



PRODUCT SPECIFICATION



LANGUAGE

JAPANESE  
ENGLISH

【1. 適用範囲 SCOPE】

本仕様書は、\_\_\_\_\_ 殿 に納入する

USB SERIES MINI-B ショートタイプ コネクタ について明記する。

This doc. covers the USB SERIESE MINI-B SHORT TYPE CONNECTOR series .

【2. 製品名称及び型番 PRODUCT NAME AND PART NUMBER】

製品名称 Product Name		製品番号 Part Number
ショートタイプ リセプタクル アッセンブリ (JACK) Short Type Receptacle Assembly (JACK)	無鉛 LEAD FREE	5 1 3 8 7 - 0 5 7 1
ショートタイプ リセプタクル アッセンブリ (JACK) Short Type Receptacle Assembly (JACK)	無鉛 LEAD FREE	5 1 3 8 7 - 0578/1578

\* : 図面参照  
\* : Refer to the drawing.

【3. 定格 RATINGS】

項目 Item	規格 Standard	
最大許容電圧 Rated Voltage (Maximum)	30V	[ AC (実効値 rms) / DC ]
最大許容電流 Rated Current (Maximum)	1.0A	
使用温度範囲 Ambient Temperature Range	0°C ~ +50 °C * 1 From 0 to +50 degree centigrade	
保存温度範囲 Shipping and Storage Temperature Range	-20°C ~ +60 °C * 1 From -20 to +60 degree centigrade	

\* 1 : 通電による温度上昇分も含む。  
Including terminal temperature rise.

【4. 性能 PERFORMANCE】

標準状態 : 指定がない限り測定は温度5~35°C、湿度45~85%、気圧85~106kPaにて行う

Standard atmospheric conditions:

Unless otherwise specified, the standard range of atmospheric conditions for making measurements and tests are as follows.

Ambient temperature : 5°C to 35°C  
Relative humidity : 45% to 85%  
Air pressure : 85kPa to 106kPa

以下の項目に関して、特に指定の無い場合嵌合相手は5 9 2 0 4シリーズとする。

Regarding following test condition, Mated connector is 59204 series unless otherwise specified.

REV.	A	B																	
SHEET	1-14	1-15																	
REVISE ON PC ONLY						TITLE:													
<b>B</b> RELEASED SH2012-0014 2011/08/04 DIXON LI						USB SERIES MINI-B SHORT TYPE <b>-LEAD FREE-</b>													
						製品仕様書 THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION													
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		SH				WIP		DIXON LI	NICOLAS ZHANG	STARY SONG	2011/08/04								
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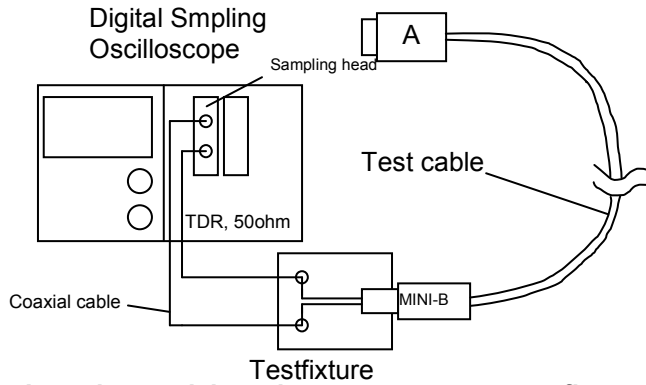
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4-1. 電氣的性能 Electrical Performance

項目 Item	条件 Test Condition	規格 Requirement	
		TYPE A	MINI-B
4-1-1 接触抵抗 Contact Resistance	コネクタを嵌合させ、開放電圧20mV以下、短絡電流100mA以下にて測定する。但し電線の導体抵抗は除く。(EIA-364-23) Mate connectors, measure by dry circuit, 20mV maximum, 100mA maximum. Except wire conductor resistance.(EIA-364-23)	30 milliohms maximum 初期及び1500回挿抜後 Initial and afterMate/ Un-mate 1500 cycles	50 milliohms maximum 初期及び5000回挿抜後 Initial and afterMate/ Un-mate 5000 cycles
4-1-2 絶縁抵抗 Insulation Resistance	コネクタを嵌合及び未嵌合状態にし、隣接するターミナル間及びターミナル、アース間にDC500V [TYPE A] かDC100V [MINI-B] を印加し測定する。(EIA-364-21) Mate/un-mate connectors, apply 500V [TYPE A] DC or 100V [MINI-B] DC between adjacent terminals or ground. (EIA-364-21)	1000 Megohm minimum	100 Megohm minimum
4-1-3 耐電圧 Dielectric Strength	コネクタを嵌合及び未嵌合状態にし、隣接するターミナル間及びターミナル、アース間にAC(rms) 500 [TYPE A] V(実効値)か、AC(rms) 100 [MINI-B] V(実効値)を1分間印可する。(EIA-364-20) Mate/Un-mate connectors, apply 500 [TYPE A] V AC(rms) or 100 [MINI-B] V AC(rms) for 1 minute between adjacent terminals or ground.(EIA-364-20)	異常なきこと No Breakdown	
4-1-4 温度上昇 Temperature Rise	コネクタを嵌合させ、最大許容電流を通電し、コネクタの温度上昇分を測定する。(EIA-364-70) Mate connectors and measure the temperature rise of contact when the maximum AC rated current is passed. (EIA-364-70)	温度上昇 Temperature Rise 30°C maximum	
4-1-5 静電容量 Capacitance	未嵌合コネクタの隣接する回路間を1kHzで測定する。(EIA-364-30) Measured between adjacent circuits of unmated connectors at 1kHz.(EIA-364-30)	2pF maximum	
4-1-6 ケーブルインピーダンス Cable Impedance	試験治具にケーブルを繋ぎ、TDRにて測定する。装置は次ページ参照。 Connect the cable to test fixture, measure by TDR. Measurement configuration are next pages.	<USB1.1> Diff.Impedance(rt=4ns) 76.5~103.5 ohms	
		<USB2.0> Diff.Impedance(rt=0.5ns) 76.5~103.5 ohms Com.Impedance(rt=0.5ns) 21~39 ohms	

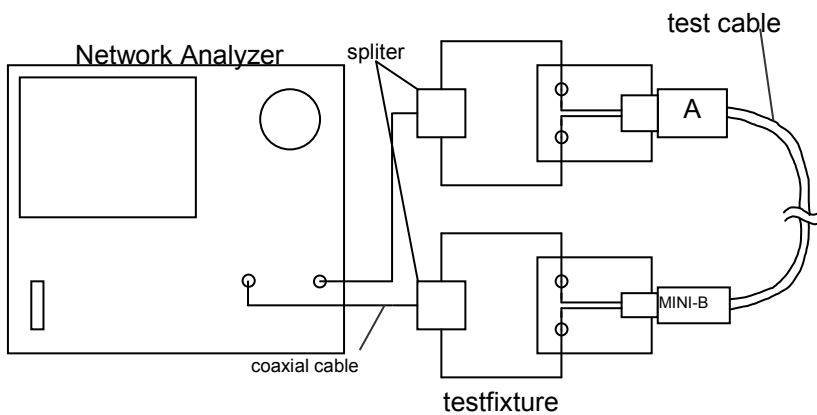
<b>B</b>	REVISE ON PC ONLY	TITLE	USB SERIES MINI-B SHORT TYPE
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REV.	DESCRIPTION	THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION	
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**Impedance, delay, skew measurement configuration**

Frequency (MHz)	Attenuation [max.] (dB/cable)
0.064	0.08
0.256	0.11
0.512	0.13
0.772	0.15
1	0.20
4	0.39
8	0.57
12	0.67
24	0.95
48	1.35
96	1.90
※ 200	3.20
※ 400	5.80

※ <USB 2.0>



**Attention measurement configuration**

項目 Item	条件 Test Condition	規格 Requirement	
		TYPE A	MINI-B
4-1-7 減衰量 Attenuation	試験治具にコネクタを嵌合させ、ネットワークアナライザにて測定する。装置は上記参照。 Connect connector to attenuation test fixture, measure by Network Analyzer. Measurement configuration are upper pages.	上記参照 Reference upper pages	
4-1-8 伝播遅延 Propagation Delay	試験治具にケーブルを繋ぎ、TDRにて測定する。装置は上記参照。 Connect the cable to test fixture, measure by TDR. Measurement configuration are upper pages.	<USB 1.1> 26ns/cable max.	<USB 2.0> 5.2ns/m max.
4-1-9 伝播遅延差 Propagation Delay Skew	試験治具にケーブルを繋ぎ、TDRにて測定する。装置は上記参照。 Connect the cable to test fixture, measure by TDR. Measurement configuration are upper pages.	<USB 1.1> 400ps/cable max.	<USB 2.0> 100ps/cable max.

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4-2. 機械的性能、その他 Mechanical Performance and others

項目 Item	条件 Test Condition	規格 Requirement	
		TYPE A	MINI-B
4-2-1 初回挿入力／ 初回抜去力 First Time Mating and First Time Un-mating Force	1 分間に12.5mm以下の速さで挿入、抜去する。 (EIA-364-13) Mate and un-mate connector at maximum rate of 12.5mm per minute. (EIA-364-13)	初回挿入力 First Time Mating Force	35N (3.57kgf) maximum
		初回抜去力 First Time Un-Mating Force	10N (1.02kgf) minimum 7N (0.71kgf) minimum
4-2-2 繰り返し挿抜 Repeated Mate / Unmate	1時間に200回以下の速さで挿入、抜去を1500〔TYPE A〕回か、5000〔MINI-B〕回繰り返す。 (EIA-364-09) Mate and unmate up to 1500〔TYPE A〕cycles or 5000〔MINI-B〕cycles repeatedly at maximum rate of 200 cycles per hour. (EIA-364-09)	外観 Appearance	異常なきこと No Breakdown
		接触抵抗 Contact Resistance	30 milliohms maximum 50 milliohms maximum
		挿入力 Mating Force	1~1500 Cycles 35N (3.57kgf) maximum 1~5000 Cycles 35N (3.57kgf) maximum
		抜去力 Un-Mating Force	1~1500 Cycles 10N (1.02kgf) minimum 1 Cycle 7N (0.71kgf) minimum 2~5000 Cycles 3N (0.30kgf) minimum
4-2-3 ケーブル保持力 Cable Pull-Out	コネクタに装着されたケーブルを軸上に50Nで1分間引っ張る。(USB:40N,1分間) (EIA-364-38) Apply axial pull out force on the cable assembled in the connector at a rate of 50N for 1 minute.(USB:40N,1minute) (EIA-364-38)	外観 Appearance	異常なきこと No Breakdown
		接触抵抗 Contact Resistance	30 milliohms maximum 50 milliohms maximum
4-2-4 ターミナル保持力 Terminal Retention Force	ハウジングに装着されたターミナルを毎分25±3mmの速さで引っ張る。 Apply axial pull out force on the terminal assembled in the housing at a rate of 25±3mm minimum.	4N(0.41kgf) minimum	

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項目 Item	条件 Test Condition	規格 Requirement		
		TYPE A	MINI-B	
4-2-5 耐振動性 Vibration	DC 100mA通電状態にて、第6項に示す振動を嵌合軸を含む互いに垂直な3方向に各15分間加える。 (EIA-364-28) Mate connectors and subject to the following vibration conditions (refer to 6 clause), for a period of 15 minutes in each of 3 mutually perpendicular axes, passing DC 100mA during the test. (EIA-364-28)	外観 Appearance	異常なきこと No Damage	
		接触抵抗 Contact Resistance	30 milliohms maximum	50 milliohms maximum
		瞬断 Discontinuity	1.0 microsecond maximum	
4-2-6 耐衝撃性 Shock	DC 100mA通電状態にて、嵌合軸を含む互いに垂直な6方向に294m/s <sup>2</sup> (30G)の衝撃を各3回加える。 (EIA-364-27) Mate connectors and subject to the following shock conditions. 3 shocks shall be applied along 3 mutually perpendicular axes, passing DC 100mA current during the test. (Total of 18 shocks) Test pulse : Half Sine Peak value : 294m/s <sup>2</sup> (30G) Duration : 11ms (EIA-364-27)	外観 Appearance	異常なきこと No Damage	
		接触抵抗 Contact Resistance	30 milliohms maximum	50 milliohms maximum
		瞬断 Discontinuity	1.0 microsecond maximum	
4-2-7 耐熱性 Heat Resistance	コネクタを嵌合させ、85±2℃の雰囲気中に96時間放置後取り出し、1~2時間室温に放置する。 (EIA-364-17) Mate connectors and expose to 85±2 degree centigrade for 96 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed. (EIA-364-17)	外観 Appearance	異常なきこと No Damage	
		接触抵抗 Contact Resistance	30 milliohms maximum	50 milliohms maximum
		耐電圧 Dielectric Strength	4-1-3項満足のこと Must meet 4-1-3	
		絶縁抵抗 Insulation Resistance	4-1-2項満足のこと Must meet 4-1-2	

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項目 Item	条件 Test Condition	規格 Requirement		
		TYPE A	MINI-B	
4-2-8 耐寒性 Cold	コネクタを嵌合させ、-55±2 °Cの 雰囲気中に96時間放置後取り出し、 1~2時間室温に放置する。 Mate connectors and expose to -55 ± 2 degree centigrade for 96 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed.	外観 Appearance	異常なきこと No Damage	
		接触抵抗 Contact Resistance	30 milliohms maximum	50 milliohms maximum
		耐電圧 Dielectric Strength	4-1-3項満足のこと Must meet 4-1-3	
		絶縁抵抗 Insulation Resistance	4-1-2項満足のこと Must meet 4-1-2	
4-2-9 耐湿性 Humidity	コネクタを嵌合させ、第7項に示す 耐湿性サイクル試験（7サイクル）後 取り出し、1~2時間室温に放置する。 (EIA-364-31 Method III) Mate connectors and expose to humidity in 7 cycles at 7 clause. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed. (EIA-364-31 Method III)	外観 Appearance	異常なきこと No Damage	
		接触抵抗 Contact Resistance	30 milliohms maximum	50 milliohms maximum
		耐電圧 Dielectric Strength	4-1-3項満足のこと Must meet 4-1-3	
		絶縁抵抗 Insulation Resistance	4-1-2項満足のこと Must meet 4-1-2	

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項目 Item	条件 Test Condition	規格 Requirement		
			TYPE A	MINI-B
4-2-10 温度サイクル Temperature Cycling	コネクタを嵌合させ、-55±3 °Cに30分 +85±2 °Cに30分、これを 1サイクルとし、5サイクル繰り返す。但 し、温度移行時間は 5分以内とする。試 験後1~2時間室温に放置する。 Mate connectors and subject to the following conditions for 5 cycles. Upon completion of the exposure period, the specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed. 1 cycle a) -55±3 °C 30 minutes b) +85±2 °C 30 minutes Transit time shall be within 5 minutes.	外観 Appearance	異常なきこと No Damage	
		接触抵抗 Contact Resistance	30 milliohms maximum	50 milliohms maximum
		耐電圧 Dielectric Strength	4-1-3項満足のこと Must meet 4-1-3	
		絶縁抵抗 Insulation Resistance	4-1-2項満足のこと Must meet 4-1-2	
4-2-11 塩水噴霧 Salt Spray	コネクタを嵌合させ、35±2 °Cにて 5±1% 重量比の塩水を 48±4時間噴霧 し試験後常温で水洗いした後、 室温で乾燥させる。 (JIS C5028/MIL-STD-202 試験法101) Mate connectors and expose to the following salt mist conditions. Upon completon of the exposure period, salt deposits shall be removed by a gentle wash or dip in running water which the specified measurements shall be performed. NaCl solution concentration:5±1% Spray time :48±4hours Ambient temperature :35±2 °C (JIS C5028/MIL-STD-202 Method101)	外観 Appearance	目視にて著しい サビが無いこと By visual linspection without noticeable rust.	
		接触抵抗 Contact Resistance	60 milliohms maximum	100 milliohms maximum
4-2-12 亜硫酸ガス SO <sub>2</sub> Gas	コネクタを嵌合させ、40±2 °Cにて 50±5ppmの亜硫酸ガスに24時間放置す る。 Mate connectors and expose to 50±5ppm SO <sub>2</sub> Gas, ambient temperature 40±2 °C for 24 hours.	外観 Appearance	異常なきこと No Damage	
		接触抵抗 Contact Resistance	60 milliohms maximum	100 milliohms maximum

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項目 Item	条件 Test Condition	規格 Requirement	
		TYPE A	MINI-B
4-2-13 硫化水素ガス H <sub>2</sub> S Gas	コネクタを嵌合させ、35±2 °Cにて 相対湿度80%,3±1ppmの硫化水素ガスに 96時間放置する。 Mate connectors and expose to 3±1ppm H <sub>2</sub> S Gas, ambient temperature 35±2 °C, humidity approx 80% for 96 hours.	外観 Appearance	異常なきこと No Damage
		接触抵抗 Contact Resistance	60 milliohms maximum 100 milliohms maximum
4-2-14 非移行性 Migration	2枚のPS板(50x50x3)の間に20~30mm 間隔で60mmの長さの試料を2本置き、 これを2枚のガラス板に挟み、500gの オモリを乗せ暴露試験を行う。 (第8項参照) 20~30mm to for 2 sheets of Polystyrene migration boards(50x50x3) two data of the length of the role of 60mm are put in an interval and this putting it to 2 sheets of glass plates 500g of are loaded do a disclosure test (refer to 8 clause) 温度 Temperature : 60°C 時間 Duration : 48h	PS板に著しい移行跡が無い事。 There shall not be remarkable conduct in a polystyrene migration board.	
4-2-15 半田付け性 Solderability	端子先端より0.5mmの位置まで、 245±5 °Cの半田に3±0.5秒浸す。 (EIA-364-52 Category 2) Dip soldertails into the molten solder [held at 245±5 degree centigrade] up to 0.5mm from the bottom of the housing for 3±0.5 seconds. (EIA-364-52 Category 2)	濡れ性 Solder Wetting	浸漬面積の95% minimum 95% of immersed area must show no voids, pin holes

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項目 Item	条件 Test Condition	規格 Requirement
4-2-16 半田耐熱性 Resistance to Soldering heat	下記の他は、JIS C 0050 (方法1A または2) に準拠。 For procedures other than specified below, refer to IEC Pub. 68-2-20. Test Tb Method 1A or 2  ディップ Solder bath method 温度 : 260±3℃ 時間 : 10±1秒 Solder temperature :260±3℃ Immersion time:10±1s 浸漬深さ : 基板面まで Thickness of printed wiring board プリント基板の厚さ : 0.8mm Thickness of P.C.B : 0.8mm  手半田 Solder iron method 温度 : 370~400℃ 時間 : 最大5秒 Solder temperature :370~400℃ Immersion time: 5 sec MAX. 但し、端子に異常のないこと。 However,excessive pressure shall not be applied to the terminal.	外観の変形および端子などの 著しいガタがなく、電気的性能を 満足すること。 Without deformation of case or excessive looseness of the terminals(pin). Electrical characteristics shall be satisfied
	第8項のリフロー条件にて2回実施する Reference reflow condition at 8 clause. Enforcement two times.	リフロー後、 端子ガタ、割れなどの異常なきこと No Damage after reflow

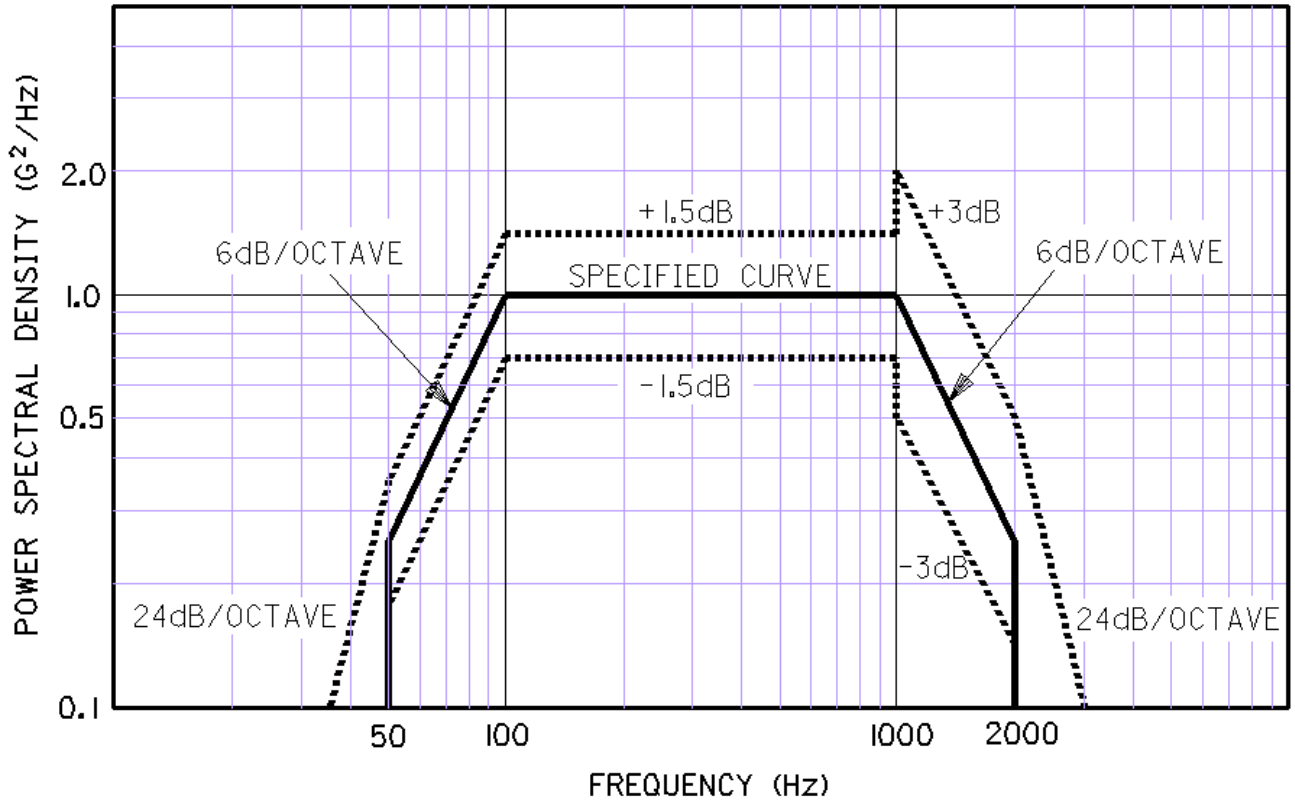
【5. 外観形状、寸法及び材質 PRODUCT SHAPE, DIMENSIONS AND MATERIALS 】

図面参照 Refer to the drawing.

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【 6. 振動条件 VIBRATION CONDITION 】

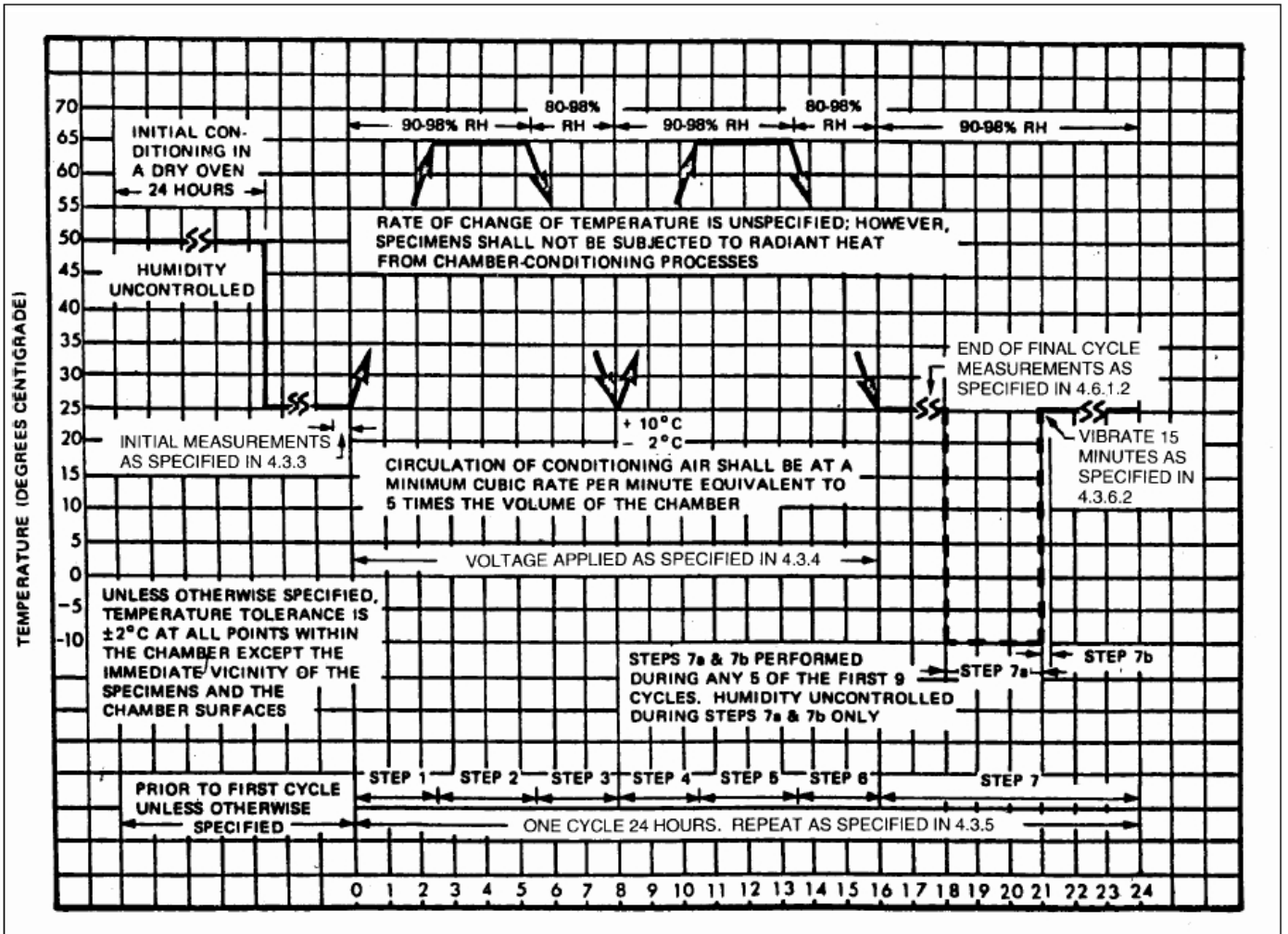


Power spectral density, G <sup>2</sup> /Hz	Overall rms G minimum
0.02	5.35

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REV.	DESCRIPTION	THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION	
DOCUMENT NUMBER <b>PS-51387-002</b>		FILENAME PS51387002.DOC	SHEET 10 OF 15
ES-4000-3996 REV. A SHEET 4 95/MAR/10 EC U5-0926 DCBRD03.LWP			W to B 3 EN-37-1(019)



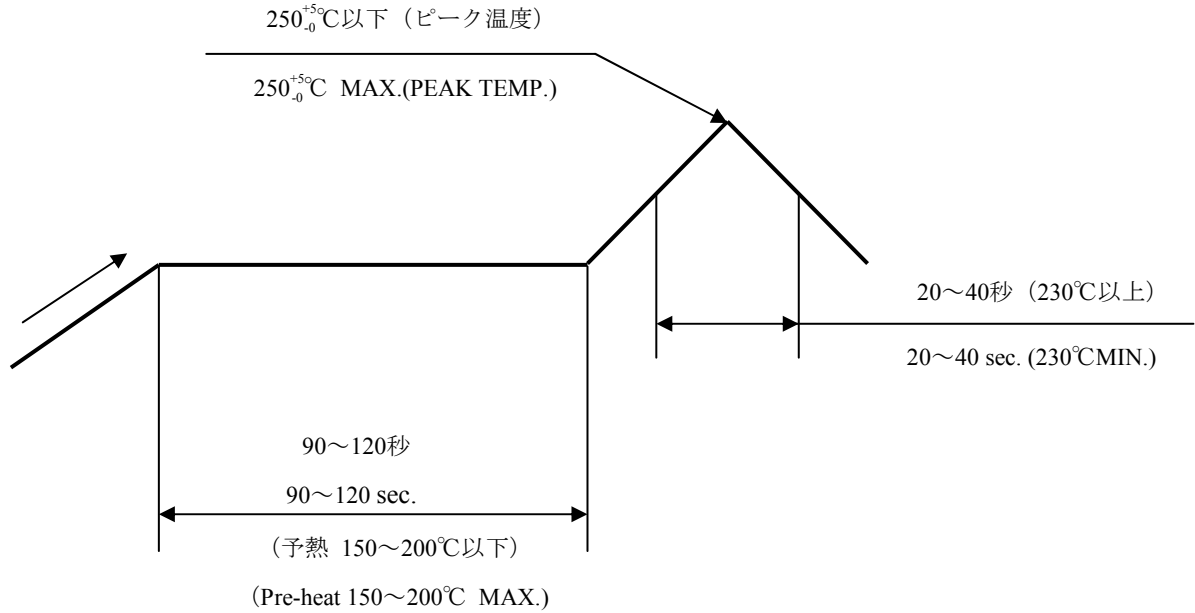
【7. 耐湿性条件 HUMIDITY CONDITION】



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【 8. 赤外線リフロー条件 INFRARED REFLOW CONDITION】



温度条件グラフ  
TEMPERATURE CONDITION GRAPH  
(基板表面温度)  
(TEMPERATURE ON BOARD PATTERN SIDE)

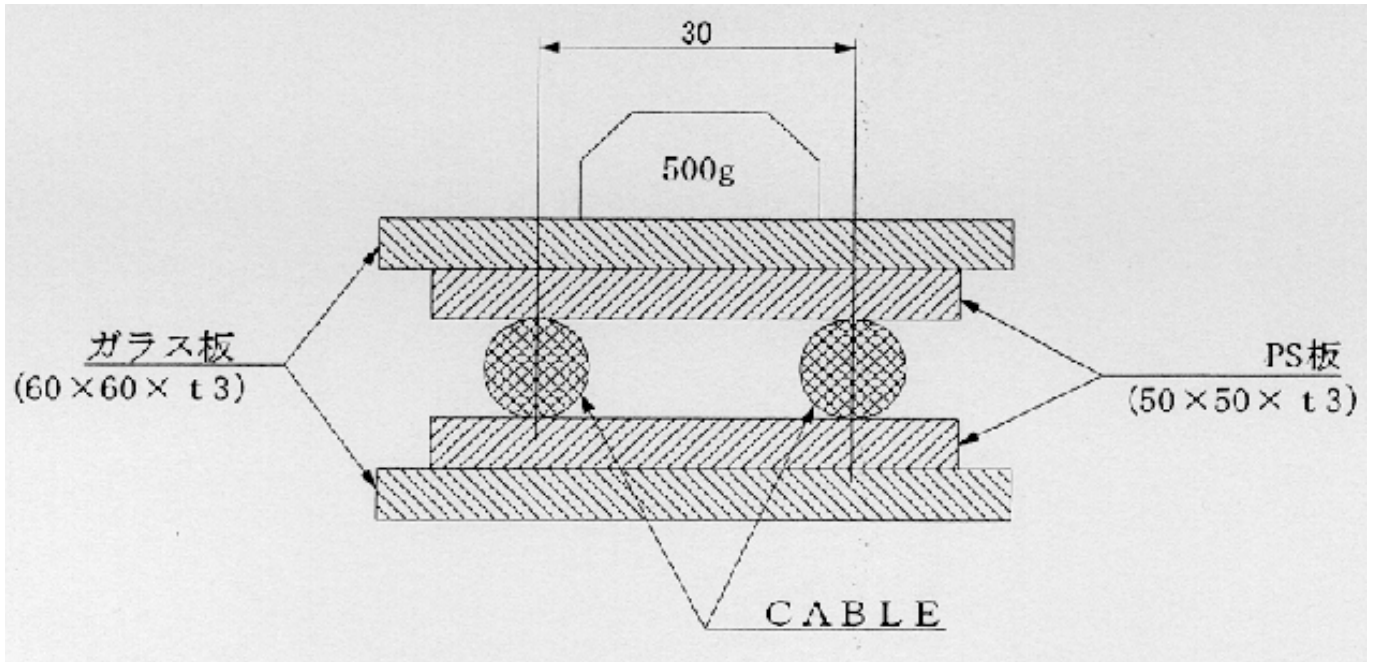
注記：本リフロー条件に関しては、リフロー装置及び基板などにより条件が異なりますので  
事前の実装評価(リフロー評価)の御確認を御願い致します。

NOTE : Please check the mount condition (reflow soldering condition) by your own devices beforehand,  
because the condition changes by the soldering devices, p.c.boards, and so on.

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【9. 非移行性試験条件 MIGRATION CONDITION】



10.0 TEST SEQUENCE

All samples have to be soldered on PCB and reflow twice total before measuring and testing.

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REV.	DESCRIPTION		
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PRODUCT SPECIFICATION



LANGUAGE

JAPANESE  
ENGLISH

Item	Group													
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Appearance	①⑥	①⑦	①⑥	①⑤	①⑦	①⑥				①⑦			①⑤	①⑤
1 Contact Resistance (initial)	②⑤	②⑥	⑤	②④	②④	⑤				②④			②④	②④
2 Insulation Resistance			②		⑤	②				⑤				
3 Dielectric Strength			③		⑥	③				⑥				
4 Durability		④												
5 Vibration	④													
6 Shock	③													
7 Heat Resistance					③									
8 Humidity						④								
9 Temperature cycling			④											
10 Salt spray				③										
11 Temperature Rise								①						
12 Capacitance									①					
13 Mating / un-mating force (initial)		③⑤												
14 Terminal / housing retention force									①					
15 Cold Test										③				
16 Solder -ability											①			
17 Resistance to soldering heat												①		
18 SO <sub>2</sub> Gas													③	
19 H <sub>2</sub> S Gas														③
Number of sample	5	5	5	5	5	5	5	5	5	5	5	5	5	5

REV.	REV. RECORD	DATE	EC NO.	WRTTN:	CH' K:
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PRODUCT SPECIFICATION



LANGUAGE

JAPANESE  
ENGLISH

A	新規作成 RELEASED	2004/04/20	J2004-3922	E. SUZUKI	K. TOJO
B	新規作成 WIP	2011/06/08	SH2011-XXXX	DIXON LI	NICOLAS ZHANG



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