PCB LoodImage figure at a rate of about 0.5mm/s until bent width reaches 2mm and hold for 60+5/-0 seconds. Testing procedure is in accordance with AEC-Q200 REV D.The measured value shall meet Table 5.0MER Peflection PCB LoodImage figure at a rate of about 0.5mm/s until bent width reaches 2mm and hold for 60+5/-0 seconds. Testing procedure is in accordance with AEC-Q200 REV D.Image figure fig			10~2000Hz、5G(49m/s ²)の振動をX,Y,Zの3方向に	す。
Vibration Component shall be soldered on the test board. Then it shall be measured after being applied vibration of 5G(49m/s ²) with 10 to 2000Hz band of vibration frequency to each of 3 perpendicular direction for 4 hours. Testing procedure is in accordance with AEC-Q200 REV D. and Table 5. 9-3 基板たわみ 第 5 図に示すたわみ試験用基板に実装し、たわみ量 2mm になるまで毎秒 0.5mm の速きで加圧し、60+5/- 0 秒間保持します。試験方法は AEC-Q200 REV D に 準拠します。 す。 Board Flex Component shall be soldered on the test board direction shown in Figure 5. Then apply pressure in vertical direction shown in following figure at a rate of about 0.5mm/s until bent width reaches 2mm and hold for 60+5/-0 seconds. Testing procedure is in accordance with AEC-Q200 REV D. The measured value shall meet Table for about 0.5mm/s until bent width reaches 2mm and hold for 60+5/-0 seconds. Testing procedure is in accordance with AEC-Q200 REV D. #END #END #END #END #END #END <t< td=""><td></td><td></td><td>各4時間加えた後、測定します。試験方法はAEC-</td><td></td></t<>			各4時間加えた後、測定します。試験方法はAEC-	
Then it shall be measured after being applied shall meet Table vibration of 5G(49m/s ²) with 10 to 2000Hz band of and Table 5. shall meet Table and Table 5. vibration frequency to each of 3 perpendicular direction for 4 hours. Testing procedure is in accordance with AEC-Q200 REV D. 9-3 9-3 基板たわみ 第 5 図に示すたわみ試験用基板に実装し、たわみ量 表2及び表5を満足しま2mm になるまで毎秒 0.5mm の速さで加圧し、60+5/-0 秒間保持します。試験方法は AEC-Q200 REV D に 準拠します。 Board Flex Component shall be soldered on the test board the measured value shown in Figure 5. Then apply pressure in vertical shall meet Table direction shown in following figure at a rate of about 0.5mm/s until bent width reaches 2mm and hold for 60+5/-0 seconds. Testing procedure is in accordance with AEC-Q200 REV D. MEE# 20 # 0 5 the esting procedure is in accordance with AEC-Q200 REV D. # 10 10 # 0 5 the esting procedure is in accordance with AEC-Q200 REV D. # 10 10 # 0 5 the esting procedure is in accordance with AEC-Q200 REV D. # 10 10 # 0 10 # 0 5 the esting procedure is in accordance with AEC-Q200 REV D. # 0 10 # 0 10 # 0 10 # 0 10 # 0 10 # 0 10 # 0			Q200 REV Dに準拠します。	
 vibration of 5G(49m/s²) with 10 to 2000Hz band of vibration frequency to each of 3 perpendicular direction for 4 hours. Testing procedure is in accordance with AEC-Q200 REV D. 9-3 基板たわみ 第 5 図に示すたわみ試験用基板に実装し、たわみ量 表2及び表5を満足しま 2mm になるまで毎秒 0.5mm の速さで加圧し、60+5/-0 秒間保持します。試験方法は AEC-Q200 REV D に 準拠します。 Board Flex Component shall be soldered on the test board shown in Figure 5. Then apply pressure in vertical direction shown in following figure at a rate of about 0.5mm/s until bent width reaches 2mm and hold for 60+5/-0 seconds. Testing procedure is in accordance with AEC-Q200 REV D. 		Vibration	Component shall be soldered on the test board.	The measured value
 vibration frequency to each of 3 perpendicular direction for 4 hours. Testing procedure is in accordance with AEC-Q200 REV D. 9-3 基板たわみ 第 5 図に示すたわみ試験用基板に実装し、たわみ量 表2及び表5を満足しま 2mm になるまで毎秒 0.5mm の速さで加圧し、60+5/-0 秒間保持します。試験方法は AEC-Q200 REV D に 準拠します。 Board Flex Component shall be soldered on the test board shall meet Table and Table 5. about 0.5mm/s until bent width reaches 2mm and hold for 60+5/-0 seconds. Testing procedure is in accordance with AEC-Q200 REV D. ^{mET#} ^{MET#} ^{MET#} ^{Lood} ^{Lood} ^{MET#} ^{MET#}			Then it shall be measured after being applied	shall meet Table
direction for 4 hours. Testing procedure is in accordance with AEC-Q200 REV D. 9-3 基板たわみ 第 5 図に示すたわみ試験用基板に実装し、たわみ量 2mm になるまで毎秒 0.5mm の速さで加圧し、60+5/- 0 秒間保持します。試験方法は AEC-Q200 REV D に 準拠します。 Board Flex Component shall be soldered on the test board shown in Figure 5. Then apply pressure in vertical direction shown in following figure at a rate of about 0.5mm/s until bent width reaches 2mm and hold for 60+5/-0 seconds. Testing procedure is in accordance with AEC-Q200 REV D.			vibration of 5G(49m/s ²) with 10 to 2000Hz band of	and Table 5.
accordance with AEC-Q200 REV D.9-3 基板たわみ第 5 図に示すたわみ試験用基板に実装し、たわみ量 2mm になるまで毎秒 0.5mm の速さで加圧し、60+5/- 0 秒間保持します。試験方法は AEC-Q200 REV D に 準拠します。Board FlexComponent shall be soldered on the test board shown in Figure 5. Then apply pressure in vertical direction shown in following figure at a rate of about 0.5mm/s until bent width reaches 2mm and hold for 60+5/-0 seconds. Testing procedure is in accordance with AEC-Q200 REV D.#Eth<			vibration frequency to each of 3 perpendicular	
9-3 基板たわみ 第 5 図に示すたわみ試験用基板に実装し、たわみ量 2mm になるまで毎秒 0.5mm の速さで加圧し、60+5/- 0 秒間保持します。試験方法は AEC-Q200 REV D に 準拠します。 Board Flex Component shall be soldered on the test board shown in Figure 5. Then apply pressure in vertical direction shown in following figure at a rate of about 0.5mm/s until bent width reaches 2mm and hold for 60+5/-0 seconds. Testing procedure is in accordance with AEC-Q200 REV D.			. .	
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hold for 60+5/-0 seconds. Testing procedure is in accordance with AEC-Q200 REV D.				
accordance with AEC-Q200 REV D. 加圧棒 20 ^{Stick} 0 Load 0 55支持台 0 5 Supporter か正 10 0 10 10 10 10 10 10 10 10				
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9-4	はんだ耐熱	製品単品状態でリフロー炉(ピーク温度 260±5℃、	ますれたびまにな法日し
0 1			
	Resistance to	1.0±0.5 秒、その他条件は 12-5-2 項を参照)に 2 回	
	•	通した後、室温に取り出し、24 時間放置した後、測定	
	()	します。試験方法は IEC60068-2-58 に準拠します。	
	(1)Re-flow	Component shall be measured after 2 times re-	
	Soldering	flow soldering and leaving at room temperature for	
		24 hours. For soldering profile, refer to item 12-5-2	Table 5.
		(Peak temperature is 260 ± 5 °C for 1.0 ± 0.5 s).	
		Testing procedure is in accordance with	
		IEC60068-2-58.	
	(2)コテ付け方式	PCB上にて温度+350±5℃で5.0±0.5秒間はんだ付	
		けを行い、室温に24時間放置した後、測定します。但	
		し、はんだこて先は電極部に直接接触しない事としま	す。
		す。試験方法はIEC60068-2-58に準拠します。(12-5-	
		3項を参照)	
	(2)Soldering	Component shall be measured after soldering on	•
	with iron	PCB at +350±5°C for 5.0±0.5s and leaving at room	
		temperature for 24 hours. The soldering iron shall	
		not touch the component while soldering. Testing	
		procedure is accordance with IEC60068-2-58.	
		(Refer to item 12-5-3)	
	. ,	製品端子部を+260±5℃の溶融はんだ中に10±1秒	
	プ方式	間浸した後、室温に取り出し、24時間放置した後、測	します。
		定します。試験方法はJESD22-B106に準拠します。	
	(3)Solder Dip	The terminals of component shall be immersed in	The measured values
		a soldering bath at +260±5°C for 10±1s by only to	shall meet Table 2
		level to cover. Component shall be measured after	and Table 5.
		leaving at room temperature for 24 hours. Testing	
		procedure is in accordance with JESD22-B106.	
1		1	

9-5	はんだ付性	無鉛はんだ (Sn-3.0Ag-0.5Cu) PCT装置にて温度+105℃、湿度100%R.H.、4時間の	端子の 95% 以上にはん だが付着します。
		エージングをし、端子部分をロジンメタノール液に5秒 浸した後、+245±5℃の溶融はんだ中に3±0.5秒間 浸します。試験方法はIEC60068-2-58に準拠します。	
	Solderability	Lead free solder (Sn-3.0Ag-0.5Cu) After being kept in pressure cooker at +105°C and 100%R.H. for 4 hours, and being placed in a rosin-methanol for 5s, the terminals of component shall be immersed in a soldering bath at +245±5°C for 3±0.5s. Testing procedure is accordance with IEC60068-2-58.	at least over ninet five (95) % of th
	はんだ付性 (2)	PCT装置にて温度+105℃、湿度100%R.H.、4時間の エージングをし、第1図に示す当社推奨ランドに実装し ます。実装条件は12-5-1、12-5-2項に従います。 After being kept in pressure cooker at +105℃	
	Solderability(2)	and 100%R.H. for 4 hours, component shall be mounted on recommended land pattern shown in Figure 1. For soldering conditions and profile, refer to item 12-5-1 and 12-5-2.	side of substrat
9-6	固着強度	R0.5 の引っかき治具を使用して、矢印の方向に 17.6 N の静荷重を加えて60秒間保持します。試験方法は AEC-Q200 REV Dに準拠します。	
	Terminal Strength	Component shall be soldered on the test PCB. Then a static load of 17.6N using a R 0.5 scratch tool shall be applied on the core of the component and in the direction of the arrow and held for 60s.Testing procedure is in accordance with AEC- Q200 REV D.	shall meet Table

10. 耐候性能 Environmental Characteristics

	項 目 Item	試 験 条 件 Test Condition	試験後の規格 Specification
			After Test
10-1	高温放置	製品を試験用基板に実装した状態で、温度+125℃	表4及び表5を満足しる
		の恒温槽中に1000時間保持した後、室温に取り出	す。
		し、24時間放置した後、測定します。試験方法は	
		AEC-Q200 REV Dに準拠します。	
	High	Component shall be soldered on the test board.	The measured value
	Temperature	Then it shall be kept in a chamber at +125°C for	shall meet Table
	Exposure	1000 hours. And then it shall be measured after	and Table 5.
	(Storage)	leaving at room temperature for 24 hours. Testing	
		procedure is in accordance with AEC-Q200 REV	
		D.	
10-2	低温放置	製品を試験用基板に実装した状態で、温度-55℃の	表3及び表5を満足しる
		恒温槽中に1000時間保持した後、室温に取り出し、	
		24時間放置した後、測定します。試験方法は	
		IEC60068-2-1に準拠します。	
	Cold	Component shall be soldered on the test board.	
	(Storage)	Then it shall be kept in a chamber at -55°C for	
		1000 hours. And then it shall be measured after	
		leaving at room temperature for 24 hours. Testing	
		procedure is accordance with IEC60068-2-1.	
10-3	高温高湿通電	製品を試験用基板に実装した状態で、温度+85℃,	
		湿度85%R.H.の恒温恒湿槽にD.C.6Vを印加しなが	
		ら1000時間保持した後、室温に取り出し、24時間放	
		置した後、測定します。 試験方法はAEC-Q200 REV	
		Dに準拠します。	
	Biased Humidity	Component shall be soldered on the test board.	
		Then it shall be kept in a chamber at +85°C,	
		85%R.H. on loading D.C.6V for 1000 hours. And	
		then it shall be measured after leaving at room	
		temperature for 24 hours. Testing procedure is in	
		accordance with AEC-Q200 REV D.	

Image: Temperature 恒温槽中に30分間保持する。これを1サイクルとし、1000サイクル行った後、室温に取り出し、24時間 放置した後、測定します。試験方法はAEC-0200 REV Dに準拠します。 Temperature Component shall be soldered on the test board. Cycling After performing 1000 cycles of thermal test (-shall meet Table 55°C for 30 minutes) test test point test to and Table 5. shall be measured after leaving at room temperature for 24 hours. Testing procedure is in accordance with AEC-Q200 REV D. 10-5 高温通電 製品を試験用基板に実装した状態で、温度±125°C 表4及び表5を満足しの恒温槽中にD.C,6Vを印加しなが61000時間保持す。 した後、室温に取り出し、24時間放置した後、測定します。試験方法はAEC-Q200 REV D. 大名、安温に取り出し、24時間放置した後、測定します。 Operational Life Component shall be soldered on the test board. The measured after leaving at room temperature for 24 hours. Testing procedure is in accordance with AEC-Q200 REV D. 0perational Life Component shall be soldered on the test board. The measured after leaving at room temperature for 24 hours. Testing procedure is in accordance with AEC-Q200 REV D. 10-6 耐静電性 Table BE-C-Q200 REV D. The measured value table be measured after applying shall meet Table be accordance with AEC-Q200 REV D. Imperiational Life Face accordance with AEC-Q200 REV D. Imperiational Life Face accordance with AEC-Q200 REV D. Imperiational Life Face accordance accordance with AEC-Q200 REV D. Imperiational Life		熱衝撃	製品を試験用基板に実装した状態で、温度-55℃の表3及び表5を満足しま
Image: Letter State し、1000サイクル行った後、室温に取り出し、24時間 放置した後、測定します。試験方法はAEC-Q200 REV Dに準拠します。 Temperature Component shall be soldered on the test board. After performing 1000 cycles of thermal test (- shall meet Table 55°C for 30 minutes to +125°C for 30minutes), it and Table 5. Shall be measured after leaving at room temperature for 24 hours. Testing procedure is in accordance with AEC-Q200 REV D. 10-5 高温通電 製品を試験用基板に実装した状態で、温度+125°C StateStateCode REV D. Operational Life Component shall be soldered on the test board. Then it shall be kept in a chamber at +125°C on shall meet Table loading D.C.6V for 1000 hours. And then it shall be measured after leaving at room temperature for 24 hours. Testing procedure is in accordance with AEC-Q200 REV D. 10-6 耐静電性 Trianol Static Refer Code REV D. 10-6 耐静電性 Trianol Static Refer Code REV D. 10-7 両静電性 Trianol Static Refer Code REV D. 10-8 耐静電性 Trianol Static Refer Code REV D. 10-6 耐静電性 Trianol Static Refer Code REV D. 10-7 Litter Statics Electro Statics Discharge E=±500V, C=150pF, R=2.0kQ,Direct Contact Component shall be measured after applying shall meet Table surge voltage (E) by discharging capacitor (C) and Table 5. Ust - Burger Code Rev D. R R R R R State Table Statics Shall meet Table Statics			恒温槽中に30分間保持後、温度+125℃の恒温槽中す。
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Electro Statics Dischargeれた電荷を、抵抗Rを介し各端子間に放電した後、 測定します。試験方法はAEC-Q200 REV Dに準拠 します。す。Electro Statics DischargeE=±500V, C=150pF, R=2.0kΩ,Direct Contact Component shall be measured after applying surge voltage (E) by discharging capacitor (C) through resistor (R). Testing procedure is in accordance with AEC-Q200 REV D.The measured value shall meet Table and Table 5.	10.6		
Electro Statics Discharge	10-0	顺靜电性	
Electro Statics Discharge $Lます$ 。 E=±500V, C=150pF, R=2.0k Ω ,Direct Contact Component shall be measured after applying surge voltage (E) by discharging capacitor (C) through resistor (R). Testing procedure is in accordance with AEC-Q200 REV D.			
Electro Statics Discharge $E=\pm500V$, C=150pF, R=2.0k Ω ,Direct Contact Component shall be measured after applying surge voltage (E) by discharging capacitor (C) through resistor (R). Testing procedure is in accordance with AEC-Q200 REV D.			
Discharge Component shall be measured after applying shall meet Table surge voltage (E) by discharging capacitor (C) and Table 5. through resistor (R). Testing procedure is in accordance with AEC-Q200 REV D.		Flastra Statica	
surge voltage (E) by discharging capacitor (C) and Table 5. through resistor (R). Testing procedure is in accordance with AEC-Q200 REV D.			
through resistor (R). Testing procedure is in accordance with AEC-Q200 REV D.		Discharge	
accordance with AEC-Q200 REV D.			surge voltage (E) by discharging capacitor (C) and Table 5.
▲ E A端子			
E A端子			
E A端子			
			accordance with AEC-Q200 REV D.
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11. / 注意 Cautions

11-1 用途の限定 Limitation of Applications

当製品について、その故障や誤動作が人命または財産に危害を及ぼす恐れがある等の理由により、高 信頼性が要求される以下の用途でのご使用をご検討の場合は、必ず事前に当社までご連絡下さい。 ①航空機器 ②宇宙機器 ③海底機器 ④発電所制御機器 ⑤医療機器

⑥輸送機器(自動車、列車、船舶等) ⑦交通用信号機器 ⑧防災/防犯機器

⑨情報処理機器 ⑩その他上記機器と同等の機器

Please contact us before using our products for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life, body or property.

①Aircraft equipment

②Aerospace equipment

③Undersea equipment

④ Power plant control equipment

5 Medical equipment

6 Transportation equipment (vehicles, trains, ships, etc.)

⑦Traffic signal equipment

⑧Disaster prevention / crime prevention equipment

⑨Data-processing equipment

DApplications of similar complexity and/or with reliability requirements to the applications listed in the above

11-2 フェールセーフ機能の付加 Fail-safe

当製品に万が一異常や不具合が生じた場合でも、二次災害防止のために完成品に適切なフェールセーフ機能を必ず付加して下さい。

Be sure to provide an appropriate fail-safe function on your product to prevent a second damage that may be caused by the abnormal function or the failure of our product.

12. 使用上の注意 Caution for Use

12-1

過大な機械衝撃が印加された場合、不具合を生じることがありますので取り扱いには充分ご 注意下さい。

The component may be damaged if excess mechanical stress is applied.

12-2

ご使用 I C 及び発振回路条件により、発振不具合(異常発振あるいは発振停止)が発生する 場合がありますので、回路条件を充分ご確認の上ご使用下さい。

Please confirm the circuit conditions on your set, because irregular or stop oscillation may occur under unmatched circuit conditions.

12-3

当製品は、画像認識タイプの位置決め機構実装機に対応しています。但し、実装条件によっては過大な衝撃が加わり製品本体を破損する場合がありますので事前に使用される実装機で 必ず評価確認をして下さい。なお、メカチャック機構タイプの実装機での実装は避けて下さい。詳細については事前に当社までお問い合わせ下さい。

The component is recommended with placement machines employing optical placement capabilities. The component might be damaged by mechanical force depending on placement machine and condition. Make sure that you have evaluated by using placement machines before going into mass production. Do not use placement machines employing mechanical positioning. Please contact Murata for details beforehand.

12-4

実装後に基板から取り外した製品は再使用しないで下さい。 Do not reuse components once mounted onto a circuit board.

12-5 はんだ付けに関する注意事項 Caution for Soldering

この製品はリフロー方式で実装をお願いします。

Please mount components on a circuit board by the re-flow soldering

12-5-1 推奨するフラックスおよびはんだ Recommendable Flux and Solder

フラックス Flux	ロジン系フラックスをお使いください。水溶性フラックスは使用 しないでください。 Please use rosin based flux, but do not use water soluble flux.
はんだ Solder	Sn-3.0Ag-0.5Cu組成のはんだをご使用ください。 クリームはんだ塗布厚は、0.10~0.15mmの範囲でお願いします。 Please use solder(Sn-3.0Ag-0.5Cu) under the following condition. Standard thickness of soldering paste: 0.10 to 0.15mm

12-5-2 推奨はんだ条件 Recommendable Soldering Profile



	惊华ノロノアイル
	Standard soldering profile
予熱	150°C to 180°C
Pre-heating	60s to 120s
加熱部	220°C 以上/min.
Heating	30s to 60s
ピーク温度	245℃以上/min. 260°C以下/max.
Peak temperature	5s 以内/max.

*温度は部品表面付近で測定します。

*Temperature shall be measured on the surface of component.

12-5-3 こて付け条件 Reworking with soldering iron

やむを得ずはんだこてを使用して製品をはんだ付け・修正する場合は、以下の点に注意して行って下さい。

Please solder with soldering iron noting to the following conditions.

	条 件 condition
予熱温度 Pre-heating	150°C 60s
はんだこてのこて先温度 Heating of the soldering iron	350°C 以下/max.
はんだこてのワット数 Watt	30W 以下/max.
はんだこてのこて先形状 Shape of the soldering iron	∲3mm 以下/max.
はんだ付け時間 Soldering Time	5s 以内/max.
はんだ Solder	Sn-3.0Ag-0.5Cu
注意事項 Caution	製品に直接こて先がふれないようにしてください。こ て先が製品に直接触れて過剰な熱が加わった場合、圧 電素子の特性劣化や製品電極の破損につながる恐れが あります。 Please do not directly touch the components with soldering iron, because the terminals of components or electrical characteristics may be damaged if excess thermal stress is applied.

12-5-4 はんだ盛り量 Solder Volume

はんだ盛り量は基板の高さ以下にしてください。基板を超えた場合、キャップと基板の封 止部が破損する可能性があります。

Please keep the solder volume below the height of the substrate. When exceeding the substrate, the damage of sealing part between the metal cap and the substrate may occur.



12-6 製品洗浄に関する注意事項 Caution for washing

塩素系洗浄剤、石油系洗浄剤、アルカリ系洗浄剤での洗浄により不具合が発生することが ありますので、ご使用はお避け下さい。

The component may be damaged if it is washed with chlorine, petroleum or alkalicleaning solvent.

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12-7 製品コーティングに関する注意事項 Caution for coating

当製品は気密構造ではありません。そのため、樹脂で製品をコーティング/成形することを保 証しておりません。

コーティング樹脂を使用する際は、事前に当社までご連絡ください。

The component is not hermetically sealed. So, it is not guarantee in use case of coating or molding the products with the resin.

Please contact us before using our products with resin coating or molding.

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13. 製品保管上の注意 Notice on product storage

13-1

温度-10~+40°C、相対湿度15~85%で、急激な温湿度変化のない室内で保管下さい。 Please store the products in room where the temperature / humidity is stable. And avoid such places where there are large temperature changes. Please store the products under the following conditions : Temperature : -10 to +40 °C

Humidity : 15 to 85% R.H.

13-2

製品保管期限は未開梱、未開封状態にて、納入後6ヶ月間です。納入後6ヶ月以内でご使用下 さい。6ヶ月を越える場合ははんだ付け性等をご確認の上、ご使用下さい。

Expire date (Shelf life) of the products is 6 months after delivery under the conditions of an unopened package. Please use the products within 6 months after delivery.

If you store the products for a long time (more than 6 months), use carefully because the products may be degraded in the solder-ability and/or rusty. Please confirm solder-ability and characteristics for the products regularly.

13-3

酸、アルカリ、塩、有機ガス、硫黄等の化学的雰囲気中で保管されますとはんだ付け性の劣化不良等の原因となりますので、化学的雰囲気中での保管は避けて下さい。

Please do not store the products in a chemical atmosphere (Acids, Alkali, Bases, Organic gas, Sulfides and so on), because the characteristics may be reduced in quality, and/or be degraded in the solder-ability due to the storage in a chemical atmosphere.

13-4

湿気、塵等の影響を避けるため、床への直置きは避けて保管下さい。 Please do not put the products directly on the floor without anything under them to avoid damp places and/or dusty places.

13-5

直射日光、熱、振動等が加わる場所での保管は避けて下さい。 Please do not store the products in the places under direct sunlight, heat and vibration.

13-6

開梱、開封後、長期保管された場合、保管状況によっては、はんだ付け性等が劣化する可能 性があります。開梱、開封後は速やかにご使用下さい。

Please use the products immediately after the package is opened, because the characteristics may be reduced in quality, and/or be degraded in the solder-ability due to storage under the poor condition.

13-7

製品落下により、製品内部の圧電素子の割れ等の原因となりますので、容易に落下しない状態での保管とお取扱いをお願い致します。

Please do not drop the products to avoid cracking of piezoelectric element.

14. <u>小</u>お願い Note:

14-1

ご使用に際しましては、貴社製品に実装された状態で必ず評価して下さい。 Please make sure that your product has been evaluated in view of your specifications with our product being mounted to your product.

14-2

当製品を当製品仕様書の記載内容を逸脱して使用しないで下さい。 You are requested not to use our product deviating from this product specification.