Guidelines taken from IPC-7351C

PCB Libraries Footprint Naming Convention

PCB Libraries, Inc.

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Surface Mount Land Pattern Naming Convention

Ball Grid Array's with Alphanumeric Rows ..... **BGA** + Pin Qty. + **C** or **N** + **P** Pitch _ Ball Columns **X** Ball Rows _ Body Length **X** Width **X** Height + **B** Ball Diameter
Ball Grid Array's with Alphanumeric Columns ..... **BGA** + Pin Qty. + **C** or **N** + **P** Pitch **+** A + Ball Columns **X** Ball Rows _ Body Length **X** Width **X** Height + **B** Ball Diameter
BGA w/Dual Pitch ..... **BGA** + Pin Qty. + **C** or **N** + **P** Col Pitch **X** Row Pitch _ Ball Columns **X** Ball Rows _ Body Length **X** Width **X** Height + **B** Ball Diameter
BGA w/Staggered Pins ..... **BGAS** + Pin Qty. + **C** or **N** + **P** Pitch _ Ball Columns **X** Ball Rows _ Body Length **X** Width **X** Height + **B** Ball Diameter
Capacitors, Aluminum Electrolytic ..... **CAPAE** + Base Body Size **X** Height + **L** Lead Length **X** Width
Capacitors, Chip, Array, Concave ..... **CAPCAV** + Pin Qty. + **P** Pitch _ + Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Capacitors, Chip, Array, Flat ..... **CAPCAF** + Pin Qty. + **P** Pitch _ + Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Capacitors, Chip ..... **CAPC** + Body Length **X** Width **X** Height + **L** Lead Length
Capacitors, Dual Flat No-lead ..... **CAPDFN** + Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Capacitors, Molded ..... **CAPM** + Lead Span **X** Body Width **X** Height + **L** Lead Length **X** Width
Capacitors, Polarized, Chip ..... **CAPPC** + Body Length **X** Width **X** Height + **L** Lead Length
Capacitors, Polarized, Dual Flat No-lead ..... **CAPPDFN** + Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Capacitors, Polarized, Molded ..... **CAPPM** + Lead Span **X** Body Width **X** Height + **L** Lead Length **X** Width
Capacitors, Side Concave, 2 Pin ..... **CAPSC** + Body Length **X** Width **X** Height + **L** Lead Length
Ceramic Flat Packages ..... **CFP** + Pin Qty. + **P** Pitch _ Body Length **X** Lead Span **X** Height + **L** Lead Length **X** Width
Column Grid Array, Circular Lead ..... **CGA** + Pin Qty. **P** Pitch _ Pin Columns **X** Pin Rows _ Body Length **X** Width **X** Height + **L** Diameter
Pillar Column Grid Array ..... **PCGA** + Pin Qty. **P** Pitch _ Pin Columns **X** Pin Rows _ Body Length **X** Width **X** Height + **L** Diameter
Crystals (2 leads) ..... **XTAL** + Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Crystals, Dual Flat No-lead ..... **XTALDFN** + Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Crystals, Side Concave ..... **XTALSC** + Body Length **X** Width **X** Height + **L** Lead Length
Diodes, Chip ..... **DIOC** + Body Length **X** Width **X** Height + **L** Lead Length
Diodes, Dual Flat No-lead ..... **DIODFN** + Pin Qty. _ Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Diodes, Molded ..... **DIOM** + Lead Span **X** Body Width **X** Height + **L** Lead Length **X** Width
Diodes, Non-polarized, Chip ..... **DIONC** + Lead Span **X** Body Width **X** Height + **L** Lead Length
Diodes, Non-polarized, Dual Flat No-lead ..... **DIONDFN** + Pin Qty. _ Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Diodes, Non-polarized, Molded ..... **DIONM** + Lead Span **X** Body Width **X** Height + **L** Lead Length **X** Width
Diodes, MELF ..... **DIOMELF** + Body Length + Diameter + **L** Lead Length
Diodes, Side Concave ..... **DIOSC +** Body Length **X** Width **X** Height + **L** Lead Length
Diodes, Side Concave, 4 Pin ..... **DIOSC4** + **P** Pitch _ Body Length **X** Width **X** Height + **L** Lead Length
Diodes, Small Outline Flat Lead, 2 Pin ..... **SODFL** + Lead Span **X** Body Width **X** Height + **L** Lead Length **X** Width
Diodes, Small Outline Flat Lead, 3 - 6 Pin ..... **DIOSOFL** + Pin Qty. + **P** Pitch _ + Lead Span **X** Body Height + **L** Lead Length **X** Width
DPAK ..... **DPAK** + Pin Qty. + **P** Pitch _ Lead Span **X** Height + **L** Lead Length **X** Width + **T** Thermal Tab Pad Length **X** Width
Ferrite Bead, Chip ..... **BEADC** + Body Length **X** Width **X** Height + **L** Lead Length
Fuses, Chip ..... **FUSC** + Body Length **X** Width **X** Height + **L** Lead Length
Fuses, Dual Flat No-Lead ..... **FUSDFN** + Body Length **X** Width **X** Height + **L** Lead Length **X** Lead Width
Fuses, Molded ..... **FUSM** + Lead Span **X** Body Width **X** Height + **L** Lead Length **X** Lead Width
Fuses, Side Concave ..... **FUSSC** + Body Length **X** Width **X** Height + **L** Lead Length
IC, Small Outline Package, Flat Lead ..... **SOPFL** + Pin Qty. + **P** Pitch _ + Lead Span **X** Body Height + **L** Lead Length **X** Width
Inductors, Chip ..... **INDC** + Body Length **X** Width **X** Height + **L** Lead Length
Inductors, Chip, Array, Concave ..... **INDCAV** + Pin Qty. + **P** Pitch _ Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Inductors, Chip, Array, Flat ..... **INDCAF** + Pin Qty. + **P** Pitch _ Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Inductors, Dual Flat No-lead ..... **INDDFN** + Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Inductors, Molded ..... **INDM** + Lead Span **X** Body Width **X** Height + **L** Lead Length **X** Width
Inductors, Precision, Molded ..... **INDPM** + Lead Span **X** Body Width **X** Height + **L** Lead Length **X** Width
Inductors, Side Concave ..... **INDSC** + Body Length **X** Width **X** Height + **L** Lead Length
Integrated Circuit, Small Outline, Flat Lead, 3 - 6 pin ..... **ICSOFL** + Pin Qty. + **P** Pitch _ + Lead Span **X** Body Height + **L** Lead Length **X** Width
Land Grid Array, Circular Lead ..... **LGA** + Pin Qty. + **C** + **P** Pitch _ Pin Columns **X** Pin Rows _ Body Length **X** Width **X** Height + **L** Lead Diameter
Land Grid Array, Square Lead ..... **LGA** + Pin Qty. + **S** + **P** Pitch _ Pin Columns **X** Pin Rows _ Body Length **X** Width **X** Height + **L** Lead Size
LED's, Chip ..... **LEDC** + Body Length + Width **X** Height + **L** Lead Length
LED's, Dual Flat No-lead ..... **LEDDFN** + Body Length **X** Width **X** Height + **L** Lead Length **X** Width
LED's, Molded ..... **LEDM** + Lead Span **X** Body Width **X** Height + **L** Lead Length **X** Width
LED's, Side Concave ..... **LEDSC** + Body Length **X** Width **X** Height + **L** Lead Length
LED's, Side Concave, 4 Pin ..... **LEDSC4** + **P** Pitch _ Body Length **X** Width **X** Height + **L** Lead Length
Oscillators, Dual Flat No-Lead (4-pin) ..... **OSCDFN4** _ Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Oscillators, Side Concave ..... **OSCSC** + Pin Qty. + **P** Pitch _ Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Oscillators, Side Flat ..... **OSCSF** + Pin Qty. + **P** Pitch _ Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Oscillators, J-Lead ..... **OSCJ** + Pin Qty. + **P** Pitch _ Body Length **X** Lead Span **X** Height + **L** Lead Width
Oscillators, L-Bend Lead ..... **OSCL** + Pin Qty. + **P** Pitch _ Body Length **X** Lead Span **X** Height + **L** Lead Length **X** Width
Oscillators, Corner Concave ..... **OSCCC** + Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Plastic Leaded Chip Carriers ..... **PLCC** + Pin Qty. + **P** Pitch _ Lead Span L1 **X** Lead Span L2 Nominal **X** Height + **L** Lead Width
Plastic Leaded Chip Carrier Sockets Square ..... **PLCCS** + Pin Qty. + **P** Pitch _ Lead Span L1 **X** Lead Span L2 Nominal **X** Height + **L** Lead Width
Pull-back Small Outline No-lead ..... **PSON** + Pin Qty. + **P** Pitch _ Body Length **X** Width **X** Height + **L** Lead Length **X** Width + **T** Thermal Pad Length **X** Width
Pull-back Quad Flat No-lead ..... **PQFN** + Pin Qty. + **P** Pitch _ Body Length **X** Width **X** Height + **L** Lead Length **X** Width + **T** Thermal Pad Length X Width
Quad Flat Packages ..... **QFP** + Pin Qty. + **P** Pitch _ Lead Span L1 **X** Lead Span L2 Nominal **X** Height + **L** Lead Length **X** Width + **T** Thermal Pad Length X Width
Ceramic Quad Flat Packages ..... **CQFP** + Pin Qty. + **P** Pitch _ Lead Span L1 **X** Lead Span L2 Nominal **X** Height + **L** Lead Length X Width
Quad Flat No-lead ..... **QFN** + Pin Qty. + **P** Pitch _ Body Length **X** Width **X** Height + **L** Lead Length **X** Width + **T** Thermal Pad Length X Width
Quad Leadless Ceramic Chip Carriers ..... **LCC** + Pin Qty. + **P** Pitch _ Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Quad Leadless Ceramic Chip Carriers (Pin 1 on Side) ..... **LCCS** + Pin Qty. + **P** Pitch _ Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Resistors, Chip ..... **RESC** + Body Length **X** Width **X** Height + **L** Lead Width
Resistors, Chip, Array, Concave ..... **RESCAV** + Pin Qty. + **P** Pitch _ Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Resistors, Chip, Array, Convex, E-Version (Even Pin Size) ..... **RESCAXE** + Pin Qty. + **P** Pitch _ Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Resistors, Chip, Array, Convex, S-Version (Side Pins Diff) ..... **RESCAXS** + Pin Qty. + **P** Pitch _ Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Resistors, Chip, Array, Flat ..... **RESCAF** + Pin Qty. + **P** Pitch _ Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Resistors, Dual Flat No-lead ..... **RESDFN** + Pin Qty. _ Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Resistors, MELF ..... **RESMELF** + Body Length + Diameter + **L** Lead Width
Resistors, Molded ..... **RESM** + Lead Span **X** Body Width **X** Height + **L** Lead Length **X** Width
Resistors, Side Concave ..... **RESSC** + Body Length **X** Width **X** Height + **L** Lead Length **X** Width
Small Outline IC, J-Leaded ..... **SOJ** + Pin Qty. + **P** Pitch _ Body Length **X** Lead Span **X** Height + **L** Lead Width
Small Outline IC, L-Leaded ..... **SOL** + Pin Qty. + **P** Pitch _ Body Length **X** Lead Span **X** Height + **L** Lead Width
Small Outline Integrated Circuit, (50 mil Pitch SOIC) ..... **SOIC** + Pin Qty. + **P** Pitch _ Body Length **X** Lead Span **X** Height + **L** Lead Length **X** Width
Small Outline Packages ..... **SOP** + Pin Qty. + **P** Pitch _ Body Length **X** Lead Span **X** Body Height + **L** Lead Length **X** Width + **T** Thermal Pad Length **X** Width
Small Outline No-lead ..... **SON** + Pin Qty. + **P** Pitch _ Body Length **X** Width **X** Height + **L** Lead Length **X** Width + **T** Thermal Pad Length **X** Width
Small Outline Diode ..... **SOD** + Lead Span **X** Body Width **X** Height + **L** Lead Length **X** Width
SOT143 ..... **SOT143-** + Pin Qty. + **P** Pitch _ Body Length **X** Lead Span **X** Body Height + **L** Lead Length
SOT23 ..... **SOT23-** + Pin Qty. + **P** Pitch _ Body Length **X** Lead Span **X** Body Height + **L** Lead Length
SOT223 ..... **SOT223-** + Pin Qty. + **P** Pitch _ Body Length **X** Lead Span **X** Body Height + **L** Lead Length
Thermistors, Chip ..... **THRMC** + Body Length + Width **X** Height + **L** Lead Width
Transistors, Small Outline, Flat Lead, 3 - 6 pin ..... **TRXSOFL** + Pin Qty. + **P** Pitch _ + Lead Span **X** Body Length **X** Body Height + **L** Lead Length **X** Width
Transistors, Dual Flat No-lead ..... **TRXDFN** + Pin Qty. _ Body Length **X** Body Width **X** Height + **L** Lead Length **X** Width
Varistors, Chip ..... **VARC** + Body Length **X** Width **X** Height + **L** Lead Width

Note: All footprint dimensional values are Nominal except Height is Maximum.

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IPC-7352 Naming Convention for Through-Hole Land Patterns

The land pattern naming convention uses component dimensions to derive the land pattern name.
The first 3 – 6 characters in the land pattern name describe the component family.
The first number in the land pattern name refers to the Lead Spacing or hole to hole location to insert the component lead.
All numbers that follow the Lead Spacing are component dimensions.

These characters are used as component body identifiers that precede the value and this is the priority order of the component body identifiers –
P = Pitch for components with more than two leads
W = Maximum Lead Width (or Component Lead Diameter)
L = Body Length for horizontal mounting
D = Body Diameter for round component body
T = Body Thickness for rectangular component body
H = Height for vertically mounted components
Q = Pin Quantity for components with more than two leads
R = Number of Rows for connectors

Notes:
All component body values are in millimeters and go two places to the right of the decimal point and no leading zeros.
All Complexity Levels used in the examples are "**B**".

Component, Category — Land Pattern Name

Capacitors, Non Polarized Axial Diameter Horizontal Mounting..... **CAPAD** + Lead Spacing + **W** Lead Width + **L** Body Length + **D** Body Diameter
Example: **CAPAD800W52L600D150**
Capacitors, Non Polarized Axial Diameter; Lead Spacing 8.00; Lead Width 0.52; Body Length 6.00; Body Diameter 1.50

Capacitors, Non Polarized Axial Rectangular .....**CAPAR** + Lead Spacing + **W** Lead Width + **L** Body Length + **T** Body thickness + **H** Body Height
Example: **CAPAR800W52L600T50H70**
Capacitors, Non Polarized Axial; Lead Spacing 8.00; Lead Width 0.52; Body Length 6.00; Body Thickness 0.50; Body Height 0.70

Capacitors, Non Polarized Axial Diameter Vertical Mounting .....**CAPADV** + Lead Spacing + **W** Lead Width + **L** Body Length + **D** Body Diameter
Example: **CAPADV300W52L600D150**
Capacitors, Non Polarized Axial; Lead Spacing 3.00; Lead Width 0.52; Body Length 6.00; Body Diameter 1.50mm

Capacitors, Non Polarized Axial Rect. Vert. Mtg. **CAPARV** + Lead Spacing + **W** Lead Width + **L** Body Length + **T** Body Thickness + **H** Body Height
Example: **CAPARV300W52L600T50H70**
Capacitors, Non Polarized Axial Rect. Vertical; Lead Spacing 8.00; Lead Width 0.52; Body Length 6.00; Body Thickness 0.50; Body Height 0.70

Capacitors, Non Polarized Radial Diameter.....**CAPRD** + Lead Spacing + **W** Lead Width + **D** Body Diameter + **H** Body Height
Example: **CAPRD200W52D300H550**
Capacitors, Non Polarized Radial Diameter; lead spacing 2.00; lead width 0.52; Body Diameter 3.00; Height 5.50

Capacitors, Non Polarized Radial Rectangular.....**CAPRR** + Lead Spacing + **W** Lead Width + **L** Body Length + **T** Body thickness + **H** Body Height
Example: **CAPRR200W52L50T70H550**
Capacitors, Non Polarized Radial Rectangular; lead spacing 2.00; lead width 0.52; Body Length 0.50; Body thickness 0.70; Height 5.50

Capacitors, Non Polarized Radial Disk Button.....**CAPRB** + Lead Spacing + **W** Lead Width + **L** Body Length + **T** Body thickness + **H** Body Height
Example: **CAPRB200W52L50T70H550**
Capacitors, Non Polarized Radial Rectangular; lead spacing 2.00; lead width 0.52; Body Length 0.50; Body thickness 0.70; Height 5.50

Capacitors, Polarized Axial Diameter Horizontal Mounting .....**CAPPAD** + Lead Spacing + **W** Lead Width + **L** Body Length + **D** Body Diameter
Example: **CAPPAD800W52L600D150**
Capacitors, Polarized Axial Diameter; Lead Spacing 8.00; Lead Width 0.52; Body Length 6.00; Body Diameter 1.50

Capacitor, Polarized Radial Diameter..... **CAPPRD** + Lead Spacing + **W** Lead Width + **D** Body Diameter + **H** Body Height
Example: **CAPPRD200W52D300H550**
Capacitors, Polarized Radial Diameter; lead spacing 2.00; lead width 0.52; Body Diameter 3.00; Height 5.50

Diodes, Axial Diameter Horizontal Mounting.....**DIOAD** + Lead Spacing + **W** Lead Width + **L** Body Length + **D** Body Diameter
Example: **DIOAD800W52L600D150**
Diodes, Non Polarized Axial Diameter; Lead Spacing 8.00; Lead Width 0.52; Body Length 6.00; Body Diameter 1.50

Diodes, Axial Diameter Vertical Mounting .....**DIOADV** + Lead Spacing + **W** Lead Width + **L** Body Length + **D** Body Diameter
Example: **DIOADV300W52L600D150**
Diodes, Non Polarized Axial; Lead Spacing 8.00; Lead Width 0.52; Body Length 6.00; Body Diameter 1.50

Dual-In-Line Packages .....**DIP** + Lead Span + **W** Lead Width + **P** Pin Pitch + **L** Body Length + **H** Component Height + **Q** Pin Qty
Example: **DIP762W52P254L1905H508Q14**
Dual-In-Line Package: Lead Span 7.62; Lead Width 0.52; Pin Pitch 2.54; Body Length 19.05; Body Height 5.08; Pin Qty 14

Dual-In-Line Sockets.....**DIPS** + Lead Span + **W** Lead Width + **P** Pin Pitch + **L** Body Length + **H** Component Height + **Q** Pin Qty
Example: **DIPS762W52P254L1905H508Q14**
Dual-In-Line Package Socket: Lead Span 7.62; Lead Width 0.52; Pin Pitch 2.54; Body Length 19.05; Body Height 5.08; Pin Qty 14

Headers, Vertical……..**HDRV** + Lead Span + **W** Lead Width + **P** Pin Pitch + **R** Pins per Row + **L** Body Length + **T** Body Thickness + **H** Height
Example: **HDRV200W52P200R2L4400T400H900**
Header, Vertical: Lead Span 2.00; Lead Width 0.52; Pin Pitch 2.00; 2 Rows; Body Length 44.00; Body Thickness 4.00; Body Height 9.00

Headers, Right Angle ……**HDRRA** + Lead Span + **W** Lead Width + **P** Pin Pitch + **R** Pins per Row + **L** Body Length + **T** Body Thickness + **H** Height
Example: **HDRRA200W52P200R2L4400T400H900**
Header, Vertical: Lead Span 2.00; Lead Width 0.52; Pin Pitch 2.00; 2 Rows; Body Length 44.00; Body Thickness 4.00; Body Height 9.00

Inductors, Axial Diameter Horizontal Mounting .....**INDAD** + Lead Spacing + **W** Lead Width + **L** Body Length + **D** Body Diameter
Example: **INDAD800W52L600D150**
Inductors, Axial Diameter; Lead Spacing 8.00; Lead Width 0.52; Body Length 6.00; Body Diameter 1.50

Inductors, Axial Diameter Vertical Mounting ..... **INDADV** + Lead Spacing + **W** Lead Width + **L** Body Length + **D** Body Diameter
Example: **INDADV300W52L600D150**
Inductors, Axial Diameter Vertical Mounting; Lead Spacing 3.00; Lead Width 0.52; Body Length 6.00; Body Diameter 1.50

Inductors, Non-Polarized, Radial Diameter.....**INDRD** + Lead Spacing + **W** Lead Width + **D** Body Diameter + **H** Body Height
Example: **INDRD800W52D600H500**
Inductors, Non-Polarized, Radial Diameter; Lead Spacing 8.00; Lead Width 0.52; Body Diameter 6.00; Body Height 5.00

Inductors, Polarized, Radial Diameter .....**INDPRD** + Lead Spacing + **W** Lead Width + **D** Body Diameter + **H** Body Height
Example: **INDPRD300W52D600H500**
Inductors, Polarized, Radial Diameter; Lead Spacing 3.00; Lead Width 0.52; Body Diameter 6.00; Body Height 5.00

Jumpers, Wire.....**JUMP** + Lead Spacing + **W** Lead Width
Example: **JUMP500W52**
Jumper; Lead Spacing 5.00; Lead Width 0.52

Mounting Holes Plated With Support Pad..... **MTGP** + Pad Size + **H** Hole Size + **Z** Inner Layer Pad Size
Example: **MTGP700H400Z520**
This is a Mounting hole for a #6-32 screw using a circular 7.00 land on the primary and secondary side of the board, a 4.00 diameter hole with the internal lands are smaller that the external and are also circular 5.20 in diameter.

Mounting Holes Non-Plated With Support Pad .....**MTGNP** + Pad Size + **H** Hole Size + **Z** Inner Layer Pad Size
Example: **MTGNP700H400Z520**
This is a Mounting hole for a #6-32 screw using a circular 7.00 land on the primary and secondary side of the board, a 4.00 diameter hole with the internal lands are smaller that the external and are also circular 5.20 in diameter.

Mounting Holes Non-Plated Without Support Pad .....**MTGNP** + Pad Size + **H** Hole Size + **Z** Inner Layer Pad Size + **K** Keep-out Diameter
Example: **MTGNP100H400Z520K700**
This is a Mounting hole for a #6-32 screw using a circular 1mm land on the primary and secondary side of the board, a 4.00 diameter hole with the internal lands are smaller that the external and are also circular 5.20 in diameter and a 7.00 diameter keep-out.

Mounting Holes Plated with 8 Vias ..... **MTGP** + Pad Size + **H** Hole Size + **Z** Inner Layer Pad Size + 8 Vias
Example: **MTGP700H400Z520V8**
This is a Mounting hole for a #6-32 screw using a circular 7mm land on the primary and secondary side of the board, a 4mm diameter hole with the internal lands are smaller that the external and are also circular 5.2mm in diameter, with 8 vias.

Pin Grid Array's.....**PGA** + Pin Qty + **P** Pitch + **C** Pin Columns + **R** Pin Rows + **L** Body Length **X** Body Width + **H** Component Height
Example: **PGA84P254C10R10L2500X2500H300**
Pin Grid Array: Pin Qty 84; Pin Pitch 2.54; Columns 10; Rows 10; Body Length 25.00 X 25.00; Component Height 3.00

Resistors, Axial Diameter Horizontal Mounting.....**RESAD** + Lead Spacing + **W** Lead Width + **L** Body Length + **D** Body Diameter
Example: **RESAD800W52L600D150**
Resistors, Axial Diameter; Lead Spacing 8.00; Lead Width 0.52; Body Length 6.00; Body Diameter 1.50

Resistors, Axial Diameter Vertical Mounting ..... **RESADV** + Lead Spacing + **W** Lead Width + **L** Body Length + **D** Body Diameter
Example: **RESADV300W52L600D150**
Resistors, Axial Diameter Vertical Mounting; Lead Spacing 3.00; Lead Width 0.52; Body Length 6.00; Body Diameter 1.50

Resistors, Axial Rectangular Horizontal Mounting ..**RESAR** + Lead Spacing + **W** Lead Width + **L** Body Length + **T** Body thickness + **H** Body Height
Example: **RESAR800W52L600T50H70**
Resistors, Axial Rectangular; Lead Spacing 8.00; Lead Width 0.52; Body Length 6.00; Body Thickness 0.50; Body Height 0.70

Single-In-Line Packages..... **SIP** + Body Width + **W** Lead Width + **P** Pin Pitch + **L** Body Length + **H** Component Height + **Q** Pin Qty
Example: **DIP150W52P254L1905H508Q14**
Single-In-Line Package: Body Width 1.5; Lead Width 0.52; Pin Pitch 2.54; Body Length 19.05; Body Height 5.08; Pin Qty 14

Test Points, Round Land.....**TP** + Lead Width
Example: **TP52**

Test Points, Square Land..... **TPS** + Lead Width
Example: **TPS52**

Test Points, Top Land Round & Bottom Land Square .....**TPRS** + Lead Width
Example: **TPRS52**

Wire ..... **PAD** + Wire Width
Example: **PAD52**

Library Expert Land Pattern Naming Convention Notes

- All dimensions are in Metric Units
- All Lead Span and Height numbers go two places past the decimal point and “include” trailing Zeros
- All Lead Span and Body Sizes go two place before the decimal point and “remove” leading Zeros
- All Chip Component Body Sizes are one place to each side of the decimal point
- Pitch Values are two places to the right & left of decimal point with no leading Zeros but include trailing zeros

Land Pattern Naming Convention: Each land pattern in IPC-7351 is specified by a unique name that must convey the package family type, pin quantity, pin pitch, body length and width dimensions, terminal lead span, terminal lead length and width and thermal pad dimensions whenever applicable. Other fields in a land pattern name are optional and are discussed below.

Table 1 specifies the naming convention for each package type. The following notes provide the user with guidance on using the table.

Specific characters are reserved for use in the naming convention to denote or separate certain fields:

- **P** : Prefixes pin pitch. For example, P80 specifies a 0.80 mm pitch between terminations.
- **L** : Prefixes nominal lead dimensions
- **T** : Prefixes thermal tab dimensions
- **X** : Dimension separator. For example, 0.80 mm by 1.50 mm is denoted 80X150
- **C, N** : Denote Collapsing and Non-collapsing balls respectively when specifying a BGA land pattern
- **_** : Underscore is a field separator between pin quantity and/or pin pitch and the package body dimensions
- **-** : Dash is a field separator between pin quantity in hidden and deleted pin components
- **+** : Plus denotes "in addition to". The plus "+" symbol does not actually appear in the land pattern name but is only used to assist the user in reading Table 1.

Additional notes for using Table 1:

- All dimensions are metric units
- All dimensions are nominal except height is maximum
- All numeric values are two places before and after the decimal point and “remove” leading Zeros
- If there is no pin quantity in the Land Pattern Name it is assumed that the pin quantity is 2
- Thermal Tabs are included in the Pin Quantity

Additional and Optional Fields:

The suffix letters “L”, “M”, and “N” are used to signify when the land protrusion is at their minimum (least), maximum (most), or median (nominal) protrusion and appear as the last character. The 3 Density Levels are defined as follows:

M = Maximum (Most) Material Condition (Density Level A)
N = Median (Nominal) Material Condition (Density Level B)
L = Minimum (Least) Material Condition (Density Level C)

If no Density Level suffix is provided, then the land pattern either follows the component manufacturer's recommended pattern or a custom land pattern for use with multiple component manufacturer’s packages in the same component family.

Additional suffices for JEDEC Standard parts that have several alternate packages are as follows:

AA, AB, AC JEDEC Component Identifier (used primarily on Semiconductor packages).

Additional suffixes for alternate components that do not follow the JEDEC standard are as follows (these are located before the Density Level suffix):

“A” – Alternate Component letter is used when component package nominal dimensions are the same for two packages but the package tolerances are different enough to create a unique land pattern to avoid land pattern name duplication.

Ball Grid Array (BGA) packages may require land pattern names that indicate a difference in pitch between balls in the rows vs. balls in the columns. These are often referred to as a “dual pitch BGA”. For example, the BGA land pattern name of BGA48C**80X100**P6X8_900X1200X120 conveys that the pitch 0.80 mm between columns and 0.100 mm between rows.
Note: In this example, Pin A1 is assumed to be located in the Lower left when viewing the package from the top view. A 90° rotation of the BGA swaps the definition of Rows and Columns.

A pin order or pin quantity modifier shall be added to the component package type specification to convey reverse pin ordering, hidden pins, or deleted pins.

SOP20R: 20 pin part, Reverse Pin Order

SOT143R: Reverse Pin Order

SOP20-24: 20 pin part in a 24 pin package. The pins are numbered 1 – 24 the hidden pins are skipped over. The schematic symbol displays up to 24 pins.

SOP24-20: 20 pin part in a 24 pin package. The pins are numbered 1 – 20 the deleted pins are removed. The schematic symbol displays 20 pins.

Land Pattern Naming for Non-conforming Packages: A large number of component packages are unique, non-standard packages or unique connectors. These component packages do not fit into a standard land pattern name due to their unique features. Therefore, in order to have a single land pat tern naming convention that covers every component package in the electronics industry, the land pattern name must be associated with the component manufacturer and their part number or case code as shown below:

ManufacturerNameAbbreviation_ManufacturerPartNumber or
ManufacturerNameAbbreviation_ManufacturerCaseCode

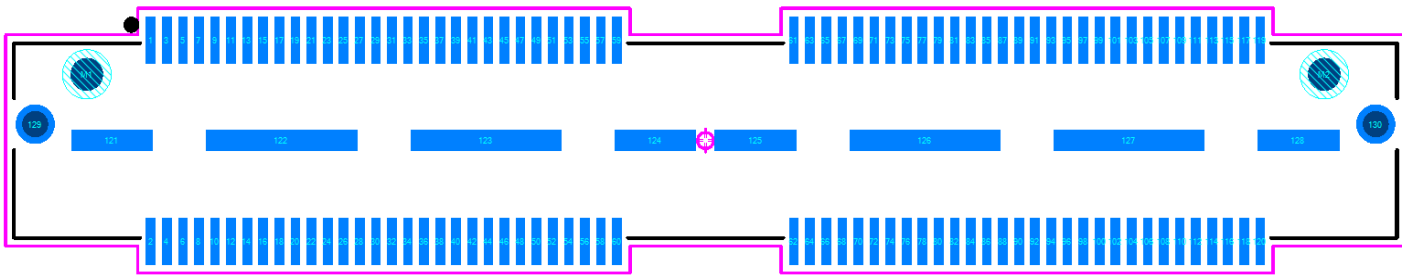
- All special characters used in the part number will be replaced with a hyphen "-" except periods "." will be replaced with an underscore "_".
- If the component package or connector is unique and has a single manufacturer part number, then **Part Number** would be used to generate the Land Pattern Name
- The component is a standard package and is associated with multiple manufacturer part numbers then manufacturer **Case Code** would be used to generate the Land Pattern Name

Examples:

FOXCONN_JFM38U1A-2PVT-4F	TI_RKG41	CK_CRD16CM0SB
MOLEX_67503-1020	MAXIM_L1053-H2	ABRACON_ABM11
SAMTEC_QTH-060-01-L-D-A	CUI_SJ-3566AN	AMPHENOL_101-00565-64

For reference, various unique footprints are shown below that are non-conforming with Table 1.

SAMTEC_QTH-060-01-L-D-A – SMT Connector with plated mounting and non-plated alignment holes



Appendix I - Library Expert Manufacturer Names

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2J Antennas 2J
3D Plus 3DPLUS
3M 3M
4D 4D
ABLIC ..... ABLIC
Abracon ..... ABRACON
Aces ..... ACES
Active-Semi ..... ACTIVESEMI
Adafruit ..... ADAFRUIT
Adam Technologies ..... ADAMTECH
Adesto Technologies ..... ADESTO
Advanced ..... ADVANCED
Advanced Acoustic Technology ..... AAT
Advanced Crystal Technology ..... ADVCRYSTAL
Advanced Linear Devices ..... ALD
AEconversion ..... AEC
AEL Crystals ..... AEL
Aeroflex ..... AEROFLEX
AirBorn ..... AIRBORN
Aker ..... AKER
AKM Semiconductor ..... AKMSEMI
Akros Silicon ..... AKROS
Allegro Micro ..... ALLEGRO
Alliance Memory ..... ALLIANCE
Allwinner Technology ..... ALLWINNER
Alpha & Omega ..... ALPHA
Alpha Novatech ..... ALPHANOVA
Alps ..... ALPS
Altech ..... ALTECH
Altera ..... ALTERA
Amass ..... AMASS
Amazing Microelectronic ..... AMAZINGMICRO
Ambiq Micro ..... AMBIQ
AMD ..... AMD
American Bright ..... AMERICANBRIGHT
American Electrical ..... AMELECTRICAL
American Technical Ceramics ..... AMTECHCER
American Zettler ..... AZETTLER
Ametherm ..... AMETHERM
Amgis Toroids ..... AMGIS
Amotech ..... AMOTECH
Amphenol ..... AMPHENOL
Amphenol Advanced Sensors ..... AMPHENOLAS
Amphenol Aerospace Operations ..... AMPHENOLAE
Amphenol Canada ..... AMPHENOLCA
Amphenol Connex ..... AMPHENOLCX
Amphenol ICC ..... AMPHENOLICC
Ampleon ..... AMPLEON
ams AG ..... AMSAG
Amtek Technology ..... AMTEK
Analog Devices ..... ANALOG
Analog Microelectronics ..... ANALOGMICRO
Anaren ..... ANAREN
ANDANTA ..... ANDANTA
Andon ..... ANDON
Anglia ..... ANGLIA
Antenova ..... ANTENOVA
Antique Electronic Supply ..... ANTIQUEES
Apacer Technology ..... APACER
Apem ..... APEM
Apex Microtechnology ..... APEXMICRO
API Delevan ..... APIDEV
API Technologies ..... APITECH
Aquantia ..... AQUANTIA
Arch Electronics ..... ARCHELEC
Arduino ..... ARDUINO
Aries ..... ARIES
Artesyn Embedded Technologies ..... ARTESYN
ASJ ..... ASJ
Assmann ..... ASSMANN
Atlanta Micro ..... ATLANTAMICRO
Atmel ..... ATMEL
ATTEND ..... ATTEND
AUK Contractors ..... AUK
Avago Technologies ..... AVAGO
Avalanche Technology ..... AVALANCHE
Avdel ..... AVDEL
AVX ..... AVX
Axon ..... AXON
Azimuth Electronics ..... AZIMUTH
Azoteq ..... AZOTEQ
AzureWave ..... AZUREWAVE
Battery Space ..... BATTERYSPACE
Beckhoff ..... BECKHOFF
Bel Power Solutions ..... BELPS
BelFuse ..... BELFUSE
Bellwether ..... BELLWETHER
BeRex ..... BEREX
Bernier ..... BERNIER
BH Electronics ..... BHELECTRONICS
Binder ..... BINDER
Bivar ..... BIVAR
BLOCK ..... BLOCK
Blockmaster Electronics ..... BLOCKMASTER
Bluegiga Technologies ..... BLUEGIGA
Bosch-Sensortec ..... BOSCH
Bothhand ..... BOTHHAND
Bourns ..... BOURNS
Boyd ..... BOYD
Bridgelux ..... BRIDGELUX
BrightKing ..... BRIGHTKING
BRILLNICS ..... BRILLNICS
Broadcom ..... BROADCOM
Buddies Technology ..... BUDDIES
Bulgin ..... BULGIN
C&K ..... CK
C3Semi C3
Caddock ..... CADDOCK
Cal-Chip ..... CALCHIP
California Eastern Laboratories ..... CEL
Calogic ..... CALOGIC
Cambion ..... CAMBION
Cambridge Silicon Radio ..... CSR
Camden Boss ..... CAMDEN
Cantherm ..... CANTHERM
Cardinal ..... CARDINAL
Carling Technologies ..... CARLING
CCP Contact Probes ..... CCPCP
CDK ..... CDK
Central ..... CENTRAL
Challenge Electronics ..... CHALLENGE
Changjiang Connectors ..... CJT
Chenmko ..... CHENMKO
Chequers Electronic ..... CHEQUERS
CHILISIN ..... CHILISIN
China Base ..... CBI
ChinaSound ..... CHINASOUND
Cinch ..... CINCH
Cirrus Logic ..... CIRRUS
CIT Relay and Switch ..... CIT
Citizen Finedevice ..... CITIZEN
Cliff Electronic Components ..... CLIFF
CML Microcircuits ..... CMLMICRO
CnC Tech ..... CNCTECH

Cobham ..... COBHAM
Codaca Electronic ..... CODACA
COEV Magnetics ..... COEVMAG
CogniMem Technologies ..... COGNIMEM
Coil WS ..... COILWS
Coilcraft ..... COILCRAFT
Coilmaster ..... COILMASTER
Cole ..... COLE
Comax Electronics ..... COMAX
Comchip ..... COMCHIP
COMM CON Connectors ..... COMMCON
COMPELMA ..... COMPELMA
Comtec ..... COMTEC
Comus ..... COMUS
CONEC ..... CONEC
Conexant ..... CONEXANT
Connfly Electronic ..... CONNFLY
Connor-Winfield ..... CONNORWINFIELD
Contact Technology ..... CONTACT
Copal ..... COPAL
Coral ..... CORAL
Cornell Dubilier Electronics ..... CDE
Cosel ..... COSEL
Cosmo ..... COSMO
Cotex Industrial ..... COTEX
Coto ..... COTO
COTSWORKS ..... COTSWORKS
Cree ..... CREE
Crydom ..... CRYDOM
Crystek ..... CRYSTEK
CS Bright ..... CSBRIGHT
CTC Coils ..... CTCCOILS
CTS ..... CTS
CUI ..... CUI
CUI Devices ..... CUIDEVICES
Custom MMIC ..... CUSTOMMMIC
CviLux ..... CVILUX
CW Industries ..... CWIND
Cyntec ..... CYNTEC
Cypress Semiconductor ..... CYPRESS
Cyrod ..... CYROD
Darfon Electronics ..... DARFON
Data Delay Devices ..... DATADELAY
Data Device Corporation ..... DDC
Datatronics ..... DATATRONICS
Davicom ..... DAVICOM
Dean Technology ..... DEANTECH
Decawave ..... DECAWAVE
Defense Supply Center, Columbus ..... DSC
Degson Electronics ..... DEGSON
Delta Electronics ..... DELTA
Deltron ..... DELTRON
Device Engineering ..... DEVICEENG
Dialight ..... DIALIGHT
Dialog ..... DIALOG
Dielectric ..... DIELECTRIC
DIGI ..... DIGI
Digilent ..... DIGILENT
Digitron Semiconductors ..... DIGITRON
Dinkle ..... DINKLE
Diodes ..... DIODES
Dionics ..... DIONICS
Diotec Semiconductor ..... DIOTEC
DIPTRONICS ..... DIPTRONICS
Dold ..... DOLD
Dominant Semiconductors ..... DOMINANTSEMI
DORJI Applied Technologies ..... DORJI
DSP Group ..... DSP
DYNAMAX ..... DYNAMAX
EastRising Technology ..... EASTRISING
Eaton Bussmann ..... EATON
EBY Electro ..... EBYELECTRO
EBYTE ..... EBYTE
Ecliptek ..... ECLIPTEK
ECS International ..... ECS
EDAC ..... EDAC
EECO ..... EECO
EFC Wesco ..... EFCWESCO
Efficient Power Conversion ..... EPC
Efinix ..... EFINIX
Electrocube ..... ELECTROCUBE
Electronic Assembly ..... EA
Electronic Concepts ..... ELECTRONICCONCEPTS
Elesta ..... ELESTA
Elite Semiconductor Memory Technology ..... ESMT
ELMA ..... ELMA
Elmo Motion Control ..... ELMO
Elna ..... ELNA
EMC Technology ..... EMCTECH
EMTEK ..... EMTEK
EnOcean ..... ENOCEAN
Enpirion ..... ENPIRION
Enpirion ..... ENPIRION
Enplas ..... ENPLAS
Envoy Data ..... ENVOYDATA
EPCOS ..... EPCOS
EPIGAP Optronic ..... EPIGAP
Epitex ..... EPITEX
Epson ..... EPSON
ERNI ..... ERNI
ESKA ..... ESKA
Espressif ..... ESPRESSIF
Essentra Components ..... ESSENTRA
E-Switch ..... ESWITCH
E-tec Interconnect ..... ETEC
Etron Technology ..... ETRON
ETSI ..... ETSI
Ettinger ..... ETTINGER
Eurohm ..... EUROHM
Euroquartz Ltd ..... EUROQUARTZ
Everlight ..... EVERLIGHT
Everspin Technologies ..... EVERSPIN
Exar Corporation ..... EXAR
Excelitas ..... EXCELITAS
Excellence Optoelectronics ..... EXCELLENCEOPTO
Exxelia ..... EXXELIA
Fagor Electronica ..... FAGOR
Fairchild Imaging ..... FAIRCHILDIMG
Fairchild Semiconductor ..... FAIRCHILD
Fair-Rite ..... FAIRRITE
Fairview Microwave ..... FAIRVIEW
Fanstel ..... FANSTEL
Faratronic ..... FARATRONIC
Fastron ..... FASTRON
Ferroxcube ..... FERROXCUBE
Feryster ..... FERYSTER
Finder ..... FINDER
Finisar ..... FINISAR
First Sensor ..... FIRSTSENSOR
Fischer Connectors ..... FISCHERCONN
Fischer Elektronik ..... FISCHER
Flex Power Modules ..... FLEXPOWER
FN-Link ..... FNLINK
Fox Electronics ..... FOX
Foxconn Electronics ..... FOXCONN
Fractus Antennas ..... FRACTUSANT
Freebird Semiconductor ..... FREEBIRDSEMI
Freescale ..... FREESCALE
Fremont Micro Devices ..... FMD
Fresco Logic ..... FRESCO
Frontier ..... FRONTIER
FTDI Chip ..... FTDI

Fuji ..... FUJI
Fujitsu ..... FUJITSU
Fuzetec ..... FUZETEC
GAIA Converter ..... GAIA
GaN Systems ..... GAN
Gemalto ..... GEMALTO
General Electric ..... GE
GeneSiC ..... GENESIC
Geyer Electronic ..... GEYER
Giantec Semiconductor ..... GIANTEC
GigaDevice ..... GIGADEVICE
Glenair ..... GLENAIR
Global Connector Technology ..... GCT
Global Mixed Mode Technology ..... GMMT
Golledge ..... GOLLEDGE
Good Sky Electric ..... GOODSKY
Gowanda ..... GOWANDA
GradConn ..... GRADCONN
Grayhill ..... GRAYHILL
Greenliant ..... GREENLIANT
GSI Technology ..... GSI
Guerilla RF ..... GUERILLARF
H&D Wireless ..... HD
HAHN ..... HAHN
Haiiwai Electronics ..... HAIIWAI
Haixu Electronic ..... HAIXU
HALO Electronics ..... HALO
Hamamatsu ..... HAMAMATSU
Hammond ..... HAMMOND
HanRun ..... HANRUN
HAOYU Electronics ..... HAOYU
Harmony Electronics ..... HARMONY
Harting ..... HARTING
Hartmann ..... HARTMANN
Harvatek ..... HARVATEK
Harwin ..... HARWIN
Hemisphere ..... HEMISPHERE
Heroic Technology ..... HEROIC
Hewlett Packard ..... HP
Hillcrest Labs ..... HILLCRESTLABS
Hirose ..... HIROSE
Hittite ..... HITTITE
HK Resistors ..... HKRESISTORS
HMicro ..... HMICRO
Hokuriku ..... HOKURIKU
Holt ..... HOLT
Holtek Semiconductor ..... HOLTEK
Holy Stone ..... HOLYSTONE
Homyet ..... HOMYET
Honda Tsushin Kogyo ..... HTK
Honeywell ..... HONEYWELL
Hongfa ..... HONGFA
Hoyato ..... HOYATO
HRO Electronics ..... HRO
Hsuan Mao Technology ..... HSUANMAO
HTC Korea - TAEJIN ..... HTCTAEJIN
HUBER+SUHNER ..... HUBERSUHNER
HVP ..... HVP
IC Plus ..... ICPLUS
ICE Components ..... ICE
iC-Haus ..... ICHAUS
Illinois Capacitor ..... ILLINOIS
ILSI America ..... ILSI
Imo Precision Controls ..... IMOPC
Industrial Fiber Optics ..... INDUSTRIALFIBEROPTICS
Inertial Sense ..... INERTIALSENSE
Infineon ..... INFINEON
Infinite Power Solutions ..... INFINITE
Infomart ..... INFOMART
Innovasic ..... INNOVASIC
Inolux ..... INOLUX
INPAQ ..... INPAQ
Inrcore ..... INRCORE
Intan Technologies ..... INTAN
Integrated Device Technology ..... IDT
Integrated Silicon ..... ISSI
Intel ..... INTEL
International Rectifier ..... IRF
Intersil ..... INTERSIL
Invac ..... INVAC
InvenSense ..... INVENSENSE
I-PEX ..... IPEX
IQD Frequency Products ..... IQD
Iriso Electronics ..... IRISO
Ironwood Electronics ..... IRONWOOD
Isabellenhuette ..... ISA
ITE Tech ..... ITETECH
ITG Electronics ..... ITG
ITT Cannon ..... ITT
IXYS ..... IXYS
JALCO Co., Ltd ..... JALCO
Japan Aviation Electronics ..... JAE
Jauch Quartz GmbH ..... JAUCH
Jianghai ..... JIANGHAI
JieJie Microelectronics ..... JJM
Johanson ..... JOHANSON
JPC ..... JPC
JQL Electronics ..... JQL
JRC ..... JRC
JST ..... JST
KAIDA ..... KAIDA
Kaweei Technology ..... KAWEEITECH
KDS ..... KDS
KEL ..... KEL
Kemet ..... KEMET
Keysight Technologies ..... KEYSIGHT
Keystone Electronics ..... KEYSTONE
Kindwin Opto Electronic ..... KINDWIN
Kinetic Technologies ..... KINETICTECH
King Core Electronics ..... KINGCORE
Kingbright ..... KINGBRIGHT
Kingstate Electronics ..... KINGSTATE
Kingston ..... KINGSTON
Kionix ..... KIONIX
KIOXIA ..... KIOXIA
Kirale Technologies ..... KIRALE
KitaGawa ..... KGS
Klaran ..... KLARAN
Knitter-Switch ..... KNITTER
Knowles Electronics ..... KNOWLES
KOA Speer Electronics ..... KOA
Kobiconn ..... KOBICONN
Kodenshi ..... KODENSHI
KOHER ..... KOHER
Korea Electric Terminal ..... KET
KOTL ..... KOTL
Kouhi ..... KOUHI
KYCON ..... KYCON
Kyocera ..... KYOCERA
Kyushu Dentsu ..... KYUSHU
Laird ..... LAIRD
Lantronix ..... LANTRONIX
Lascar Electronics ..... LASCAR
Lattice Semiconductor ..... LATTICE
Leach ..... LEACH
Leader Tech ..... LEADERTECH
LEDiL ..... LEDIL
Ledtronics ..... LEDTRONICS
Legacy Technologies ..... LEGACYTECH
Lelon ..... LELON
LEM ..... LEM
LEMO ..... LEMO

Leoco ..... LEOCO
Lime Microsystems ..... LIME
LinkCom ..... LINKCOM
LINK-PP ..... LINKPP
Linx ..... LINX
Lite-On Optoelectronics ..... LITEON
Littelfuse ..... LITTELFUSE
Loranger ..... LORANGER
Lotes ..... LOTES
LS Mtron ..... LSMTRON
LSR ..... LSR
Lumberg ..... LUMBERG
Lumex ..... LMX
Lumileds ..... LUMILEDS
Luminus ..... LUMINUS
Lumissil Microsystems ..... LUMISSIL
LUXSHARE-ICT ..... LUXSHARE
Lyn-Tron ..... LYNTRON
MAC8 ..... MAC8
MACOM ..... MACOM
Macronix ..... MACRONIX
Maestro Wireless ..... MAESTROWL
Mallory Sonalert Products ..... MALLORY
Maluska ..... MALUSKA
Marathon Special Products ..... MARATHONSP
Marki Microwave ..... MARKI
Marktech ..... MARKTECH
Marubeni ..... MARUBENI
Marutsuelec ..... MARUTSUELEC
Marvell ..... MARVELL
Masach ..... MASACH
Matsusada ..... MATSUSADA
Maxim Integrated ..... MAXIM
MaxLinear ..... MAXLINEAR
Maxwell Technologies ..... MAXWELL
MEAN WELL ..... MEANWELL
MEC Switches ..... MECSWITCHES
Meder ..... MEDER
MegaChips ..... MEGACHIPS
Meihua ..... MEIHUA
Melexis ..... MELEXIS
Memory Protection Devices ..... MPD
MEMSIC ..... MEMSIC
Menlo Microsystems ..... MENLOMICRO
Mentech ..... MENTECH
Mentor ..... MENTOR
Mercury Crystal ..... MERCURYCR
Meticom ..... METICOM
METZ Connect ..... METZ
MG Electronics ..... MGELECTRONICS
Micrel ..... MICREL
Micro Commercial ..... MICRO
Microchip ..... MICROCHIP
MicroCrystal ..... MICROCRYSTAL
Microdiode ..... MICRODIODE
Microhard ..... MICROHARD
Micron ..... MICRON
Micronas ..... MICRONAS
Micropac ..... MICROPAC
MicroPower Direct ..... MPDIRECT
MICROS ..... MICROS
Microsemi ..... MICROSEMI
MIKROE ..... MIKROE
MILL-MAX ..... MILLMAX
Mini-Circuits ..... MINICIRCUITS
MiniRF ..... MINIRF
Minntronix ..... MINNTRONIX
Mirrorcle Technologies ..... MIRRORCLE
Mitsubishi Electric ..... MITSUBISHI
MITSUMI ..... MITSUMI
MMD ..... MMD
Molex ..... MOLEX
Monolithic Power Systems ..... MONOLITHIC
MORNSUN ..... MORNSUN
Most Well Technology ..... MOSTWELL
Motocraft ..... MOTOCRAFT
Moxie ..... MOXIE
MPE Garry ..... MPEGARRY
MS Kennedy ..... MSK
MtronPTI ..... MTRONPTI
Multicomp ..... MULTICOMP
Murata ..... MURATA
Nanya ..... NANYA
NDK ..... NDK
NEL Frequency Controls ..... NEL
Neltron Industrial ..... NELTRON
NetPower ..... NETPOWER
Neutrik USA ..... NEUTRIK
Newhaven Display ..... NEWHAVEN
Nexperia ..... NEXPERIA
NIC Components ..... NIC
Nichia Corporation ..... NICHIA
Nichicon ..... NICHICON
Nicomatic ..... NICOMATIC
Nidec ..... NIDEC
NimbeLink ..... NIMBELINK
Nippon Chemi-Con ..... NIPPON
Nisshinbo Micro Devices ..... NISSHINBO
NKK Switches ..... NKK
NorComp ..... NORCOMP
Norden Logic ..... NORDEN
Nordic ..... NORDIC
NORWE ..... NORWE
Nover ..... NOVER
Nuvoton ..... NUVOTON
NVE ..... NVE
NXP Semiconductors ..... NXP
Octavo Systems ..... OCTAVO
ODU ..... ODU
OEP ..... OEP
Ohmite ..... OHMITE
Omnetics ..... OMNETICS
OmniVision Technologies ..... OMNIVISION
OMRON ..... OMRON
On Shore Technology ..... OST
Onion ..... ONION
onsemi ..... ONSEMI
Opto Diode ..... OPTODIO
Orbel ..... ORBEL
OSA Opto Light ..... OSAOPTO
Osram ..... OSRAM
OUPIIN ..... OUPIIN
PAN JIT International ..... PANJIT
Panasonic ..... PANASONIC
PANCON ..... PANCON
PARA Light ..... PARALIGHT
Parallax ..... PARALLAX
Passive Plus ..... PASSIVEPLUS
PCA Electronics ..... PCA
PCI Express ..... PCIEX
PennEngineering ..... PENNENG
Perancea ..... PERANCEA
Peregrine Semiconductor ..... PEREGRINE
Pericom Semiconductor ..... PERICOM
Phoenix Contact ..... PHOENIX
Pickering ..... PICKERING
Pico Electronics ..... PICO
Piconics ..... PICONICS
Picor ..... PICOR
PIHER ..... PIHER
Plessey ..... PLESSEY
Pletronics ..... PLETRONICS

Pololu ..... POLOLU
Polyshine ..... POLYSHINE
Polytronics Technology ..... POLYTRONICS
Pomona Electronics ..... POMONA
Positronic ..... POSITRONIC
Power Integrations ..... POWERINT
PPT Shenzhen Magnetic Technology ..... PPT
Preci-Dip ..... PRECIDIP
Premo ..... PREMO
Presidio Components ..... PRESIDIO
Proant ..... PROANT
PROD Technology ..... PRODTECH
Prolific ..... PROLIFIC
Protectron ..... PROTECTRON
Protek Devices ..... PROTEK
Provertha ..... PROVERTHA
P-TEC ..... PTEC
PTR Messtechnik ..... PTRM
PUI Audio ..... PUIAUDIO
Pulse Electronics ..... PULSE
PulseR ..... PULSER
Purdy ..... PURDY
Qorvo ..... QORVO
Qseven ..... QSEVEN
QT Brightek ..... QTBRIGHTEK
Q-TECH ..... QTECH
Qualcomm ..... QUALCOMM
Qualtek Electronics ..... QUALTEK
QuartzCom ..... QUARTZCOM
Quectel ..... QUECTEL
Quickfilter Technologies ..... QUICKFILTER
QuickLogic ..... QUICKLOGIC
Radiall ..... RADIALL
RAFI ..... RAFI
Rakon ..... RAKON
RALEC ..... RALEC
Ralink ..... RALINK
Raltron ..... RALTRON
Rami Technology ..... RAMITECH
Ramtron ..... RAMTRON
RAONTECH ..... RAONTECH
Raspberry Pi ..... RASPBERRY
Ratioplast ..... RATIOPLAST
Raytac ..... RAYTAC
RCD Components ..... RCDCOMP
RDI ..... RDI
Realtek Semiconductor ..... REALTEKSEMI
RECOM Electronic ..... RECOM
Rectron ..... RECTRON
Redpine Signals ..... REDPINE
Renata Battaries ..... RENATA
Renco Electronics ..... RENCO
Renesas Electronics ..... RENESAS
RF Solutions ..... RFSOL
RFHIC ..... RFHIC
RFMD ..... RFMD
RFMi ..... RFMI
Richtek Technology ..... RICHTEK
Ricoh Electronic Devices ..... RICOH
Riedon ..... RIEDON
Rigado ..... RIGADO
RLC Electronics ..... RLCELEC
RLS ..... RLS
ROHM Semiconductor ..... ROHM
Rosenberger ..... ROSENBERGER
RS ..... RS
Rubycon ..... RUBYCON
Sagami ..... SAGAMI
Same Sky ..... SAMESKY
Samsung Electro-Mechanics ..... SAMSUNGEM
Samsung Semiconductor ..... SAMSUNGSEMI
Samtec ..... SAMTEC
SanDisk ..... SANDISK
Sangshin ..... SANGSHIN
Sanken Electric ..... SANKEN
Sanyo ..... SANYO
Schaffner ..... SCHAFFNER
Schurter ..... SCHURTER
SEGGER ..... SEGGER
Seiko Instruments ..... SEIKO
Semikron Danfoss ..... SEMIKRON
Semitec ..... SEMITEC
Semtech ..... SEMTECH
Sena Technologies ..... SENATECH
Sensata Technologies/Airpax ..... SENSATA
Sensata WELLS-CTI ..... SENSATAWELLSCTI
Sensirion ..... SENSIRION
Sensitron ..... SENSITRON
Sensor Electronic Technology ..... SETI
Seoul Semiconductor ..... SEOULSEMI
SGX Sensortech ..... SGXSENSORTECH
Sharp Microelectronics ..... SHARP
Shikues ..... SHIKUES
Shunxiangnuo Electronics ..... SHUNXIANGNUO
SIBA Fuses ..... SIBA
Sierra Wireless ..... SIERRAWL
Sigma Designs ..... SIGMA
Signal Transformer ..... SIGNAL
Silego Technology ..... SILEGO
Silergy ..... SILERGY
Silex Technology ..... SILEX
Silicon Labs ..... SILICONLABS
Silvertel ..... SILVERTEL
SIMCom Wireless ..... SIMCOM
Singatron Enterprises ..... SINGATRON
SiTIME ..... SITIME
Siward ..... SIWARD
SK hynix ..... SKHYNIX
Skylab ..... SKYLAB
Skyworks Solutions ..... SKYWORKS
SMC Diodes ..... SMCDIODES
SMEC ..... SMEC
Smiths Connectors ..... SMITHS
SMK ..... SMK
SMP Technology ..... SMPTECH
Snaptron ..... SNAPTRON
Soberton ..... SOBERTON
Solidlite ..... SOLIDLITE
Solomon Systech ..... SOLOMONSYS
Song Chuan ..... SONGCHUAN
Song Huei Electric ..... SONGHUEI
Sonix Technology ..... SONIX
SOSHIN ..... SOSHIN
Souriau Connection Technology ..... SOURIAU
Southwest Microwave ..... SOUTHWEST
Spansion ..... SPANSION
Sprague-Goodman ..... SPRAGUE
SRT Micro Ceramique ..... SRTMICRO
ST Microelectronics ..... ST
Stackpole Electronics ..... STACKPOLE
Standex-Meder Electronics ..... STANDEX
Stanley Electric ..... STANLEY
STAR MICRONICS ..... STAR
STARCONN ..... STARCONN
State of the Art ..... SA
Stelvio Kontek ..... STELVIO
Stewart Connector ..... STEWART
Sullins Connector Solutions ..... SULLINS
Sumida ..... SUMIDA
Sumitomo ..... SUMITOMO
Sunex Digital Imaging Optics ..... SUNEX
SunLED ..... SUNLED

Sunlord ..... SUNLORD
Suntsu Electronics ..... SUNTSU
Suotek ..... SUOTEK
Superior Sensor Technology ..... SUPERIOR
Surge Components ..... SURGECOMP
Susumu ..... SUSUMU
Suyin Technologies ..... SUYIN
Swissbit ..... SWISSBIT
Switchcraft ..... SWITCHCRAFT
SYFER ..... SYFER
SynQor ..... SYNQOR
Tadiran Batteries ..... TADIRANBATT
Tag Connect ..... TAG
Taicom ..... TAICOM
Taimag ..... TAIMAG
Tai-Saw Technology ..... TAISAW
TAI-TECH ..... TAITECH
TaiTien Electric ..... TAITIEN
TAITRON ..... TAITRON
Taiwan Semiconductor ..... TAIWANSEMI
Taiyo Yuden ..... TAIYO
Taizhou Fu Sheng ..... TAIZHOU
Talema Group ..... TALEMA
Tamura ..... TAMURA
Taoglas ..... TAOGLAS
TAT ..... TAT
TDK ..... TDK
TE Connectivity ..... TE
Tecate ..... TECATE
Tektronix ..... TEKTRONIX
Teledyne ..... TELEDYNE
Telit ..... TELIT
Tempo Semiconductor ..... TEMPOSEMI
Tensility International ..... TENSILITY
Texas Instruments ..... TI
Therma-Flo ..... THERMAFLO
Thin Film Technology ..... TFT
Thinking Electronics ..... THINKING
Titan Opto ..... TITANOPTO
Toko America ..... TOKOAM
Topline ..... TOPLINE
Toptek ..... TOPTEK
TOP-UP ..... TOPUP
Torex Semiconductor ..... TOREX
Toshiba ..... TOSHIBA
Traco ..... TRACO
Transko ..... TRANSKO
Transphorm ..... TRANSPHORM
Triad Magnetics ..... TRIADMAGNETICS
Triad Semiconductor ..... TRIADSEMI
Trinamic Motion Control GmbH ..... TRINAMIC
TriQuint ..... TRIQUINT
Trontek ..... TRONTEK
TRP Connector ..... TRPCONN
Trxcom ..... TRXCOM
TT Electronics ..... TT
TTM Technologies ..... TTMTECH
Turck ..... TURCK
Tusonix ..... TUSONIX
TXC Corporation ..... TXC
U-Blox ..... UBLOX
UJU Electronics ..... UJU
Ulti-Mate ..... ULTIMATE
Ultra Chip ..... ULTRACHIP
United Chemi-Con ..... UNITEDCC
UTAC Thai ..... UTACTHAI
Vacuumschmelze ..... VACUUMSCHMELZE
Valcon ..... VALCON
VectorNav Technologies ..... VECTORNAV
Vectron ..... VECTRON
VEN ..... VEN
Venkel ..... VENKEL
Vesper ..... VESPER
VIA Labs ..... VIALABS
Vicor ..... VICOR
Vigo ..... VIGO
Vigortronix ..... VIGORTRONIX
Virginia Panel ..... VPC
Vishay ..... VISHAY
Visual Communications VCC
Vitec Electronics ..... VITEC
Vitrohm ..... VITROHM
VLSI Solutions ..... VLSI
Volgen/Kaga Electronics ..... VOLGEN
Voltage Multipliers ..... VOLTAGEMULTI
Voltronics ..... VOLTRONICS
VPT Power ..... VPTPOWER
VTI ..... VTI
WAGO ..... WAGO
Wakefield ..... WAKEFIELD
Walsin Technology ..... WALSIN
Wamco ..... WAMCO
Wayon ..... WAYON
Weco ..... WECO
WeEn Semiconductors ..... WEENSEMI
Weidmuller ..... WEIDMULLER
Weixin Electronics ..... WEIXIN
WIMA ..... WIMA
Winbond Electronics ..... WINBOND
WIZnet ..... WIZNET
Wolfson ..... WOLFSON
Wolfspeed ..... WOLFSPEED
Worldsemi ..... WORLDSEMI
WP Products ..... WPPRO
Wurth ..... WURTH
XFMRS ..... XFMRS
XICON ..... XICON
Xilinx ..... XILINX
XKB Connectivity ..... XKB
XMOS ..... XMOS
XMULTIPLE ..... XMULTIPLE
XP EMCO ..... XPEMCO
XP Power ..... XPPOWER
XtalTQ ..... XTALTQ
Yageo ..... YAGEO
Yamaichi Electronics ..... YAMAICHI
Yangxing Technology ..... YANGXING
Yantel ..... YANTEL
YDS ..... YDS
Yeonho ..... YEONHO
YIC ..... YIC
Yoldal ..... YOLDAL
Yost Labs ..... YOSTLABS
Z-Communications ..... ZCOMM
Zentri ..... ZENTRI
Zierick ..... ZIERICK
Zilog ..... ZILOG