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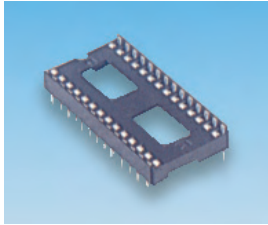
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38

Semiconductors - Hardware

IC Sockets - Dual-In-Line

Dual wipe DIP Sockets



- Low profile
● Dual wiping contact
● Stack end to end or side to side for high board density
● Large target area with tapered lead-in ramps for easy dip insertion
● Phosphor Bronze Contact
● Insulator: P.B.T 30% G.F. polyester, UL recognised
● Plating: Tin-plated over nickel
● High quality turned pin options

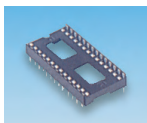


Contact rating 1A
Contact resistance 20mΩ max.
Insulation resistance 5000MΩ @ 500VDC
Dielectric withstanding voltage 1000 VAC (1Min)
Capacitance 0.5pF max.
Dielectric withstand voltage 1,000 Volts RMS
Operating temperature -45°C to +105°C
Engaging Force 340 Grams per contact max.
Separating force 20 Grams per contact max.
Durability 50 cycles

249136.342475

Table with columns: No. of Ways, Tube Quantity, Order Code, Price Each (1+, 50+, 500+, 1K+). Includes sub-sections for 0.3" (7.62mm) Row Spacing, Turned Pin 0.3" (7.62mm) Row Spacing, 0.6" (15.24mm) Row Spacing, 0.6" (15.24mm) Row Spacing (Sold in Tubes), 0.3" (7.62mm) Row Spacing (Sold in Tubes), and 0.6" (15.24mm) Row Spacing (Sold in Tubes).

DIPLOMATE™ Dual Wipe DIP Sockets



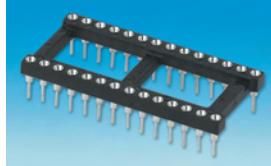
- Open frame construction
● Inhibits solder wicking and flux contamination
● Tin plated phosphor bronze contacts
● Stackable end-to-end or side-by-side
● Suitable for auto-insertion
● Body height above pcb 4.45mm
● UL recognised

Contact rating 250V ac
Contact resistance 20mΩ
Insulation resistance 5000Ω min.
Dielectric withstand voltage 1000V rms

211532

Table with columns: No. of Ways, Mftrs List No., Order Code, Price Each (5+, 10+, 100+, 250+). Includes sub-sections for 0.3" (7.62mm) Row Spacing and 0.6" (15.24mm) Row Spacing.

Premium Quality, Turned Pin DIP Sockets 800 Series, Thick 30µm Gold Plated Contacts



H (above PCB)=4.75, W=10.16 (0.3" row spacing), 12.7 (0.4" row spacing), 17.78 (0.6" row spacing), 25.4 (0.9" row spacing), L=1.27 (x No. ways) PCB clearance=4.32 min.

The 800 Series socket combines precision four-fingered inner contacts with an open ladder insulator to produce the ultimate high-reliability socket.

- Low insertion force, precision 4-finger inner contacts
● High quality turned pin contacts
● "X" and "Y" Stackable. Open ladder for cooling, cleaning and inspection
● Accepts IC leads: Rectangular - 0.23mm x 0.38mm to 0.28mm x 0.51mm
● Round - 0.41mm to 0.53mm 2.67mm min. length
● Thermoplastic polyester body, UL recognised

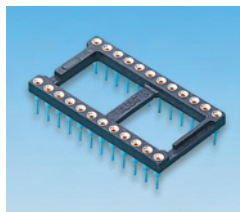
Contact rating 3A
Contact resistance 10mΩ
Insulation resistance 5000 x 10^6MΩ
Insertion force 134g typ.
Dielectric withstand voltage 1kV rms
Insulator Shell Thermoplastic polyester
Contact Beryllium Copper, 30µ Gold plated
Operating temp. -55°C to +125°C

Mftrs. List No. 8xx-AG11D where xx = No. of ways, except 824-AG31D=416-8616.

241546

Table with columns: No. of Ways, Order Code, Price Each (1+, 60+, 240+, 480+). Includes sub-sections for 0.3" (7.62mm) Row Spacing, 0.4" (10.16mm) Row Spacing, 0.6" (22.86mm) Row Spacing, and 0.9" (15.24mm) Row Spacing.

Low Profile – Turned Pin Contacts



- Available individually, or in convenience tubes
● High precision, four-fingered inner contacts
● X and Y stackable
● Open frame design for cooling, cleaning and easy inspection
● Non-wicking, closed base
● Supplied in 630mm tubes
● Beryllium copper inner contact, 10µ gold-on-nickel or tin plated
● Thermoplastic polyester body, UL recognised

Contact rating 3A
Contact resistance 10mΩ
Insulation resistance 5000 x 10^6MΩ
Capacitance 1pF
Dielectric withstand voltage 1kV rms
Operating temperature -55°C to +105°C

Mftrs. List No. 8XX-AG11DESL (gold plated), 8XX-AG12DES (tin plated) where XX = No. of ways, except 824-AG31DESL = 738-566

Gold Plated Contacts

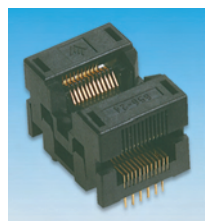
Table with columns: No. of Ways, Contact Material, Order Code, Price Each (1+, 60+, 240+, 480+). Includes sub-section for 7.62mm (0.3") Row Spacing.

Prices are in Singapore Dollars and exclusive of GST. Due to the volatile nature of certain products, prices are subject to change without notice.

Mfrs. List No. 652B0082215-002. =596-516 652B0162215. =877-256
 652B0082215. =877-232 652D00202215. =877-268
 652-0162211E001. =518-207 652D0282215. =518-220

IC	Overall W Body D		Order Code	1+	Price Each		
					10+	50+	100+
8 Way	6.0	3.9	596-516†	46.57	40.36	35.66	26.29
8 Way	6.0	3.9	989-7615●	46.57	40.36	35.66	26.29
8 Way	6.4	4.4	877-232†	46.11	39.96	35.31	26.56
8 Way	6.4	4.4	989-7631●	46.11	39.96	35.31	27.25
16 Way	10.2	7.6	518-207†	50.97	44.97	43.22	37.86
16 Way	10.2	7.6	989-7585●	50.97	44.97	43.22	37.86
16 Way	6.4	4.4	877-256†	51.59	45.49	41.50	34.08
16 Way	6.4	4.4	989-7640●	51.59	45.49	41.50	34.08
20 Way	10.4	7.55	877-268†	58.43	53.91	52.84	48.60
20 Way	10.4	7.55	989-7658●	58.43	53.91	52.84	48.60
28 Way	10.47	7.55	518-220†	60.16	54.82	49.06	41.82
28 Way	10.47	7.55	989-7593●	60.16	54.82	49.06	41.82

SSOP, Zero Insertion Force



- For 0.65mm pitch SSOP packages
- Open top, simple IC insertion/extraction
- Manual or automatic loading
- Good pin access for testing
- Upper lead contact points
- Gold plated contacts
- Compact dimensions
- Body UL recognised

Mfrs. List No. 656C1xx2211-001 where xx=No of ways, except 656-1082211=877-270

	H W D			Order Code	Price Each		
					1+	5+	25+
8 Way	13.6	18.8	9.0	877-270†	46.13	35.66	28.28
20 Way	13.6	22.0	14.2	596-541†	63.49	52.27	46.08

	H W D			Order Code	Price Each		
					1+	5+	25+
8 Way	13.6	18.8.0	9	989-7666●	46.13	35.66	28.28
20 Way	13.6	22.0	14.2	989-7623●	63.49	52.27	46.08

IC Sockets - Single-In-Line

SIL Socket Terminal Strips
 500 Series, 4-Fingered Contacts



H (above pcb)=4.57, W=2.54
 L=2.54 x (No. of ways)

Contact rating	3.0A
Contact resistance	10mΩ
Insulation resistance	5000 x 10 ⁶ MΩ
Insertion force	179g typ.
Dielectric withstand voltage	1000V rms

Mfrs. List No. 510-AG91Dxx-ESL where xx = No. of ways

No. of Ways	Order Code	Price Each				
		1+	25+	100+	250+	+
0.1" (2.54mm) Pitch						
5	416-8290	1.00	0.71	0.60	0.54	--
7	416-8306	1.20	0.88	0.72	0.64	--
7	117-2524●	1.14	0.91	0.75	0.72	--
8	416-8318	1.33	0.91	0.78	0.68	--
8	117-2525●	1.20	0.94	0.81	0.75	--
10	416-8320	1.91	1.36	1.10	1.01	--
10	117-2526●	1.76	1.40	1.14	1.07	--
14	416-8331	3.02	2.12	1.77	1.57	--
16	117-2527●	2.90	2.28	1.89	1.73	--
16	416-8343	3.14	2.20	1.85	1.66	--
20	416-8355	3.89	2.69	2.27	2.01	--
20	117-2528●	3.58	2.77	2.34	2.15	--

Turned Pin, 0.1" (2.54mm) Pin Spacing



Body H=4.2, W=2.54

- Turned pin contacts
- Cut to desired length
- Beryllium copper, gold-plated contacts

HARWIN

Mfrs. List No.

20 D01-99720-01	366-5690
20 D01-9972042	102-3034
32 D01-99732-01	366-5707
32 D01-9973242	102-3035
20 D01-9952042	102-3031
32 D01-9953242	102-3033

No. of Ways	Order Code	Price Each				
		1+	100+	500+	1K+	+
20	366-5690	1.41	1.22	1.12	0.96	--
20	102-3034●	1.41	1.22	1.12	0.96	--
32	366-5707	2.18	1.86	1.73	1.48	--
32	102-3035●	2.18	1.86	1.73	1.48	--

Wire Wrap Socket, 0.1" (2.54mm) Pin Spacing



Body H=4.9, W=2.54, Lead L=12.9

- Turned pin socket contacts
- May be cut to desired length
- 4 leaf beryllium copper contacts, gold plated
- Tin-lead plated brass shell
- UL recognised

Mfrs. List No. D01-995-20-01=170-716,
 D01-995-32-01=170-717

No. of Ways	Order Code	Price Each			
		1+	100+	500+	1K+
20	170-716	4.54	4.01	3.88	3.24
32	170-717	6.88	5.91	5.46	4.62

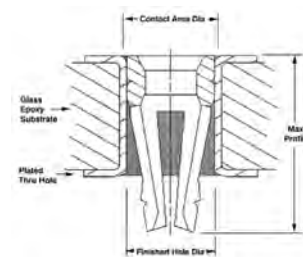
Holtite™ Press-fit, Zero Profile Sockets



The solderless zero-profile Holtite™ socket contact is designed to be press-fitted into the plated-through hole of a pcb, allowing the plated-through hole to become the component socket. The outer conical shape of the Holtite™ socket contact sizes the plated-through hole when pressed into place. The precision-machined geometry displaces the plated material without damaging the hole, or affecting the normal mechanical and electrical contact performance.

- Beryllium copper contacts, gold or tin/lead plated
- Maximum heat dissipation
- Solderless, gas-tight, press-fit insertion

tyco / Electronics / AUGAT™



- Supplied on MYLAR carrier strip
- Lowest socket profile
- Reliable, precision-machined, tapered-entry, four finger contact

Current rating	3A max.	Operating temperature	-55°C to +125°C (Gold)
Contact resistance	9mΩ max.		-55°C to +105°C (Tin/Lead)
Insertion force	102g	Material:	Beryllium copper
Extraction force	100g	Plating:	Gold or tin/lead

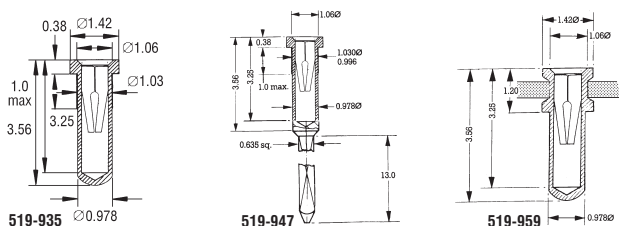
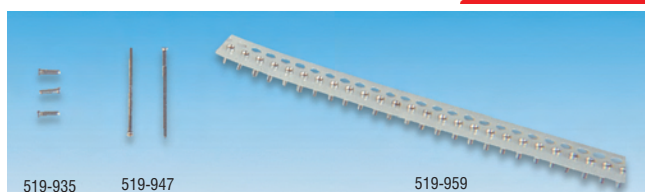
L mm	Di. mm	Min. pcb thickness, mm	PCB hole dia., mm	Mfrs. List No.	Order Code
Gold Plated					
2.39	1.12	0.75	1.04	8134-HC-5P2-B	416-8367
3.45	1.59	0.75	1.47	8134-HC-6P2-B	416-8380
3.45	1.59	0.75	1.47	8134-HC-8P2-B	416-8409
2.39	1.17	0.75	1.09	8134-HC-14P2-B.	416-8434

L mm	Dia. mm	Min. pcb thickness, mm	PCB hole dia., mm	Mfrs. List No.	Order Code
Tin/Lead					
2.34	1.12	0.75	1.04	8134-HC-5P3-B	416-8379
3.45	1.59	0.75	1.47	8134-HC-6P3-B	416-8392
3.45	1.59	0.75	1.47	8134-HC-8P3-B	416-8410
3.96	2.18	1.27	2.08	8134-HC-12P3-B	416-8422
2.39	1.17	0.75	1.04	8134-HC-14P3-B	416-8446

241543

Mfrs. List No.	Order Code	5+	250+	1K+	2K5+	+
Gold Plated						
8134-HC-5P2-B	416-8367	0.25	0.18	0.15	0.13	--
8134-HC-6P2-B	416-8380	0.84	0.59	0.48	0.43	--
8134-HC-8P2-B	416-8409	0.44	0.31	0.26	0.22	--
8134-HC-14P2-B	416-8434	0.24	0.16	0.14	0.12	--
Tin/Lead Plated						
8134-HC-5P3-B	416-8379	0.20	0.15	0.12	0.11	--
8134-HC-6P3-B	416-8392	0.33	0.24	0.19	0.17	--
8134-HC-8P3-B	416-8410	0.42	0.29	0.25	0.21	--
8134-HC-12P3-B	416-8422	0.44	0.31	0.26	0.24	--
8134-HC-14P3-B	416-8446	0.28	0.19	0.16	0.15	--

Ultra Low Profile Sockets



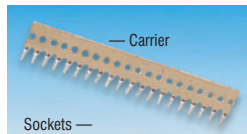
Subminiature, high reliability sockets designed to allow IC devices to be mounted on to PCB boards giving virtually zero above board profile, with the added advantage of allowing tracks to be taken between the sockets, spaced on 2.54mm centres. The sockets can also function as through-board connections.

The socket is a press-fit into a 1mm hole and has a closed body design to eliminate solder wicking. The outer shell of the socket has a tinned finish, while the inner spring contacts are gold finished. The sockets are available either loose or in strips mounted on 2.54mm centres. The sockets are also available with three level wire wrap tails. The strips may be cut as desired and the plastic carrier may be easily removed after soldering.

211497

	Mfrs. List No.	Order Code	10+	Price Each	100+	1K+
Standard, loose	H3153F01	519-935	0.47	0.33	0.24	
Wire wrap, loose	H3175F01	519-947	1.10	0.77	0.57	
Socket strip	D01F6020001	519-959	3.30	--	--	

Ultra Low Profile Sockets on SIL Carrier



- Carrier backed for auto-insertion
- Socket specification as per 519-935 above
- 2.54mm (0.1") carrier centres

Mfrs. List No. D01-990xx01, where xx=No. of ways

Carrier H=13, L=2.54 x No. of ways

211502

	Order Code	1+	25+	Price Each	100+	500+
8 way	177-845	3.21	2.76	2.41	1.99	
10 way	177-847	4.47	3.21	2.70	2.34	
12 way	177-848	4.80	4.14	3.60	3.02	
14 way	177-849	5.61	4.82	4.21	3.50	
20 way	177-850	7.98	6.84	5.97	5.01	

Zero Insertion Force Test Socket – ZIP Strip™



- For use with SIL packages
- 2 or more will accommodate non-standard leaded packages
- Glass filled polysulfone, **UL94V-0** rated bodies
- Beryllium copper contacts, gold plated
- 0.1" (2.54mm) pin spacing
- 1A contact rating
- 1kV rms breakdown voltage
- -55°C to +150°C operating temperature

Mfrs. List No. 210-2599-00-0602.=291-092 232-2601-00-0602.=291-110
220-2600-00-0602.=291-109

211452

	Order Code	1+	5+	Price Each	10+	+
10 way	291-092	48.54	45.48	--	--	
20 way	291-109	69.81	63.87	63.84	--	
32 way	291-110	85.84	--	--	--	
32 way	989-7410	64.64	49.67	45.04	--	
32 way	989-7429	84.41	63.65	58.82	--	

32 Way In-Line ZIP Strip Socket



- Lever actuated zero insertion force mechanism
- Socket contact point of 2.2 mm (0.085") below top surface of socket
- Accepts pins upto 0.6 mm square (0.025")
- Ganging bar included to enable mass actuation
- Can be used in sets of 2 or more to create a socket for non-standard leaded packages
- Colour: green

Pin spacing 0.1" (2.54mm)
Contact material Beryllium Copper
Insulation Material: Glass filled polysulfone
Contact rating 1 Amp
Breakdown voltage (min) 1000 V rms @ sea level
Insulation resistance Greater than: 1 x 10⁹ Ω @ 500 Vdc
Operating temp -55°C to 150 °C

423301

Mfrs. List No.	Order Code	1+	10+	Price Each	50+	+
232-2601-00-0602	989-7437	115.52	89.55	82.75	--	--

IC Sockets - Pin Grid Array (PGA)

Zero Insertion Force PGA Socket



- Lever action
- Easy to assemble kit form
- Contacts supplied separately
- Beryllium copper contacts, nickel boron plated
- Polyethersulfone body, **UL** recognised
- Stainless steel, PTFE coated lever
- 1A current rated
- 0.1" (2.54mm) pin centres

Mfrs. List No. 2XX-6315-70-1900 = 430-535, 2XX-6321-70-1900 = 430-547,

211450

Grid Size	Order Code	1+	Price Each	30+	50+
11 x 11	430-511	51.20	45.15	40.86	
13 x 13	430-523	76.63	63.60	54.48	
15 x 15	430-535	82.34	66.63	55.05	
21 x 21	430-547	90.14	72.96	60.27	
Contacts for IC sockets	520-068	1.56	1.35	1.20	

IC Sockets - PLCC/LCC



PLCC Sockets



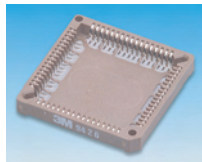
- Through-hole or surface mount options
- Phosphor bronze contacts, tin/lead plated
- Thermoplastic body **UL** recognised
- In-built location pegs
- Supplied in tube multiples

H (above pcb) = 7.95 (through hole), 4.47 (SMD)

Mfrs. List No. D830xxC-06 and D830xxB-06 (SMD only) where xx = No. of ways.

222198

PLCC Sockets



Low cost, production grade sockets for JEDEC A/B packages. Very low profile, top extraction style with internal standoffs and inspection windows. Compatible with all SMT soldering processes. **UL** recognised
H (above pcb)=5.08



No. of ways	W/D	Mftrs List No.	No. of ways	W/D	Mftrs List No.
20	15.24	PLCC-20-SMT-TT			
28	17.78	PLCC-28-SMT-TT			
32	17.78/20.32	PLCC-32-SMT-TT			
44	22.86/22.86	PLCC-44-SMT-TT			

Current rating 1A
Contact resistance <30mΩ
Contacts Insulator
Phosphor Bronze
Polyphenylene Sulphide

No. of Ways	Order Code	Price Each				
		1+	10+	50+	100+	+
20	SMD 398-3444	2.10	2.01	1.89	1.77	--
28	SMD 398-3456	1.62	1.41	1.29	1.08	--
32	SMD 398-3468	1.92	1.68	1.56	1.29	--
44	SMD 398-3470	2.04	1.77	1.71	1.59	--
52	SMD 398-3481	2.70	2.37	2.28	2.13	--
68	SMD 398-3493	3.00	2.70	2.58	2.37	--
84	SMD 398-3500	3.81	3.27	3.03	2.55	--

PLCC ZIF Sockets



● PCB terminations fit 0.1" (2.54mm) grid
● Corner posts provide positive package registration
● **UL** recognised

No. of ways	H (above PCB)	W	D
20	19.3	26	37
28	20	30	41
32	18.3	30	40
44	20	34	45
52	26.4	38	49
68	23.54	42	60

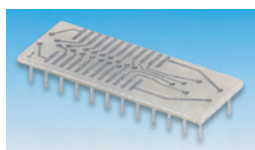
Contacts Beryllium Copper
Contact resistance 30mΩ typ.
Operating temperature -55°C to +170°C

Mftrs. List No. xx-536-11, where xx=No. of ways

No. of Ways	Order Code	1+	5+	10+
20	328-9930	114.68	103.23	92.89
28	233-146	217.19	189.44	153.77
32	290-970	130.89	114.22	94.37
44	233-158	233.04	203.28	164.99
52	290-981	166.82	145.48	118.06
68	233-160	309.20	264.75	206.62

IC Sockets - Adaptors

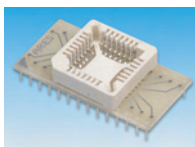
SOIC to 0.3" (7.62mm) DIL



● Converts to standard 0.3" (7.62mm) row spacing DIL configuration
● Wide solder pads, min. row spacing 0.15" (3.81mm)
● Suitable for SOJ packages
● Tin/nickel plated phosphor bronze pins

No. of ways	Mftrs List No.	Order Code	1+	25+	100+
8	08-350000-10.	547-219	27.34	21.12	19.74
14	14-350000-10.	547-220	18.09	15.57	13.03
16	16-350000-10.	547-232	13.79	11.46	10.40
18	18-350000-10.	547-244	23.64	21.31	17.69
24	24-350000-10.	547-256	31.78	27.32	24.81
28	28-350002-10.	547-268	27.01	23.99	20.39
8	08-350000-11-RC	113-6592	27.34	21.12	19.74
14	14-350000-11-RC	113-6593	18.09	15.57	13.03
16	16-350000-11-RC	113-6594	13.79	11.46	10.40
18	18-350000-11-RC	113-6595	23.64	21.31	17.69
24	24-350000-11-RC	113-6596	31.78	27.32	24.81
28	28-350002-11-RC	113-6597	35.63	31.65	26.90

PLCC to 0.6" (15.24mm) DIL



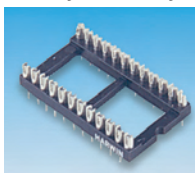
● Converts to standard DIL pin outs, 0.1" (2.54mm) pitch, 0.6" (15.24mm) row spacing
● Nickel plated phosphor-bronze pins
● **UL** recognised



No. of Mftrs ways	List No.	Order Code	1+	5+	20+	50+
28	28-653000-11-RC	116-9121	49.58	40.69	36.94	30.46
32	32-653000-11-RC	116-9124	48.67	39.20	34.41	--
44	44-653000-11-RC	116-9122	72.44	57.94	48.27	41.36
68	68-653000-11-RC	116-9123	99.57	79.66	66.37	56.91
84	84-653000-10	547-300	73.07	57.42	53.58	52.27

Component DIL Headers

14 Way to 40 Way, Turned Pin



Slotted DIL headers with precision turned contacts, for use in either board-to-board interconnection or for mounting small discrete components. May be used with corresponding DIL socket. Body is black glass filled polyester. **UL** recognised, contacts are brass with tin on nickel finish. Pin spacing 0.1" (2.54mm). Operating temperature range -55°C to +150°C.

H (above PCB)=6.14

Mftrs. List No. D62xx-01, where xx=No of ways

No. of Ways	Order Code	1+	100+	250+	500+	+
0.3" (7.62mm) Row Spacing						
14	176-361	3.18	2.82	2.76	2.52	--
16	176-362	3.69	3.37	3.31	3.11	--
20	176-363	4.33	3.95	3.88	3.63	--
0.6" (15.24mm) Row Spacing						
24	176-364	5.33	4.88	4.78	4.49	--
28	176-365	9.17	7.85	7.42	6.00	--
40	176-366	8.19	7.51	7.38	6.87	--

IC Installation and Extraction Tools

Lead Alignment Hand Tool



● Straightens bent pins
● Aligns 0.3" (7.62mm) and 0.6" (15.24mm) row spacing IC pins
● Accepts DIL ICs up to 48 pin (63.5mm length)
● Simple squeeze-to-operate
● Static safe

Mftrs. List No. T516AS

Order Code	1+	10+	25+
175-657	82.17	71.22	60.39

DIL Extraction Tool



A simple robust IC extraction tool manufactured from stainless steel with a soft plastic cover for increased grip. Suitable for use on DIL packages from 6 to 28 leads.

W=25, L=10

Order Code	1+	10+	25+
109-152	15.69	13.08	11.34

Prices are in Singapore Dollars and exclusive of GST. Due to the volatile nature of certain products, prices are subject to change without notice.

DIL IC Inserters and Extractors



- Durable, high quality metal construction
- Static safe
- Precision lifting/lowering mechanism prevents IC pin damage
- Extractor requires: 1mm min. clearance underneath the IC 3mm min. clearance between adjacent ICs

Mfrs. List No.	TW2100-14=877-463 TW2000-40=877-451 TW2000-14/20=877-426	TW2100-16=877-475 TW2100-24/6=877-505	TW2000-24=877-440 TW2100-40=877-517
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211516

No. of Ways	IC Row Spacing	Order Code	1+	5+	25+
Inserters					
14	0.3"	877-463	63.63	59.79	57.30
16	0.3"	877-475	63.63	59.79	57.30
24/28	0.6"	877-505	64.80	60.90	58.38
40	0.6"	877-517	64.80	60.90	58.38
Extractors					
14 to 20	0.3"	877-426	70.17	65.94	63.18
24/28	0.6"	877-440	76.80	70.41	64.98
40/48	0.6"	877-451	80.40	73.71	68.04

PLCC Extraction Tool - Static Safe



- Eliminates the risk of component and socket damage when removing PLCC IC packages
- Simple and safe 'squeeze to remove' operation
- Durable hardened steel extraction jaws
- E.S.D. safe plastic arms
- Universal size - fits all PLCC packages

222189

Order Code	1+	5+	10+
517-082	86.75	79.89	77.01

IC Test Clips

DIL IC Test Clip/Extractor



- Unique design provides accurate, reliable contact
- Non-shorting, positive spring clamping
- Narrow nose for greater dexterity in densely populated boards
- Exposed contacts allow probing at IC legs
- Alloy 770 contacts
- Nylon body

Mfrs. List No. 923690-xx, where xx=No. of ways, except 178-274=923689-24

211548

Order Code	1+	10+	25+
0.3" (7.62mm) Row Spacing			
8 way 178-270	33.13	29.07	19.56
14 way 178-271	26.64	22.53	20.10
16 way 178-272	42.63	24.45	21.81
20 way 178-273	52.92	45.15	40.20
24 way 178-274	65.28	54.21	47.88
0.6" (15.24mm) Row Spacing			
24 way 178-275	65.28	54.21	47.88
28 way 178-276	76.17	63.21	55.86
40 way 178-277	89.61	75.78	67.56



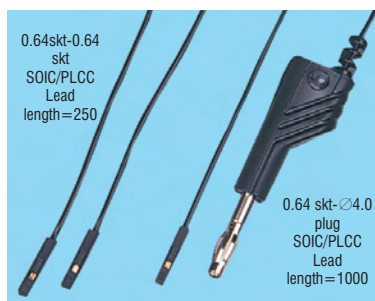
RoHS Directive

Worried about the part number lottery?
Count on us for traceability
-visit www.rohs.info

Don't risk anyone else for RoHS

TERMINAL

SOIC, PLCC and PQFP Test Leads



211468

Description	Order Code	1+	5+	10+
0.64mm Socket - 0.64mm Socket Black	518-025	7.98	6.18	5.34
0.64mm Socket - 0.64mm Socket Red	101-1430	6.71	5.92	5.37
0.64mm Socket - 4mm Stackable Red	518-049	13.57	10.45	8.97
0.64mm Socket - 4mm Stackable Red	121-2467	13.44	10.35	8.88
0.64mm Socket - 4mm Stackable Black	518-050	13.44	10.35	8.88
0.64mm Socket - 4mm Stackable Black	121-2468	13.44	10.35	8.88

SOIC Small-Outline IC



These test clips are for the easy and convenient testing of surface mounted small-outline IC's (SOIC's). Strong helical springs and insulating contact combs ensure contact integrity during testing. Probes or single row female connectors will connect to the 0.025" (0.63mm) square, gold plated contacts on 0.1" (2.54mm) centres.

IC pin spacing 0.05" (1.27mm)

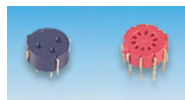
Mfrs. List No. 178-278/279/280 923650-xx, 178-282/283 923660-xx, where xx=No. of ways

211463

Order Code	1+	5+	10+
Narrow Bodied 0.15" (3.81mm)			
8 way 178-278	31.98	27.66	24.81
14 way 178-279	34.44	29.82	27.51
16 way 178-280	36.72	31.80	28.44
Wide Bodied 0.3" (7.62mm)			
20 way 178-282	43.09	37.35	33.42
24 way 178-283	46.14	39.93	35.76

Transistor/Diode Sockets and Fixing Hardware

Transistor and IC Sockets



177-129 432-775

- Polyester thermoplastic
- Gold flash contacts
- TO-18, TO-5/39 sockets fit 0.1" (2.54mm) grid
- TO-99 socket fits 0.3" (7.62mm) square pattern
- TO-100 socket fits 0.4" (10.16mm) grid
- -55°C to +150°C temperature range
- UL recognised

211550

Order Multiple = 5	Order Code	5+	10+	25+	50+	+
3 pin TO-18	177-128	0.90	0.83	0.80	0.74	--
3 pin TO-5, TO-39	177-129	1.03	0.93	0.90	0.83	--
Order Multiple = 1		1+	10+	25+	50+	+
8 pin TO-99	177-130	2.60	2.38	2.34	2.18	--
10 pin TO-100	432-775	2.25	1.89	1.83	1.60	--

Transistor Pads



519-960 H=3.43 Dia=6.35
519-972 H=3.81 Dia=7.11
519-984 H=3.18 Dia=6.35
519-996 H=2.79 Dia=8.89
520-007 H=3.68 Dia=9.37

519-960: TO-92 spreads to 0.1" (2.54mm) inline or 0.2" (5.08mm) pcb
519-972: TO-92 spreads to 0.2" (5.08mm) pcb
519-984: TO-18 PO Type 1B
519-996: TO-5 PO Type 2A
520-007: TO-5/TO-18 spread TO-18 to TO-5

211551

Order Code		Price Each			
		100+	1K+	2K5+	10K+
519-960	0.05	0.04	0.04	0.03	
519-972	0.04	--	--	--	
519-984	0.04	--	--	--	
519-996	0.03	--	--	--	
520-007	0.04	0.03	0.02	--	

TO-99 and TO-100 IC Mounting Pads



520-019 H=1.65, Dia.=9.53
520-044 H=5.08, W=10.31, D=10.31
520-056

520-019: TO-99 low profile pad
520-044: TO-99 DIL spreader
520-056: TO-100 DIL spreader

211552

Order Code		Price Each			
		100+	2K5+	10K+	+
520-019	0.06	0.05	0.03	--	
	10+	250+	1K+	10K+	
520-044	0.32	0.22	0.16	0.13	
520-056	0.32	0.22	0.16	0.13	

TO-3 Mounting Accessories



170-022 (1kV breakdown) 170-031 170-032

211553

	Order Code	Price Each			
		1+	25+	100+	1K+
Heat Transfer Pad	170-022	2.46	1.74	1.35	1.07
	5+	100+	250+	1K+	
Plastic Covers Snap-on With fixing lugs	170-031	0.51	0.38	0.29	0.24
	170-032	0.41	0.35	0.29	0.24

Transistor Fixing Kits

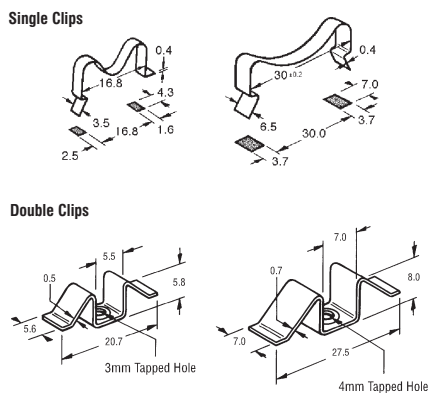


520-159 M3 Thread 520-160 M3 Thread

211555

Type	Order Code	Price Each			
		10+	250+	1K+	10K+
TO-3/TO-66	520-159	0.41	0.36	--	--
TO-220/TO-126/SOT-93	520-160	0.22	0.19	0.16	0.16

Spring Mounting Clips



A convenient and reliable method of mounting plastic power devices, applying an even pressure across the body. Produces excellent heat transfer characteristics.

Available as single or double clips. The double clip requires one screw, and is suitable for any panel or pad thickness. Zinc plated, clear passivated finish. Isolation voltage 1kV.

Packages	Max. Panel Thickness (mm)	Max. Pad Thickness (mm)	Max. Force (kg)	Mfrs List No.	Order Code
1 x TO-220	2.0	0.2	3.0	TSC704	557-729
1 x TO-3P, TO-218, TO-247	2.0	0.5	3.5	TSC903	557-730
2 x TO-220	--	--	--	TSC607-ZP	520-111
2 x TO-3P, TO-218, TO-247	--	--	--	TSC506-ZP	520-135

211444

Package	Order Code	Price Each			
		10+	100+	250+	1K+
Single Clips					
TO-220	557-729	0.35	0.22	0.16	0.12
TO-3P, TO-218, TO-247	557-730	0.35	0.26	0.19	0.13
Double Clips					
TO-220	520-111	0.90	0.69	0.57	0.39
TO-3P, TO-218, TO-247	520-135	1.14	0.90	0.69	0.49

Transistor Insulating Bushes



- For use with screw mounted transistors
- Isolates transistors from heatsinks
- Popular TO-220 and TO-3 sizes
- Nylon construction
- Suitable for use with Sil-Pad and other thermal pads
- Sold in packs of 10

222200

Size	Order Code	Price Per Pack			
		1+	25+	100+	1K+
TO-220	936-649	2.49	1.80	1.41	1.02
TO-3	936-637	2.49	1.80	1.41	1.02

Thermal Interface Materials

Heatsink Compound

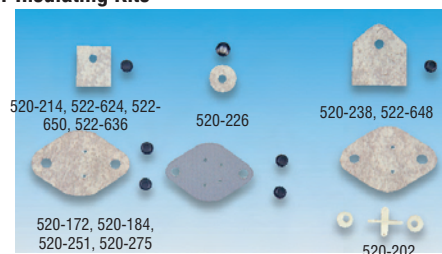


- Eliminates thermal 'hotspots'
- Silicon oil based
- Excellent thermal resistance, typically 0.05° C/W
- Volume resistivity 5 x 10¹⁴Ω/cm
- Operating temperature range -40°C to +200°C
- Excellent thermal stability
- Choice of container size

211536

Mfrs. List No.	Order Code	Price Each			
		1+	5+	10+	+
4gm tube 120-SA	335-4076	7.93	6.50	5.62	--
60gm jar 120-2	335-4106	24.70	17.75	15.34	--
140gm tube 120-5	335-4040	46.02	33.02	28.57	--
230gm jar 120-8	335-4039	57.40	41.21	35.65	--

Transistor Insulating Kits



- All kits offer 1kV isolation, except 520-202 (2kV)
- 520-172/520-251 use 4.37mm high bushes, shank length 3.2mm
- 520-184 uses 6.35mm high bushes, shank length 5.2mm
- The kits with silicone impregnated washer eliminate the need for heatsink compound
- It is recommended that heatsink compound should be used with Mica washer kits - See above
- ◇ Suitable for TO-218 devices with rounded tab (e.g. some bipolar transistors).
- ◆ Suitable for TO-247/TO-3P devices with rectangular tab (e.g. power MOSFET's).

211557

Type	Order Code	10+	250+	1K+	10K+
Kits with Mica Washer					
MK3301	520-172	0.32	0.26	0.22	0.22
TO-3 (6.35mm bush)	520-184	0.44	0.29	0.26	0.22
TO-3 (2kV isolation)	520-202	0.54	0.41	0.29	0.25
TO-220	520-214	0.32	0.29	0.22	0.18
TO-126	520-226	0.38	0.22	0.19	0.18
◇ SOT-93 (TO-3P, TO-218)	520-238	0.41	0.26	0.22	0.19
Kits with Silicone Impregnated Washer					
TO-3 (4.37mm bush)	520-251	0.54	0.42	0.40	--
TO-126	522-624	0.44	0.35	0.29	0.24
TO-220	522-636	0.33	0.27	0.21	0.18
◇ SOT-93 (TO-3P, TO-218)	522-648	0.69	0.54	0.39	0.30
◆ TO-3P, TO-218	522-650	0.75	0.57	0.48	0.36

Thermally Conductive Material



Sil-Pad 400®



- Suitable for clip mounted TO-220 packages (664-194), or screw mounted TO-220 and TO-3P packages
- Clean, grease-free and flexible
- 0.45°C/W thermal resistance
- Electrically isolating to 3.5kV (min)
- Silicon rubber/fibre-glass
- -60°C to +180°C operating temperature
- 0.18mm thickness

Mfrs. List No. 3223-07FR-43 =664-194 SP400-0.007-00-54 =878-3608
3223-07FR-104NH=664-224 SP400-0.007-00-1212=878-3616

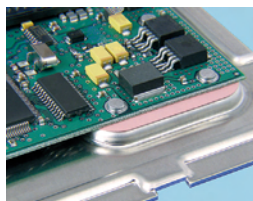
222196

Package	Order Code	10+	500+	1K+
TO-220	664-194	0.29	0.26	0.23
TO-3P (pre-cut hole)	664-224	0.46	0.36	0.36
Order Multiple=1		1+	5+	10+
300mm x 300mm sheet	NEW 878-3616	60.87	48.51	39.67
		Price Per Pack		
Package	Order Code	1+	5+	25+
TO-220 (pre-cut hole)	NEW 878-3608	7.67	5.99	5.12

Transistor Insulating Bushes

Pack Quantity=10	Order Code	1+	25+	100+	1K+
Size					
TO-220	936-649	2.49	1.80	1.41	1.02
TO-3	936-637	2.49	1.80	1.41	1.02

Sil-Pad SP900S



- Thermal impedance: 0.61°C-in²/W (@5-psi)
- Low mounting pressure
- Suitable for clip mounted TO-220 packages (878-3551) or screw mounted TO-220 and TO-3P power packages
- Smooth and highly compliant surface
- Electrically isolating

NEW

Thermal Conductivity W/m-K	Dielectric Breakdown Voltage kV-ac	Dielectric Constant	Dielectric Constant	Volume Resistivity Ω-m
1.6	5.5	6	0.2mm	10 ¹⁰

387133

Pack Quantity = 10	Order Code	1+	10+	25+
Package				
TO-220	878-3551	8.57	6.83	5.59
TO-220 (pre-cut hole)	878-3560	8.57	6.83	5.59
TO-3P	878-3578	10.01	8.04	6.56
		Price Each		
Package		1+	5+	10+
100mm x 100mm sheet	878-3586	21.13	16.87	13.79

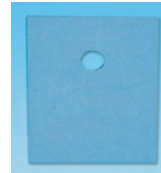
Transistor Insulating Bushes

Pack Quantity = 10	Order Code	1+	25+	100+	1K+
Size					
TO-220	936-649	2.49	1.80	1.41	1.02
TO-3	936-637	2.49	1.80	1.41	1.02

Medium Grade Thermally Conductive Material



Sil-Pad K6®



- Thermal impedance:0.49°C-in²/W (@50 psi)
- Tough dielectric barrier against cut-through
- Electrically isolating to 6kV (min).
- Medium performance Kapton®-based film
- 0.15mm thickness

Sil-Pad K-6 is a medium performance film-based thermally conductive insulator. The film is coated with a silicone elastomer to deliver high performance and provides a continuous, physically tough, dielectric barrier against 'cut-through' and resultant assembly failures.

Mfrs. List No. K6-54 =664-250
K6-104 =681-090
SIL-PAD K6 300MMX300MM SHEET=681-106

222195

Package	Order Code	10+	100+	+
TO-220	664-250	0.55	0.47	--
TO-3P	681-090	0.75	0.56	--
		1+	5+	10+
300mm x 300mm sheet	681-106	132.66	118.24	108.39

Transistor Insulating Bushes

Size	Order Code	1+	25+	100+	1K+
TO-220	936-649	2.49	1.80	1.41	1.02
TO-3	936-637	2.49	1.80	1.41	1.02

High Grade Thermally Conductive Material



Sil-Pad® K-10



- Thermal impedance 0.41°C-in²/W (@50 psi)
- 0.2°C/W thermal resistance
- Tough dielectric barrier against cut-through
- Electrically isolating to 6kV (min)
- High performance film
- Designed to replace ceramic insulators

Sil-Pad K-10 is a high performance insulator. It combines special film with a filled silicone rubber. The result is a product with good cut-through properties and excellent thermal performance. Sil-Pad K-10 is designed to replace ceramic insulators such as Beryllium Oxide, Boron Nitride, and Alumina. These insulators are expensive and they break easily. Sil-Pad K-10 eliminates breakage and costs much less than ceramics.

Mfrs. List No. K10-54=936-741 K10-104=936-753 K10SHEET =936-765

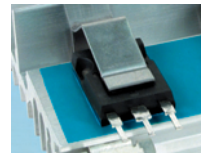
222199

Package	Order Code	5+	100+	1K+
TO-220	936-741	1.43	0.91	0.81
TO-3P	936-753	2.21	1.66	--
		1+	5+	10+
300mm x 300mm sheet	936-765	285.77	237.32	223.52

Transistor Insulating Bushes

Pack Quantity = 10	Order Code	1+	25+	100+	1K+
Size					
TO-220	936-649	2.49	1.80	1.41	1.02
TO-3	936-637	2.49	1.80	1.41	1.02

Sil-Pad A1500



- Thermal impedance: 0.42°C-in²/W (@50 psi)
- Solvent-free process
- Elastomeric compound coated on both sides

NEW

Bergquist Sil-Pad A1500 is a silicone-based thermally conductive and electrically insulating material. It consists of a cured silicone elastomeric compound coated on both sides of a fiberglass reinforcement layer.

Thermal Conductivity W/m-K	Dielectric Breakdown Voltage kV-ac	Dielectric Constant	Dielectric Constant	Volume Resistivity Ω-m
2	6000	7	0.2mm	10 ¹¹

387150

Order Code	1+	5+	10+	
100mm x 100mm sheet	878-3667	53.33	42.49	34.75

Semiconductors - Hardware

38

Compliant
Non-compliant
Limited stock - RoHS replacement available

RoHS

High Performance, High Reliability Insulator BERGQUIST

Sil-Pad 2000®



- Ultimate performance and reliability
- 0.2°C/W thermal resistance
- Electrically isolating to 4kV (min).
- Clean, grease-free and flexible
- -60°C to +200°C operating temperature
- Boron nitride loaded silicon elastomer
- Pre-cut for transistors, or uncut sheet
- 0.38mm thickness

Sil-Pad 2000 is a high performance thermallyconductive insulator designed for demanding-military / aerospace and commercial applications.Sil-Pad 2000complies with **MIL-M-38527/8A, MIL-M-38527C** and **MIL-I-49456**.

Mfrs. List No. 2015-54 = 681-118 2015-104 = 681-120 SP2000 SHBBT = 681-131 222194

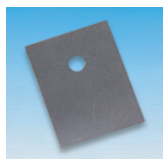
Package	Order Code	Price Each		
		5+	+	+
TO-220	681-118	1.87	--	--
TO-3P	681-120	3.09	--	--
		1+	5+	10+
150mm x 150mm sheet	681-131	192.66	175.14	160.55

Transistor Insulating Bushes

Pack Quantity = 10 Size	Order Code	Price Per Pack		
		1+	25+	100+
TO-220	936-649	2.49	1.80	1.41
TO-3	936-637	2.49	1.80	1.41

Grease Replacement Thermal Interface BERGQUIST

Q-Pad 3®



- Graphite loaded polymer elastomer
- **Electrically conductive** - non-insulating
- Clean, grease-free and easy to assemble
- 1.3°C/W thermal resistance
- Pre-cut for transistors, or uncut sheet
- 0.13mm thickness

Bergquist Q-Pad 3 eliminates problemsassociated with thermal grease such as contaminationof electronic assemblies and reflowsolder baths. Q-Pad 3 may be installed prior to soldering and cleaning, without worry. Whenclassed between two surfaces, the elastomer-conforms to surface textures thereby creatingand air free interface between heat generating-components and heat sinks.

Type	Mfrs. List No.	Order Code	Price Each		
			10+	+	+
TO-220	Q3AC-35	557-780	0.24	--	--
			1+	5+	10+
102mm x 102mm sheet		878-3659	12.02	9.58	7.87
300mm x 300mm sheet (adhesive backed)		681-465	60.13	54.96	52.26

Thermally Conductive, Pressure Sensitive Adhesive Tape BERGQUIST

Bond-Ply 100



- Thermal impedance: 0.86°C - in²/W (@ 100 psi)
- High bond strength to a variety of surfaces
- Double-sided pressure sensitive adhesive tape
- High performance, thermally conductive acrylic adhesive
- Can be used instead of heat cure adhesive, screw mounting or clip mounting

Typical applications:

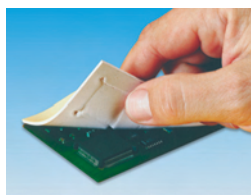
- Mount heat sink onto BGA graphicprocessor or drive processor
- Mount heat spreader onto powerconverter PCB or onto motor control PCB



Thermal Conductivity W/m-K	Dielectric Breakdown Voltage V-ac	Tensile Strength (psi) / (MPa)	Thickness	Volume Resistivity Ω-m
0.8	3000	6	0.127mm	10 ¹¹

Package	Mfrs. List No.	Price Each		
		1+	5+	10+
150mm x 150mm sheet	878-3705	32.14	25.65	20.99
300mm x 300mm sheet	878-3713	109.78	87.52	71.58
Supplied in Packs of 10		Price Per Pack		
		1+	10+	25+
25mm x 25mm sheet	878-3721	10.91	8.70	7.13

Gap Pad™ Conformable Air Gap Fillers BERGQUIST



Gap Pad provides an effective thermal interface between heat sinks and electronic devices where uneven surface topography, air gaps and rough surface textures are present.

- Eliminates air gaps to reduce thermal resistance
- Highly conformable to reduce interfacial resistance
- Low-stress vibration dampening
- Compatible with automated dispensing equipment
- Available in different grades, of various thickness

VO: Standard applications

VO Soft: Low stress applications, fragile components

VO Ultra-Soft: Highly-conformable, gel-like modulus

2000-S40: High thermal performance, highly-conformable, glass reinforced

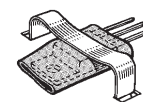
2500-S80: High thermal performance, highly-conformable, non-reinforced, inherently tacky

3000-S30: Ultra-high thermal performance, highly-conformable, glass reinforced

Material	Thermal Conductivity W/m-K	Dielectric Breakdown Voltage kV-ac	Dielectric Constant	Volume Resistivity Ω-m	Adhesive Backed ?
Gap Pad VO	0.8	6	5.5	1x10 ¹¹	y
Gap Pad VO Soft	0.8	6	5.5	1x10 ¹¹	n
Gap Pad VOUS	1	6	5.5	1x10 ¹¹	n
Gap Pad 2000 S40	2.0	2.5	6.0	4.2 x 10 ¹¹	n
Gap Pad 2500 S80	2.7	6	6.8	1x10 ¹¹	n
Gap Pad 3000 S30	3.0	2.5	6.0	8.5 ¹⁰	n

100mm x 100mm Sheet Thickness	Order Code	1+	5+	10+
Gap Pad VO				
1.5mm	681-143	50.93	45.34	42.32
2mm	936-728	59.83	54.73	52.59
3.2mm	681-155	87.23	79.30	72.70
4mm	936-730	112.64	98.51	86.87
Gap Pad VO Soft				
1.5mm	168-830	51.64	46.09	41.96
3.2mm	168-841	94.35	78.33	69.94
Gap Pad VO Ultra-Soft				
1.0mm	NEW 878-3411	47.84	46.60	41.68
2mm	NEW 878-3438	63.44	61.77	55.28
3.175mm	NEW 878-3446	107.34	104.52	93.51
5mm	NEW 878-3454	153.51	149.49	133.75
Gap Pad 2000 S40				
1.0mm	NEW 878-3462	54.77	51.76	49.15
2.0mm	NEW 878-3470	77.00	72.72	69.07
3.175mm	NEW 878-3489	103.45	97.63	92.77
Gap Pad 2500 S80				
1mm	NEW 878-3497	67.09	63.34	60.16
2mm	NEW 878-3500	104.16	98.33	93.41
3.175mm	NEW 878-3519	138.14	130.40	123.94
Gap Pad 3000 S30				
1mm	NEW 878-3527	112.43	106.10	100.81
2mm	NEW 878-3535	149.96	141.55	134.52
3.175mm	NEW 878-3543	186.32	175.94	167.10

Transistor Insulating Tubes



TO-220 L=25, Dia.=10
TO-218/247/3P L=30, Dia.=13

A simple and safe method of isolating power devices. The transistor is inserted into the flexible tube, which is then clipped on to a suitable heatsink. Electrical isolation is greatly improved compared to traditional screw mounting techniques. **UL** recognised.

Thickness	0.6 max.	Thermal conductivity	0.7 Wm ⁻¹ K ⁻¹
Breakdown voltage	8000V	Elongation	115%
Thermal resistance	0.92°C/W	Temperature range	-55°C to +180°C

FOR SUITABLE TRANSISTOR CLIPS SEE ORDER CODES 557-729 & 557-730

Package	Mfrs. List No.	Order Code	Price Each			
			10+	250+	1K+	10K+
TO-220	THER-T-SMALL	547-566	0.52	--	--	--
TO-218/TO-247						
TO-3P	THER-T-LARGE	547-578	0.63	0.54	0.48	0.34

Prices are in Singapore Dollars and exclusive of GST. Due to the volatile nature of certain products, prices are subject to change without notice.

Kool-Pad® Thermally Conductive Sheet



- Cut-to-shape 300mm x 300mm sheets
- Silicon rubber/fibre glass, **UL** recognised
- -60°C to +180°C operating temperature

Mfrs. List No. K177-NA-30X30. =151-085 K200-NA-30X30. =279-900 211558

R_{th} °C/W	$V_{isolation}$ kV	Thick- ness mm	Order Code	1+	5+	25+	100+	Price Each
0.45	3.5	0.18	151-085	41.07	39.49	37.93	30.52	
0.28	1	0.2	279-900	22.33	21.34	--	--	

Self-Adhesive Kool-Pad™, Thermally Conductive Sheet

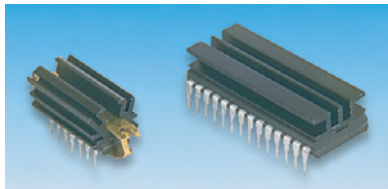


- Eliminates mechanical clamping to heatsinks
- Cut-to-shape 300mm x 300mm sheets
- Heat curable, adhesive coated on both sides
- 0.49°C/W thermal resistance (TO-3)
- Electrically conductive aluminium foil base
- -20°C to +155°C operating temperature
- Thickness 0.14mm
- **UL** recognised

Mfrs. List No. KA150-2AC-30X30. Order Code **557-742** 1+ 41.18 5+ 39.46 25+ 37.93 100+ 33.80 211473

Heatsinks

Dual-in-Line

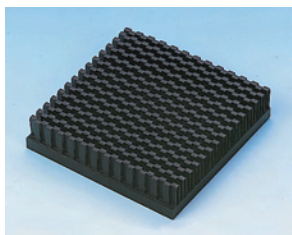


- 170-755** H=7.3, W=10.5, L=31.5 (inc. clip)
- 175-010** H=4.8, W=13.5, L=30.5
- 175-012** H=4.8, W=13.5, L=50.8

Mfrs. List No. DIP1490 = 170-755 DIP1495 = 175-010 DIP1497 = 175-012 211559

Thermal Resistance	IC Pin count	Order Code	5+	100+	500+	Price Each
0.3" (7.62mm) IC Row Spacing						
31°C/W	14/16	170-755	2.43	2.16	1.87	
0.6" (15.24mm) IC Row Spacing						
25°C/W	24	175-010	1.20	1.08	0.93	
20°C/W	40	175-012	1.77	1.47	1.35	

High Performance, Multi-Fin



- Highly efficient corrugated design
- Low profile
- For use with miniature d.c. fans, available separately
- Self adhesive fan gasket included
- Skimmed flat rear surface
- Black anodised finish
- Recommended device attachment by self-adhesive thermally conductive sheet

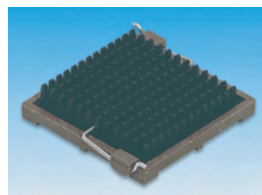
- Suitable for other cooling applications e.g. microprocessors
- Ideal for use with DuraTEC™ Thermoelectric Modules,

Order Code	H	W	L	Fan Size (mm)	Fan Order Code	Mfrs. List No.
936-881	15.5	30	30	25	899-872	CP464-030-030-04-S-2
936-893	15.5	45	45	40	899-902	CP464-045-045-04-S-2
936-900	15.5	60	60	60	960-0302	CP464-060-060-04-S-2
936-911	15.5	80	80	80	960-0981	CP464-080-080-04-S-2
936-923	15.5	100	100	80	960-0981	CP464-100-100-04-S-2

222203

R_{th} Forced Convection °C/W	Order Code	1+	25+	100+	250+	Price Each
2	936-881	43.76	34.13	27.00	21.62	
1.6	936-893	50.91	41.57	34.69	27.58	
0.7	936-900	53.39	43.87	41.41	32.99	
0.4	936-911	53.58	50.65	42.65	42.60	
0.3	936-923	67.50	59.76	54.75	46.86	

Pin Grid Array, Pin Fin™ Adhesive Tape Fixing



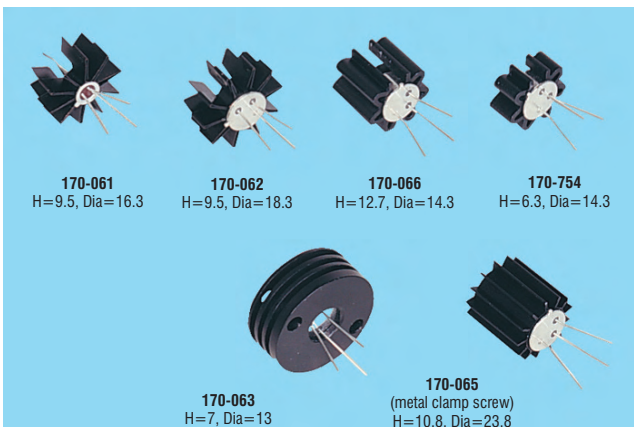
Pin fin (N.B. clamp not included)

PGA Matrix	H	W	D	R_{th} Natural Convection °C/W	R_{th} Forced Convection (400 FPM) °C/W	Order Code
17 x 17 and 18 x 18	10.0	45.5	44	9.0	3.5	596-620
17 x 17 and 18 x 18	16.5	45.5	44	6.9	2.8	596-644

Mfrs. List No. 3321B-TACH = 596-620 3332B-TACH = 596-644 211449

PGA Matrix	Order Code	1+	25+	100+	250+	Price Each
Double Sided Adhesive Tape Fixing						
17 x 17 and 18 x 18	596-620	5.19	4.74	4.50	4.42	
17 x 17 and 18 x 183332B-TACH	596-644	10.65	6.81	6.09	5.02	

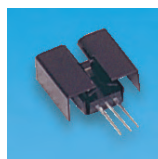
TO-5/TO-18/TO-39



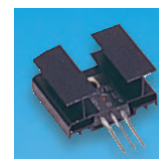
Mfrs. List No. Aavid Thermalloy 5C-20 = 170-065, 5F = 170-066, 5F2 = 170-754 211561

R_{th} °C/W	Order Code	5+	25+	100+	1K+	Price Each
TO-5/TO-39						
62.2	170-754	1.47	0.96	0.75	0.54	
45.2	170-066	0.63	0.54	0.51	--	
		1+	25+	100+	1K+	
30	170-065	9.72	7.23	5.85	4.79	
		5+	25+	100+	1K+	
TO-18	170-061	1.71	1.38	1.11	0.84	

TO-126/TO-220 Clip-on



170-498
H=10, W=21.8, D=19



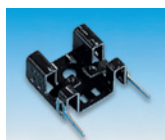
170-758
H=12.5, W=25, D=20

Semiconductors - Hardware

38

Compliant
Non-compliant
Limited stock - RoHS replacement available

RoHS



Solderable tabs 1.7 x 0.5
151-305
H=9, W=21, D=10



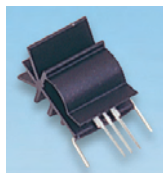
Solderable tinned nickel coating tabs 1.7 x 0.7
178-700
H=11, W=22, D=19



178-701
H=11, W=22, D=19



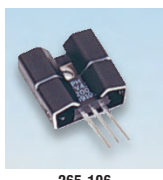
Solderable tabs 1.70.5
936-844
H=12.7, W=12.7, D=19.5



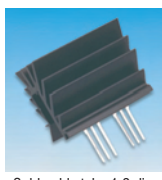
175-645/175-646
Solderable tabs 1.3 dia on fixing centres
21 (175-645), 36 (175-646)
H=20, W=21, D=28
H=20, W=36, D=28



179-954
H=8.1, W=19.7, D=13.2



265-196
H=8.1, W=19.7, D=20



Solderable tabs 1.3 dia on fixing centres 35
523-392
H=27, W=16, D=35

Mfrs. List No.	Aavid Thermalloy	PF752 = 178-701	PF750 = 178-700
		HF35 = 121-3434	PF436 = 936-844
	HS Marston	PF720 = 265-196	82SN-00200-U-220 = 170-758
		PF730 = 179-954	PPC0350BP = 523-392
		HF20 = 121-3432	

211562

R _{th} °C/W	Convection °C/W	Order Code	Price Each				
			5+	25+	100+	1K+	
TO-126	34	179-954	1.59	1.11	0.78	0.51	
	TO-220	28	265-196	0.51	0.36	0.27	0.26
		25	936-844	0.87	0.59	0.53	0.53
		23.5	151-305	2.88	2.25	1.89	1.23
		23.3	170-498	2.01	1.56	1.38	0.96
14		178-701	1.02	0.87	0.75	0.72	
21	170-758	1.51	1.29	1.10	0.76		
20	178-700	1.71	1.29	1.23	1.17		
		1+	25+	100+	1K+		
13		121-3432	5.07	3.78	2.94	1.95	
11		121-3434	5.67	4.53	3.54	2.34	
8		523-392	6.14	4.67	3.94	2.80	

TO-220/TO-3P Clip-on or Screw Fixing



595-846
H=13.0, W=30.0, D=30.0



595-871
H=10.0, W=44.0, D=36.9



595-883
H=10.0, W=44.0, D=17.8



595-810 H=25.0, W=42.2, D=38.0
595-834 H=22.0, W=28.0, D=38.0



595-858
H=13.0, W=30.0, D=30.2 (Body)
Solder tabs pitch 24.1 and length 5.0

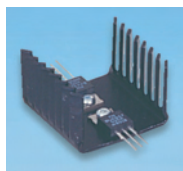
Devices may be fixed with screw or clip. 595-858 has solder tabs.
595-810 can have two devices mounted per heatsink.

211488

R _{th} °C/W	Order Code	1+	25+	100+	500+	+
20	595-883	3.05	2.19	1.59	1.16	--
17	595-858	3.59	3.02	2.58	2.35	--
14	595-846	4.20	3.24	2.80	2.54	--

°C/W	Order Code	1+	25+	100+	500+	+
12	595-871	2.79	2.13	1.74	1.23	--
9.9	595-834	2.93	2.58	2.29	2.10	--
7.1	595-810	3.21	2.34	1.86	1.29	--
Clip	595-895	0.51	0.32	0.24		

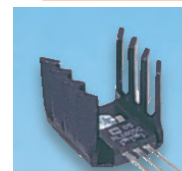
TO-126/TO-220/TO-218 Screw Fixing



707-351
H=13, W=42, D=38
707-363
H=19, W=42, D=38



707-375*
H=12.7, W=30, D=45
* =solder terminals



707-557
H=11, W=22, D=19

Mfrs. List No.	TV100 = 707-351	TV265 = 707-375
	TV101 = 707-363	TV102 = 707-557

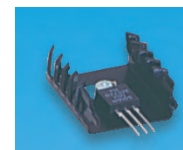
211504

Package	°C/W	Order Code	Price Each			
			1+	25+	100+	1K+
TO-126	29.9	707-557	2.43	1.50	1.08	0.70
TO-220/TO-218	13	707-375	4.23	2.67	2.16	1.49
TO-220	9	707-351	3.72	2.22	1.77	1.20
TO-220	7.7	707-363	3.72	2.22	1.77	1.20

TO-220/TO-126/TO-218 Screw Fixing



170-070
Slot = 3.8 x 9,
H=12.7, W=25, D=30



Standard tabs
170-071
H=12.7, W=30, D=30.2
179-936
H=12.7, W=30, D=45.0
Slot = 3.8 x 8.9



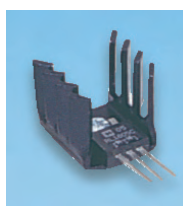
170-072
H=19, W=22, D=19
170-073
H=11, W=22, D=19
Hole dia = 4



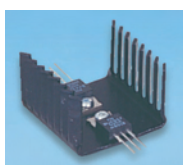
179-934
H=12.7, W=30, D=30.2
Slot = 3.8 x 8.9



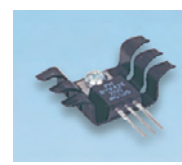
170-074
H=22, W=28, D=38
Hole dia = 4



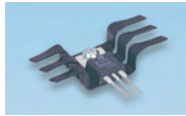
170-075
H=19, W=22, D=19
170-076
H=13, W=22, D=19
Hole dia = 4



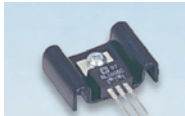
Accepts one or two devices
179-935
H=25, W=42, D=38.0
2 holes dia=4



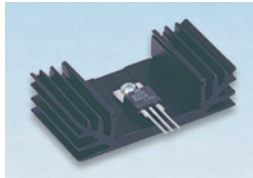
177-009
H=10.2, W=31.7, D=17.8
Hole dia=3.7



177-010
H=10.2, W=44.4, D=17.8,
Hole dia=3.7



May be mounted flat or free-standing vertically
179-938
H=9.4, W=28, D=19
Hole dia=3.8



May be mounted vertically by two No 6 self tapping screws as shown (not supplied)
175-009
H=16, W=60, D=32

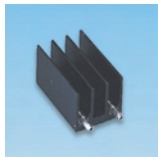
Mfrs. List No.	Aavid TV46 = 170-076	TV35 = 179-935	TV65 = 179-936
	TV4 = 170-075	1.25GY-50 = 175-009	TV96 = 177-009
	THM6230B = 170-070	220SA = 179-938	TV97 = 177-010
	TV58 = 170-073	TV1505 = 170-071	TV40 = 170-074
	TV5 = 170-072	TV1500 = 179-934	

224008

R_{th} °C/W	Order Code	Price Each			
		5+	25+	100+	1K+
TO-126					
27	170-076 ●	2.16	1.59	1.20	0.75
21	170-075 ●	1.29	1.11	0.84	0.78
19	170-070 ● ‡	1.50	1.41	1.26	1.16
		1+	25+	100+	1K+
TO-220					
30	170-073 ●	2.34	1.71	1.32	0.78
20	177-009 ●	2.76	2.10	1.53	1.08
21	170-072 ●	1.56	1.20	1.05	0.72
13	179-935 ●	3.84	2.85	2.16	1.38
6.8	175-009 ●	4.80	4.71	4.23	3.84
TO-220/TO126					
21	179-938 ●	2.43	1.47	1.23	0.87
17	170-071 ●	2.34	1.65	1.26	0.75
14.2	179-934 ●	2.34	1.65	1.26	0.78
TO-220/202					
13	179-936 ●	2.57	2.11	1.71	1.19
TO-220/218					
20	177-010 ●	3.00	2.10	1.53	1.08
9.9	170-074 ●	1.89	1.71	1.47	1.32

‡ Subject to design change

TO-220/TO-218 Screw Fixing



● Includes solder pins

H	W	D	Mfrs. List No.	Order Code
25.4	16.26	16.26	002702 (6390B)	707-454
38.1	16.26	16.26	6391B	707-466

211503

Order Multiple = 1					
R_{th} °C/W	Order Code	1+	25+	100+	1K+
16.7	707-454	4.29	2.64	1.86	1.30
12.9	707-466	4.65	2.85	1.98	1.40

TO-220, Screw Fixing



- High thermal efficiency
- Space-saving, vertical mounting
- Wave solderable pins on 25.4mm centres
- Black anodised

	H*	W	D	Mfrs. List No.
335-4222	25.4	34.9	12.7	637-10ABP..
335-4167	38.1	34.9	12.7	637-15ABP..
335-4179	50.8	34.9	12.7	637-20ABP..
335-4180	25.4	41.9	25.4	647-10-ABP.

*denotes height above pcb

211539

R_{th} °C/W	Order Code	1+	10+	25+	50+
5	335-4222	3.36	2.43	2.10	1.80
4.5	335-4167	3.48	2.49	2.25	1.89
4	335-4179	3.63	2.61	2.31	1.98
2.1	335-4180	4.86	3.51	3.09	2.58

TO-220/TO-218 Screw Fixing



● Includes solder pins

H	W	D	Mfrs. List No.	Order Code
38.1	41.91	25.4	6298B	707-480
50.8	41.91	25.4	6299B	707-491
63.5	41.91	25.4	6300B	707-508

211501

R_{th} °C/W	Order Code	1+	25+	100+	1K+
3.9	707-480	5.81	4.38	3.21	2.30
3.6	707-491	7.02	5.10	3.72	2.58
3.1	707-508	8.04	5.82	4.20	2.97

TO-220/TO-218



● Includes solder pins

H	W	D	Mfrs. List No.	Order Code
25.4	41.91	25.4	436963	707-510
38.1	41.91	25.4	6398B	707-521
50.8	41.91	25.4	436966	707-533
63.5	41.91	25.4	436969	707-545

211500

R_{th} °C/W	Order Code	1+	25+	100+	1K+
5.6	707-510	6.48	4.05	2.79	1.95
4.4	707-521	6.82	4.25	2.97	2.04
3.3	707-533	8.13	5.10	3.51	2.42
2.7	707-545	9.45	5.88	4.05	2.88

TO-220/TO-218/TO-202



SW Series	H	W	D
175-649/175-650/265-299	12.5	34.5	25
175-651/175-652/175-655	12.5	34.5	38
175-653/175-654	12.5	34.5	50
265-275/265-287	12.5	34.5	63
BW Series	H	W	D
177-004/177-006	25.4	35	38
177-005/177-007	25.4	35	50
707-387	25.4	35	63

Solderable tabs 2.6 dia on 25.4 fixing centres

Mfrs. List No.	SW25-2. = 175-649	SW38-2. = 175-651	SW50-2. = 175-653
	BW38-2 = 177-004	SW63-2. = 265-275	BW50-2 = 177-005
	SW25-6. = 265-299	SW38-6. = 175-655	
	SW25-4. = 175-650	SW38-4. = 175-652	SW50-4. = 175-654
	BW38-4 = 177-006	SW63-4. = 265-287	BW50-4 = 177-008
	BW63-4 = 707-387	5901. = 175-656	6801 = 177-008

211566

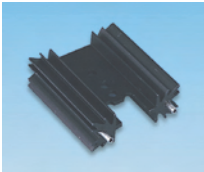
R_{th} °C/W	Order Code	1+	25+	100+	1K+
Clip Mounted, TO-220/TO-218					
13	175-649	2.10	1.71	1.47	1.08
10	175-651	2.75	2.08	1.81	1.25
8.6	175-653	2.64	2.07	1.80	1.29
7.2	177-004	4.80	3.96	3.24	2.25
6.8	265-275	2.55	2.01	1.74	1.26
5.8	177-005	4.38	3.48	2.79	1.95
Screw Mounted, TO-202					
13	265-299	2.55	2.07	1.74	1.17
10	175-655	3.00	2.34	1.92	1.35
Screw Mounted, TO-220/TO-218					
13	175-650	2.37	2.31	1.89	1.59
10	175-652	2.60	2.55	2.16	2.04
8.6	175-654	2.75	2.70	2.28	2.04
7.2	177-006	4.83	3.86	3.15	2.14
6.8	265-287	2.94	2.91	2.55	2.37
5.8	177-007	5.42	4.47	3.79	2.54
4.7	707-387	6.42	4.98	3.99	2.93
Clips					
SW series	175-656	0.35	0.26	0.22	0.18
BW Series	177-008 ●	0.78	0.66	0.48	0.24

Semiconductors - Hardware

38

Compliant
Non-compliant
RoHS
Limited stock - RoHS replacement available

**Multiple TO-220/TO-202
Screw or Clip Fixing**



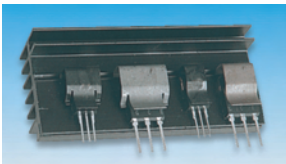
Incorporating tin plated roll pins for additional support and/or earthing points. Clips supplied separately.

H	W	D	R _{th} °C/W	Mfrs. List No.	Order code
25.4	34.92	12.8	14	436898	707-405
38.1	34.92	12.8	11	6099B	707-417
50.8	34.92	12.8	9	6100B	707-429

211499

	Order Code	Price Each			
		1+	25+	100+	1K+
Heatsinks	707-405	4.11	2.97	2.46	1.35
	707-417	4.77	3.30	2.55	1.53
	707-429	5.19	3.72	2.73	1.74
Clip	707-442	0.85	0.63	0.44	0.28

Multiple TO-220/TO-218, Clip Fitting



Style	Package	Mfrs. List No.	Order code
Standard	TO-220	4426.	265-238
Standard	TO-218/TO-247	4473.	265-240
Slim	TO-220	4525.	265-251
Slim	TO-218/TO-247	4597.	265-263

265-202 5.0°C/W H=45, W=50, D=30
 265-214 3.7°C/W H=45, W=75, D=30
 265-226 2.9°C/W H=45, W=100, D=30

The heatsinks feature a clip retaining slot and are for use with retaining clips for quick and easy fitting. Standard clips have stabilising legs to allow assembly prior to device fitment. Device can be removed and replaced without clip removal. Slim clips are without stabilising legs, allowing devices to be placed closer together.

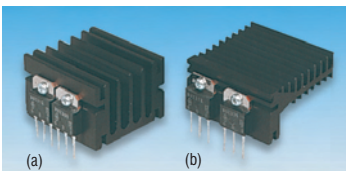
Fitting: Assemble clip to the retaining rail by thumb pressure applied to the top/front of the clip, this will snap it firmly into place. Clips can be removed and re-used by gripping the clip immediately adjacent to the rail using long nosed pliers or similar and twisting in an upward direction.

Mfrs. List No. KM50-1 = 265-202 KM75-1 = 265-214 KM100-1 = 265-226

211446

R _{th} , °C/W	Order Code	Price Each				
		1+	10+	25+	100+	
5	265-202	7.44	6.90	5.28	3.75	
3.7	265-214	7.71	6.12	5.19	4.23	
2.9	265-226	8.91	8.40	6.72	4.77	
		10+	50+	100+	500+	
Standard Clip	TO-220	265-238	0.44	0.32	0.27	0.26
	TO-218, TO-247, TO-3P	265-240	0.72	0.48	0.29	0.18
	Slim Clip	TO-220	265-251	0.72	0.48	0.29
TO-218, TO-247, TO-3P		265-263	0.72	0.48	0.29	0.18

Multiple TO-220/TO-218



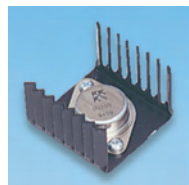
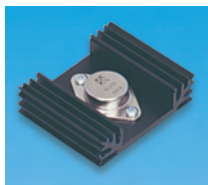
(a) 177-011	H=33, W=46, D=50
177-012	H=33, W=46, D=100
523-173	H=33, W=46, D=150
(b) 253-911	H=28, W=50, D=50
253-923	H=28, W=50, D=75
253-935	H=28, W=50, D=100

- Serrated slot for TO-220/TO-218 screw fixing.
- Accepts M3 or No. 6 self tapping screw sizes

211567

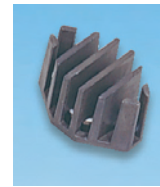
R _{th} °C/W	Order Code	Price Each				
		1+	10+	25+	100+	+
5	253-911	8.40	6.33	5.55	3.57	--
4.9	177-011	11.00	8.74	7.44	5.09	--
3.7	253-923	10.77	8.19	7.02	4.65	--
3.4	177-012	16.89	13.47	11.52	7.83	--
3.25	523-173	27.22	20.86	17.49	11.38	--
3.1	253-935	12.87	9.93	8.43	5.58	--

TO-3



170-087: H=16, W=60, D=89
 232-660: H=20, W=65, D=50

170-077: H=25, W=42,
 D=38



399-9348

H=32.8 x 46.48 sq

177-013

H=25, W=40.8, D=26.9
 Fixing centres=30.15, ø 4.1

595-743

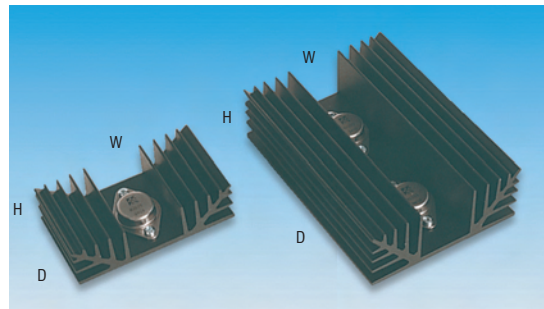
H=43.0, W=41.2, D=45.0

Mfrs. List No. Aavid Thermalloy: 437911=170-077, 002193=399-9348,
 436628=170-087, 437691=177-013,
 ABL: 510AB 0500MB(T03)=232-660, LS50=595-743

211569

R _{th} °C/W	Order Code	Price Each			
		1+	25+	100+	1K+
7.3	177-013	7.89	6.75	5.61	5.58
7.1	170-077	1.56	1.26	0.96	0.90
5.5	399-9348	5.94	5.67	3.63	2.79
4	595-743	4.32	3.33	2.55	1.59
3.4	170-087	13.86	10.50	8.13	5.52
3.3	232-660	7.74	5.94	5.28	5.04

TO-3



253-698

H=25, W=88, D=50

253-716

H=35, W=88, D=75

253-730

253-704

H=25, W=88, D=75

253-728

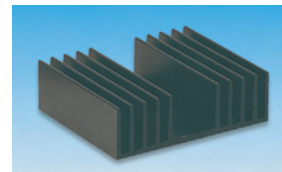
H=35, W=88, D=100

Mfrs List No. 515AB0500MB (TO-3)=253-698, 515AB0750MB (TO-3)=253-704,
 520AB0750MB (TO-3)=253-716, 520AB1000MB (TO-3)=253-728,
 520AB1250MB (TO-3X2)=253-730.

211442

R _{th} °C/W	Holes Drilled	Order Code	Price Each			
			1+	10+	30+	100+
2.5	1 x TO-3	253-698	10.02	7.83	7.26	6.90
1.9	1 x TO-3	253-704	16.95	12.54	10.86	7.86
1.65	1 x TO-3	253-716	13.11	10.77	9.93	9.45
1.4	1 x TO-3	253-728	23.91	17.67	15.45	11.10
1.2	2 x TO-3	253-730	27.57	20.43	17.73	12.75

Undrilled



	H	W	D	Mfrs. List No.
150-014	14	93	100	325AB1000B
150-015	14	93	150	325AB1500B
150-016	37	120	100	345AB1000B
150-017	37	120	150	345AB1500B
150-018	37	120	200	345AB2000B
523-185	50	125	100	350AB1000B
150-019	50	125	150	350AB1500B
523-197	50	125	200	350AB2000B
150-020	50	125	250	350AB2500B

211573

R _{th} °C/W	Order Code	Price Each			
		1+	10+	30+	100+
2.9	150-014	17.25	14.25	12.00	8.43
2.2	150-015	25.14	20.97	17.73	12.09
1	150-016	23.40	18.18	17.10	16.23
0.9	150-017	42.00	34.74	29.55	20.73
0.85	150-018	48.99	41.04	36.33	27.15
0.67	523-185	50.02	38.41	32.12	22.99
0.5	150-019	45.45	39.99	37.20	35.34
0.42	523-197	67.41	55.20	50.76	38.91
0.36	150-020	92.19	80.16	68.46	55.56

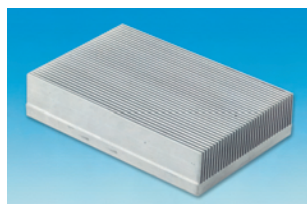


- Heatsinks for use with the Semikron isolated power modules: the Semipack (page 1333), Semitrans (page 0000) and Semipont bridge rectifier (page 0000) ranges
- Mounting channels accommodate power modules and additional accessories

333609

Mfrs. List No.	R _{th} °C/W	Order Code	1+	25+	100+
P3/180A	0.47	438-8562	128.82	103.06	77.29
P33/150A	1.85	438-8574	35.04	28.03	21.02
P35/250A	0.41	438-8586	84.73	67.79	50.84

Ultra-Fin™



- Latest generation extrusion technology
- Exceptional fin height/space ratio
- Increased thermal performance from a lower mass
- Optimum performance achieved when force air cooled
- Recommended 12V fan: Papst 3312 or order code 149-426, or equivalent

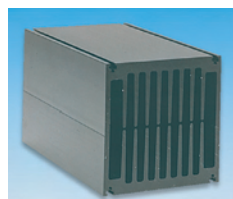
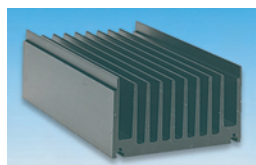
H=32.0 W=101.6

R _{th} °C/W	L	Mfrs. List No.	Order Code
0.12	100	890SP-01000-A-100	410-5977
0.08	150	890SP-01500-A-100	410-5989
0.07	200	890SP-02000-A-100	410-5990
0.05	250	890SP-02500-A-100	410-6003
0.04	300	890SP-03000-A-100	410-6015

241536

R _{th} °C/W	Order Code	1+	10+	30+	100+
0.12	410-5977	40.95	32.46	30.21	22.59
0.08	410-5989	57.45	45.57	42.39	31.71
0.07	410-5990	73.86	58.59	54.51	40.77
0.05	410-6003	90.39	71.67	66.69	49.86
0.04	410-6015	100.74	79.89	72.96	55.59

Comb Section Assembly



Fin-to-Fin Assembly

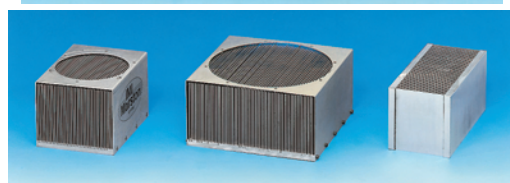
Two sections may be assembled fin-to-fin, providing a highly efficient force cooled assembly.

Order Code	H	W	D	Mfrs. List No.
526-812	64.5	119	200	173AB2000B
526-915	64.5	119	300	173AB3000B

211485

R _{th} °C/W	Order Code	1+	10+	25+
0.63	526-812	96.07	76.73	63.63
0.48	526-915	135.72	108.44	89.84

COLDFIN and COLDFIN 2



- Ultra-Low thermal resistance
- Low weight
- Space efficient design
- Low volume
- Fans are available separately

(force cooled) °C/W	R _{th}	H	W	L	Fan Size	Mfrs. List No.	Order Code
COLDFIN	0.1	51.5	125	125	120 x 120	CF1-1250-0515-1250BA	936-418
	0.2	40	81.6	81.6	80 x 80	CF1-0816-0400-0816A	936-431
	0.05	130	153	200	150 dia	CF1-1500-1250-2000CA	311-0795
	0.03	130	253	250	250 dia	CF1-2500-1250-2500CA	311-0825
COLDFIN 2	0.13	80.5	81.6	150	80 x 80	CF2-0816-0805-1500NA	936-420
	0.05	120	250	125	120 x 120 x 2	CF2-2500-1000-1250NA	311-0837

211525

Order Code	1+	10+	30+
936-418	204.09	169.70	143.23
936-420	181.99	152.33	132.32
936-431	127.08	105.65	88.70
	1+	5+	10+
311-0795	729.76	624.96	621.40
311-0837	404.06	346.01	341.29

COLDCUBE™



- Ultra-high performance cooling
- Low weight/volume
- Fits a standard U2 rack
- Operates with 1 or 2 80mm fans, available separately

H	W	D	Order Code
82	75	60	936-406
82	75	100	567-840

Mfrs. List No. CC02=936-406, CC01=567-840

211454

R _{th} °C/W	Order Code	1+	10+	30+
0.12	567-840	201.30	170.13	145.28
0.14	936-406	154.71	123.67	99.76

Force Cooled Assemblies

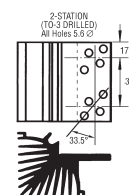
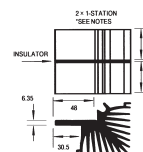
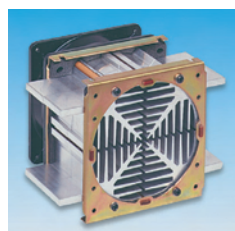


Illustration shows complete assembly:
 2 x 1 station module kits
 1 x 2 station component kit
 1 x 119mm axial flow fan - (available separately)

Total Assembly
 H=128, W=171 (incl platforms)
 D (1 station)=41, D (2 station)=78
 D (3 station)=114, D (4 station)=151
 D (6 station)=224
 Fixing centres (to fan)=105 x 105 x 4 dia.

A (1 station)=34.9
 A (2 station)=71.4
 A (4 station)=144.4

- Compact high thermal performance
- Electrically isolated extensions
- Force cooled or natural convection
- TO-3 pre-drilled, or undrilled
- Module Kit comprises 4 aluminium extensions
- Component Kit contains necessary hardware gaskets, end plates and instructions
- Complete assembly comprises one or more module kits and corresponding component kit

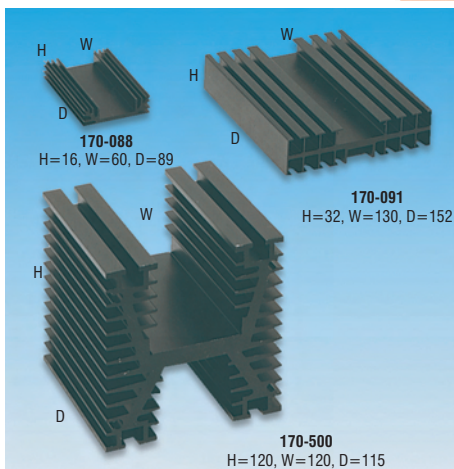
Typical dissipation
 Typical thermal resistance for station No 1 (station nearest fan) per extrusion
 1 station - 200W, 6 station - 800W
 1.16°C/W @ 10 cu ft/min
 1.02°C/W @ 15 cu ft/min

Mfrs. List No. FC-Mx=148-449 to 148-451, FC-Mx-AC=151-302 to 151-303 where x=No of stations
 FC-Cx=148-452 to 148-457

211584

Order Code	1+	10+	30+
Module Kits (TO-3 drilled)			
2 station 151-302	119.18	99.76	85.14
4 station 151-303	203.50	170.32	143.01
Module Kits (Undrilled)			
1 station 148-449	58.40	53.86	46.84
2 station 148-450	97.67	81.96	69.78
4 station 148-451	173.22	145.00	121.73
Component Kits			
1 station 148-452	89.40	75.25	64.32
2 station 148-453	95.66	78.66	67.35
4 station 148-455	98.73	82.78	70.57
6 station 148-457	117.58	98.37	82.56

Undrilled

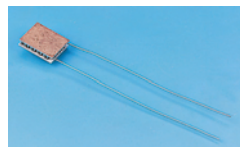


Mfrs. List No.	3.5Y1 = 170-088,	6W1 = 170-091,	NV115-1 = 170-500
R_{th} °C/W	3.4	1.1	0.5

Order Code	Price Each			
	1+	10+	25+	100+
170-088	8.73	6.81	5.82	4.84
170-091	22.44	20.64	18.39	16.62
170-500	48.99	46.80	42.87	--

Thermoelectric Modules

Low/Medium Power Heat Pumps

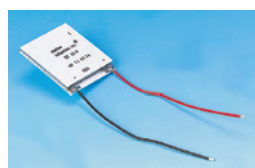


- Single stage, Peltier Effect coolers
- Metalized on both surfaces
- d.c. powered
- Polarity dependent heating/cooling
- Vibration and noise-free
- Small and light weight
- Precision temperature control <0.05°C
- Suitable for low temperature soldering (<120°C)
- Maintenance-free, reliable solid-state design

Heat Pump Capacity W	ΔT_{max} °C	I_{max} A	V_{max} V	H	W	D	Mfrs. List No.
5	67	1.8	4.4	2.1	8.8	11	MI1025T-01AC

Mfrs. List No.	Order Code	Price Each		
		1+	10+	25+
MI1025T-01AC	936-625	192.72	160.02	146.24

DuraTEC, High Power Heat Pumps



- Single stage, Peltier-Effect coolers
- Reliable solid state design
- Sealed against condensation/moisture
- dc powered
- Vibration and noise free
- Small, lightweight package
- Precision temperature control to <0.05°C
- Maintenance free

- Polarity dependent heating/cooling
- 100mm leads

Heat Pump Capacity W	ΔT_{max} °C	I_{max} A	V_{max} V	H	W	D	Mfrs. List No.
6	68	2.5	3.6	4.04	16	20.5	DT3-2.5-01LS
9	68	3.7	3.6	3.43	16	20.5	DT3-4-01LS
17	68	7.4	3.6	3.63	20	24.5	DT3-8-01LS
20	68	3.7	8.2	3.43	23.5	28	DT6-4-01LS
30	68	5.6	8.2	4.01	30	34	DT6-6LS
39	68	7.4	8.2	3.63	30	34	DT6-8-01LS
23	68	2.5	14.7	4.04	30	34	DT12-2.5-01LS
36	68	3.7	14.6	3.43	30	34	DT12-4-01LS
54	68	5.6	14.6	4.01	40	44	DT12-6LS
71	68	7.4	14.7	3.63	40	44	DT12-8LS
71	68	7.4	14.7	3.63	40	44	RC12-8-01LS

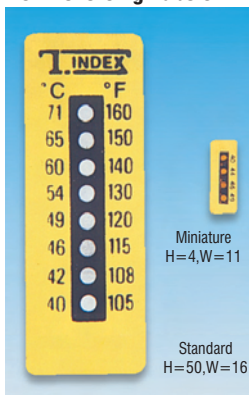
Mfrs. List No.	Order Code	Price Each		
		1+	10+	25+
DT3-2.5-01LS	936-443	80.79	68.76	63.76
DT3-4-01LS	936-455	77.97	66.40	61.55
DT3-8-01LS	936-479	88.58	73.55	65.71
DT6-4-01LS	936-492	82.84	72.29	--
DT6-6LS	596-486	97.69	86.66	76.77
DT6-8-01LS	936-509	115.39	100.68	93.88

Mfrs. List No.	Order Code	1+	10+	25+
DT12-2.5-01LS	936-510	99.82	82.88	75.75
DT12-4-01LS	936-522	98.06	81.43	74.40
DT12-6LS	596-498	103.10	91.44	83.70
DT12-8LS	596-504	117.40	104.14	92.54
RC12-8-01LS	115-6590	117.40	104.14	92.54

Temperature Indicators

Non Reversing Labels

THERMINDEX



- Self-adhesive
- Non-reversing-records peak temperatures
- Water and oil resistant
- 'Miniature' range has 4 sensing areas
- 'Standard' range has 8 sensing areas
- <1s response time
- ±1°C accuracy (<100°C), ±1% (>100°C)

Mfrs. List No. SERIES 4M=522-892 to 522-934
SERIES 8=522-958 to 522-995

°C temperature markings				Order code			
40	44	46	49	522-892	522-909	522-910	522-922
54	60	65	71	522-909	522-910	522-922	522-934
77	82	88	93	522-910	522-922	522-934	
99	104	110	116	522-922	522-934		
121	127	132	138	522-934			

Standard				Order code			
40.6	43.3	46	49	522-958	522-960	522-971	522-983
54.4	60	65.5	71	522-960	522-971	522-983	522-995
77	82	88	93	522-971	522-983	522-995	
99	104	110	116	522-983	522-995		
121	127	132	138	522-995			
149	154	160	166				
177	182	188	193				
199	204	210	216				
224	232	241	249				
254	260						

10 Strips Per Pack Temperature Range	Order Code	1+	25+	50+
Miniature				
40°C to 49°C	522-892	21.84	18.45	16.83
54°C to 71°C	522-909	21.84	18.45	16.83
77°C to 93°C	522-910	21.84	18.45	16.83
99°C to 116°C	522-922	21.84	18.45	16.83
121°C to 138°C	522-934	21.84	18.45	16.83
Standard				
40.6°C to 71°C	522-958	22.29	18.81	17.10
77°C to 116°C	522-960	22.98	19.38	17.61
121°C to 160°C	522-971	22.29	18.81	17.10
166°C to 204°C	522-983	22.29	18.81	17.10
210°C to 260°C	522-995	22.29	18.81	17.10

Reversible Strips

THERMINDEX



- Self-adhesive
- Thermochromic liquid crystal
- 7 sensing areas, at 5°C intervals
- Correct temperature is indicated in green
- <1s response time, ±1°C accuracy

10 Strips Per Pack Temperature Range	Order Code	1+	10+	25+
0°C to 30°C	523-010	24.48	19.98	17.34
30°C to 60°C	523-021	24.48	19.98	17.34
60°C to 90°C	523-033	24.48	19.98	17.34

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Compliant Non-compliant Limited stock - RoHS replacement available

RoHS

