IPC-7351B Naming Convention for Standard SMT Land Patterns

Surface Mount Land Patterns

Component, Category	Land Pattern Name
Ball Grid Array's	**BGA** + Pin Qty + **C** or **N** + Pitch **P** + Ball Columns **X** Ball Rows _ Body Length **X** Body Width **X** Height
BGA w/Dual Pitch	**BGA** + Pin Qty + **C** or **N** + Col Pitch **X** Row Pitch **P** + Ball Columns **X** Ball Rows _ Body Length **X** Body Width **X** Height
BGA w/Staggered Pins	**BGAS** + Pin Qty + **C** or **N** + Pitch **P** + Ball Columns **X** Ball Rows _ Body Length **X** Body Width **X** Height
BGA Note: The **C** or **N** = Collapsing or Non-collapsing Balls	
Capacitors, Chip, Array, Concave	**CAPCAV** + Pitch **P** + Body Length **X** Body Width **X** Height **-** Pin Qty
Capacitors, Chip, Array, Flat	**CAPCAF** + Pitch **P** + Body Length **X** Body Width **X** Height **-** Pin Qty
Capacitors, Chip, Non-polarized	**CAPC** + Body Length + Body Width **X** Height
Capacitors, Chip, Polarized	**CAPCP** + Body Length + Body Width **X** Height
Capacitors, Chip, Wire Rectangle	**CAPCWR** + Body Length + Body Width **X** Height
Capacitors, Molded, Non-polarized	**CAPM** + Body Length + Body Width **X** Height
Capacitors, Molded, Polarized	**CAPMP** + Body Length + Body Width **X** Height
Capacitors, Aluminum Electrolytic	**CAPAE** + Base Body Size **X** Height
Ceramic Flat Packages	**CFP127P** + Lead Span Nominal **X** Height **-** Pin Qty
Column Grid Array's	**CGA** + Pitch **P** + Number of Pin Columns **X** Number of Pin Rows **X** Height **-** Pin Qty
Crystals (2 leads)	**XTAL** + Body Length **X** Body Width **X** Height
Dual Flat No-lead	**DFN** + Body Length **X** Body Width **X** Height – Pin Qty
Diodes, Chip	**DIOC** + Body Length + Body Width **X** Height
Diodes, Molded	**DIOM** + Body Length + Body Width **X** Height
Diodes, MELF	**DIOMELF** + Body Length + Body Diameter
Diodes, Side Concave	**DIOSC** + Body Length **X** Body Width **X** Height **-** Pin Qty
Fuses, Molded	**FUSM** + Body Length + Body Width **X** Height
Inductors, Chip	**INDC** + Body Length + Body Width **X** Height
Inductors, Molded	**INDM** + Body Length + Body Width **X** Height
Inductors, Precision Wire Wound	**INDP** + Body Length + Body Width **X** Height
Inductors, Chip, Array, Concave	**INDCAV** + Pitch **P** + Body Length **X** Body Width **X** Height **-** Pin Qty
Inductors, Chip, Array, Flat	**INDCAF** + Pitch **P** + Body Length **X** Body Width **X** Height **-** Pin Qty
Land Grid Array, Circular Lead	**LGA** + Pin Qty + **C** + Pitch **P** + Pin Columns **X** Pin Rows _ Body Length **X** Body Width **X** Height
Land Grid Array, Square Lead	**LGA** + Pin Qty + **S** + Pitch **P** + Pin Columns **X** Pin Rows _ Body Length **X** Body Width **X** Height
Land Grid Array, Rectangle Lead	**LGA** + Pin Qty + **R** + Pitch **P** + Pin Columns **X** Pin Rows _ Body Length **X** Body Width **X** Height
LED's, Molded	**LEDM** + Body Length + Body Width **X** Height
LED's, Side Concave	**LEDSC** + Body Length **X** Body Width **X** Height **-** Pin Qty
Oscillators, Side Concave	**OSCSC** + Pitch **P** + Body Length **X** Body Width **X** Height **-** Pin Qty
Oscillators, J-Lead	**OSCJ** + Pitch **P** + Body Length **X** Body Width **X** Height **-** Pin Qty
Oscillators, L-Bend Lead	**OSCL** + Pitch **P** + Body Length **X** Body Width **X** Height **-** Pin Qty
Oscillators, Corner Concave	**OSCCC** + Body Length **X** Body Width **X** Height
Plastic Leaded Chip Carriers	**PLCC** + Pitch **P** + Lead Span L1 **X** Lead Span L2 Nominal **X** Height **-** Pin Qty
Plastic Leaded Chip Carrier Sockets Square	**PLCCS** + Pitch **P** + Lead Span L1 **X** Lead Span L2 Nominal **X** Height **-** Pin Qty
Quad Flat Packages	**QFP** + Pitch **P** + Lead Span L1 **X** Lead Span L2 Nominal **X** Height **-** Pin Qty
Ceramic Quad Flat Packages	**CQFP** + Pitch **P** + Lead Span L1 **X** Lead Span L2 Nominal **X** Height **-** Pin Qty
Quad Flat No-lead	**QFN** + Pitch **P** + Body Width **X** Body Length **X** Height **-** Pin Qty + Thermal Pad
Pull-back Quad Flat No-lead	**PQFN** + Pitch **P** + Body Width **X** Body Length **X** Height **-** Pin Qty + Thermal Pad
Quad Leadless Ceramic Chip Carriers	**LCC** + Pitch **P** + Body Width **X** Body Length **X** Height **-** Pin Qty
Quad Leadless Ceramic Chip Carriers (Pin 1 on Side)	**LCCS** + Pitch **P** + Body Width **X** Body Length **X** Height **-** Pin Qty
Resistors, Chip	**RESC** + Body Length + Body Width **X** Height
Resistors, Molded	**RESM** + Body Length + Body Width **X** Height
Resistors, MELF	**RESMELF** + Body Length + Body Diameter
Resistors, Chip, Array, Concave	**RESCAV** + Pitch **P** + Body Length **X** Body Width **X** Height **-** Pin Qty
Resistors, Chip, Array, Convex, E-Version (Even Pin Size)	**RESCAXE** + Pitch **P** + Body Length **X** Body Width **X** Height **-** Pin Qty
Resistors, Chip, Array, Convex, S-Version (Side Pins Diff)	**RESCAXS** + Pitch **P** + Body Length **X** Body Width **X** Height **-** Pin Qty
Resistors, Chip, Array, Flat	**RESCAF** + Pitch **P** + Body Length **X** Body Width **X** Height **-** Pin Qty
Small Outline Diodes, Flat Lead	**SODFL** + Lead Span Nominal + Body Width **X** Height
Small Outline IC, J-Leaded	**SOJ** + Pitch **P** + Lead Span Nominal **X** Height **-** Pin Qty
Small Outline Integrated Circuit, (50 mil Pitch SOIC)	**SOIC127P** + Lead Span Nominal **X** Height **-** Pin Qty
Small Outline Packages	**SOP** + Pitch **P** + Lead Span Nominal **X** Height **-** Pin Qty
Small Outline No-lead	**SON** + Pitch **P** + Body Width **X** Body Length **X** Height **-** Pin Qty + Thermal Pad
Pull-back Small Outline No-lead	**PSON** + Pitch **P** + Body Width **X** Body Length **X** Height **-** Pin Qty + Thermal Pad
Small Outline Transistors, Flat Lead	**SOTFL** + Pitch **P** + Lead Span Nominal **X** Height **-** Pin Qty
SOD (Example: **SOD3717X135** = **JEDEC SOD123**)	**SOD** + Lead Span Nominal + Body Width **X** Height
SOT89 (JEDEC Standard Package)	**SOT89**
SOT143 & SOT343 (JEDEC Standard Package)	**SOT143 & SOT343**
SOT143 & SOT343 Reverse (JEDEC Standard Package)	**SOT143R & SOT343R**
SOT23 & SOT223 Packages (Example: **SOT230P700X180-4**)	**SOT** + Pitch **P** + Lead Span Nominal **X** Height **-** Pin Qty
TO (Generic DPAK - Example: **TO228P970X238-3**)	**TO +** Pitch **P** + Lead Span **X** Height **-** Pin Qty

IPC-7351B 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

Naming Convention Special Character Use for Land Patterns

The _ (underscore) is the separator between pin Qty in Hidden & Deleted pin components
The **–** (dash) is used to separate the pin qty.
The **X** (capital letter X) is used instead of the word “by” to separate two numbers such as height **X** width like “Quad Packages”.

IPC-7351B Suffix Naming Convention for Land Patterns

Common SMT Land Pattern to Describe Environment Use (This is the last character in every name)
Note: This excludes the BGA component family as they only come in the Nominal Environment Condition

- **M** ..... Most Material Condition (Level A)
- **N**..... Nominal Material Condition (Level B)
- **L**.....Least Material Condition (Level C)

Alternate Components that do not follow the JEDEC, EIA or IEC Standard

- **A**..... Alternate Component (used primarily for SOP & QFP when Component Tolerance or Height is different)
- **B**..... Second Alternate Component

Reverse Pin Order

- **-20RN**..... 20 pin part, Reverse Pin Order, Nominal Environment

Hidden Pins

- **-20_24N** ..... 20 pin part in a 24 pin package. The pins are numbered 1 – 24 the hidden pins are skipped. The schematic symbol displays up to 24 pins.

Deleted Pins

- **-24_20N** ..... 20 pin part in a 24 pin package. The pins are numbered 1 – 20. The schematic symbol displays 20 pins.

JEDEC and EIA Standard parts that have several alternate packages

- **AA, AB, AC**. JEDEC or EIA Component Identifier

GENERAL SUFFIXES

_HS.....HS = Land Pattern with Heat Sink attachment requiring additional holes or pads
Example: TO254P1055X160_HS-6N

_BEC .....BEC = Base, Emitter and Collector (Pin assignments used for three pin Transistors)
Example: SOT95P280X160_BEC-3N

_SGD .....SGD = Source, Gate and Drain (Pin assignments used for three pin Transistors)
Example: SOT95P280X160_SGD-3N

_213.....213 = Alternate pin assignments used for three pin Transistors
Example: SOT95P280X160_213-3N

PCB Matrix Naming Convention for Non-Standard SMT Land Patterns

Surface Mount Land Patterns

Component, Category	Land Pattern Name
Amplifiers	**AMP**_ Mfr.'s Part Number
Batteries	**BAT**_ Mfr.'s Part Number
Capacitors, Variable	**CAPV**_Mfr.'s Part Number
Capacitors, Chip, Array, Concave (Pins on 2 or 4 sides)	**CAPCAV**_Mfr Series No. **-** Pin Qty
Capacitors, Chip, Array, Flat (Pins on 2 sides)	**CAPCAF**_Mfr Series No. **-** Pin Qty
Capacitors, Miscellaneous	**CAP**_Mfr.'s Part Number
Crystals	**XTAL**_Mfr.'s Part Number
Diodes, Miscellaneous	**DIO**_Mfr.'s Part Number
Diodes, Bridge Rectifiers	**DIOB**_Mfr.'s Part Number
Ferrite Beads	**FB**_Mfr.'s Part Number
Fiducials	**FID** + Pad Size X Solder Mask Size
Filters	**FIL**_Mfr.'s Part Number
Fuses	**FUSE**_Mfr.'s Part Number
Fuse, Resettable	**FUSER**_Mfr.'s Part Number
Inductors, Miscellaneous	**IND**_Mfr.'s Part Number
Inductors, Chip, Array, Concave (Pins on 2 or 4 sides)	**INDCAV**_Mfr Series No. **-** Pin Qty
Inductors, Chip, Array, Flat (Pins on 2 sides)	**INDCAF**_Mfr Series No. **-** Pin Qty
Keypad	**KEYPAD**_Mfr.'s Part Number
LEDS	**LED**_Mfr.'s Part Number
LEDS, Chip	**LED**_Mfr.'s Part Number
Liquid Crystal Display	**LCD**_Mfr.'s Part Number
Microphones	**MIC**_Mfr.'s Part Number
Opto Isolators	**OPTO**_Mfr.'s Part Number
Oscillators	**OSC**_Mfr.'s Part Number **-** Pin Qty
Quad Flat Packages w/Bumper Corners, Pin 1 Side	**BQFP** + Pitch **P** + Lead Span L1 **X** Lead Span L2 Nominal **X** Height **-** Pin Qty
Quad Flat Packages w/Bumper Corners, 1 Center	**BQFPC** + Pitch **P** + Lead Span L1 **X** Lead Span L2 Nominal **X** Height **-** Pin Qty
Resistors, Chip, Array, Concave (Pins on 2 or 4 sides)	**RESCAV**_Mfr Series No. **-** Pin Qty
Resistors, Chip, Array, Convex Type E (Pins on 2 sides)	**RESCAXE**_Mfr Series No. **-** Pin Qty
Resistors, Chip, Array, Convex Type S (Pins on 2 sides)	**RESCAXS**_Mfr Series No. **-** Pin Qty
Resistors, Chip, Array, Flat (Pins on 2 sides)	**RESCAF**_Mfr Series No. **-** Pin Qty
Relays	**RELAY**_Mfr.'s Part Number
Speakers	**SPKR**_Mfr's Part Number
Switches	**SW**_Mfr.'s Part Number
Test Points, Round	**TP** + Pad Size (1 place left of decimal and 2 places right of decimal, Example **TP100** = 1.00mm)
Test Points, Square	**TPS** + Pad Size (1 place left of decimal and 2 places right of decimal)
Test Points, Rectangle	**TP** + Pad Length **X** Pad Width (1 place left of decimal and 2 places right of decimal)
Thermistors	**THERM**_Mfr.'s Part Number
Transceivers	**XCVR**_ Mfr.'s Part Number
Transducers (IRDA's)	**XDCR**_Mfr.'s Part Number
Transient Voltage Suppressors	**TVS**_Mfr.'s Part Number
Transient Voltage Suppressors, Polarized	**TVSP**_Mfr.'s Part Number
Transistor Outlines, Custom	**TRANS**_Mfr.'s Part Number
Transformers	**XFMR**_Mfr.'s Part Number
Trimmers & Potentiometers	**TRIM**_Mfr.'s Part Number
Tuners	**TUNER**_Mfr.'s Part Number
Varistors	**VAR**_Mfr.'s Part Number
Voltage Controlled Oscillators	**VCO**_Mfr.'s Part Number
Voltage Regulators, Custom	**VREG**_Mfr.'s Part Number

Note: All dimensions are in Metric Units and all numbers go two places past the decimal point

IPC-7251 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
A, **B** & **C** = the fabrication complexity level as defined in the IPC-2221 and IPC-2222

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: **CAPAD800W52L600D150B**
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: **CAPAR800W52L600T50H70B**
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: **CAPADV300W52L600D150B**
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: **CAPARV300W52L600T50H70B**
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: **CAPRD200W52D300H550B**
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: **CAPRR200W52L50T70H550B**
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: **CAPRB200W52L50T70H550B**
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 .....**CAPPA** + Lead Spacing + **W** Lead Width + **L** Body Length + **D** Body Diameter
Example: **CAPPAD800W52L600D150B**
Capacitors, Polarized Axial Diameter; Lead Spacing 8.00; Lead Width 0.52; Body Length 6.00; Body Diameter 1.50

Capacitor, Polarized Radial Diameter..... **CAPPR** + Lead Spacing + **W** Lead Width + **D** Body Diameter + **H** Body Height
Example: **CAPPRD200W52D300H550B**
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: **DIOAD800W52L600D150B**
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: **DIOADV300W52L600D150B**
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: **DIP762W52P254L1905H508Q14B**
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: **DIPS762W52P254L1905H508Q14B**
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

Header, vertical,2.54mm pitch;0.635mm lead width,20 pins,2 rows,10 pins per row,25.40mm L X 2.54mm W X 8.38mm H body
HDRV20W64P254_2X10_2540X254X838P – Example: vertical header, 2 rows by 20 pins:
Headers, Right Angle… **HDRV** + total Pins + **W** Lead Width + **P** Row Pitch (+ **X** Column Pitch [if different]) + _ Row s + **X** Pins per Row + _ Body Length + **X** Body Thickness + **X** Component Height + Fabrication Level

Header, right angle, 2.54mm pitch; 0.635mm lead width, 20 pins, 2 rows, 10 pins per row, 25.40mm L X 2.54mm W X 5.08mm H body
HDRRA20W64P254_2X10_2540X254X508P – Example: right angle header, 2 rows by 20 pins:
Headers, Right Angle. **HDRRA** + total Pins + **W** Lead Width + **P** Row Pitch (+ **X** Column Pitch [if different]) + _ Row s + **X** Pins per Row + _ Body Length + **X** Body Thickness + **X** Component Height + Fabrication Level

Header, vertical, 2.54mm pitch; 0.635mm lead width, 50 pins, 3 rows, 25 pins per row, 63.50mm L X 2.54mm W X 8.38mm H body
HDRV50W64P254_3X25_6350X254X838P – Example: vertical header, 3 rows by 25 pins with 25 missing ping pins:
Headers, Vertical **HDRV** + Total Pins + **W** Lead Width + **P** Row Pitch (+ **X** Column Pitch [if different]) + _ Row s + **X** Pins per Row + _ Body Length + **X** Body Thickness + **X** Component Height + Fabrication Level

Inductors, Axial Diameter Horizontal Mounting..... **INDAD** + Lead Spacing + **W** Lead Width + **L** Body Length + **D** Body Diameter
Example: **INDAD800W52L600D150B**
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: **INDADV300W52L600D150B**
Inductors, Axial Diameter Vertical Mounting; Lead Spacing 3.00; Lead Width 0.52; Body Length 6.00; Body Diameter 1.50

Jumpers, Wire.....**JUMP** + Lead Spacing + **W** Lead Width
Example: **JUMP500W52B**
Jumper; Lead Spacing 5.00; Lead Width 0.52

Mounting hole for ANSI size 6 with flat washer, tight fitting, non-plated; 3.85mm dia. hole, 8.7mm land, with 6 vias
Example: **MTGNP870H385V6P**
Mounting hole, ...**MTG** + **NP** (non-plated) + Land Size + **H** + Hole Size + **V** + No. of vias + Fab Level

Mounting hole for Metric size M3.5 pan head, tight fitting, plated; 3.85mm dia. hole, 7.35mm land
Example: **MTGP735H385Z735P**
Mounting hole, ... **MTG** + **P** (plated) + Land Size + **H** + Hole Size + **Z** + Anti-pad size + Fab Level

Mounting hole for size 2.75 mm, loose fitting, plated; 2.9mm dia. hole, 4mm land
Example: **MTGP400H290Z400P**
Mounting hole, ...**MTG** + **NP** (plated) + Land Size + **H** + Hole Size + **Z** + Anti-pad size + Fab Level

Example – clearance hole:
Mounting hole for size 2.25 mm, tight fitting, non-plated; 2.6mm dia. hole,1.3mm land
Example: **MTGNP130H260Z130P**
Mounting hole, ... **MTG** + **NP** (non-plated) + Land Size + **H** + Hole Size + **Z** + Anti-pad size + Fab Level

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: **PGA84P254C10R10L2500X2500H300B**
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: **RESAD800W52L600D150B**
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: **RESADV300W52L600D150B**
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: **RESAR800W52L600T50H70B**
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: **SIP150W52P254L1905H508Q8B**
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 8

Test Point; 0.635mm lead width, round, 2.54mm Diameter X 5.84mm H body height.
TPCW64D254H584P – Example: round test point with round or square lead:
Test Points, ...**TP** + **C** + **W** + Lead Width + **D** + Body Diameter + **H** + Height + Fab Level

Test Point; 0.635mm lead width, square, 2.54mm W X 5.84mm H body.
TPRW64L254H584P – Example: square test point with round or square lead:
Test Points, ...**TP** + **R** + **W** + Lead Width + **L** + Body Size + **H** + Height + Fab Level

Test Point; 1.57mm W X 0.635mmT lead width, rectangular, 2.54mm L X 0.635mm W X 3.30mm H body
TPRW157X64L254T64H330P – Example: rectangular test point with rectangular lead
Test Points, ...**TP** + **R** + **W** + Lead Length + **X** + Lead Width + **L** + Body Length + **T** + Body Width + **H** + Height + Fab Level

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

Oscillators ..... **OSC** + Lead Span + **W** Lead Diameter + **P** Pin Pitch + **L** Body Length + **H** Component Height + **Q** Pin Qty
Example for 8 pin Oscillator: **OSC762W46P762L1320H600Q8B**
Oscillator: Lead Span 7.62; Lead Diameter 0.46; Pin Pitch 762; Body Length 13.20; Body Height 6.00; Pin Qty 8

Example for 14 pin Oscillator: **OSC762W53P1524L2080H508Q14B**
Oscillator: Lead Span 7.62; Lead Diameter 0.53; Pin Pitch 762; Body Length 20.80; Body Height 508; Pin Qty 14

PCB Matrix Naming Convention for Non-standard PTH Land Patterns

Library Name	**Land Pattern Name**
Amplifiers	**AMP**_Mfr.'s Part Number
Batteries	**BAT**_Mfr.'s Part Number
Bridge Rectifiers	**DIOB**_Mfr.'s Part Number
Converters	**CONV**_Mfr.'s Part Number
Crystals	**XTAL**_Mfr.'s Part Number
Ferrite Beads	**FB**_Mfr.'s Part Number
Filters	**FIL**_Mfr's Part Number
Fuses	**FUSE**_Mfr.'s Part Number
Fuses, Resettable	**FUSER**_Mfr.'s Part Number
Heat Sinks	**HSINK**_Mfr.'s Part Number
Inductors	**IND**_Mfr.'s Part Number
LED's	**LED**_Mfr.'s Part Number
Liquid Crystal Display	**LCD**_Mfr.'s Part Number
Microphones	**MIC**_Mfr.'s Part Number
MOV	**MOV**_Mfr.'s Part Number
Opto Isolators	**OPTO**_Mfr.'s Part Number
Oscillators	**OSC**_Mfr.'s Part Number
PAD	**PAD** + Pad Size **X** Hole Size + **H**
Photo Detectors	**PHODET**_Mfr.'s Part Number
Regulators	**REG**_Mfr.'s Part Number
Relays	**RELAY**_Mfr.'s Part Number
Shield, off the shelf	**SHIELD**_Mfr.'s Part Number
Shield, Custom	**SHIELD** + Body Length **X** Body Width
Speakers	**SPKR**_Mfr's Part Number
Stiffners	**STIF**_Mfr's Part Number
Switches	**SW**_Mfr.'s Part Number
Thermistors	**THERM**_Mfr.'s Part Number
Transducers (IRDA's)	**XDCR**_Mfr.'s Part Number
Transient Voltage Suppressors	**TVS** + Mfr.'s Part Number
Transient Voltage Suppressors, Polarized	**TVSP** + Mfr.'s Part Number
Transistor Outlines (JEDEC Standard Package)	**TO-** JEDEC Number
Transistor Outlines, Custom	**TRANS**_Mfr.'s Part Number
Transformers	**XFMR**_Mfr.'s Part Number
Trimmers & Potentiometers	**TRIM**_Mfr.'s Part Number
Tuners	**TUNER**_Mfr.'s Part Number
Varistors	**VAR**_Mfr.'s Part Number
Voltage Controlled Oscillator	**VCO**_Mfr.'s Part Number
Voltage Regulators (JEDEC Standard Package)	**TO-** JEDEC Number

Note: All dimensions are in Metric Units and all numbers go two places past the decimal point

IPC-7x51 Naming Convention for Connector Land Patterns

Library Name	Land Pattern Name

CONNECTORS (Miscellaneous Connector Libraries)

3M™	3M_Part Number
AGILENT™	AGILENT_Part Number
AIRBORNE™	AIRBORNE_Part Number
AMPHENOL™	AMPHENOL_Part Number
AVX™	AVX_Part Number
BERG™	BERG_Part Number
BLOCKMASTER ELECTRONICS™	BLOCKMASTER_Part Number
CUI-STACK™	CUI-STACK_Part Number
E.F. JOHNSON™	JOHNSON_Part Number
FCI ELECTRONICS™	FCI_Part Number
FUJITSU™	FUJITSU_Part Number
HIROSE™	HIROSE_Part Number
ITT CANNON™	ITT_Part Number
JALCO™	JALCO_Part Number
JWT™	JWT_Part Number
JST™	JST_Part Number
KEYSTONE™	KEYSTONE_Part Number
KYCON™	KYCON_Part Number
LEMO™	LEMO_Part Number
MILL-MAX™	MILL-MAX_Part Number
MOLEX™	MOLEX_Part Number
NEUTRIK™	NEUTRIK_Part Number
PHOENIX™	PHOENIX_Part Number
PULSE™	PULSE_Part Number
RIA™	RIA_Part Number
SAMTEC™	SAMTEC_Part Number
SIEMENS™	SIEMENS_Part Number
SPEEDTECH™	SPEEDTECH_Part Number
STEWART™	STEWART_Part Number
SULLINS™	SULLINS_Part Number
SWITCHCRAFT™	SWITCHCRAFT_Part Number
TYCO™	TYCO_Part Number
YAMAICHI™	YAMAICHI_Part Number

IPC-7351 Surface Mount Land Patterns Sectional Breakdown

IPC-735* Component Family Breakdown:

IPC-7351 = IEC 61188-5-1, Generic requirements - Attachment (land/joint) considerations – **General Description**

IPC-7352 = IEC 61188-5-2, Sectional requirements - Attachment (land/joint) considerations – **Discrete Components**

IPC-7353 = IEC 61188-5-3, Sectional requirements - Attachment (land/joint) considerations – **Gull-Wing leads, two sides (SOP)**

IPC-7354 = IEC 61188-5-4, Sectional requirements - Attachment (land/joint) considerations – **J leads, two sides (SOJ)**

IPC-7355 = IEC 61188-5-5, Sectional requirements - Attachment (land/joint) considerations – **Gull-Wing leads, four sides (QFP)**

IPC-7356 = IEC 61188-5-6, Sectional requirements - Attachment (land/joint) considerations – **J leads, four sides (PLCC)**

IPC-7357 = IEC 61188-5-7, Sectional requirements - Attachment (land/joint) considerations – **Post leads, two sides (DIP)**

IPC-7358 = IEC 61188-5-8, Sectional requirements - Attachment (land/joint) considerations – **Area Array Components (BGA)**

IPC-7359 = NO IEC Document, Sectional requirements - Attachment (land/joint) considerations – **No Lead Components (LCC)**

IPC-7351 Surface Mount Land Pattern Zero Orientation

1) Chip Capacitors, Resistors and Inductors (RES, CAP and IND) – **Pin 1 (Positive) on Left**

2) Molded Inductors (INDM), Resistors (RESM), Molded Polarized Capacitors (CAPMP) – **Pin 1 (Positive) on Left**

3) Precision Wire-wound Inductors – **Pin 1 (Positive) on Left**

4) MELF Diode – **Pin 1 (Cathode) on Left**

5) SOD Diodes – **Pin 1 (Cathode) on Left**

6) Aluminum Electrolytic Capacitors – **Pin 1 (Positive) on Left**

7) SOT Devices (SOT23, SOT23-5, SOT223, SOT89, SOT143, etc.) – **Pin 1 Upper Left**

8) TO252 & TO263 (DPAK Type) Devices – **Pin 1 Upper Left**

9) Small Outline Gullwing ICs (SOIC, SOP, TSOP, SSOP, TSSOP) – **Pin 1 Upper Left**

10) Ceramic Flat Packs (CFP) – **Pin 1 Upper Left**

11) Small Outline J Lead ICs (SOJ) – **Pin 1 Upper Left**

12) Quad Flat Pack ICs (PQFP, SQFP) – **Pin 1 Upper Left**

13) Ceramic Quad Flat Packs (CQFP) – **Pin 1 Upper Left**

14) Bumper and Plastic Quad Flat Pack ICs (BQFPC, PQFPC Pin 1 Center) – **Pin 1 Top Center**

15) Plastic Leaded Chip Carriers (PLCC) – **Pin 1 Top Center**

16) Leadless Chip Carriers (LCC) – **Pin 1 Top Center**

17) Leadless Chip Carriers (LCCS Pin 1 on Side) – **Pin 1 Upper Left**

18) Quad Flat No-Lead ICs (QFN) QFNS & QFNRV, QFNRH – **Pin 1 Upper Left**

19) Ball Grid Arrays (BGA) – **Pin A1 Upper Left**

IPC-7251 Through-hole Land Patterns Sectional Breakdown

IPC-725* Component Family Breakdown:

IPC-7251 = Generic requirements – Attachment (land/joint) considerations – **General Description**

IPC-7252 = Sectional requirements – Attachment (land/joint) considerations – **Discrete Components (Axial & Radial)**

IPC-7253 = Sectional requirements – Attachment (land/joint) considerations – **Dual-In-Line Package (DIP)**

IPC-7254 = Sectional requirements – Attachment (land/joint) considerations – **Three Leaded Semiconductor**

IPC-7255 = Sectional requirements – Attachment (land/joint) considerations – **Pin Grid Array**

IPC-7256 = Sectional requirements – Attachment (land/joint) considerations – **Unique Multiple function Parts**

IPC-7257 = Sectional requirements – Attachment (land/joint) considerations – **Connectors & Headers**

IPC-7258 = Sectional requirements – Attachment (land/joint) considerations – **Single-In-line Package (SIP) Resistor Networks**

IPC-7259 = Sectional requirements – Attachment (land/joint) considerations – **Mounting Hardware**

IPC-7251 Through-hole Land Pattern Zero Orientation

1) Axial Lead Capacitors, Resistors, Diodes and Inductors (RES, CAP, DIO and IND) – **Pin 1 (Positive or Cathode) on Left**

2) Radial Lead Capacitors (CAP) – **Pin 1 (Positive) on Left**

3) Dual-in-line Packages (DIP) – **Pin 1 Left – Upper**

4) Three Leaded Semiconductor – **Pin 1 Left – Upper**

5) Pin Grid Array (PGA) – **Pin 1 Left – Upper**

6) Unique Multiple function Parts – **Pin 1 Left – Upper**

7) Connectors & Headers (HDR) – **Pin 1 Left – Upper**

8) Single-In-line Package (SIP) Resistor Networks – **Pin 1 Left – Upper**