



承認書

SPECIFICATION FOR APPROVAL

DOC. NO. : JN96-01004-C05

ISSUE DATE : 2009/11/26

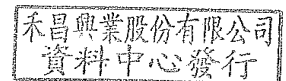
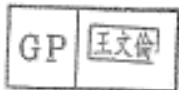
CUSTOMER :

PART NAME : FPC 0.5P CONNECTOR

PART NO. : 196033-□□041

APP. DATE :

MANUFACTURER SIGNATURE



☒ P-TWO INDUSTRIES INC.

NO. 9, SHIN HWA RD, KWEI SHAN IND. PARK TAOYUAN, 330 TAIWAN, R.O.C.
TEL:00886-3-3766666 FAX:00886-3-3762222

☐ P-TWO INDUSTRIES(S.Z.) CO.LTD.

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☐ P-TWO TECHNOLOGY CO.,LTD.

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INCLUDE PRODUCT & PACKAGE

Product Name: FPC0.5 CONNECTOR	Document No.: JN96-01004	REV.: 05
File Name: 196033-□□041	Issue Date: 2009/11/16	Page: 1 of 20

SPECIFICATION OF PRODUCTS

0.5mm PITCH FFC/FPC CONNECTOR

1. Scope:

This specification covers the requirements for product performance, and test methods provisions of 0.5mm PITCH FFC/FPC CONNECTOR.

2. Applicable documents:

The following documents form a part of this specification to the extent specified herein. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

2.1 Military Standard and Specifications:

MIL-STD-1344 Test Methods for Electrical Component Parts.

MIL-STD-202 Test Methods for Electronic and Electrical Component Parts.

3. Requirements:

3.1 Designs and Construction:

Product shall be of the design, construction and physical dimensions specified in the applicable product drawing.

3.2 Materials:

A. Terminal: Copper Alloy. Gold Plating (Lead Free).

B. Fitting Nail: Copper Alloy. Matte Tin Plating (Lead Free).

C. Housing: Heat Resistance Plastic (UL94 V-0).

D. Actuator: Heat Resistance Plastic (UL94 V-0).

3.3 General Specification:

A. Voltage Rating: 50V (AC/DC)/Contact.

B. Current Rating: 0.5A (AC/DC)/Contact.

C. Operation Temperature & Humidity Rating: -40°C~+85°C, 95%MAX.

D. Storage Temperature & Humidity Rating: -40°C~+85°C, 95%MAX.

3.4 GP requires substances (level1) forbidden

(Including orders placed to subcontractors)

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SPECIFICATION OF PRODUCTS

4. Electrical Performance :

No.	Items	Requirements	Test Procedures
4.1	Contact Resistance	Initial 20 m Ω , After test 40 m Ω MAX.	It should be tested in accordance with method 3004 of MIL-STD-1344A. Measure by low level. (Max : 20mV , 100mA)
4.2	Insulation Resistance	500 M Ω MIN	It should be tested in accordance with method 3003 of MIL-STD-1344A. When 500V DC is applied between adjacent contacts and insulation resistance is measured within one minute.
4.3	Dielectric Strength	No Breakdown	The connector shall be tested in accordance with method 3001 of MIL-STD-1344A. When the 500V AC r.m.s for one minute applied between adjacent contacts.

5. Mechanical Performance :

No.	Items	Requirements	Test Procedures
5.1	Appearance	Product shall be conforming to the requirements of applicable product drawing.	Visually, dimensionally and functionally inspected per applicable product drawing.
5.2	FFC/FPC Retention Force	100gf / PIN MIN (Less than 12 Pins) (12Pins include)	Insert the actuator, pull the FFC/FPC at the speed rate of 25 $\pm$ 3 mm/minute.
		30gf / PIN MIN (More than 12 Pin)	
5.3	Terminal / Housing Retention Force	200 gf MIN	Apply axial pull out of force at the speed rate of 25 $\pm$ 3 mm/minute on the terminal assembled in the housing.
5.4	Fitting Nail / Housing Retention Force	400 gf MIN	Apply axial pull out of force at the speed rate of 25 $\pm$ 3 mm/minute on the fitting nail assembled in the housing.

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6. Physical Performance :

No.	Items	Requirements	Test Procedures
6.1	Durability	Retention force : 30gf / PIN MIN Contact Resistance : 40mΩ MAX	Mate applicable FFC/FPC and insert and withdraw actuator at the speed rate of 25±3 mm/minute. Times : Up to 30 cycles
6.2	Vibration	Appearance : no damage,cracks,or parts dislocation. Contact Resistance : 40mΩ MAX Discontinuity : 1μs MAX	In accordance with method MIL-STD-202 method 201, all contacts shall be connected in series and DC 100mA shall be applied. Wave form : Sine wave Frequency : 10~55~10Hz in 1 minutes Amplitude : 1.5mm Orientation : X,Y,Z (3 axes) Duration : 2 hours /axis
6.3	Shock	Appearance : no damage,cracks,or parts dislocation. Discontinuity : 1μs MAX	In accordance with method MIL-STD-202 method 213. DC 100mA shall be applied. MAX acceleration : 50G Wave form : Half sine wave Orientation : X,Y,Z (3 axes) Duration : 11ms./axis Times : 3 strokes in each X,Y,Z axis
6.4	Solderability	More than 95% of the immersion shall be covered with solder.	It should be tested to compare with method 208 of MIL-STD-202. Steam Aging 8H Soldering time : 5±0.5 seconds Solder temperature : 245±5°C
6.5	Resistance to soldering heat	No deformation of components affecting performance.	1. manual soldering : Soldering time : 5 seconds MAX Solder temperature : 350±5°C 2.Reflow : Peak temperature : 260±5°C Duration time : 10±0.5 seconds Condition : 3 cycles

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7. Environmental Performance :

No.	Items	Requirements	Test Procedures
7.1	H ₂ S Gas	Contact Resistance : 40mΩ MAX	The specimens subjected to the chamber temperature of 40±2°C exposure to H ₂ S gas from 3±1ppm for 96 hours, humidity at 90%.
7.2	NH ₃ Gas	Contact Resistance : 40mΩ MAX	The specimens subjected to the chamber temperature of 40±2°C exposure to NH ₃ gas evaporating from 28% ammonia solution for 40 minutes, humidity at 75%.
7.3	Salt spray	Contact Resistance : 40mΩ MAX	In accordance with method MIL-STD-202 method 101. Temperature : 35±2°C Density : 5±1% in weight Duration : 48 hours
7.4	Humidity (steady state)	Appearance neither damage nor corrosion. Contact Resistance : 40 mΩ MAX Dielectric Strength : No Breakdown Insulation Resistance : 500 MΩ MIN	In accordance with method MIL-STD-202 method 103. Temperature : 40±2°C Relative Humidity : 90~95% Duration : 96 hours
7.5	Temperature cycling (Thermal Shock)	Contact Resistance : 40mΩ MAX	In accordance with method MIL-STD-202 method 107. Temperature : -55±3°C (30min) → 25±3°C (5min) → 85±3°C (30min) → 25±3°C (5min) Condition : 25 cycles
7.6	Temperature life High (Heat Resistance)	Contact Resistance : 40mΩ MAX. Appearance neither damage nor crack.	In accordance with method MIL-STD-202 method 108. Temperature : 85±2°C Duration : 96 hours
7.7	Temperature life Cold (Cold Resistance)	Contact Resistance : 40mΩ MAX. Appearance neither damage nor crack.	In accordance with method IEC-60068-2-1. Temperature : -40±2°C Duration : 96 hours

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ORDERING INFORMATION

0.5mm PITCH FFC/FPC CONNECTOR

Specifications:

Part Name: 0.5mm PITCH FFC/FPC Connector.

Connector Styles: Wire to Board Connector.

ZIF (Zero Insertion Force) Type.

Mounting of Connector On Board:

SMT (Surface Mounted Technology) Type.

Centerline (Pitch):0.5mm(0.02 inch)

Part No.:

1	9	6	033	-			04	1
			(1)		(2)		(3)	(4)

(1) Type Of Connectors:

033:FPC 0.5P Swing Actuator Type

(2) No. Of Contacts::

04~50 pin

(3) Plating:

04:Gold Plating.

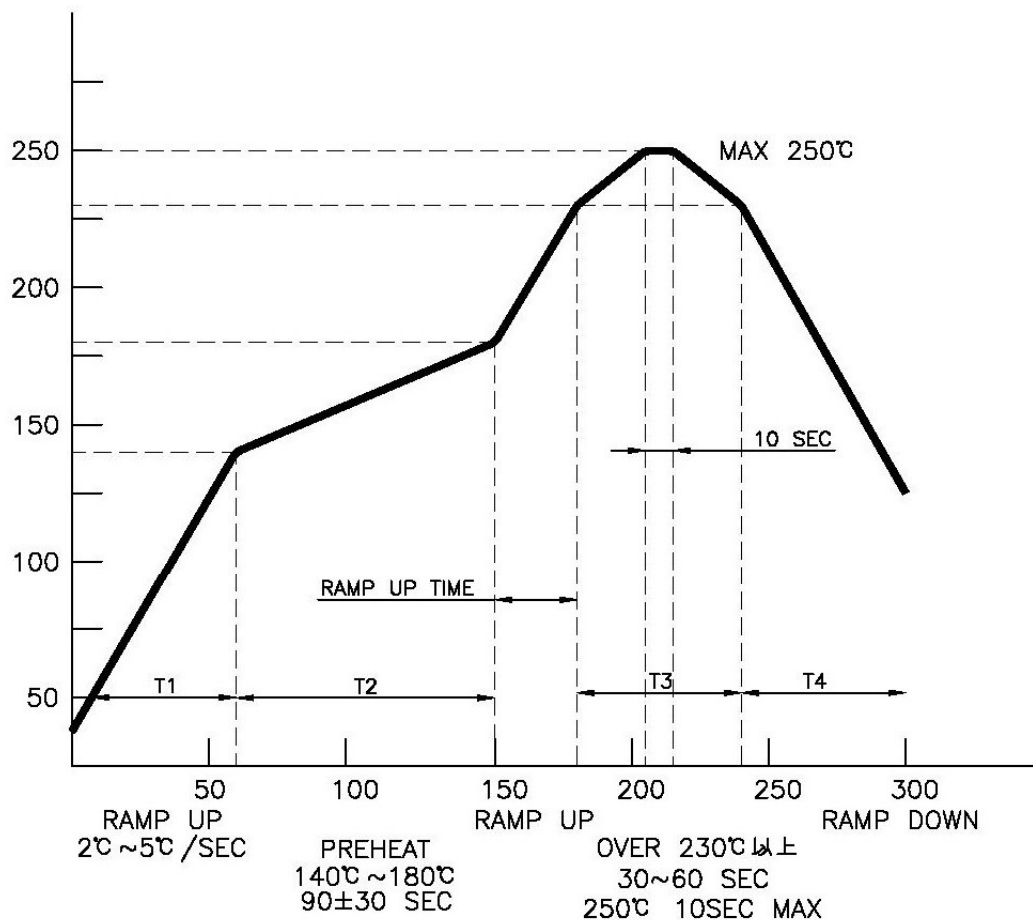
(4) Packaging:

1: Tape & Reel.

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INFRARED REFLOW CONDITION

Sn-Ag-Cu PROFILE



T1:	Temperature Ramp Up Rate	2°C~5°C/SEC
T2:	Preheat: 140°C~180°C	90±30 SEC
T3:	Time Over 230°C	30~60 SEC
T4:	Ramp Down Rate During Cooling	4°C~7°C/SEC
	Peak Temperature	250°C Max

Temperature Profile of Reflow Soldering

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MATERIAL REFERENCE TABLE

Parts Name	General Name	Model No.	Heat Resistance Level	UL Card NO.	Specifie Weight
Housing	PA-46	TS250F8	UL94 V-0	E172082	See the Attachment (P09~P10)
Actuator	PA9T	GN2330	UL94 V-0	E90350	
Terminal	Phosphor Bronze	C5210R-SH	—	—	
Fitting Nail	Brass	C2680R-H	—	—	

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PIN	Housing		Actuator		Terminal		Fitting Nail		Total to Weight
4	0.0520gf	50.49%	0.0150gf	14.56%	0.0200gf	19.42%	0.0160gf	15.53%	0.1030gf
5	0.0550gf	49.00%	0.0163gf	14.48%	0.0250gf	22.27%	0.0160gf	14.25%	0.1123gf
6	0.0580gf	47.74%	0.0175gf	14.40%	0.0300gf	24.69%	0.0160gf	13.17%	0.1215gf
7	0.0610gf	46.65%	0.0188gf	14.34%	0.0350gf	26.77%	0.0160gf	12.24%	0.1308gf
8	0.0640gf	45.71%	0.0200gf	14.29%	0.0400gf	28.57%	0.0160gf	11.43%	0.1400gf
9	0.0670gf	44.89%	0.0213gf	14.24%	0.0450gf	30.15%	0.0160gf	10.72%	0.1493gf
10	0.0700gf	44.16%	0.0225gf	14.20%	0.0500gf	31.55%	0.0160gf	10.09%	0.1585gf
11	0.0730gf	43.52%	0.0238gf	14.16%	0.0550gf	32.79%	0.0160gf	9.54%	0.1678gf
12	0.0760gf	42.94%	0.0250gf	14.12%	0.0600gf	33.90%	0.0160gf	9.04%	0.1770gf
13	0.0790gf	42.42%	0.0263gf	14.09%	0.0650gf	34.90%	0.0160gf	8.59%	0.1863gf
14	0.0820gf	41.94%	0.0275gf	14.07%	0.0700gf	35.81%	0.0160gf	8.18%	0.1955gf
15	0.0850gf	41.51%	0.0288gf	14.04%	0.0750gf	36.63%	0.0160gf	7.81%	0.2048gf
16	0.0880gf	41.12%	0.0300gf	14.02%	0.0800gf	37.38%	0.0160gf	7.48%	0.2140gf
17	0.0910gf	40.76%	0.0313gf	14.00%	0.0850gf	38.07%	0.0160gf	7.17%	0.2233gf
18	0.0940gf	40.43%	0.0325gf	13.98%	0.0900gf	38.71%	0.0160gf	6.88%	0.2325gf
19	0.0970gf	40.12%	0.0338gf	13.96%	0.0950gf	39.30%	0.0160gf	6.62%	0.2418gf
20	0.1000gf	39.84%	0.0350gf	13.94%	0.1000gf	39.84%	0.0160gf	6.37%	0.2510gf
21	0.1030gf	39.58%	0.0363gf	13.93%	0.1050gf	40.35%	0.0160gf	6.15%	0.2603gf
22	0.1060gf	39.33%	0.0375gf	13.91%	0.1100gf	40.82%	0.0160gf	5.94%	0.2695gf
23	0.1090gf	39.10%	0.0388gf	13.90%	0.1150gf	41.26%	0.0160gf	5.74%	0.2788gf
24	0.1120gf	38.89%	0.0400gf	13.89%	0.1200gf	41.67%	0.0160gf	5.56%	0.2880gf
25	0.1150gf	38.69%	0.0413gf	13.88%	0.1250gf	42.05%	0.0160gf	5.38%	0.2973gf
26	0.1180gf	38.50%	0.0425gf	13.87%	0.1300gf	42.41%	0.0160gf	5.22%	0.3065gf
27	0.1210gf	38.32%	0.0438gf	13.86%	0.1350gf	42.76%	0.0160gf	5.07%	0.3158gf
28	0.1240gf	38.15%	0.0450gf	13.85%	0.1400gf	43.08%	0.0160gf	4.92%	0.3250gf
29	0.1270gf	38.00%	0.0463gf	13.84%	0.1450gf	43.38%	0.0160gf	4.79%	0.3343gf
30	0.1300gf	37.85%	0.0475gf	13.83%	0.1500gf	43.67%	0.0160gf	4.66%	0.3435gf

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MATERIAL REFERENCE TABLE

PIN	Housing		Actuator		Terminal		Fitting Nail		Total to Weight
31	0.1330gf	37.70%	0.0488gf	13.82%	0.1550gf	43.94%	0.0160gf	4.54%	0.3528gf
32	0.1360gf	37.57%	0.0500gf	13.81%	0.1600gf	44.20%	0.0160gf	4.42%	0.3620gf
33	0.1390gf	37.44%	0.0513gf	13.80%	0.1650gf	44.44%	0.0160gf	4.31%	0.3713gf
34	0.1420gf	37.32%	0.0525gf	13.80%	0.1700gf	44.68%	0.0160gf	4.20%	0.3805gf
35	0.1450gf	37.20%	0.0538gf	13.79%	0.1750gf	44.90%	0.0160gf	4.11%	0.3898gf
36	0.1480gf	37.09%	0.0550gf	13.78%	0.1800gf	45.11%	0.0160gf	4.01%	0.3990gf
37	0.1510gf	36.99%	0.0563gf	13.78%	0.1850gf	45.32%	0.0160gf	3.92%	0.4083gf
38	0.1540gf	36.89%	0.0575gf	13.77%	0.1900gf	45.51%	0.0160gf	3.83%	0.4175gf
39	0.1570gf	36.79%	0.0588gf	13.77%	0.1950gf	45.69%	0.0160gf	3.75%	0.4268gf
40	0.1600gf	36.70%	0.0600gf	13.76%	0.2000gf	45.87%	0.0160gf	3.67%	0.4360gf
41	0.1630gf	36.61%	0.0613gf	13.76%	0.2050gf	46.04%	0.0160gf	3.59%	0.4453gf
42	0.1660gf	36.52%	0.0625gf	13.75%	0.2100gf	46.20%	0.0160gf	3.52%	0.4545gf
43	0.1690gf	36.44%	0.0638gf	13.75%	0.2150gf	46.36%	0.0160gf	3.45%	0.4638gf
44	0.1720gf	36.36%	0.0650gf	13.74%	0.2200gf	46.51%	0.0160gf	3.38%	0.4730gf
45	0.1750gf	36.29%	0.0663gf	13.74%	0.2250gf	46.66%	0.0160gf	3.32%	0.4823gf
46	0.1780gf	36.22%	0.0675gf	13.73%	0.2300gf	46.80%	0.0160gf	3.26%	0.4915gf
47	0.1810gf	36.15%	0.0688gf	13.73%	0.2350gf	46.93%	0.0160gf	3.20%	0.5008gf
48	0.1840gf	36.08%	0.0700gf	13.73%	0.2400gf	47.06%	0.0160gf	3.14%	0.5100gf
49	0.1870gf	36.01%	0.0713gf	13.72%	0.2450gf	47.18%	0.0160gf	3.08%	0.5193gf
50	0.1900gf	35.95%	0.0725gf	13.72%	0.2500gf	47.30%	0.0160gf	3.03%	0.5285gf

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PLASTIC MATERIAL CERTIFICATE OF HOUSING

STANYL DATE SHEET TS250F8

40% GF REINFORCED RETARDENT

【TYPICAL PROPERTIES】

Properties	METHOD	UNIT	STANYL TS250F8	
General Properties				
Density	ISO 1183		1.74	
Melting Temperature	DSM	°C		
Mold Shrinkage (1)	DSM	%	2.95	
Humidity Absorption (23°C 50% RH)		WT%	MACHINE DIRECTION 0.2±0.1	TRANSVERS DIRECTION 0.2±0.1
	ISO 1110		0.3	
Mechanical Properties			DRY	WET
Tensile Strength (2)	ISO 527-1A	MPa	180	130
Tensile Elongation (2)	ISO 527-1A	%	2	3
Tensile Modulus (3)	ISO527-1A	MPa	15.000	12.000
Chippy Impact Strength (4) (23°C)	ISO-179-10A	kJ/m ²	10	12
Chippy Impact Strength (4) (40°C)	ISO-179-10A	kJ/m ²	10	10
Flexural Strength(5)	ISO 178	MPa	250	200
Flexural Modulus(5)	ISO 178	MPa	13.000	10.000
Temperature Properties				
Hdt-A (1.80mpa)		°C	>290	
Coeff. Linear Thermal Expansion (20°C-80°C)	ISO 76A DSM	1/K=10 ⁻³	MACHINE DIRECTION 2	TRANSVERS DIRECTION 8
Electrical Properties				
Dielectric Strength	IEC 243	kV/mm	>30	
Volume Resistivity	IEC 83	Ω.cm	10 ¹⁵	
Surface Resistivity	IEC 83	Ω	10 ¹⁵	
Dielectric Constant	IEC 250		4.0	
Dissipation Factor	IEC 250	x10 ⁻³	16	
Flammability	UL 94		0.75mm V-0	

(1) Measured on Plaque (80×80×1 mm). Depending on Making Conditions.

(2) Test Speed: 5 mm/min.

(3) Test Speed: 1 mm/min.

(4) Notched, Edgewise.

(5) Test Speed: 2 mm/min.

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PLASTIC MATERIAL CERTIFICATE OF HOUSING

QMFZ2 Component - Plastics

Wednesday, May 13, 1998

E172082

DSM JAPAN ENGINEERING PLASTICS K K

YONEDA BLDG, 6TH FL 6-17-20 SHINBASHI MINATO-KU TOKYO 105-0004 JAPAN

Material Designation: **TS 250F(c)(a)**

Product Description: Polyamide 4/6 (PA4/6), furnished as pellets.

Color	Min. Thick. (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str	IEC GWIT	IEC GWFI
ALL	0.75	V-0	-	-	-	-	-	-	-
CTI: -			HVTR: -		D495: -		IEC BP: -		

(a) Virgin and regrind from 0 to 50% by weight have the same basic material characteristics.

(c) Represents a number 2-10 incl. denoting glass content range 10-50 percent.

Report Date: 05/12/1997

Underwriters Laboratories Inc®

264172001

UL94 small-scale test data does not pertain to building materials, furnishings and related contents. UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in components and parts of end-product devices and appliances, where the acceptability of the combination is determined by ULI.

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P-TWO INDUSTRIES INC.

PLASTIC MATERIAL CERTIFICATE OF ACTUATOR

KURARAY CO., LTD.
(KABUSIKI KAISHA KURARAY)
1-12-39, UMEDA, KITA-KU, OSAKA, 530-8611, JAPAN
TELEPHON 81-6-6348-2181
FACSIMILE 81-6-6348-2188

To whom it may concern;

Date;

We are pleased to submit the INSPECTION REPORT OF GENESTAR
as follows;

INSPECTION REPORT OF GENESTAR

Grade : GN2330
Type : 1
Color : BLACK
Lot No. : 1920K01
Quantity : 6 MT
P/O No. :

Item	Test method	Unit	Test result
Tensile strength	ASTM D 638	MPa	177
Tensile elongation(at break)	ASTM D 638	%	4
Flexural strength	ASTM D 790	MPa	218
Flexural modulus	ASTM D 790	GPa	10.7
Specific gravity	ASTM D 792	-	1.62
Notched izod impact strength	ASTM D 256	J/m	100

Tsugunori Kashimura

Tsugunori Kashimura

Senior Staff

HIGH PERFORMANCE MATERIALS DEVELOPMENT DEPT.
HIGH PERFORMANCE MATERIALS DIVISION

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P-TWO INDUSTRIES INC.

PLASTIC MATERIAL CERTIFICATE OF ACTUATOR

MAR 07 '03 02:14PM
UL iQ for Plastics Yellow Card



QMFZ2 Component - Plastics

Friday, February 22, 2002

E90350

KURARAY CO LTD

ADVANCED PLASTICS DEVELOPMENT DIV 1-12-39 UMEDA KITA-KU, OSAKA 530-0001 JAPAN

Material Designation: **GN2330#**

Product Description: (PA9T), furnished as pellets.

Color	Min. Thick. (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str	IEC GWIT	IEC GWFI
ALL	0.75	V-0	-	-	50	50	50	-	-
CTI: -			HVTR: -		D495: -		IEC BP: -		

Suffix optional.

Report Date: 07/10/2001

Underwriters Laboratories Inc®

231240001

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P-TWO INDUSTRIES INC.

METAL MATERIAL CERTIFICATE OF TERMINAL



REPORT OF MATERIAL TEST

各佳利

DATE: MAR. 12, 2007

Customer: 怡和股份有限公司

Commodity: C5210R PHOSPHOR BRONZE FAR SPRING (SH)

Applied Standard: CNS 9503 Phosphor Bronze Sheets, Plates and Strips



ISO 9002-4MSY035-00

台正字第

號

Chemical Analysis Test

Work No.	Size of Product			P(%)	Sn(%)	Cu+Sn+P(%)			
	Thickness (mm)	Width (mm)	Length (mm)						
	Standard								
				0.030 - 0.350	7.00 - 9.00	min. 99.70			
62M055C	0.200	306.000		0.125	7.710	99.975			
62M055D	0.200	306.000		0.125	7.710	99.975			

Mechanical & Physical Test

Work No.	Size of Product			Dimension Test		Tension Test		Hardness Test	Grain Size	Electric Conductivity
	Thickness (mm)	Width (mm)	Length (mm)	Thickness (mm)	Width (mm)	Tensile Strength (kgf/mm ²)	Elongation (%)	HV	(mm)	(%)
	Standard			-	(-) 0.10 - (+) 0.00	75 - 85	min. 9	230 - 270	-	-
62M055C	0.200	306.000		GOOD.	GOOD.	76.20	19.96	235.0 - 238.0	0.005	11.8
62M055D	0.200	306.000		GOOD.	GOOD.	76.20	19.96	235.0 - 238.0	0.005	11.8

QC Supervisor

鄭建益

AS01005

MINCHALI METAL INDUSTRY CO., LTD.

11, Pei Yuan Road, Chung Li City, Taiwan, R. O. C.

Tel : (03)4526141-5 (03)4526017-9

Product Name:
FPC0.5 CONNECTOR

Document No.:
JN96-01004

REV.:
05

File Name:
196033-□□041

Issue Date:
2009/11/16

Page:
15 of 20



CERTIFICATE OF TEST																
Customer : P-TWO																
Sheet No : 0000022260																
Date : 2008 . 02 . 01																
Onsan Plant:611,Daejeong-Ri,Onsan-UP,Ulsu-Kun, POONGSAN CORPORATION																
Ulsan Metropolitan City, Korea TEL: (052)231-9114																
FAX: (052)231-9400																
Article & Temper		JIS H 3130 C5210R-SH		Tensile Strength (N/mm ²)	Yield Strength ()	Elongation (%)	Hardness (HV 1Kg)	Kb ()	Grain Size (mm)	Erichsen Test (mm)	Electrical Conductivity (%IACS)	Plating (μ m)		Bending Test (°)		
Lot No	Spec. Size	Min	Max	745,000	813,000	9.0	235	510	0.010			Cu	Sn	Good Way (°)	Bad Way (180°)	
78XH2N	0.200 × 19.000			809.049		9.0	247	510	0.008					R/T=1.5	NoCrack	GOOD
*** Blank ***																
Chemical Composition (In Wt %)																
Element	Chemical Composition (In Wt %)								Size			Surface	Weight (kg)			
	Cu+Sn+P	Zn	Pb	Fe	Sn	P	Cd	Thickness	Width	Length						
Spec. Min	99.7000				7.0000	0.0300		0.190	18.900							
Lot No. Max		0.2000	0.0090	0.1000	9.0000	0.3500	0.0005	0.206	19.000							
78XH2N	99.9798	0.0011	0.0063	0.0026	7.5050	0.1644	0.0001	0.198	18.920							
*** Blank ***																
Total Weight : 1.05g, 100 Weight : 1.05g, 100																
Remarks : We hereby certify that above material has been tested to comply with the specification. No Prohibited Substances Contained																
Manager of Quality Assurance Dept H. K. Choi																

Page:
16 of 20



P-TWO INDUSTRIES INC.

METAL MATERIAL CERTIFICATE OF TERMINAL



第一伸銅科技股份有限公司
FIRST COPPER TECHNOLOGY CO., LTD.

檢驗報告表

Inspection Report

P01020-A1900

序號: 51220041 ~95 ~0
Serial NO. V

客戶名稱 Customer	禾品興業股份有限公司	重量 Weight(Kg)	695.2	出貨日期 Date	20070314
品名 Article	標準 Standard NO.	尺寸 & 質別 Dimension & Temper	製程代號 P-Code	鋼卷編號 Coil NO.	
C5210	JIS H 3130	0.2mm*19mm*SH材	N5S2000	BN5510054	
化學成份 Chemical Compositions (%)					
元素 Element	Sn	Pb	Fe	P	Cu+Sn+P
規範 Spec.	MAX 9.0000	↓ .0500	↓ .1000	.3500	
	MIN 7.0000			.0300	↑ 99.70
實測 Actual	7.9700	.0053	.0001	.1317	99.97
機械性質 Mechanical Properties					
項目 Item	抗張強度 Tension Strength Kg/mm ²	伸長率 Elongation %	硬度 Hardness HV	毛邊 Burr mm	No Prohibited Substances Contained
規範 Spec.	MAX 74.0	↑ 9.0	250.0	↓ .030	
	MIN 77.3	↑ 9.8	230.0		
實測 Actual	77.3	9.8	234.0	.023	

PCF39-1

Q.A. 品保處 Manager: 2009/11/16

Product Name: FPC0.5 CONNECTOR	Document No.: JN96-01004	REV.: 05
File Name: 196033-□□041	Issue Date: 2009/11/16	Page: 17 of 20

This document contains information that is proprietary to P-TWO INC., and should not be used without permission.



P-TWO INDUSTRIES INC.

METAL MATERIAL CERTIFICATE OF FITTING NAIL



第一伸銅科技股份有限公司
FIRST COPPER TECHNOLOGY CO., LTD.

檢驗報告表 Inspection Report

序號: 51118076 ~95 ~0
Serial NO. y

客戶名稱 Customer	禾昌興業股份有限公司		重量 Weight (Kg)	819.4		出貨日期 Date	20070314	
品 名 Article	標 準 Standard NO.	尺 寸 & 質 別 Dimension & Temper			製程代號 P-Code		鋼卷編號 Coil NO.	
C2680	JIS H 3100	0.2mm*18mm*H材			E3H2000P		FE3509122	
化 學 成 份 Chemical Compositions (%)								
元 素 Element	Cu	Zn	Pb	Fe				
規 範 MAX Spec. MIN	68.00 64.00	↓ REM	↓ .0500	↓ .0500				
實 測 Actual	65.37	↓ REM	↓ .0009	↓ .0014				
機 械 性 質 Mechanical Properties					No Prohibited Substances Contained			
項 目 Item	抗張強度 Tension Strength Kgf/mm ²	伸長率 Elongation %	硬 度 Hardness HV	毛邊 Burr mm				
規 範 MAX Spec. MIN	52.0 44.0	↑ 14.0	160.0 145.0	↓ .020				
實 測 Actual	50.2	↑ 19.6	159.0	↓ .016				

PCF39-1

Q.A.
品保處 Manager:

Product Name:
FPC0.5 CONNECTOR

Document No.:
JN96-01004

REV.:
05

File Name:
196033-□□041

Issue Date:
2009/11/16

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P-TWO INDUSTRIES INC.

METAL MATERIAL CERTIFICATE OF FITTING NAIL



REPORT OF MATERIAL TEST

DATE: MAR. 13, 2007

Customer: 怡和股份有限公司 Commodity: C 2880 R BRASS STRIP (H)
 Applied Standard: CNS 4383 Brass Sheets, Plates and Strips



台正字第 3544 號

Chemical Analysis Test

Work No.	Size of Product			Cu(%)	Fe(%)	Pb(%)	Zn(%)			
	Thickness (mm)	Width (mm)	Length (mm)							
	Standard									
				64.00 - 68.00	max. 0.050	max. 0.050	REN.			
5CA208A	0.200	623.000		65.190	0.014	0.000	REN.			

Mechanical & Physical Test

Work No.	Size of Product			Dimension Test		Tension Test		Hardness Test	Grain Size	Electric Conductivity
	Thickness (mm)	Width (mm)	Length (mm)	Thickness (mm)	Width (mm)	Tensile Strength (kgf/mm ²)	Elongation (%)	HV	(mm)	(%)
	Standard			-	(-) 0.10 - (+) 0.00	42 - 55	-	105 - 175	-	-
5CA208A	0.200	623.000		6000.	6000.	48.68	17.44	155.0 - 156.0	-	24.0

QC Supervisor

鄭建益

AS20303

MINCHALI METAL INDUSTRY CO., LTD.

11, Pei Yuan Road, Chung Li City, Taiwan, R. O. C.

Tel : (03)4526141-5 (03)4526017-9

Fax : (03)4529112 (03)4629625

Product Name:
FPC0.5 CONNECTOR

Document No.:
JN96-01004

REV.:
05

File Name:
196033-□□041

Issue Date:
2009/11/16

Page:
19 of 20



P-TWO INDUSTRIES INC.

METAL MATERIAL CERTIFICATE OF FITTING NAIL

Customer : P-TWO		CERTIFICATE OF TEST										POONGSAN CORPORATION	
Sheet No : 0000021991		Date : 2008 . 03 . 07										Onsan Plant:611,Daejeung-Ri,Onsan-1P,Ulsan-Kun, Ulsan Metropolitan City, Korea TEL: (052)231-9114 FAX: (052)231-9400	
Article & Temper JIS H 3100 C2680R-H		Tensile Strength (KG/mm ²)	Yield Strength ()	Elongation (%)	Hardness (HV 1Kg)	Kb ()	Grain Size (mm)	Erichsen Test (mm)	Electrical Conductivity (%IACS)	Plating (μm)	Cu	Sn	Bending Test Good Way (°) Bad Way (180°)
Lot No	Spec. Min Max	45,000 53,000	402 529	12.0	140 160		0.015						R/T=1.5 NoCrack NoCrack
78KB1D	0.200 × 18.500	48,000	412	21.0	154		0.015						GOOD
*** Blank ***													
Element	Chemical Composition (In Wt%)								Size				
Spec.	Cu	Zn	Pb	Fe	Cd				Thickness	Width	Length	Surface Weight (kg)	
Min	64.0000	R							0.190	18.400			
Max	68.0000			0.0090	0.0500	0.0050			0.206	18.500			
Lot No.									0.200	18.440			
78KB1D	65.2600	R	0.0028	0.0069	0.0001				0.201	18.470		GOOD	
*** Blank ***													
Total Weight : 711.900-													
Remarks : We hereby certify that above material has been tested to comply with the specification.													
No Prohibited Contained													
Manager of Quality Assurance Dept POONGSAN CORPORATION <i>H. K. Choi</i>													

Product Name: FPC0.5 CONNECTOR	Document No.: JN96-01004	REV.: 05
File Name: 196033-□□041	Issue Date: 2009/11/16	Page: 20 of 20

禁用品質保證函

The Confirmation of Prohibited / Controlled Substances

我們保證我們的產品遵循下列內容：

We hereby confirm and assure that our products are in conformity of the following stipulations:

- 1、塑膠原料及零部件之塑膠部分，其鎘(Cadmium)含量必須低於 5 PPM，其鉛(Lead)含量必須低於 100 PPM，汞(Mercury)、六價鉻(Chromium VI)、聚溴聯苯(PBBs)及聚溴二苯醚(PBDEs)低於 1000 PPM。

Cadmium contained in raw material for plastics and plastic components must be less than 5ppm; Lead must be less than 100ppm. ; Mercury, Chromium VI, PBBs and PBDEs must be less than 1000ppm..

- 2、包裝材料(包括紙箱、輪盤、TUBE 管、PE 袋及標籤紙)其鎘(Cadmium)、鉛(Lead)、汞(Mercury)、六價鉻(Chromium VI)總含量必須低於 100 PPM。

The total content of Cadmium, Lead, Mercury and Chromium VI in packaging (including cartons, reels, PVC tubes, PE bags, INK and labels) must be less than 100ppm.

- 3、金屬材料(包括銅板、銅線及表面電鍍層)其鎘(Cadmium)含量必須低於 5 PPM，其汞(Mercury)、六價鉻(Chromium VI)及鉛(Lead) 含量必須低於 1000 PPM。

The content of Cadmium in metal material (including copper, copper wire and surface plating) must be less than 5ppm ; Mercury , Chromium VI, Lead must be less than 1000ppm.

- 4、凡我方交給客戶的所有我方之零件和包裝材料均依照上述規定，若有不符這份保證信則本公司將承擔所有發生的費用及法律責任。

All parts and packaging materials delivered to our customers must be in compliance with stipulations above. If failure to any part of this guarantee letter happens, our company is responsible for all incurred charge and legal issues.

- 5、本保證函所生一切訴訟，適用中華民國法律，雙方同意以台灣台北地方法院為專屬管轄法院。

This agreement shall be governed by, and construed with, the substantive the laws of the Republic of China. Any disputes under this agreement will be brought in the courts located in Taipei, Taiwan, R.O.C., and the parties hereby consent to the personal jurisdiction and venue of the court.

- 6、本保證函同時以中文及英文書寫，有任何疑義爭執產生時，以中文版本所載為準。

This agreement wrote by Chinese and English, if it has any dispute arise, it being understood that the Chinese version shall be controlling.

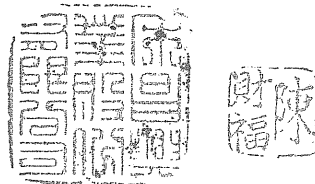
Company Name: P-TWO INDUSTRIES INC.

Representative: 陳財福

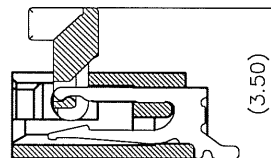
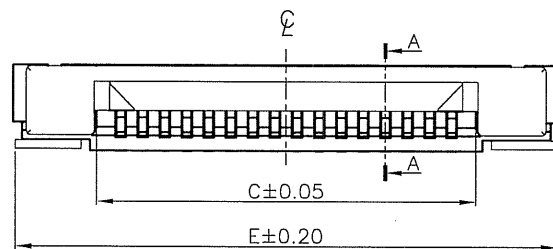
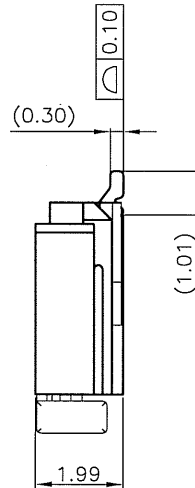
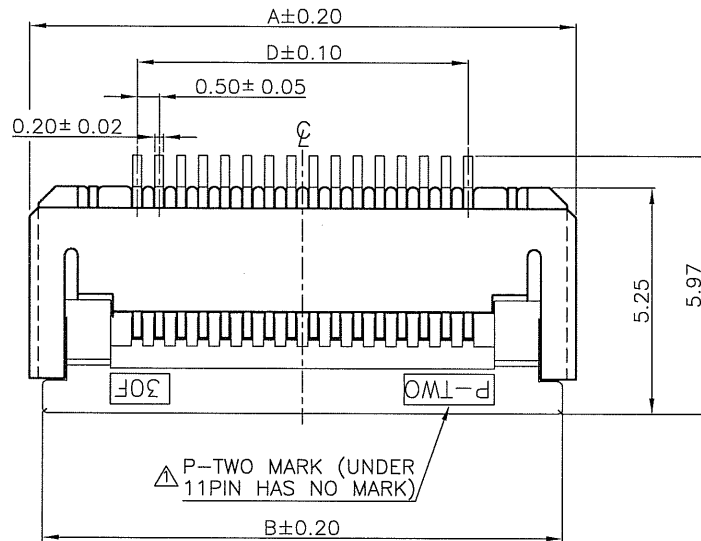
Address: NO.9, SHIN HWA RD, KWEI SHAN IND. PARK TAOYUAN, 330 TAIWAN.

Tel No.: +886-3-3769999

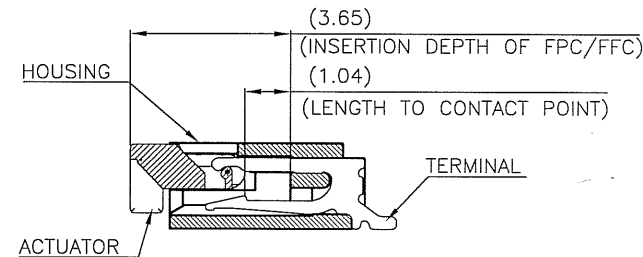
Fax No.: +886-3-3762222



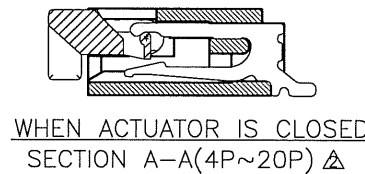
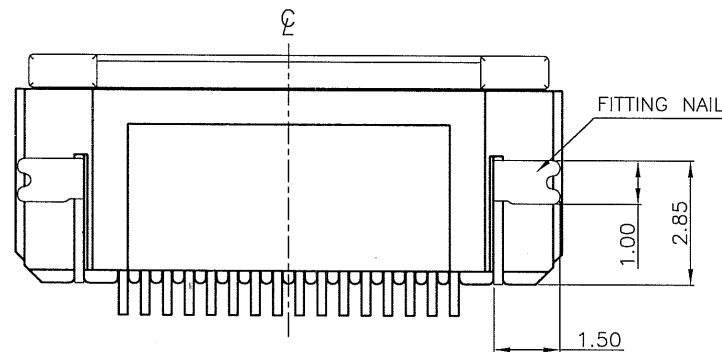
- NOTES:
 1.HOUSING MATERIAL: HEAT RESISTANT PLASTIC UL94 V-0.
 2.ACTUATOR MATERIAL: HEAT RESISTANT PLASTIC UL94 V-0.
 3.TERMINAL MATERIAL: COPPER ALLOY
 4.FITTING NAIL MATERIAL: COPPER ALLOY
 5.PLATING:
 TERMINAL:
 OVERALL SURFACE PLATED WITH GOLD
 OVERALL UNDER PLATED WITH NICKEL
 FITTING NAIL:
 OVERALL SURFACE PLATED WITH MATTE TIN
 OVERALL UNDER PLATED WITH NICKEL
 6.PARTS NO:196033-XX041



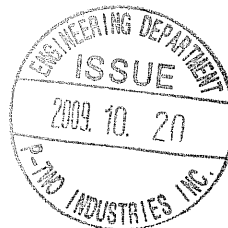
WHEN ACTUATOR IS OPENED



WHEN ACTUATOR IS CLOSED
 SECTION A-A(21P~60P)



WHEN ACTUATOR IS CLOSED
 SECTION A-A(4P~20P) Δ

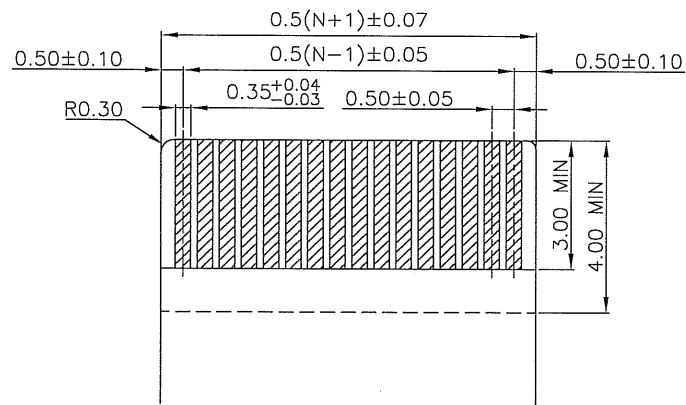


No. of Contacts (n)	Dimensions				
	A	B	C	D	E
4	6.4	5.80	2.60	1.50	6.3
5	6.9	6.30	3.10	2.00	6.8
6	7.4	6.80	3.60	2.50	7.3
7	7.9	7.30	4.10	3.00	7.8
8	8.4	7.80	4.60	3.50	8.3
9	8.9	8.30	5.10	4.00	8.8
10	9.4	8.80	5.60	4.50	9.3
11	9.9	9.30	6.10	5.00	9.8
12	10.4	9.80	6.60	5.50	10.3
13	10.9	10.30	7.10	6.00	10.8
14	11.4	10.80	7.60	6.50	11.3
15	11.9	11.30	8.10	7.00	11.8
16	12.4	11.80	8.60	7.50	12.3
17	12.9	12.30	9.10	8.00	12.8
18	13.4	12.80	9.60	8.50	13.3
19	13.9	13.30	10.10	9.00	13.8
20	14.4	13.80	10.60	9.50	14.3
21	14.9	14.30	11.10	10.00	14.8
22	15.4	14.80	11.60	10.50	15.3
23	15.9	15.30	12.10	11.00	15.8
24	16.4	15.80	12.60	11.50	16.3
25	16.9	16.30	13.10	12.00	16.8
26	17.4	16.80	13.60	12.50	17.3
27	17.9	17.30	14.10	13.00	17.8
28	18.4	17.80	14.60	13.50	18.3
29	18.9	18.30	15.10	14.00	18.8
30	19.4	18.80	15.60	14.50	19.3
31	19.9	19.30	16.10	15.00	19.8
32	20.4	19.80	16.60	15.50	20.3
33	20.9	20.30	17.10	16.00	20.8
34	21.4	20.80	17.60	16.50	21.3
35	21.9	21.30	18.10	17.00	21.8
36	22.4	21.80	18.60	17.50	22.3
37	22.9	22.30	19.10	18.00	22.8
38	23.4	22.80	19.60	18.50	23.3
39	23.9	23.30	20.10	19.00	23.8
40	24.4	23.80	20.60	19.50	24.3
41	24.9	24.30	21.10	20.00	24.8
42	25.4	24.80	21.60	20.50	25.3
43	25.9	25.30	22.10	21.00	25.8
44	26.4	25.80	22.60	21.50	26.3
45	26.9	26.30	23.10	22.00	26.8
46	27.4	26.80	23.60	22.50	27.3
47	27.9	27.30	24.10	23.00	27.8
48	28.4	27.80	24.60	23.50	28.3
49	28.9	28.30	25.10	24.00	28.8
50	29.4	28.80	25.60	24.50	29.3

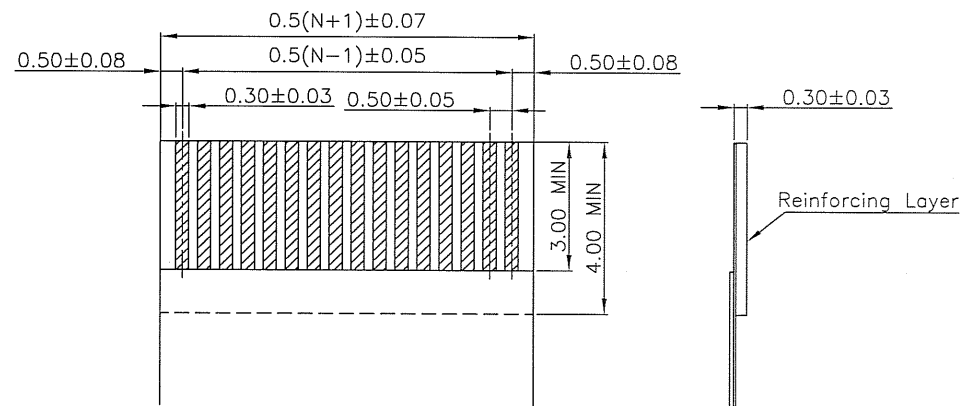
CUSTOMER DRAWING

P-TWO INDUSTRIES INC.

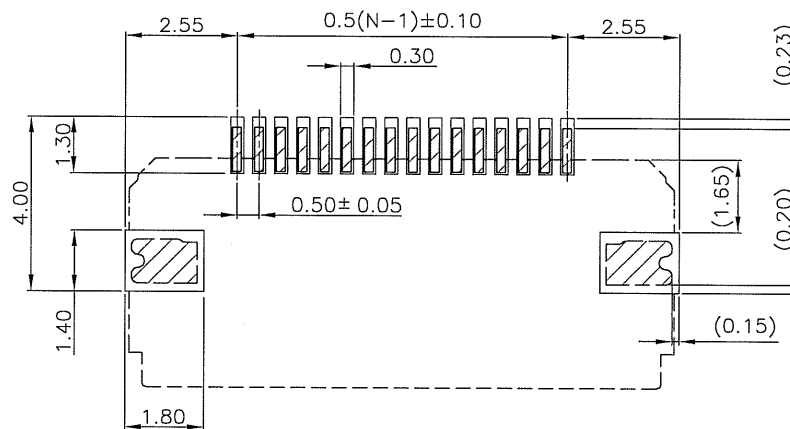
UNLESS OTHERWISE SPECIFIED TOLERANCES ARE				APPROVED BY DATE				TITLE			
X.X ±0.25				CHECKED BY DATE				FPC 0.5 CONNECTOR			
X.XXX ±0.15				DRAWN BY DATE				SWING ACTUATOR TYPE			
ANG. ±0'30"				DOCUMENT NO				PAGE			
SER	AREA	DESCRIPTION	CHK	DATE	UNIT	SIZE	DRAWING NO	REV	SHEET	SCALE	
						A3	196033-XX041	C	1/2	8:1	



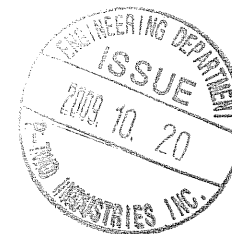
RECOMMENDED FPC DIMENSION



RECOMMENDED FFC DIMENSION



P.C.B LAYOUT REF

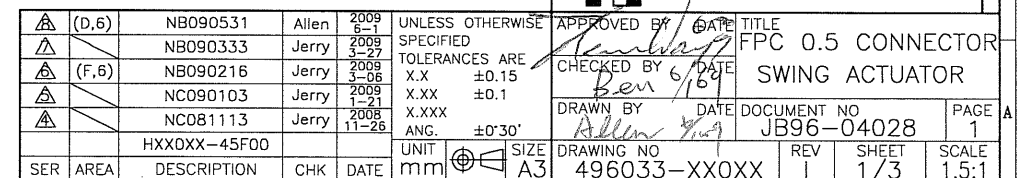


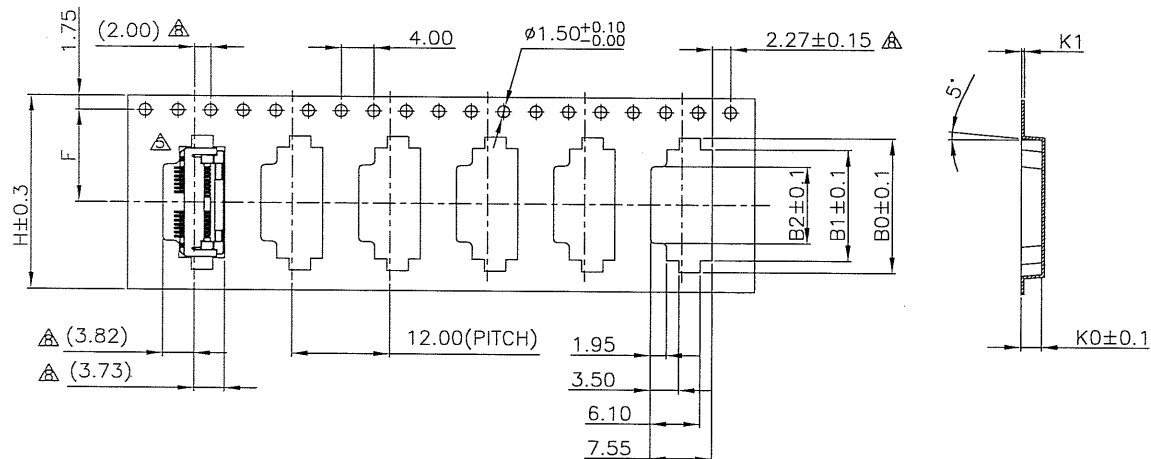
CUSTOMER DRAWING



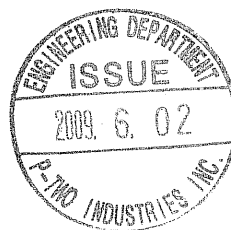
P-TWO INDUSTRIES INC.

						UNLESS OTHERWISE SPECIFIED TOLERANCES ARE	APPROVED BY DATE	TITLE		
						X.X ±0.25	<i>[Signature]</i>	FPC 0.5 CONNECTOR		
						X.XX ±0.15	CHECKED BY DATE	SWING ACTUATOR TYPE		
						X.XXX ±0.15	<i>Ben 15/10/09</i>			
						±0°30'	DRAWN BY DATE	DOCUMENT NO	PAGE	
							<i>Shen 19/10/09</i>	JB96-01009	2	





Connector+Carrier Tape
part Number:
196XXX-XXXX1
No. of CKT
4~18PINS
Type No.
034/033/041/042/095

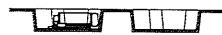
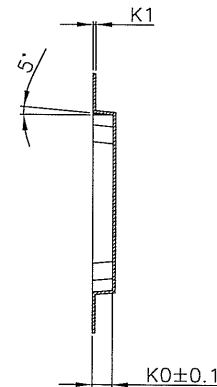
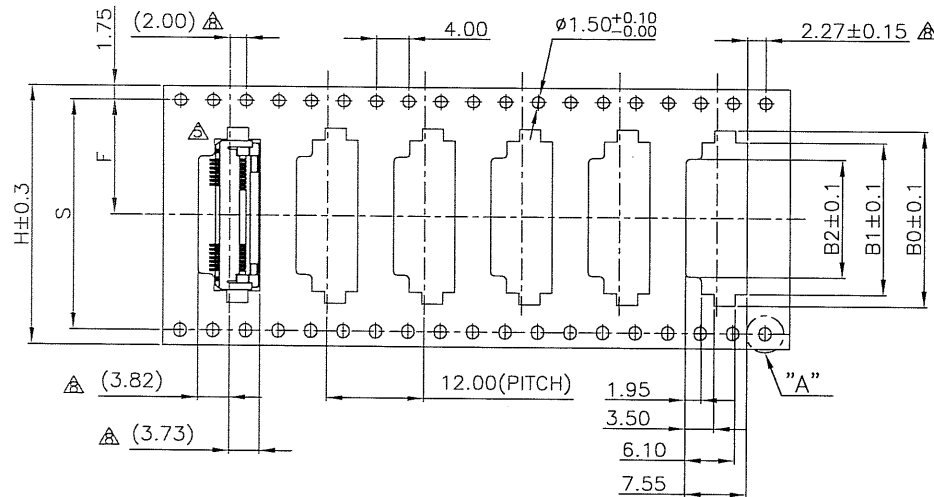


Carrier Length : 56M Pitch : 12mm									
Number of Connectors : 1500 PCS/Reel									
NO. of Contacts(n)	B0	B1	B2	K0	K1	S	F Δ	H	Carrier Part No.
4	9.60	6.60	2.50						496033-24004
5	10.10	7.10	3.00						496033-24005
6	10.60	7.60	3.50						496033-24006
7	11.10	8.10	4.00						496033-24007
8	11.60	8.60	4.50						496033-24008
9	12.10	9.10	5.00						496033-24009
10	12.60	9.60	5.50						496033-24010
11	13.10	10.10	6.00	2.50	0.35	-	11.5 ± 0.1	24	496033-24011
12	13.60	10.60	6.50						496033-24012
13	14.10	11.10	7.00						496033-24013
14	14.60	11.60	7.50						496033-24014
15	15.10	12.10	8.00						496033-24015
16	15.60	12.60	8.50						496033-24016
17	16.10	13.10	9.00						496033-24017
18	16.60	13.60	9.50						496033-24018

P-TWO INDUSTRIES INC.

SER	AREA	DESCRIPTION	CHK	DATE	UNIT	SIZE	DRAWING NO	REV	SHEET	SCALE
					mm	A3	496033-XX0XX	I	2/3	1.5:1

Δ (6.7)(0.2)	NB090531	Allen	2009	UNLESS OTHERWISE	APPROVED BY	DATE	TITLE
Δ (D,9)	NB090333	Jerry	2009	SPECIFIED	<i>Ben</i>	<i>6/19</i>	FPC 0.5 CONNECTOR
Δ	NB090216	Jerry	2009	TOLERANCES ARE	CHECKED BY	DATE	SWING ACTUATOR
Δ (I,5)	NC090103	Jerry	2009	X.X ± 0.15	<i>Ben</i>	<i>6/19</i>	
Δ (C,8)	NC081113	Jerry	2009	X.XX ± 0.1	DRAWN BY	DATE	DOCUMENT NO
	HXX0XX-45F00		2008	X.XXX	<i>Allen</i>	<i>6/19</i>	JB96-04028
			11-26	ANG. $\pm 0'30''$			



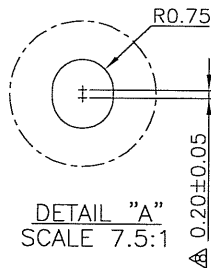
Pull out direction →

Connector+Carrier Tape
part Number:

196XXX-XXXX1

No. of CKT
19~60PINS

Type No.
034/033/041/042/095



DETAIL "A"
SCALE 7.5:1



Carrier Length: 56M Pitch: 12mm
Number of Connectors: 1500 PCS/Reel

NO. of Contacts(n)	B0	B1	B2	K0	K1	S△	F△	H	Carrier Part No.
19	17.10	14.10	10.00						496033-32019
20	17.60	14.60	10.50						496033-32020
21	18.10	15.10	11.00						496033-32021
22	18.60	15.60	11.50						496033-32022
23	19.10	16.10	12.00						496033-32023
24	19.60	16.60	12.50						496033-32024
25	20.10	17.10	13.00						496033-32025
26	20.60	17.60	13.50						496033-32026
27	21.10	18.10	14.00						496033-32027
28	21.60	18.60	14.50						496033-32028
29	22.10	19.10	15.00						496033-44029
30	22.60	19.60	15.50						496033-44030
31	23.10	20.10	16.00						496033-44031
32	23.60	20.60	16.50						496033-44032
33	24.10	21.10	17.00						496033-44033
34	24.60	21.60	17.50						496033-44034
35	25.10	22.10	18.00						496033-44035
36	25.60	22.60	18.50						496033-44036
37	26.10	23.10	19.00						496033-44037
38	26.60	23.60	19.50						496033-44038
39	27.10	24.10	20.00						496033-44039
40	27.60	24.60	20.50						496033-44040
41	28.10	25.10	21.00						496033-44041
42	28.60	25.60	21.50						496033-44042
43	29.10	26.10	22.00						496033-44043
44	29.60	26.60	22.50						496033-44044
45	30.10	27.10	23.00						496033-44045
46	30.60	27.60	23.50						496033-44046
47	31.10	28.10	24.00						496033-44047
48	31.60	28.60	24.50						496033-44048
49	32.10	29.10	25.00						496033-44049
50	32.60	29.60	25.50						496033-44050
55	35.10	32.10	28.00						496033-56055
60	37.60	34.60	30.50						496033-56060



P-TWO INDUSTRIES INC.

△ (6.2)(4.2) (6.9)	NB090531	Allen	2009 6-1	UNLESS OTHERWISE SPECIFIED	APPROVED BY: <i>Ben</i> DATE: <i>6/16/09</i>	TITLE: FPC 0.5 CONNECTOR
△ (6.9)	NB090333	Jerry	2009 5-27	TOLERANCES ARE	CHECKED BY: <i>Ben</i> DATE: <i>6/16/09</i>	SWING ACTUATOR
△ (1.5)	NB090216	Jerry	2009 3-9	X.X ±0.15		
△ (1.5)	NC090103	Jerry	2009 1-21	X.XX ±0.1		
△	NC081113	Jerry	2008 11-26	X.XXX ANG. ±0°30'		
	HXX0XX-45F00			UNIT mm	DRAWN BY: <i>Allen</i> DATE: <i>6/16/09</i>	DOCUMENT NO: JB96-04028
SER	AREA	DESCRIPTION	CHK	DATE	DRAWING NO: 496033-XX0XX	PAGE 1
					REV: 1	SHEET 3/3
					SCALE: 1.5:1	

品質/環安政策

QUALITY/ENVIRONMENTAL SAFETY POLICIES

1. 顧客滿意守法規.

Satisfying customer & obeying the law and regulations.

2. 防汙減廢節能源.

Protecting pollution, reducing waste & saving energy.

3. 全員參與勤改善.

All the staff join in & improve frequently.

4. 以人為本保安全.

Taking person as foundation & keep safety .