

TITLE DC POWER JACK	SPC. NO. KM02007 & 8	PAGE : 1 OF 7 DATE : 2002.07.24
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1. Scope

This specification applies to unified polarity type DC jack (Type 1 2 ③ 4) used in electronic equipment.

For DC input use.

2. Applicable Safety Standard /Applicable Standard

Applicable Safety Standard : Electrical Applicable and Material Control Law (Technical Requirement)

Applicable Standard : EIAJ RC-5320A “Plugs and jacks for coupling an external voltage power supply ”

(Unified polarity type)

3. Polarity



4. Standard atmospheric conditions

Unless otherwise specified. The standard range of atmospheric condition for making measurements and tests are as follows :

Ambient temperature : 5°C to 35°C

Relative humidity : 45% to 85%

Air pressure : 86kPa to 106kPa

If there is any doubt about the results, measurements shall be made within the follow limits :

Ambient temperature : 20±2°C

Relative humidity : 60% to 70%

Air pressure : 86kPa to 106kPa

Operating temperature range : -10°C ~ 65°C

Storage temperature range : -25°C ~ 75°C

ISSUE	DATE	WRN	CHKD	APVD	DESCRIPTIONS
	2002.07.24	陳樹民	龔雲輝	龔雲輝	
△×2	2008.01.24	劉秀慧	夏正雄	郭遠峰	Solderability 245°C → 250°C
△×2	2008.12.08	黃健璋	夏正雄	夏正雄	Add statement of shelf life and test group
△×1	2012.08.30	劉秀慧	李阮龍	郭遠峰	Modify the item 7.2

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5. Mechanical characteristics			
	Item	Conditions	Specification
1	Insertion force	Measurement shall be made after insertion and withdrawal using standard plug gauge 3 times.	19.6N (2kgf MAX)
2	Withdrawal force		2.95~14.7N (0.3~1.5kgf)
3	Terminal strength	A static load of 4.9N(500gf) shall be applied to the tip of the terminal for 10 sec in any direction.	There shall be no damage to the terminal such as cracks, Looseness or play. Electrical and mechanical characteristics shall be satisfied.
6. Electrical characteristics			
	Item	Conditions	Specification
1	Rating	Type 1	DC 3.15V 2A
		Type 2	DC 6.3V 2A
		Type 3	DC 10.5V 2A
		Type 4	DC 13.5V 2A
2	Contact resistance	1K Hz Measured at small current (100mA MAX.)	30 mΩ MAX.
3	Insulation resistance	Apply a voltage of 500V DC for 1 min. to following portions after which measurement shall be made : Between body and conductor Between conductors not to be contact Between conductors not to be contact when plug is inserted	100MΩ MIN.
4	Dielectric strength	AC 500V (60Hz) For 1 minute. (Trip current : 2mA) Between body and conductor Between conductors not to be contact Between conductors not to be contact when plug is inserted	Without damage such as insulation breakdown
7. Endurance characteristics			
	Item	Conditions	Specification
1	Solderability	Temperature of solder : Δ 250°C±5°C Time of dip : 3 ±0.5 seconds Length of dip : 2 ±0.5mm (from top of terminal)	The soldered area shall be covered a minimum of 90% of the surface being immersed.

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Item	Condition	Specifications		
2	Wave soldering Process	Electrical and mechanical characteristics shall be satisfied, and not show remarkable failure.		
	Profile Feature		Pb-Free Assembly	
			Topside PCB	Padside PCB
	Preheat -Temperature min -Temperature max -Time (ts min to max)		120°C (Ts1 max)	110°C (Ts min) 150°C (Ts max) 75 sec
	Peak/Classification Temperature		165°C (Tp1)	260°C ±5 °C (Tp)
	Time within 5°C of actual Temperature (tp)			10 sec (within 2 times every time 2-3 sec)
	Time 25°C to Peak temperature			3 minutes max
	Resistance to Soldering Heat Test ⚠	Wave Soldering Temperature Profile are as below ⚠ About the plastic properties , Please refer to the data sheet of plastic.		
		<p>Temperature</p> <p>Time</p> <p>--- Topside PCB</p> <p>— Padside PCB</p>		
	Soldering Iron Test	Temperature of soldering Iron : 380±10°C Soldering time : 3±1 seconds	Same as Wave soldering Process	
	Insertion force	19.6N (2kgf MAX)		
	Withdrawal force	2.95 ~ 14.7N (0.3 ~ 1.5kgf)		

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Item	Conditions	Specification
3 Cold	The jack shall be stored at a temperature of $-25^{\circ}\text{C} \pm 3^{\circ}\text{C}$ for 2 hours. And then it shall be subjected to the controlled recovery conditions for 1 hour after which measurement shall be made.	There shall be no damage on appearance. Mechanical and electrical characteristics shall be satisfied.
4 Dry heat	The jack shall be stored at a temperature of $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 96 hours. And then it shall be subjected to the controlled recovery conditions for 1 hour after which measurement shall be made.	There shall be no damage on appearance. Mechanical and electrical characteristics shall be satisfied.
5 Composite temperature / humidity cyclic test	The jack shall be subject to 10 continuous cycles each as shown in figure below. Then the jack shall be stored at standard atmospheric conditions for 24 hours recovery after which measurement shall be made. ※ Temperature shall be reduced from 25°C to -10°C within 30 min. Humidity uncontrolled at a temperature less than 25°C	There shall be no damage on appearance. Mechanical and electrical characteristics shall be satisfied.

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Item	Conditions	Specification
6 Humidity	The DC Jack shall be subject to 90% ~95RH, 40°C±2°C for 96 hours, and shall then be conditioned at room ambient conditions for a period of 30 minutes.	There shall be no damage on appearance. Mechanical and electrical characteristics shall be satisfied.
7 Sulfuration	The terminals of DC jack shall be dipped into a dilute solution of 3% potassium sulfide for 1 minute.	60 mΩ MAX.
8 Operating endurance	Without load : Insertion and withdrawal shall be made with the mating plugs and jacks for 5000 cycles at a speed of 10~20 cycles/min. Load : At rating condition (non-inductive load) Insertion and withdrawal shall be made 1000 cycles at a speed of 10~20 cycles/min.	There shall be no damage on appearance. Mechanical and electrical characteristics shall be satisfied.
	Insertion force	19.6N (2kgf) MAX
	Withdrawal force	1.96~14.7N (0.2~1.5kgf)
	Contact resistance	60 mΩ MAX.

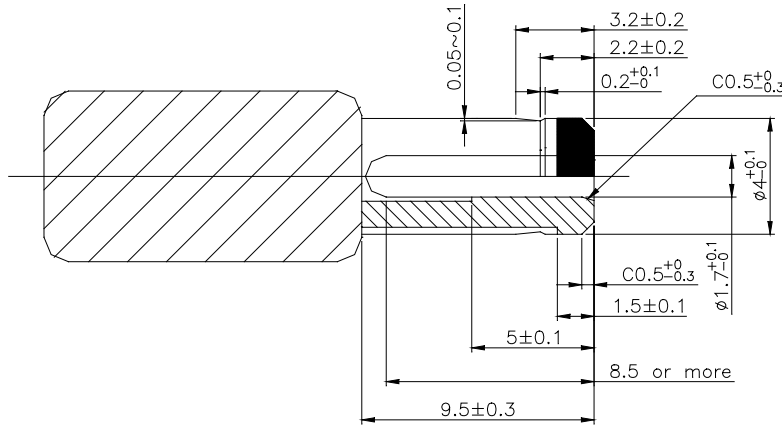
8. Δ Soldering condition shelf life about 6 months depend on storage condition of humidity, temperature and others factors.

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9. Mating plug

TYPE 2
$3.15V < RV \leq 6.3V$
RV=Rated voltage

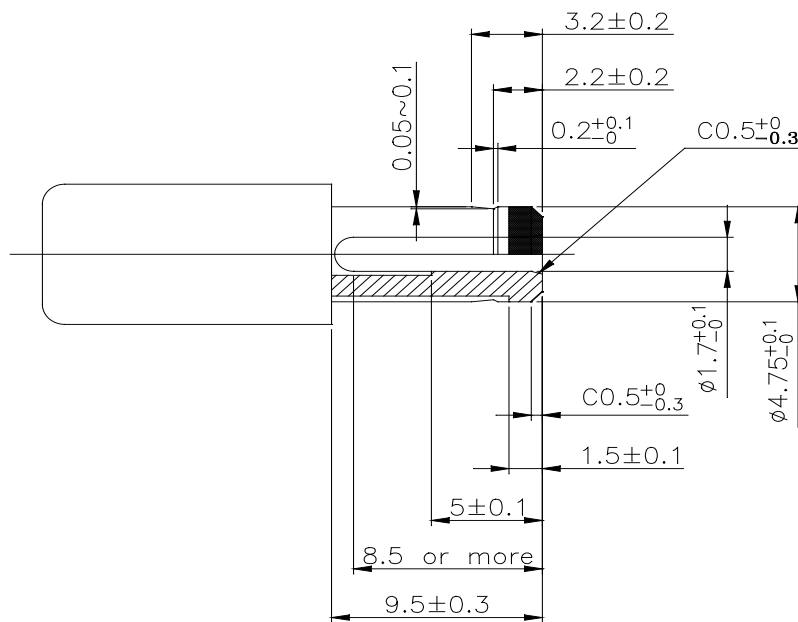
Figure of mating plug



UNIT : mm

TYPE 3
$6.3V < RV \leq 10.5V$
RV=Rated voltage

Figure of mating plug



UNIT : mm

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10. Δ Endurance test sequence :

Test Item		Test group								
		A	B	C	D	E	F	G	H	I
5.1	Insertion force	1,7		1	1,7	1,7	1,7	1,7		1
5.2	Withdrawal force	2,8		2	2,8	2,8	2,8	2,8		2
2.3	Terminal strength	6								
6.2	Contact resistance	3,9		3,7	3,9	3,9	3,9	3,9	1,3	3
6.3	Insulation resistance	4,10		4,8	4,10	4,10	4,10	4,10		4,7
6.4	Dielectric strength	5,11		5,9	5,11	5,11	5,11	5,11		5,8
7.1	Solderability		1							
7.2	Resistance to Soldering Heat Test			6						
7.3	Cold				6					
7.4	Dry heat					6				
7.5	Composite temperature/ humidity cyclic test						6			
7.6	Humidity							6		
7.7	Sulfuration								2	
7.8	Operating endurance									6

Test sample quality : 2 pcs min. / group