HUADING GROUP CO LTD

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Company Profile

Found:	March, 2003
Registered:	HK\$100, 000, 000, 00=US\$13, 000, 000, 00
Operation:	P. R. CHINA
Production Capacity:	200,000M2/Month
Employees:	4600
2020 Revenues	US\$176 Million

Key Milestones

1976	Single-sided PCB Factory Started Full Production
1982	Double-sided PCB Factory Started Full Production
1988	Multilayer PCB Factory Started Full Production
1900	A Member of CPCA=China Printed Circuit Association Since CPCA Establishment in June, 1990. Plant started Building Automative PCB
2000	Director of China Printed Circuit Association
2003	Flex PCB Factory Started Full Production, Including Rigid Flex PCB Plant Started Building HDI Huading Group Established
2006	Metal-cored(Aluminium-cored)PCB Factory Started Full Production, Plant started Anvlaver Production
2007	Become An IPC member
2012	Executive Director of China Printed Circuit Association Among 671 Officially Registered Member In P.R.China
2014	Ranked #88 Among The World Top PCB Manufactures
2015	Ranked #82 Among The World Top PCB Manufactures
2016	Ranked #83 Among The World Top PCB Manufactures
2017	Ranked #89 Among The World Top PCB Manufactures
2018 2019	Ranked #96 Among The World Top PCB Manufactures Ranked #87 Among The World Top PCB Manufactures
2021	Huading-inversed PCR Factory Is About To Re Listed On The IIS A Stock Market

NTI-100 2019 World Top PCB Makers (unit: US\$ million)/ 2018 data adjusted with 2019 Exchange Rates

Rank	Maker	Country	2018	2019	Growth	Brief Explanation
1	ZD Tech*	Taiwan	3,831	3,887	1.46%	Expanding a buying Boardtek (Oct 2020)
2	TTM Technologies	USA	2,847	2,689	-5.55%	Sold Mobility ralated business to AKMMeadville
3	Unimicron	Taiwan	2,450	2,668	8.90%	IC substrate expansion \$800?
4	Nippon Mektron	Japan	2,700	2,597	-3.81%	Heavy dependennce on smartphone hurts
5	Mflex (Dongshan Prec)	China	1,652	2,115	28.02%	Mflex+Multek (Multek is expanding)
6	Compeq	Taiwan	1,634	1,816	11.14%	No. 2 plant in Chingqing will be operational at year end
7	Tripod	Taiwan	1,685	1,760	4.45%	Xiantao plant expanding
8	Shennan Circuit	China	1,129	1,523	34.90%	New IC substrate plants in Wuxi
9	HannStar	Taiwan	1,399	1,395	-0.29%	HannStar Board_GMB+Elan
10	Samsung E-M	S. Korea	1,273	1,386	8.88%	Shut down Kunshan HDI plant
11	KBC PCB Group	China	1,250	1,234	-1.28%	Several makers under the wing such as Elek & Eltec
12	Ibiden	Japan	1,064	1,213	14.00%	\$1.2 billion IC substrate expansion (2020-2021)
13	Wus Group	Taiwan	971	1,193	22.86%	Is it a Taiwan maker or Chinese maker? Maybe Chinese
14	Young Poong Group	S. Korea	1,273	1,149	-9.74%	Interflex is recovering
15	AT&S	Austria	1,150	1,119	-2.70%	\$1.3 billion investment in 5 years
16	Meiko	Japan	1,091	1,060	-2.84%	Trying to expand market horizon
17	Nanya PCB	Taiwan	932	1,005	7.83%	IC substrate for high-end servers doing well
18	Fujikura	Japan	1,120	956	-14.64%	More than 90% revenue copmes from overseas
19	Daeduck Group	S. Korea	836	920	10.05%	Strong in IC substrate and high-end MLB
20	Kinwong	China	709	914	28.91%	New plant in Zhuhai
21	Simmtech	S. Korea	864	858	-0.69%	Includes Eastern in Japan and Xian plant
22	Flexium*	Taiwan	866	843	-2.66%	Apple, Apple, Apple
23	CMK	Japan	828	758	-8.45%	Heavy dependence in automotive
24	Shinko Denki	Japan	690	748	8.40%	High-end IC substrates like Ibiden
25	Unitech	Taiwan	632	725	14.72%	50%+ comes from Rigid-Flex PCB
26	Kinsus	Taiwan	767	722	-5.87%	IC substrate, contact lens
27	T.P.T.	Taiwan	746	702	-5.90%	PC Motherboard and LCD driver circuits
28	Sumitomo Denko	Japan	831	671	-19.25%	What went wrong?
29	LG Innotek	S. Korea	661	616	-6.80%	Shutting down HDI & regular PCB plants
30	Gold Circuit	Taiwan	666	615	-7.66%	Currently, string with PC motherboards and tablets
31	Chin Poon	Taiwan	653	578	-11.48%	Automotive dependence is hurting

32	BH Flex	S. Korea	659	562	-14.72%	Three plants in Vietnam (north of Hanoi)
33	Victory Giant	China	477	561	17.61%	HDI plant added
34	Career*	Taiwan	502	551	9.76%	24% of the share is now owned by HannStar Board
35	Shenzhen Fast Print	China	501	549	9.58%	China, USA and UK
36	Shenzhen Suntak	China	527	515	-2.28%	New Plannt in Zhuhai
37	Kyocera PCB	Japan	550	500	-9.09%	A bit of guess
38	SI Flex	S. Korea	472	462	-2.12%	Only in Vietnam, S. Korean plants are shut down
39	Murata	Japan	505	450	-10.00%	MetroCirc, LCP based multilayerflex boards
40	DG Shengyi Electronics	China	294	447	52.00%	A new plant in Ji'An and a new plant in Dongguang (HDI)
41	Dynamic	Taiwan	421	443	5.26%	Taiwan plant was shut down
42	Isu-Petasys	S. Korea	481	439	-8.73%	Two groups and a US plant
43	Founder Tech	China	353	438	24.01%	Inleuding ACCESS (nw plant in Nantong)
44	Ellington	China	480	434	-9.58%	Automotive and motherboards
45	Nitto Denko	Japan	373	397	6.43%	HDD suspension specialist
46	Bomin	China	281	385	37.01%	
47	Kyoden	Japan	405	377	-6.22%	Japan and Thailand (collaboration with APEX)
48	KCE Electronics	Thailand	419	374	-10.74%	Heavy dependence on automotive, trying to diversify
4	Wuzhu	China	368	357	-2.99%	Shenzhen, Meizhou, Dongguang & Gangzhou (new)
50	Xiamen Hongxin	China	325	355	9.23%	FPC specialist
51	Olympic	China	306	343	12.09%	Smart factory expanding
52	Hitachi Chemical	Japan	384	337	-12.24%	Bought by Showa Denko and removed Tokyo Exchange
53	APEX	Taiwan	361	336	-6.93%	Thailand APEX 2 expanding with a new plant
54	CCTC	China	356	334	-6.18%	Not much expansion
55	Aoshikan	China	323	328	1.55%	Know to process large panels
56	Gul Technologies	Singapore	338	316	-6.51%	A small hicupp
57	Redboard	China	280	310	10.71%	HDI and Rgid-Flex
58	CEE PCB	China	251	303	20.72%	Absorbed
59	Guangdong Xinda	China	287	295	2.79%	CPCA data
60	Sun & Lynn	China	268	291	8.58%	Company report
61	Sanmina	USA	280	280		Two plant in US, a plant in Singapoer & a plant in Wuxi
62	ASE	Taiwan 255 260 1.96% IC substrate plants in Kaoshiung and Shanghai				
63	APCB	Taiwan	289	256		Emphasis in Thailand
64	Boardtek	Taiwan	246	241	-2.01%	Being purchased by Zhen Ding Technology (ZDT)
65	AbonMax (Palwonn)	Taiwan	234	240		Not sure, very shadowy maker (Shenzhen & Suzhou)

66	MFS	Singapore	238	240	0.84% N	New plant in
67	DAP	S. Korea	261	232	-11.11% H	Have not visited for many years, HDI board maker
68	STEMCO	S. Korea	199	231	16.08%	COF specialist, JV between Samsung & Toray
69	Shirai Denshi	Japan	253	230	-9.09% \	VISPER AVI is slow (not included)
70	AKM	China	177	217	22.60% I	Paid \$550 million to TTM to get Mobility business
71	Guangzhou Jun Ya	China	162	212	30.84%	CPCA data
72	Ichia*	Taiwan	234	201	-14.10% N	Not doing well in recent years
73	Kunshan Huaxing	China	195	199	2.05%	CPCA data
74	Fujitsu	Japan	233	197	-15.45% V	Wild guess
75	Delton	China	138	192	39.13% N	Not sure about 2018 revenue
76	Guangzhou Kingshine	China	173	192	10.98%	CPCA data
77	Guangdong Chaohua	China	201	191	-4.98% C	CPCA data. Makes laminates as well
78	Circuitronics	China	192	180	-6.25% V	Wild Guess
79	Somacis	Italy	177	180	1.69% I	Dongguang plant expanding
80	Würth Elektronik	Germnay	172	179	4.07%	
81	Kyosha	Japan	193	174	-9.84%	A new plant near Hanoi, Vietnam
82	SZ Sandeguan Prec. Ckt	China	192	173	-9.90%	CPCA data
83	Liang Dar	Taiwan	176	171	-2.84%	Two plants in Kaoshiung and a plant in Dongguang
84	OKI PCB Group	Japan	166	167	0.60%	OKI Printed Circuits and OKI Circuits
85	Shenzhen Sunshine	China	163	166	1.84% I	High-end products. Owns a small shop in Germany
86	BYD	China	156	163	4.49% V	Wild guess based on 2018 data
87	Huading Group	China	154	162	5.19%	CPCA data
88	SZ Jove Enterprise	China	131	161	22.90%	CPCA data
89	Onpress	China	166	160	-3.61%	Gold plating & automtoive
90	Lead-Tech	China	173	159	8.09% F	Four plants in China one making COF
91	Daisho Denshi	Japan	168	156	-7.14% I	Daisho never laid off employees even during hard time
92	Ji'An Mankun	China	148	155		From a friend
93	Tai Hong Ind	Taiwan	180	150	-16.67% V	Wild guess. China plant shut down.
94	Tigerbuilder	China	145	150		Changing market direction
95	3Win Group	China	141	147		Wild guess. Its website does not work.
96	Hyunwoo	S. Korea	127	145		Do't know this kaer well.
97	Mutual Tech	Taiwan	136	144	5.88%	AND THE PARTY OF T
98	Amphenol PCB Div	USA	130	140	7.69% N	Nashua (NH), Guangzhou (FPC) and UK (Invotec)
99	Kunshan Wanzhen PCB	China	131	138		CPCA data

Certificates

	Multilayer	DE. S. & S. S
UL	approved	approved
ISO 9001	approved	approved
IATF16949	approved	approved
QC 080000	approved	approved
OHSAS18001	approved	N/A

UL Product iQ

2020/11/12

ZPMV2.E347973 - Wiring, Printed - Component | UL Product iQ

UL Product iQ™



ZPMV2.E347973 - Wiring, Printed - Component

Wiring, Printed - Component

See General Information for Wiring, Printed - Component

HUADING GROUP COLTD

E347973

12/F, Nanfung Centre 264-298 Castle Peak Rd Tsuen Wan, NT HONG KONG

	Cond	Width			Max			Max			
		Min	Cond	SS/	Area	Sol	der	Oper		Meets	C
	Min	Edge	Thk	DS/	Diam	Lin	nits	Temp	Flame	UL796	T
Type	mm(in)	mm(in)	mic(mil)	DSO	mm(in)	c	sec	c	Class	DSR	1
Metal Ba	ase multilayer Pr	inted Wiring I	Boards.								
HD-	0.076 (0.003)	0.23 (0.009)	12 (0.47)	SS	76.2 (3.0)	700	10	105	V-0	All	
no-	0.070 (0.003)	u23 (u003)	12(047)	33	70.2 (5.0)	200	10	103	100	7-4	

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Metal Base Single Lay	or Printed Win	inn Boards with	Flammability Only	Recognition
metal base single cay	CI PHINCES WHILE	ing boards with	realisma only only	recognition.

	_	_			_		_	_	-	-	_
HD- MC04	G:	2	-	SS	26	288	10	-	V-0	-	-

76.2 (3.0)

Metal-based printed wiring boards, flammability only Recognition.

0.076 (0.003) 0.076 (0.003) 12 (0.47)

_			The same of the sa		_		_	_	_	_	_
HD-	-	9	-	SS	*	260	30	÷	V-0	-	-
MC05	1			- 1	l	- 1		ı	1		-

Multilayer metal base printed wiring boards...

											T
HD- MC12	0.16 (0.006)	0.48 (0.019)	30 (1.18) Int:102	SS	25.4 (1.0)	288	60	130	V-0	All	١.
30000000			Fr. 18 P. 18								ı

Multilayer printed wiring boards.

HD-03	0.15 (0.006)	0.45 (0.018)	17 (0.67) Int:35	DS	25.4 (1.0)	260	10	105	V-0	All	
HD-M03	0.1 (0.004)	0.2 (0.008)	17 (0.67) Int:35	DŞ	25.4 (1.0)	280	5	130	V-0	All	
HD-M05	0.076 (0.003)	0.23 (0.009)	17 (0.67) Int:34	DS	76.2 (3.0)	280	30	130	V-0		
HD-M06	0.11 (0.004)	0.25 (0.010)	17 (0.67) Int:68	DS	25.4 (1.0)	280	5	130	V-0	All	

				1 1 1 TO 1 TO 1							
HD-M07	0.076 (0.003)	0.23 (0.009)	17 (0.67) Int:34	DS	76.2 (3.0)	280	30	130	V-0	27	-
HD-M09	0.15 (0.006)	0.45 (0.018)	17 (0.67) Int:70	DS	76.2 (3.0)	288	10	110	V-0	ī.	
HD-M10	0.15 (0.006)	0.45 (0.018)	17 (0.67) Int:70	DS	76.2 (3.0)	288	10	105	V-0	-:	
HD-M11	0.20 (0.008)	0.60 (0.024)	17 (0.67) Int:34	DS	76.2 (3.0)	288	10	105	V-0	-:	
HD-M12	0.23 (0.009)	0.23 (0.009)	12 (0.47) Int:68	DS	76.2 (3.0)	288	10	130	V-0	All	3
HD-M13	0.076 (0.003)	0.23 (0.009)	17 (0.67) Int:70	DS	76.2 (3.0)	288	10	130	V-0	ै	
HD-M14	0.15 (0.006)	0.45 (0.018)	17 (0.67) Int:70	DS	76.2 (3.0)	288	10	105	V-0	All	
HD-M15	0.15 (0.006)	0.45 (0.018)	17 (0.67) Int:70	DS	76.2 (3.0)	288	10	130	V-0	÷	•
HD-M16	0.1 (0.004)	0.3 (0.012)	17 (0.67) Int:68	DS	20 (0.8)	288	30	130	V-0	All	
HD-M17	0.1 (0.004)	0.3 (0.012)	18 (0.71) Int:68	DS	20 (0.8)	288	30	130	V-0	All	
HD-M18	0.076 (0.003)	0.23 (0.009)	12 (0.47) Int:102	DS	76.2 (3.0)	288	30	130	V-0	A	
HD-M19	0.24 (0.009)	0.72 (0.028)	68 (2.68) Int:204	DS	76.2 (3.0)	288	30	130	V-0	All	
HD-M20	0.075 (0.003)	0.2 (0.008)	17 (0.67) Int:70	DS	50.8 (2.0)	288	20	110	V-0	All	
HD-M21	0.15 (0.006)	0.25 (0.010)	17 (0.67) Int:70	DS	50.8 (2.0)	288	20	130	V-0	All	•
HD-M22	0.1 (0.004)	0.1 (0.004)	12 (0.47) Int:70	DS	50.8 (2.0)	288	20	130	V-0	All	
HD-M23	0.15 (0.006)	0.45 (0.018)	17 (0.67) Int:34	DS	50.8 (2.0)	288	20	130	V-0	All	0
HD-M24	0.08 (0.003)	0.24 (0.009)	17 (0.67) Int:34	DS	25.4 (1.0)	260	10	130	V-0	All	•
HD-M25	0.08 (0.003)	0.08 (0.003)	17 (0:67) Int:34	DS	25.4 (1.0)	280	10	130	V-0	All	
HD-M26	0.08 (0.003)	0.24 (0.009)	17 (0.67) Int:102	DS	76.2 (3.0)	288	20	130	V-0	All	٠
HD-M27	0.08 (0.003)	0.08 (0.003)	12 (0.47) Int:70	DS	25.4 (1.0)	288	10	130	V-0	All	
HD-M28	0.35 (0.014)	0.35 (0.014)	17 (0.67) Int:175	DS	50.8 (2.0)	255	5	130	V-0	All	

HD-M29	0.25 (0.010)	0.3 (0.012)	17 (0.67) Int:212	DS	50.8 (2.0)	288	10	130	V-0	All
HD-M30	0.25 (0.010)	0.3 (0.012)	17 (0.67) Int:212	DS	50.8 (2.0)	288	10	130	V-0	All
HD-M31	0.08 (0.003)	0.24 (0.009)	17 (0.67) Int:34	DS	50.8 (2.0)	260	10	130	V-0	All
HD-M32	0.08 (0.003)	0.1 (0.004)	17 (0.67) Int:60	DS	50.8 (2.0)	288	20	130	V-0	All
HD-ML6	0.075 (0.003)	0.1 (0.004)	17 (0.67) Int:44	DS	25.4 (1.0)	288	10	130	V-0	All
HD-ML8	0.1 (0.004)	0.2 (0.008)	17 (0.67) Int:170	DS	25.4 (1.0)	280	5	130	V-0	All
Multilaye	r printed wirin	g boards, flam	mability only	Recogni	tion.					
HD-M01	2	(S)	28	DS	i i	288	10	25	V-0	-38
HD-M04	-	-	4 3	DS	-	288	10		V-0	
Single Lay	yer Metal Base	Printed Wiring	Board.	84 8	의 :			22 1	5	611
HD- MC07	0.15 (0.006)	0.25 (0.010)	34 (134)	SS	50.8 (2.0)	280	30	110	V-0	All
HD- MC09	0.13 (0.005)	0.3 (0.012)	17 (0.67)	ss	50.8 (2.0)	288	30	110	V-0	All
HD- MC10	0.1 (0.004)	0.25 (0.010)	17 (0.67)	ss	50.8 (2.0)	288	10	110	V-0	All
HD- MC11	0.1 (0.004)	0.25 (0.010)	17 (0.67)	ss	50.8 (2.0)	288	10	130	V-0	All
HD- MC18	0.15 (0.006)	0.25 (0.010)	17 (0.67)	DS	50.8 (2.0)	288	10	90	V-0	Ali
HD- MC19	0.15 (0.006)	0.25 (0.010)	17 (0.67)	DS	50.8 (2.0)	288	10	110	V-0	All
Single Lay Recogniti	er Metal Base on.	Printed Wiring	g Board, empl	oying m	etal base la	ninate	with	Flamn	nability	Only
		3		ss	-	288	20	13	V-0	
HD- ML16			-	nuinn m	etal base la	ninate	5 5			
ML16	yer Metal Base	Printed Wiring	g Board, empk	by my m						
ML16	ver Metal Base 0.19 (0.007)	0.24 (0.009)	26 (1.02)	SS	50.8 (2.0)	288	20	125	V-0	38
ML16 Single Lay HD- MC06	Correct new	0.24 (0.009)	26(102)	la e	50.8 (2.0)	288	20	125	V-0	88

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DS 25.4 (1.0)

DS 50.8 (2.0)

203.2 (8.0)

203.2 (8.0)

25.4 (1.0)

DS 20.1 (0.8)

DS 25.4 (1.0)

DS 25.4 (1.0)

DS 25.4 (1.0)

76.2 (3.0)

25.4 (1.0)

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76.2 (3.0)

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25.4 (1.0)

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DS 50.8 (2.0)

DS 50.8 (2.0)

55 25.4 (1.0)

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50.8 (2.0)

DS 25.4 (1.0)

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288 10

260

260 10 130 V-0

260

260 10 130 V-0 All

270 10 130 V-0 All

260

280

260 10 120 V-0 All

288 30 130 V-0 All

260 10 130

280

288 30 130 V-0

260

260

260 10 130 V-0 All

260 10 130 V-0

260 10 130

260 10 130 V-0

280 10 130

288 20 130 V-0

288

288 20 105 V-0

288 10

260 10

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130

130

10 130 V-0 All

10 105

260 10

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130 V-0 All

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HD-D19

HD-D20

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HD-D22

HD-D23

HD-D24

HD-D25

HD-D26

HD-D27

HD-D28

HD-D29

HD-D30

0.15 (0.006)

Single layer printed wiring boards. 0.12 (0.005)

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Single Layer Printed Wiring Boards.

0.15 (0.006)

0.15 (0.006)

0.15 (0.006)

Single layer printed wiring boards.

0.076 (0.003)

0.2 (0.008)

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Single layer Metal Base printed wiring boards, flammability only Recognition.

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Single La	yer Printed Wir	ing Boards.									
HD-D31	0.125 (0.005)	0.125 (0.005)	27(1,06)	DS	50.8 (2.0)	288	20	105	V-0		ŀ
HD-D32	0.1 (0.004)	0.2 (0.008)	17 (0.67)	DS	50.8 (2.0)	288	20	130	V-0	All	
Single lay	erp <mark>rinted</mark> wirin	ng boards.	1.00		-						
HD-DS6	0.075 (0.003)	0.1 (0.004)	17 (0.67)	DS	25.4 (1.0)	288	10	130	V-0	All	ŀ
HD-501	0.20 (0.008)	0.48 (0.019)	35 (1.38)	SS	25.4 (1.0)	260	10	130	V-1	All	
HD-S02	0.20 (0.008)	0.48 (0.019)	35 (1.38)	SS	25.4 (1.0)	260	10	130	V-0	All	2
HD-S06	0.22 (0.009)	0.66 (0.026)	34(134)	SS	25.4 (1.0)	260	10	130	V-0	All	ŀ
HD-S16	0.22 (0.009)	0.66 (0.026)	34(1.34)	ss	25.4 (1.0)	270	10	130	V-0	All	-
Single La	yer Printed Wir	ing Boards Fla	mmability On	ly Reco	gnition.						
HD-D17	Si .	4	2	DS	24	288	20	4	V-0	Ģ.	T
Single lay	er printed wiri	ng boards, flan	nmability onl	y Recog	nition.		8	33	\$0 · ·		
HD-01	3	2	Ž.	DS	9)	288	15	ä	V-0	3	12
HD-D10	9	2	-	DS	25	280	10	3	V-0	Ģ.	ŀ
HD-D11	e j	ê	Š	DS	ži.	280	10	3	V-0		-
HD-D12	8		-	DS	5)	280	10	ē	V-0	2	ŀ
HD-D13	-	4	7	DS	23	280	10	į.	V-0	-	-
HD-D14	9 [9	Ÿ	DS	=:	280	10	9	V-0	÷	-
HD-D15	8	5	÷	DS	āi.	260	10	5	V-0		ī
HD-S07	2	2	12	SS	2)	260	10	ŝ	V-0	3	2
HD-S08	8	-	4	SS	23	260	10	-	V-0	Ģ.	-
			r -	SS		260	10	***	V-0	1	T

CTI marking is optional and may be marked on the printed wiring board.

(=) or file number and type designation. May be followed by a suffix to denote arking: Company name or trademark ctory identification or burning test classification.

Last Updated on 2020-06-09

re appearance of a company's name or product in this database does not in itself assure that products so identified have been anufactured under UL's Follow-Up Service. Only those products bearing the UL Mark should be considered to be Certified and overed under UL's Follow-Up Service. Always look for the Mark on the product.

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ZPXK2.E484912 - Wiring, Printed - Flexible Material Constructions - Component | UL Product iQ

UL Product iQ™



ZPXK2.E484912 - Wiring, Printed - Flexible Material Constructions - Component

Wiring, Printed - Flexible Material Constructions - Component

See General Information for Wiring, Printed - Flexible Material Constructions - Component

HUADING GROUP CO LTD

E484912

12/F, Nanfung Centre 264-298 Castle Peak Rd Tsuen Wan, NT HONG KONG

											$\overline{}$
Type	mm(in)	mm(in)	mic(mil)	DSO	mm(in)	c	sec	c	Class	DSR	1
	Min	Edge	Thk	DS/	Diam	Lin	nits	Temp	Flame	UL796F	т
		Min	Cond	SS/	Area	Sol	der	Oper		Meets	c
	Cond	Width			Max			Max			

Type	mm(in)	mm(in)	mic(mil)	DSO	mm(in)	c	sec	c	Class	DSR	
Multilaye	r flexible mate	rials intercon	nect constructio	ns, Fla	mmability	Recog	nitio	n only.			
HD- FM03		-	2	DS	20	288	10	2	V-0	2	I
HD- FM04	-		-	DS	+1.	288	10	-	V-0	-	Ī
HD- FM05		2	2	DS	20	288	10	2	V-0	-	Ī
Multilaye	r flexible mate	rials intercon	nect constructio	ns, for	rigid-flex	applic	ation				Ī
HD- FM02	0.07 (0.003)	0.07 (0.003)	12 (0.47) Int:35	DS	50.8 (2.0)	288	10	105	V-0		Ī
Multilaye	r Rigid Flexible	Materials In	erconnect Cons	tructio	ons.						
HD- FM01	0.08 (0.003)	0.08 (0.003)	9 (0.35) Int17	DS	50.8 (2.0)	288	10	105	V-0		I
											-
Single lay	er Flex-to-Inst	all, Flexible M	laterials Interco	nnect (Constructio	ns.					
	0.07 (0.003)	0.15 (0.006)	12 (0.47)	DS	25.4 (1.0)		10	105	V-0	A	T
HD-F06	0.07 (0.003)	0.15 (0.006)		DS			10	105	V-0	A	
HD-F06	0.07 (0.003)	0.15 (0.006)	12 (0.47)	DS			10	105	V-0 VTM- 0	_	

Single layer flexible materials interconnect constructions, Flammability Recognition only.

2020/8/1

ZPXK2.E484912 - Wiring, Printed - Flexible Material Constructions - Component | UL Product iQ

HD-F01	20	10		DS	÷	288	10	*	V-0	-	-
HD-F02		15	2:	DS	ė	288	10	ŧ	V-0	ı.t.	-
HD-F03		.50	59	DS	3	288	10	<u>.</u>	V-0	æ	-
HD-F04	-	24	2	DS	1	288	10	2	V-0	্র	ુ
HD-F05		20	-	DS		288	10	1	VTM- 0	-	
HD-F07	*	.85	, 5	DS		288	10	*	V-0		
HD-F08		51	_ E	DS	ē	288	10	8	V-0		
HD-F09		.	[S	DS	3	288	10	ē	V-0	×	-
HD-F10	-	20	88	DS	Ų.	288	10	g),	V-0	ं	-

Marking: Company name or trademark or i, or file number and type designation. May be followed by a suffix to denote factory identification or burning test classification.

Last Updated on 2019-08-30

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Railway PCB Application Certificate



Test Report No. AJFS1810010494FF Date: NOV.01, 2018 Page 1 of 3

HUADING GROUP CO., LIMITED

UNIT D,WORLD TRADE CENTRE, NO.122 SHUGUANG ROAD, HANGZHOU CITY, ZHEJIANG PROVINCE, THE PEOPLE'S REPUBLIC OF CHINA

The following sample(s) was / were submitted and identified on behalf of the client as:

Sample Description: PRINTED CIRCUIT BOARDS

SGS Ref No.: SHIN1810075761SC

Style/Item No.: /

<u>Product Specification</u>: FR4 PCB <u>Product or Lot No.</u>: FR4 PCB

Test Requested:

EN 45545-2:2013+A1:2015 Railway applications— Fire protection on railway vehicles Part 2: Requirements for fire behaviour of materials and components, R24

Test Results: -- See attached sheet --

Test Period:

Sample Receiving Date : OCT.24, 2018

Test Performing Date : OCT.24, 2018 TO OCT.29, 2018

Signed for and on behalf of SGS-CSTC Co., Ltd. Anji Branch

Allen Zou

Technical Manager



| No.301, Sunight Road 2 Block, Sunight Industry Zone, Anji County, Zhejiang Province, China 313300 t (86-572) 5(18825 f (86-572) 5(18825 www.spsgroup.com.cn 中国 - 新江 - 安吉县积光工业园二区阳光大道301号 | 邮编:313300 t (86-572) 5(18825 f (86-572) 5(18825 e e sps.china@sgs.com

Member of the SGS Group (SGS SA)



No. AJFS1810010494FF

Date: NOV.01, 2018

Test Report

No. AJFS1810010494FF

Date: NOV.01, 2018

APPENDIX: T01 EN ISO 4589-2:2017 Determination of burning behaviour by oxygen Index Part 2:

Ambient temperature test

1. Conditioning

T: 23±2 °C, R.H: 50±5%, at least 88 h.

2. Test results

- 1) Select initial oxygen concentration (in accordance with 8.2.3): 40%
- 2) Determining the Preliminary Oxygen Concentration (Till pair of oxygen concentrations which gives opposite response differs by ≤1%, in accordance with 8.6)

Oxygen concentration, % (V/V)	40	45	50	55	60	61	
Length burnt, (mm)	<50	<50	<50	<50	<50	<50	
Response, ("X" or "O")	0	0	0	0	0	0	

Oxygen concentration of the "O" response for the pair = / % (this is the concentration to be used again for the first measurement in section below)

OI >60% (V/V).

Photo Appendix:



SGS authenticate the photo on original report only ***End of Report***

No. 301, Sunlight Road, 2 Block, Sunlight Industry Zone, Anii County, Zheilang Province, China 313300 t (86-572) 5018825 f (86-572) 5018829 www.sgsgroup.com.cr

中国・浙江・安吉县阳光工业园二区阳光大道301号 邮编:313300 t (65-572) 501865 f (65-572) 501869 e sgs.china@sgs.com

Test Report

Description of Test specimens

Sample Descript	tion PCB
Color	Green
Туре	III
Size of sample	Length 90mm Width 10mm Thickness 1.6mm

II. Summary of test results

Short name of requirement set (used for)	Test method reference	Parameter Unit	Test results *
R24	T01 EN ISO 4589-2 OI	Oxygen content %	>60

^{*} For the test details, please see the appendix of this test report.

According to the test results, the submitted sample meets the requirements of R24 (detailed in Table 5 of EN 45545-2:2013+A1:2015) for a HL3 Hazard Level Classification.

Test Criteria, EN 45545-2:2013+A1:2015, Table 5, Material requirement sets, R24

Short name of requirement set (used for)	Test method reference	Parameter Unit	Requirement Definition	HL1	HL2	HL3
R24	T01 EN ISO 4589-2 OI	Oxygen content %	Minimum	28	28	32

The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use. The test results relate only to the specimens of the product in the form in which were tested.

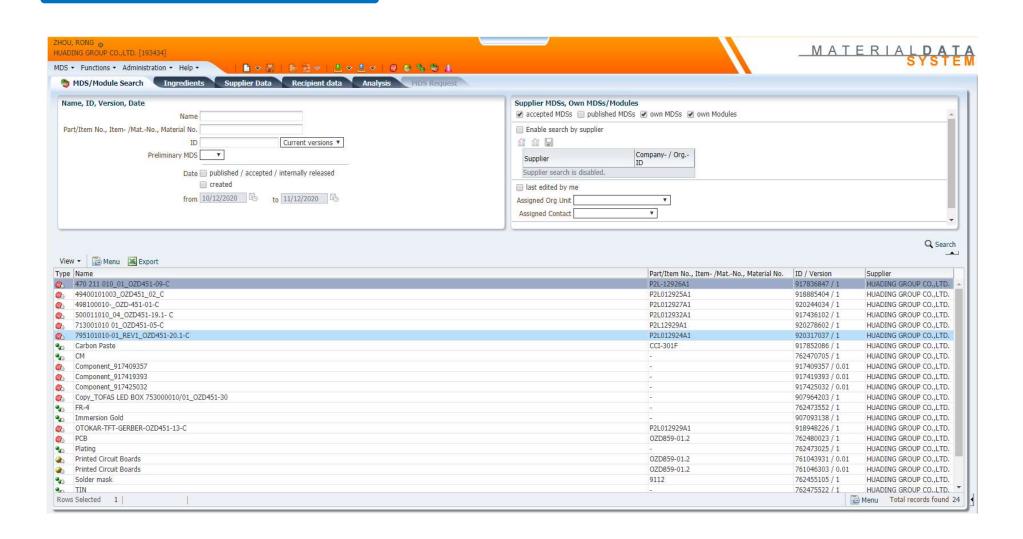
The specimen was supplied by the sponsor and SGS-CSTC ANJI Branch was not involved in any selection or sampling procedure.

To be continued...



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IMDS Global PCB Data For Automative Applications



Manufacturing Sites - Anhui

Capital: USD6M(RMB37.8M)

Assessment: USD12M(RMB75.6M)

Plant Area: 172K SqFt

Floor Area: 269K SqFt

Capacity: 300K SqFt/MTH(conventional)

Capacity: 600K SqFt/MTH

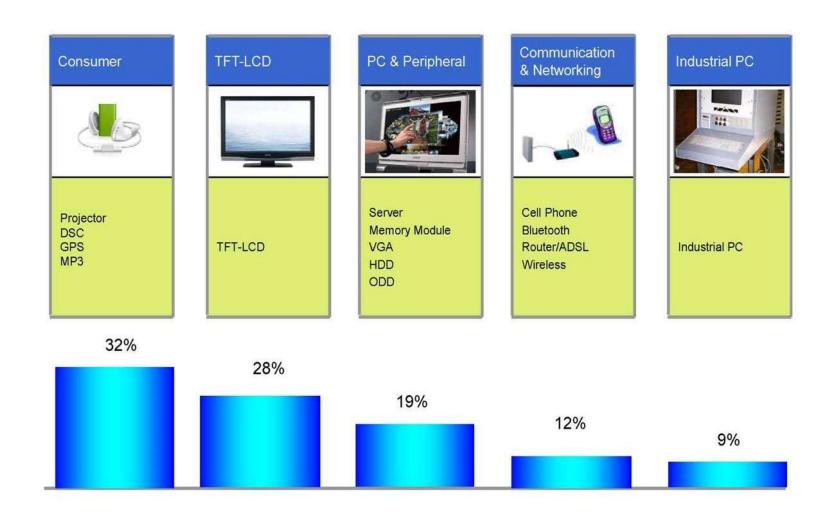
Employee: 800

Feature: STH



Anhui Plant

Manufacturing Sites - Product Mix



Manufacturing Sites - Jiangsu

Capital: USD 6.5M(RMB40.95M)

Assessment: USD 261M(RMB164M)

Plant Area: 280K SqFt

Floor Area: 452K SqFt

Capacity: 6,500k SqFt/MTH(conventional)

(Outer Layer) 300K SqFt/MTH(HDI)

Capacity: 1,000K SqFt/MTH

(Inner Layer)

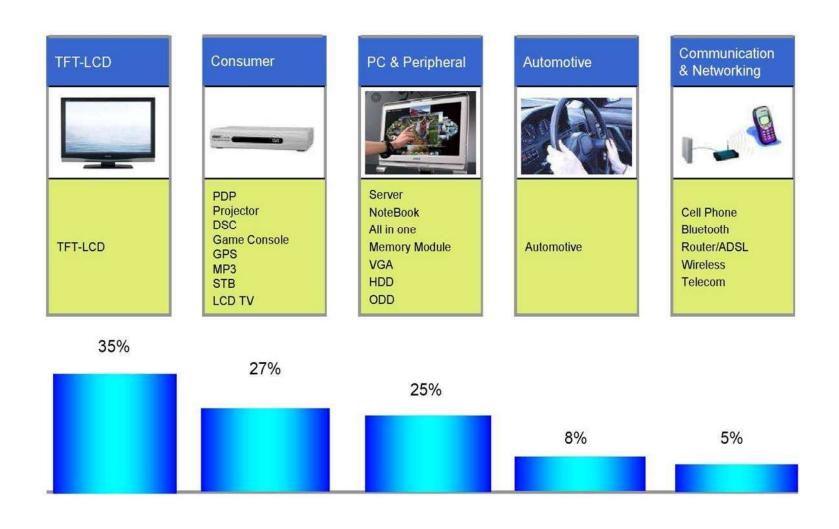
Employee: 860

Feature: High Volume Production



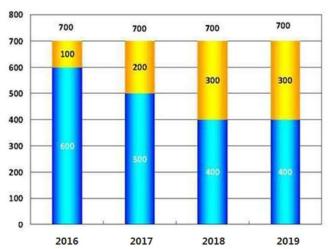
Jiangsu Plant

Manufacturing Sites - Jiangsu Product Mix

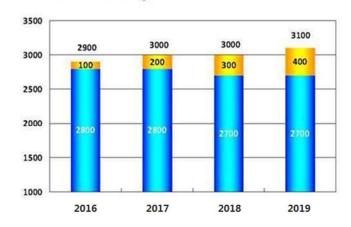


Capacity Plan





JiangSU Factory





Total Capacity Expansion



(K SqFt/MTH)



Technology Overview

Technical Roadmap

Unit: mil	2016	2017	2018	2019	2020	2021			
Build Up Structure	Any Layer/ 10 Layers	Any Layer/ 12 Layers	Any Layer/ 14 Layers	Any Layer/ 16 Layers	Any Layer/ 18 Layers	Any Layer/ 20 Layers			
PCB Thickness (min./max.)	16/128	14/128	12/128	12/130	12/130	12/130			
Min.IL-core Thickness	2	2	1.8	1.6	1.6	1.6			
Min.Line Width/space- inner Layer	2.4/2.4	2.2/2.2	2/2	1.8/1.8	1.6/1.6	1.6/1.6			
Min.Line Width/space- Outer Layer	2.4/2.4	2.2/2.2	2/2	1.8/1.8	1.6/1.6	1.6/1.6			
Min.Laser Via/pad	6/10	5/9	4/8	3/6	3/6	3/6			
BAG/Ball Pitch	18	16	14	12	12	12			
Min. S/M Clearance(mm)	1.5	1.4	1.3	1.2	1.0	1.0			
SMD (Define Pad)	6	6	5	5	5	5			
Impendance	+/-8%	+/-7%	+/-7%	+/-7%	+/-6%	+/-6%			
			Material/I	nnovation					
Material	Low DK, Lo	Low DK, Low DF, Low CTE, Metal Core, Thin Dielectric, Ceramin(High Frequency)							
Innovation	Embedde	Filling Cop d Copper Coins			With Flying Le mer, Burried C				

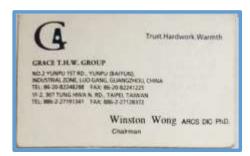
HDI Capability Overview

Description		2016	2017	2018	2019	2020	2021	
Copper Filled Via / Stagger Via	¥	Min. Via Diameter (mil)	4	3	2.8	2.8	2. 4	2. 4
		Min.L1 Capture Pad(mil)	D+5	D+4	D+3.2	D+3.2	D+2.4	D+2.4
	4	Min.L2 Capture Pad(mil)	D+5	D+4	D+3. 2	D+3. 2	D+2.4	D+2. 4
		Min.L3 Capture Pad(mil)	D+5	D+4	D+3. 2	D+3. 2	D+2.4	D+2. 4
		Aspect Ratio	0.8	1.0	1.0	1.2	1.2	1.2

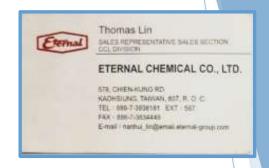
PCB Finish

	Anhui	Jiangsu		
HASL	available	available		
Lead-Free HASL	available	available		
OSP	available	available		
Immersion Silver	available	available		
Immersion Tin	available	available		
ENIG(Selective ENIG)	available	available		
Hard Gold/Soft Gold	available	N/A		
Gold Finger	available	available		

Partners (suppliers)



















Main Customers











































World Class PCB Solutions

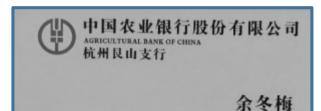
Partnership Bank

THE INDUSTRIAL & COMMERCIAL BANK OF CHINA HANGZHOU BRANCH INTERNATIONAL BUSINESS DEPT

Zhou Hui Lian

General Accountant and Manager International Settlement Division

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行长

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BANK OF CHINA HANGZHOU BRANCH Intl Trade Settlement Dept. Comprehensive Section Assistant Manager

LI YONG MING

Economist

Add 5 Xiao Nu Road Hangzhou China Post Code 310006 Cable 5290 Tel: 7032288-4142 Telex: 350236 BOCWL CN Fax: (0571)7022924

