

# IX-UC2001/2002/2003

Part No. Receptacle: 30113/30114/30115

## Product Specification

Qualification Test Report No. TR-18060

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0	S18523	August 21, 2018	S. Suzuki		T. Hirakawa
Rev.	ECN	Date	Prepared by	Checked by	Approved by

## 1. Scope

This Product Specification defines the test conditions and the performances of the IX-UC2000 series , a USB type-C connector.

## 2. Product Name and Parts No.

### 2.1 Product Name

IX-UC2001 RECEPTACLE MID MOUNT TYPE  
IX-UC2002 RECEPTACLE MID MOUNT TYPE  
IX-UC2003 RECEPTACLE MID MOUNT TYPE

### 2.2 Parts No.

Receptacle: 30113-024E-01  
30114-024E-01  
30115-024E-01

## 3. Rating

### 3.1 Operating Conditions

Amperage:

30113-024E-01: 5A AC/DC (For Vbus pin)

30114-024E-01: 5A AC/DC (For Vbus pin)

30115-024E-01: 5A AC/DC (For Vbus pin)

Voltage:

30113-024E-01: 20V AC

30114-024E-01: 20V AC

30115-024E-01: 20V AC

Operating temperature: 233 to 353K(-40°C to 80°C) (Containing temperature rise by current)

Operating humidity: 85% max

### 3.2 Storage Conditions

Storage temperature: 248 to 333K(-25°C to 60°C)

Storage humidity: 85% max. (Non-condensing)

## 4. Test and Performance

### Test Condition

This initial test is equal to it's at shipping condition and unless otherwise specified, all tests and measurements shall be performed under the following conditions in accordance with EIA-364

Temperature: 288K to 308K(15°C to 35°C)

Pressure: 866hPa to 1066hPa(650mmHg to 800mmHg)

Relative humidity: 45 to 75%R.H.

**4.1. Electrical Performance****1. Low level contact resistance**

Reference standard: EIA 364-23

Test conditions: Solder the receptacle connector to the test board and mate the plug connector together, then measure the contact resistance as shown in Fig.1 by the four terminal methods. Apply the low level condition of 20mV MAX. DC for the open circuit voltage and 100mA MAX. DC for the closed circuit current.

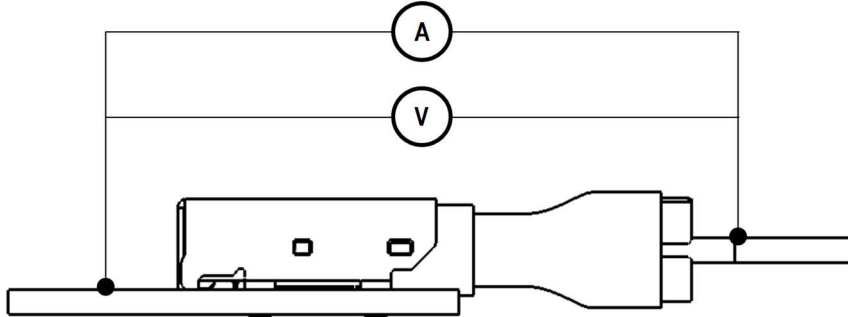


Fig.1

Pass criteria: Contact  
Initial: 40 mΩ MAX.  
After testing: 50 mΩ MAX.

**2. Insulation resistance**

Reference standard: EIA 364-21

Test conditions: Mate the plug and receptacle connector together, and then apply DC 100 V between the inner contact and the ground contact.

Pass criteria: Initial: 100 MΩ MIN. After testing: 100 MΩ MIN.

**3. Dielectric withstanding voltage**

Reference standard: EIA 364-20

Test conditions: Mate the receptacle and plug connector together, then apply AC 100V(rms) between the neighboring contacts for a minute.

Pass criteria: No abnormalities such as creeping discharge, flashover, insulator breakdown occur.

**4. Temperature rising**

Reference standard: EIA364-70 Method2

Test conditions: Mate the plug and receptacle connector together and then apply rating current per contact.

Pass criteria: Over ambient  $\Delta T 30$  °C MAX.

**4.2. Mechanical Performance****1. Mating force and unmating force**

Reference standard: EIA 364-13

Test conditions: Solder the receptacle connector to the test board, then place the board and plug on push-on/pull-off machine, measure of initial and mating/unmating 10000 cycles at a speed  $12.5 \pm 3$  mm/min. along the mating axis.

Pass criteria: Mating force: 5~20 N  
Unmating force: Initial: 8~20 N 10000cycles: 6~20 N

**4.2. Mechanical Performance**

2. Durability	
Reference standard:	EIA 364-09
Test conditions:	Solder the receptacle connector to the test board, then place the board and plug on the push-on/pull-off machine, and repeat mating and unmating 10000cycles at a maximum rate of $500\pm 50$ cycles per hour. along the mating axis.
Pass criteria:	Contact resistance: Shall meet 4.1.1 Insulation resistance: Shall meet 4.1.2. Dielectric withstanding voltage: Shall meet 4.1.3. Appearance: No abnormality adversely affecting the performance shall occur.

3. Vibration	
Reference standard:	EIA-364-28 Test condition VII Test letter D
Test conditions:	Solder the receptacle connector to the test board, then mate plug connector, and place them on the vibrator. Then apply the following vibration. During the testing, run 100mA DC to check electrical discontinuity. Frequency: 50Hz→500Hz→50Hz/approx. 15min. Directions: 3 mutually perpendicular direction. Total Amplitude: 1.52mm Sweep duration: 15 minutes for each direction, a total of 45 minutes.
Pass criteria:	Contact resistance: Shall meet 4.1.1. Electrical discontinuity: No electrical discontinuity greater than $1\mu\text{s}$ shall occur. Appearance: No abnormality adversely affecting the performance shall occur.

**4.3. Environmental Performance**

1. Thermal shock	
Reference standard:	EIA 364-32
Test conditions:	Solder the receptacle connector to the test board, then mate plug connector, and expose them to the following environment. Temperature: 218K(-55°C),30min.→358K(85°C),30min. Transition time: 5min. MAX. No. of cycles: 10 cycles
Pass criteria:	Contact resistance: Shall meet 4.1.1. Insulation resistance: Shall meet 4.1.2. Dielectric withstanding voltage: Shall meet 4.1.3. Appearance: No abnormality adversely affecting the performance shall occur.

2. High temperature life	
Reference standard:	EIA-364-17
Test conditions:	Solder the receptacle connector to the test board, then mate plug connector, and expose them to the following environment. Temperature: $358\pm 2\text{K}$ ( $105\pm 2^\circ\text{C}$ ) Duration: 120 hours
Pass criteria:	Contact resistance: Shall meet 4.1.1. Appearance: No abnormality adversely affecting the performance shall occur.

**4.3. Environmental Performance**

<b>3. Cyclic temperature and humidity</b>	
Reference standard:	EIA 364-31
Test conditions:	Solder the receptacle connector to the test board, then mate plug connector, and expose them to the following environment. Temperature and humidity 298K(25°C)80% RH→338K (65°C)50%RH Ramp times: 0.5 hour Dwell times: 1 hour Duration: 24cycles (72hours)
Pass criteria:	Contact resistance: Shall meet 4.1.1. Insulation resistance: Shall meet 4.1.2. Dielectric withstanding voltage: Shall meet 4.1.3. Appearance: No abnormality adversely affecting the performance shall occur.

<b>4. Salt water spray</b>	
Reference standard:	EIA 364-26B
Test conditions:	Solder the receptacle connector to the test board, then mate plug connector, and expose them to the following environment. Temperature: 308±2K (35±2°C) Salt water density: 5±1% [by weight] Duration: 48 hours
Pass criteria:	Contact resistance: Shall meet 4.1.1. Appearance: No abnormality adversely affecting the performance shall occur.

<b>5. Mixed flowing gas</b>	
Reference standard:	EIA 364-65 Class II A
Test conditions:	Solder the receptacle connector to the test board, then mate plug connector, and expose them to the following environment. Temperature: 303±2K (30±2°C) Relative humidity: 70±5%RH Gas: Cl2 10±3ppb NO2 200±50ppb H2S 10±5ppb SO2 100±2ppb Duration: 168 hours
Pass criteria:	Contact resistance: Shall meet 4.1.1. Appearance: No abnormality adversely affecting the performance shall occur.

4.4. Others

1. Solder ability	
Reference standard:	EIA 364-52
Test conditions:	Dip the solder tine of the contact in the solder bath at $528 \pm 5K$ ( $255 \pm 5^\circ C$ ) for $5 \pm 0.5$ seconds after immersing the tine in the flux of RMA or R type for 5 to 10 seconds.
Pass criteria:	More than 95% of the dipped surface shall be evenly wet.

2. Soldering heat resistance

Reference standard:	IPC/JEDEC-STD-020C
Test conditions:	Reflow temperature as shown in Fig.2. The number of times of Reflow is within 2.

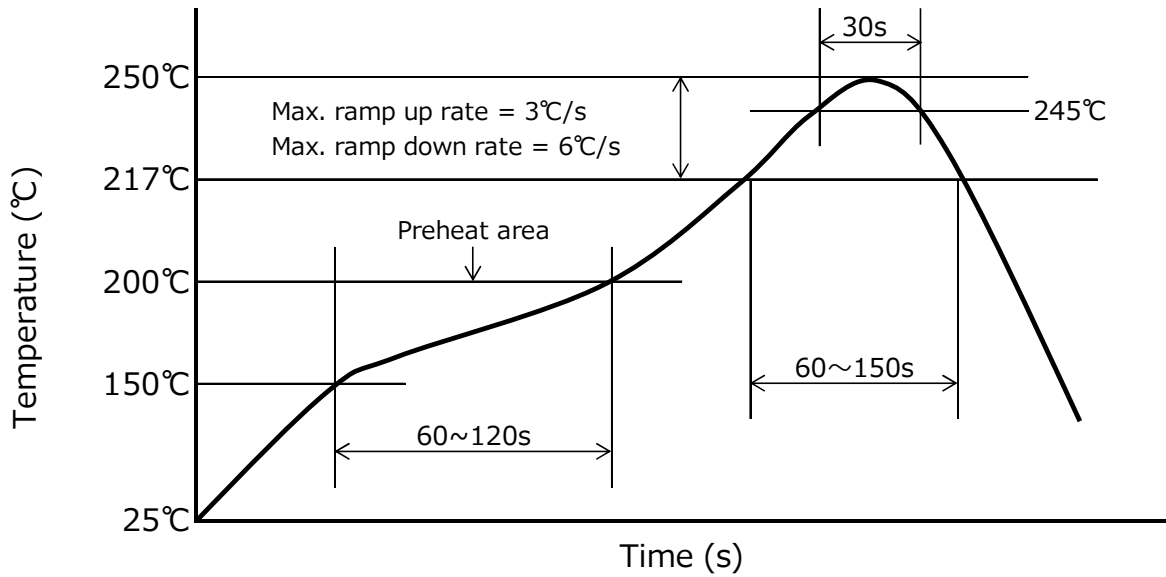


Fig.2

Pass criteria:	No deformation nor defect adversely affecting the performance occur.
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## 4.5 Test Sequence and Specimen Quantity

Table.1 Test Sequence and Sample Quantity

Test Item	Group									
	A	B	C	D	E	F	G	H	J	K
Contact resistance		2,8	1,3	1,5	1,3	1,5	1,3	1,3		
Insulation resistance		3,9		2,6		2,6				
Dielectric withstanding voltage		4,10		3,7		3,7				
Temperature rising	1									
Mating force		1,7								
Unmating force		5,11								
Durability		6								
Vibration			2							
Thermal shock				4						
High temperature life					2					
Cyclic temperature and humidity						4				
Salt water spray							2			
Mixed flowing gas								2		
Solder ability									1	
Soldering heat resistance										1
Specimen quantity.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.

※Numbers indicate sequence in which tests are performed.

## 5. Recommended Metal Mask

Refer to drawing for the recommended metal mask thickness and opening dimension.