

AD-312N

Antenna Approval Sheet

Part Number	R3410110230
Product Number	AD-312N
Description	Dipole Antenna, 2.65dBi/4.86dBi 2.4G/5GHz, I-PEX / MHF1 connector
DOC NO	AS-2110001

Ver. 1.0

Revised History

Version	Purpose	Date	Responsible
1.0	Initial Doc	2021/10/18	Kamoro

SparkLAN		Customer
Sales	PM	Approval by

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Dual Band Dipole Antenna

AD-312N

Electrical Specifications

Frequency range	2400 -2500 MHz	5150-5875 MHz
Peak Gain	2.65 dBi	4.86 dBi
Efficiency	50 %	36.26 %
VSWR	2.0 : 1 Max.	2.0 : 1 Max.
Power handling	1W (cw)	
Impedance	50 Ω	
Dimensions	36.1x8.1mm	
Antenna Material	FR4	
Connector	I-PEX	
Cable	Ø1.13 L:550mm	

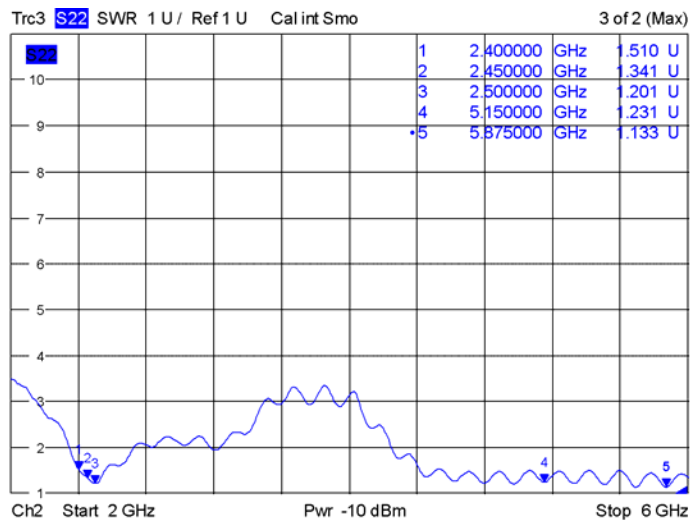


*Antenna measured on a 2mm thick ABS plastic base

Environmental & Mechanical Characteristics

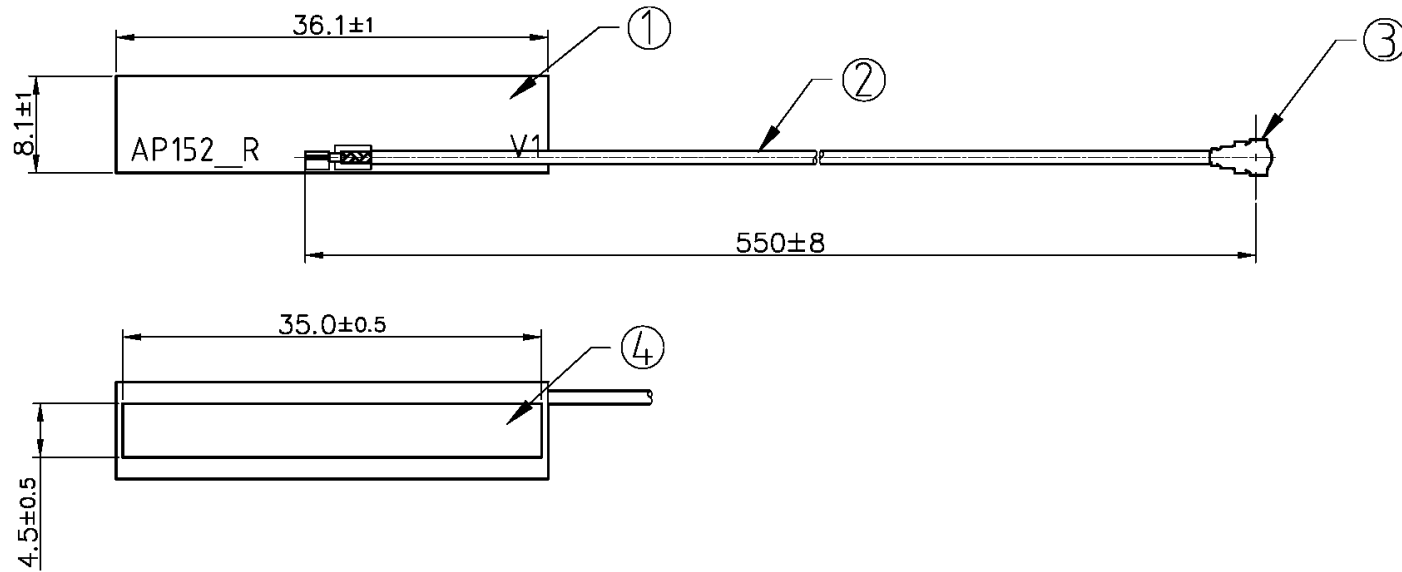
Temperature	- 10°C to +55°C
Humidity	95% @ 25°C

VSWR



Antenna Drawing

NO.	NAME	FINSH	MAT'L	Q'TY	MEMO
1.	PCB	BLACK	FR4	1	
2.	CABLE	BLACK	--	1	ø1.13
3.	CONNECTOR	PLATED GOLD	BRASS	1	IPEX
4.	TAPE	--	--	1	



PROJECTION		TOLERANCE UNLESS OTHERWISE SPECIFIED	
		LINER	ANGLE
UNITS	MM	.X ±0.10	X' ±0.5°
		.XX ±0.05	
		.XXX ±0.01	
REV.	A	APPD.	
SHEET	1/1	CHKD.	
SIZE	SCALE	DESIGN	
A4	1:1	DRAW	Gino 2020/04/21

TITLE
AD-312N
DWG NO.
R3410110230

REV.	ECN.	NAME	DATE
3.			
2.			
1.			

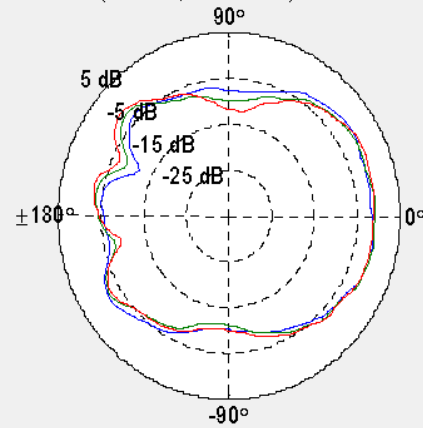
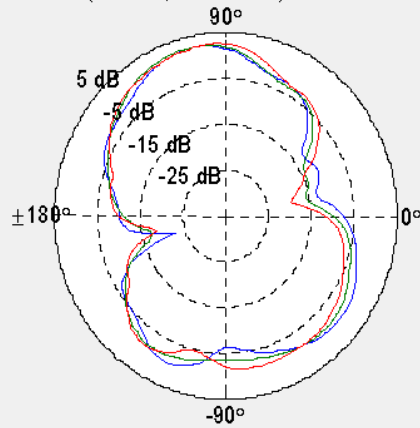
Antenna Pattern

2G Band = 2400 - 2500 MHz % 2G Band

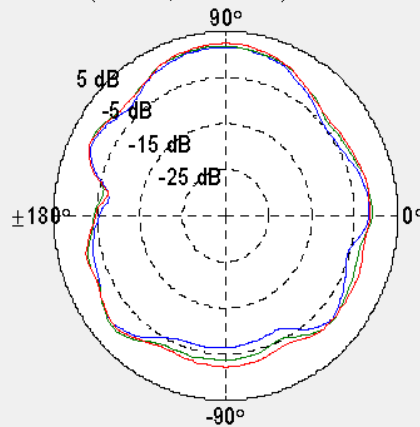
XY Plane (+X = 0°, +Y = +90°) / Elevation = 90 °

ZX Plane (+Z = 0°, +X = +90°) / Azimuth = 0 °

- 2400 MHz
- 2450 MHz
- 2500 MHz



YZ Plane (+Z = 0°, +Y = +90°) / Azimuth = 90 °

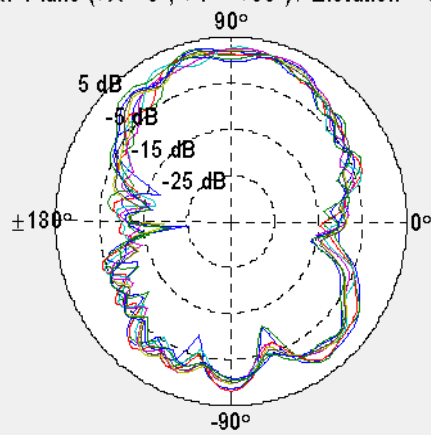


Antenna Pattern

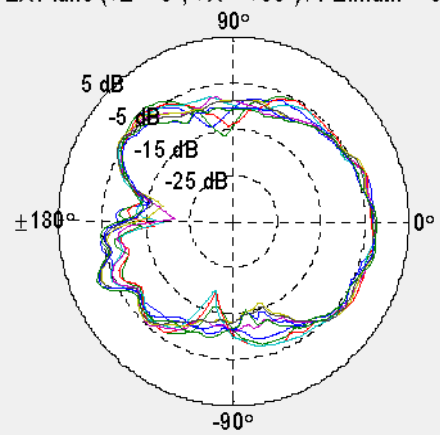
5G Band = 4400 - 6000 MHz

- 5150 MHz
- 5250 MHz
- 5350 MHz
- 5475 MHz
- 5600 MHz
- 5725 MHz
- 5750 MHz
- 5825 MHz
- 5875 MHz

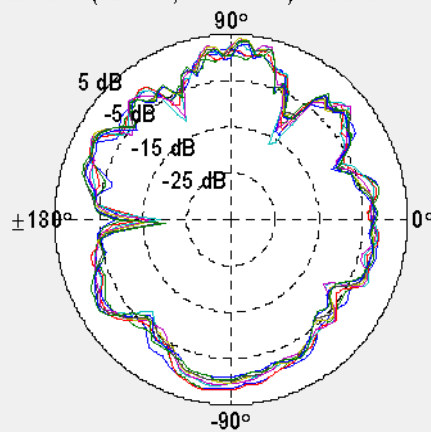
XY Plane (+X = 0°, +Y = +90°) / Elevation = 90 °



ZX Plane (+Z = 0°, +X = +90°) / Azimuth = 0 °



YZ Plane (+Z = 0°, +Y = +90°) / Azimuth = 90 °



Product Photo



速連通訊股份有限公司

文件編號		文件名稱		發行版本	B	頁次	1/1
公司名稱：	SparkLAN		最小包裝	PCS	50		
料號/品名：	R3410110230 / AD-312N		中包裝	PCS	200		
供應商料號/品名			大包裝	PCS	5000		
相關配件			備註				

<p>1. 最小包裝(50PCS-夾鏈袋)</p>  <p>示意圖</p>	<p>2. 中包裝(200PCS-PE 袋)</p>  <div data-bbox="1514 544 2092 863" style="border: 1px solid black; padding: 5px;"> <p>P/N : R3410110230</p> <p>Name: AD-312N</p> <p>P/O : 1090800007</p> <p>Q' TY: 200 PCS</p> <p>Date: 2020/08/26</p> <p>標籤尺寸：7X3CM</p> </div> <p>示意圖</p>
<p>3. 大包裝(5000PCS-1 箱)</p>  <p>示意圖</p>	



NAN YA PLASTICS CORPORATION
ELECTRONIC MATERIALS DIVISION.
COPPER CLAD LAMINATE DEPARTMENT

**Glass cloth base epoxy resin
flame retardant copper clad laminate**

NO. 201, TUNG HWA N. ROAD,
TAIPEI, TAIWAN.

NP-140TL

FEATURES

- Multi-functional epoxy renders the material outstanding heat resistance, better dimensional stability, and through-hole reliability that benefit the performance of high layer count multilayer boards.
- HTE copper foil applied to prevent corner cracking.
- High luminance of epoxy contrast with copper for laser type A.O.I.
- UV solder mask may be applied simultaneously in order to increase yields.
- IPC-4101B specification is applicable.

PERFORMANCE LIST

Characteristics	Unit	Conditioning	Typical Values	SPEC	Test Method	
Volume resistivity	MΩ-cm	C-96/35/90	5.0 x10 ⁹	10 ⁶ ↑	2.5.17	
Surface resistivity	MΩ	C-96/35/90	5.0 x10 ⁷	10 ⁴ ↑	2.5.17	
Permittivity 1 MHZ	-	C-24/23/50	4.2-4.4	5.4 ↓	2.5.5.9	
Permittivity 1 GHZ	-	C-24/23/50	3.8-4.0	-	2.5.5.9	
Loss Tangent 1 MHZ	-	C-24/23/50	0.015-0.020	0.035 ↓	2.5.5.9	
Loss Tangent 1 GHZ	-	C-24/23/50	0.012-0.014	-	2.5.5.9	
Arc resistance	SEC	D-48/50+D-0.5/23	120 ↑	60 ↑	2.5.1	
Dielectric breakdown	KV	D-48/50	60 ↑	40 ↑	2.5.6	
Moisture absorption	%	D-24/23	0.20-0.30	0.35 ↓	2.6.2.1	
Flammability	-	C-24/23/50+E-24/125	94V0	94V0	UL94	
Peel strength 1 oz	lb/in	288°Cx10" solder floating	10-14	6 ↑	2.4.8	
Thermal stress	SEC	288°C solder dipping	90 ↑	10 ↑	2.4.13.1	
Glass transition temp	°C	DSC	140 ± 5	N/A	2.4.25	
Dimensional stability X-Y axis	%	E 4/105	0.01-0.03	0.05 ↓	2.4.39	
Coefficient of thermal expansion	ppm/°C	TMA	50-70	N/A	2.4.24	
						Z-axis before Tg
						Z-axis after Tg

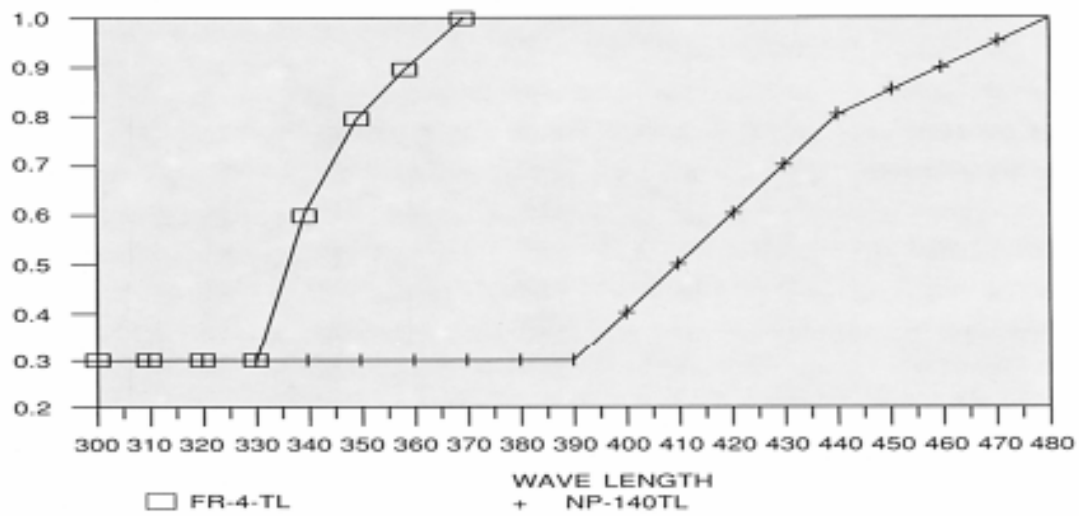
Data shown are nominal values for reference only.

NOTE:

The average value in the table refers to samples of .020" 1/1.

Test method per IPC-TM-650

■ UV TRANSMISSION CURVE OF 0.2mm CCL



■ PRODUCT SIZE & THICKNESS

THICKNESS INCH(mm)	COPPER CLADDING OZ (µm)	SIZE		THICKNESS TOLERANCE
		INCH	mm	
0.004 (0.1)	0.5 (17)	48.8 x 36.8	1240 x 0930	CLASS C/II
b	1.0 (35)	48.8 x 40.5	1240 x 1030	
0.047 (1.2)	2.0 (70)	48.8 x 42.5	1240 x 1080	

■ Keeping the core and prepreg in the same grain direction is crucial to ensure the flatness of multilayer boards.

Grain direction is shown on the Certificate of Conformance

■ CERTIFICATION UL

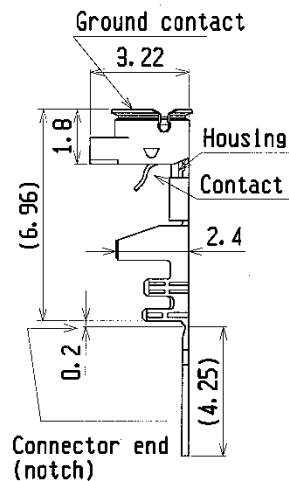
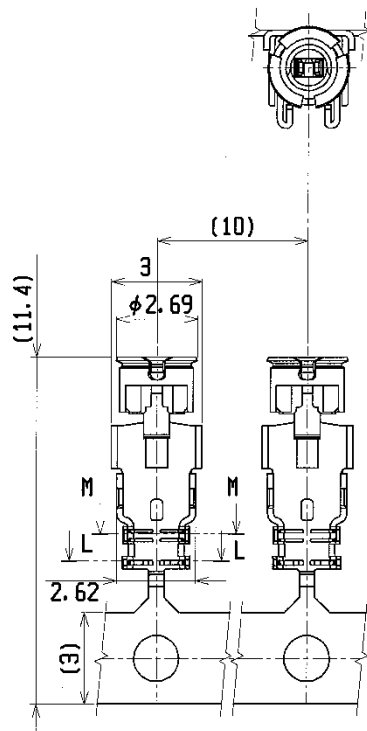
• UL File No. : E98983

■ CONSTRUCTION:

THICKNESS		CONSTRUCTION	THICKNESS		CONSTRUCTION
mm	mil		mm	mil	
0.08	3	2112 1 ply	0.45	18	7628 x 2 + 1080 x 1
0.10	4	1080 2 plies	0.46	18	7667 2 plies
0.11	4	2116 1 ply	0.50	20	7628 3 plies
0.13	5	1080 2 plies	0.53	21	7628 3 plies
0.13sp	5	2116 1 ply	0.60	24	7628 3 plies
0.15	6	1506 1 ply	0.77	31	7628 4 plies
0.16	6	2112 2 plies	0.8	32	7628 4 plies
0.21	8	7628 1 ply	0.9	36	7628 5 plies
0.26	10	2116 2 plies	1.0	39	7628 5 plies
0.30	12	2116 3 plies	1.1	43	7628 6 plies
0.30sp	12	1506 2 plies	1.2	47	7628 6 plies
0.35	14	7628 2 plies			
0.38	15	7628 2 plies			

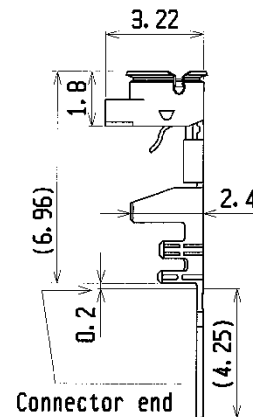
*1.2, 1.1, 1.0, 0.9, 0.77 mm, THICKNESS INCLUDES CLADDING. ALL OTHERS EXCLUDE CLADDING.

PART NO.
20278-***R-***



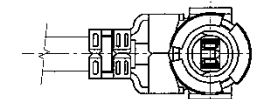
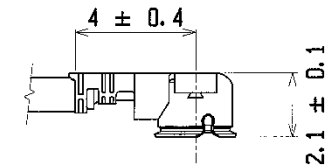
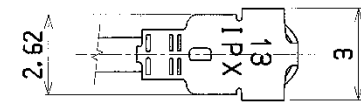
Part No. 20278-101R-08
20278-102R-08
20278-101R-13
20278-102R-13
20278-101R-32
20278-102R-32

For hand tool
(with notch)



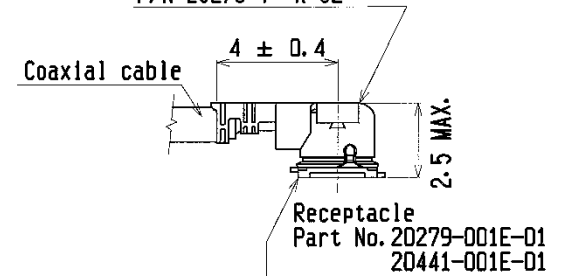
Part No. 20278-111R-08
20278-112R-08
20278-111R-13
20278-112R-13
20278-111R-32
20278-112R-32

For semi auto
termination machine
(without notch)



Cable Ass'y

Plug
P/N 20278-1**R-08
P/N 20278-1**R-13
P/N 20278-1**R-32



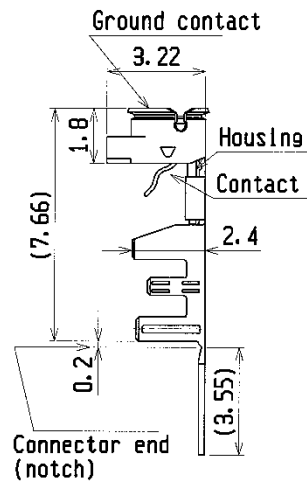
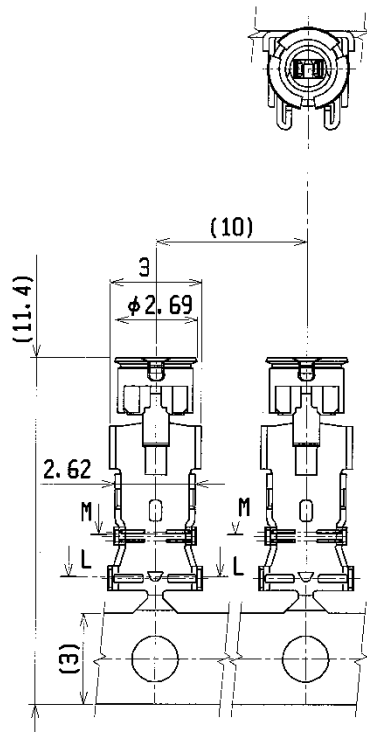
MATING

GENERAL TOLERANCE	
6 MAX.	± 0.2
6 OVER MAX. 30	± 0.3
30 OVER MAX. 120	± 0.5
ANGLE	± 2'

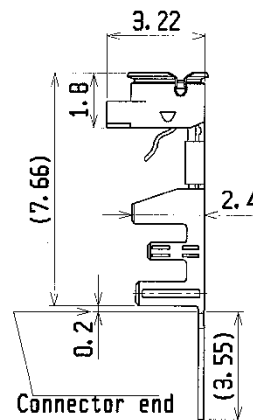
19C 208056	K.O	Feb/04/08	EK	DESIGN'D BY	DATE
18C 207346	K.O	Jul/10/08	E.K	K. Ohbayashi	JUN/13/01
17C 205233	K.O	May/18/05	T.H	CHK'D BY	DATE
16C 205024	K.O	Jan/20/05	T.H		
15C 204398	K.O	Nov/12/04	T.H	APP'D BY	DATE
REV	ECN	BY	DATE	APP	K. Katabuchi
REV. RECORD				CUSTOMER	PROJECTION
SERIES No. 2814				COPY	6/1

I-PEX	Interconnect and Packaging Electronics TOKYO, JAPAN	TITLE	General
		MW series micro coaxial connector plus vertical (ground contact : gold plating)	
SCALE	UNIT	DWG. No.	SHEET
6/1	mm	20278	1/4 19C

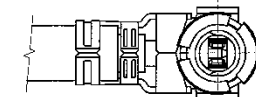
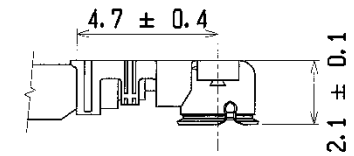
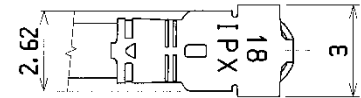
PART NO.
20278-***R-***



Part No. 20278-101R-18
20278-102R-18
For hand tool
(with notch)

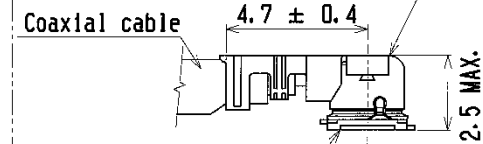


Part No. 20278-111R-18
20278-112R-18
For semi auto
termination machine
(without notch)



Cable Ass'y

Plug
P/N 20278-1**R-18



Receptacle
Part No. 20279-001E-01
20441-001E-01

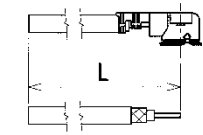
MATING

GENERAL TOLERANCE		
6 MAX.	±0.2	
6 OVER MAX. 30	±0.3	
30 OVER MAX. 120	±0.5	
ANGLE	±2'	

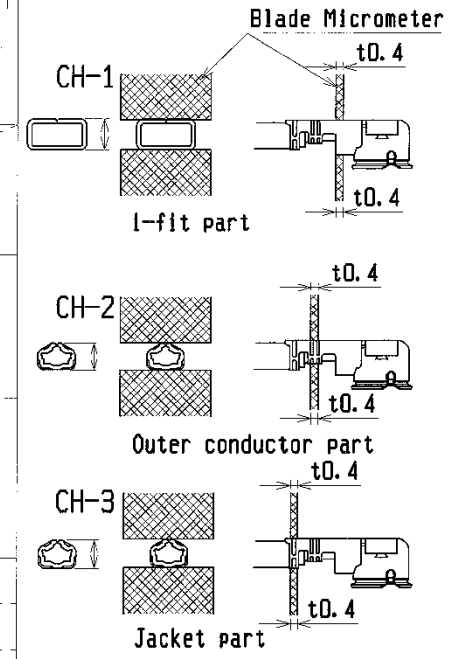
DESIGN D BY	DATE	I-PEX Interconnect and Packaging Electronics TOKYO, JAPAN	TITLE MHF series micro coaxial connector plug vertical (ground contact : gold plating)	General			
CHK' D BY	DATE						
APP' D BY	DATE						
REV ECN BY	DATE	APP	CUSTOMER COPY	PROJECTION	SCALE UNIT	DWG. No.	SHEET REV.
SERIES No.	2814				6/1 mm	20278	2/4 19C

Part No. of non halogen free type	20278-101R-08 20278-111R-08	20278-101R-13 20278-111R-13	20278-101R-32 20278-111R-32	20278-101R-18 20278-111R-18
Part No. of halogen free type	20278-102R-08 20278-112R-08	20278-102R-13 20278-112R-13	20278-102R-32 20278-112R-32	20278-102R-18 20278-112R-18
Housing color	White	Black	Black	White
Applicable cable nominal dimension	2.09±0.1 1.25±0.1 1.16±0.1 	2.09±0.1 1.25±0.1 1.16±0.1 	2.09±0.1 1.25±0.1 1.16±0.1 	RG178 B/U 2.09±0.1 1.25±0.1 1.16±0.1
Jacket	Outer conductor silver or tin plating Dielectric core Inner conductor silver plating φ0.81 Nominal (φ0.65) φ0.4 Nominal AN6335(7/0.05) * NOTE-1	φ1.13 Nominal (φ0.93) φ0.68 Nominal AN6332(7/0.08) * NOTE-1	φ1.32 Nominal (φ1.12) φ0.66 Nominal AN6332(7/0.08) * NOTE-1	φ1.8 Nominal (φ1.35) φ0.84 Nominal AN6330(7/0.102) * NOTE-1
Braided shield of Outer conductor 外部導体の編組	Single / 1重編組	Single / 1重編組	Double / 2重編組	Single / 1重編組
P/N of hand Tool	90187-008C	90187-013C	90187-032C	90233-018
P/N of semi auto termination machine	90213-008C	90213-013C	90213-032C	90232-018
Sect. M-M	1.68 1.12 	2.24 1.48 	2.29 1.56 	2.71 1.9
Sect. L-L	1.72 1.19 	2.28 1.55 	2.37 1.71 	3.1 2.26
Crimp Height	CH-1	1.34~1.40	1.34~1.40	1.34~1.40
	CH-2	0.76~0.84	1.06~1.14	1.20~1.30
	CH-3	0.85~0.97	1.15~1.35	1.26~1.46
				1.70~1.80

Cable cut length



Crimp Height



NOTE-1
中心導体、外部導体への半田コーティングは不可
Must not use solder coated
inner conductor and outer conductor.

DESIGN'D BY	DATE	 Interconnect and Packaging Electronics TOKYO, JAPAN	TITLE MHF series micro coaxial connector plus vertical (ground contact : gold plating)	General		
CHK'D BY	DATE					
APP'D BY	DATE					
REV. ECN BY DATE APP						
REV. RECORD		CUSTOMER COPY	PROJECTION	SCALE UNIT	DWG. No.	SHEET REV.
SERIES No.	2814			mm	20278	3/4 19C

Notes

1. Material

(1) Housing : PBT , UL94V-0

(2) Contact

phosphor bronze
gold plating 0.1 μ m MIN.
over nickel 1.27 μ m MIN.

(3) Ground contact

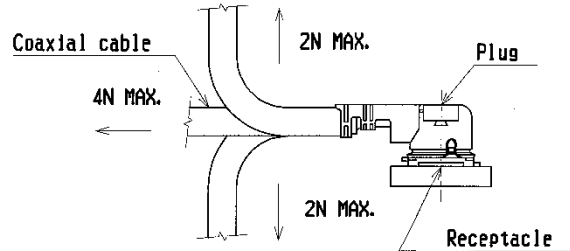
phosphor bronze
gold plating 0.05 μ m MIN.
over nickel 1.27 μ m MIN.

2. Packing : reel

3. Mating partner part No.

: 20279-001E-01, 20441-001E-01

4. Permissible load of cable at mating



5. Suggestions for mating & unmating operation.

5-1 Mating.

Please mate the connector straightly to vertical direction as much as possible, adjusting the mating axis of plug and receptacle.

As excessive slant angle mating may break the connector, please don't do it.

1. 材料

(1)ハウジング:PBT, UL94V-0

(2)コンタクト

りん青銅
金メッキ0.1 μ m MIN.
下地 ニッケル1.27 μ m MIN.

(3)グラウンドコンタクト

りん青銅
金メッキ0.05 μ m MIN.
下地 ニッケル1.27 μ m MIN.

2. 梱包 : リール

3. かん合相手 part No.

: 20279-001E-01, 20441-001E-01

4. コネクタかん合後のケーブルに対する荷重

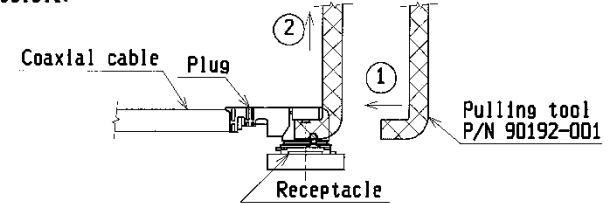
5. コネクタかん合時および抜去時の注意

5-1 コネクタ挿入時

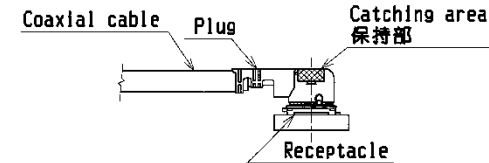
PlugとReceptacleのかん合軸を合わせ、できるだけ垂直に挿入して下さい。極端な斜め挿入は行わないで下さい。コネクタ破損の原因となりますので、過度なこじり挿入は行わないで下さい。

5-2 Unmating.

(1) In case of unmating by pulling tool.
Please use the pulling tool as the following drawing, and please pull plug to vertical direction as directly as possible.



(2) In case of unmating directly by hand
Please catch the catching area of plug, and please pull plug to vertical direction as directly as possible.



5-2 コネクタ抜去時

(1) 抜去ジグを用いる場合
下図のようにできるだけ垂直に引き抜いて下さい。

(2) 手で直接引き抜く場合
下図の保持部をつかみ、できるだけ垂直に引き抜いて下さい。

5-3 Crimp over standards of outer conductor

Standards: Less than 10% from total numbers of outer conductor
(Numbers of outer conductor's crimp over from outer conductor's barrel)

5-3 外部導体はみ出し量

外部導体はみ出し量規定:
外部導体トータル本数の10%以下
(外部導体バレルの外はみ出し量)

5-4 Caution about Heat shrinkage tubes

Please be careful not to melt housing when using heat shrinkage tubes.
It will become cause of open circuit.

5-4 熱収縮チューブについての注意

熱収縮チューブで外部導体を覆う場合は、導通不良の原因となりますので、熱によりハウジングを溶融させないように注意してください。

6. 本コネクタは'Pb-free'である

6. This is 'Pb-free' connector.

GENERAL TOLERANCE	
6 MAX.	± 0.2
6 OVER MAX. 30	± 0.3
30 OVER MAX. 120	± 0.5
ANGLE	$\pm 2^\circ$

DESIGN'D BY	DATE	Interconnect and Packaging Electronics TOKYO, JAPAN						
CHK'D BY	DATE							
APP'D BY	DATE							
REV. ECN	BY	DATE	APP	TITLE	MF series micro coaxial connector plug vertical (ground contact : gold plating)	General		
REV. RECORD				CUSTOMER COPY	PROJECTION	SCALE UNIT	DWG. No.	SHEET REV.
SERIES No. 2814						-/- mm	20278	4/4 19C

SPECIFICATION FOR APPROVAL

DOCUMENT: A3132TS001

STYLE : COAXIAL CABLE
105°C 30V

SIZE: 32AWG×1C
BRAID : TD

RECOGNIZED: UL 1979
MEET VW-1



WONDERFUL HI-TECH CO.,LTD.

OFFICE : 72WU KONG 6TH ROAD,
WU KU IND. DISTRICT
TAIPEI HSIEN, TAIWAN

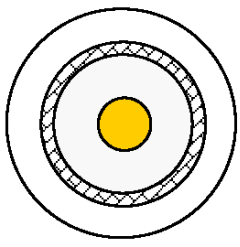
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WONDERFUL HI-TECH CO., LTD. SPECIFICATION

STYLE	105°C 30V UL 1979	DOCUMENT NO : A3132TS001	
SIZE	32AWG	ESTABLISHED DATE: Mar/16/2005	
STANDARD :			
Conductor	Size	AWG	32
	Material	----	Silver Cover Copper
	Conductors No.	----	7
	Conductors Size	mm	0.085
	O.D.	mm	0.26
Insulation	Average Thickness	mm	0.22
	Diameter	mm	0.70 ± 0.03
	Material	----	FEP
	Color	----	Clear
Braid	Material	----	Tinned Copper
	Construction	mm	16 / 4 / 0.050
	Coverage	%	89.4
Jacket	Average Thickness	mm	0.12
	Diameter	mm	1.13 ± 0.05
	Material	----	FEP
	Color	----	According to customer
Marking	Non		
Drawing			



WONDERFUL HI-TECH CO., LTD. SPECIFICATION

Electrical & Physical Properties						
Item		32AWG				
Rating Temp Voltage		105°C 30V				
Conductor Resistance		497 OHM/KM/20°C MAX.				
Insulation Resistance		3000 MEGA OHM-KM MIN.				
Dielectric Strength		AC 1000 V/Minute				
Spark Test		2 KV				
Insulation	Unaged	Tensile Strength	2500 PSI MIN.(1.76 Kg / m m ²)			
		Elongation	200% MIN.			
	Aged	Tensile Strength	UNAGED MIN. 75%(168HRS×232°C)			
		Elongation	UNAGED MIN. 75%(168HRS×232°C)			
Jacket	Unaged	Tensile Strength	2500 PSI MIN.(1.76 Kg / m m ²)			
		Elongation	200% MIN.			
	Aged	Tensile Strength	UNAGED MIN.75%(168HRS×232°C)			
		Elongation	UNAGED MIN.75%(168HRS×232°C)			
Nom. Impedance		50 ± 3 Ohms				
Nom. Capacitance		96 ± 3 pF/m				
Nom. Vel. of Prop.		69%				
Storage Temperature		-40°C ~+80°C				
VSWR Test (0 – 6 GHZ)		Max 1.3				
Flame Test		VW-1 OK				
Attenuation (dB/1m)	2.0GHZ	2.4GHZ	2.5GHZ	5.0GHZ	6.0 GHZ	
	2.90	3.20	3.28	5.05	5.40	



Double Coated Tissue Tapes

9888T

Temporary Technical Data

May, 2002

Product Description:

Product 9888T double coated tissue tape features a tissue carrier for dimensional stability and improved handling with ease of die cutting and laminating.

Construction:

Product Number	Adhesive¹/ Color/ Tape Thickness	Carrier	Liner Color, Type, Print	Liner Caliper
9888T	Translucent, 0.0059" (0.150mm)	Tissue translucent in color	White, PE ² polycoated paper, 3M logo print in red color	0.0059" (0.150mm)

Note 1: Pressure Sensitive Acrylic Adhesive provides excellent initial tack and adhesion to a wide variety surface including many low surface energy plastics.

Note 2: PE (Polyethylene)

Feature

1. 9888T feature a medium-soft acrylic pressure sensitive adhesive system. The key characteristics of this adhesive include a combination of high initial adhesion and good shear and holding power to a wide variety of materials, including many plastics.
2. 9888T feature controlled adhesive flow into open cell foam and controlled caliper for bond to application surface.
3. For foam laminating, it provides excellent foam stability to reduce stretching and allows to more precise alignment during application.

Typical Physical Properties and Performance Characteristics

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Product Number	9888T
Adhesion to stainless steel ASTMD3330 –180 degree, 2 mil Al foil at 22°C, 50%RH 15 minute RT 72 Hour RT	g/25.4m 2940 3180
Adhesion to ABS ASTMD3330 –180 degree, 2 mil Al foil at 22°C, 50%RH 15 minute RT 72 Hour RT	2210 2440
Adhesion to PC ASTMD3330 –180 degree, 2 mil Al foil at 22°C, 50%RH 15 minute RT 72 Hour RT	2560 2670
Adhesion to PP ASTMD3330 –180 degree, 2 mil Al foil at 22°C, 50%RH 20 minute RT 72 Hour RT	1900 2190

Shear strength ASTMD3654 modified 0.5 inch ² sample size at 22°C 1000 grams	10000 mins
Relative High temperature Operating Ranges	
Long Term (days, weeks) Short Term (minutes, hours)	80°C 120°C
Shelf Life 12 months from date of receipt by customer when stored in original carton at 22 °C and 50% relative humidity	

Application Techniques:

Bond strength is dependent upon the amount of adhesive-to-surface contact developed. Firm application pressure helps develop better adhesive contact and improves bond strength.

To obtain optimum adhesion, the bonding surfaces must be clean, dry and well unified. Some typical surface cleaning solvents are isopropyl alcohol or heptane. Note: Carefully read and follow the manufacturer's precautions and directions for use when working with solvents.

Ideal tape application temperature range is 70° F to 100° F (21° C to 38° C). Initial tape application to surfaces at temperatures below 50° F (10° C) is not recommended because the adhesive becomes too firm to adhere readily. However, once properly applied, low temperature holding is generally satisfactory.

General Information

Tape 9888T has a tissue carrier, which can add dimensional stability to foams and other substrates. The carrier also provides easier handling during slitting and die-cutting.

Application Ideas

- 9888T tapes are specially formulated for many indoor high performance purpose mounting and joining applications, including bonding to Polyethylene, Polypropylene and many other Plastics, where moderate temperature and shear performance are required.
- 9888T tapes are formulated for more demanding indoor and moderate outdoor high performance mounting and joining application.
- Application ideas for these tapes include
 - Lens attachment for mobile phone
 - Wire and Cable Clips
 - Appliance, Case for display and Electronics Equipment Trim
 - Interior under sheet for car
 - Paper splicing
 - Foam, Gasket attachment in mobile phones and pagers.
 - Plastics Hooks, Racks and Dispensers
 - Sign, Nameplates and Plaques
 - Appliques

Important Notice

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Limitation of Remedies and Liability

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