Footprint naming convention as used by the IPC-7351B and IPC-7352 and PCB Footprint Expert, the industry's first footprint and 3D model automation tool to adopt this new guideline.

IPC-7351B & IPC-7352
Footprint
Naming
Convention

PCB Libraries, Inc.

November 17, 2023



IPC-7351B Naming Convention for Standard SMD Land Patterns

Note: The component manufacturer's abbreviated name followed by a hyphen can be used as a prefix for the elimination of duplicate footprint names. When the package tolerances deviate from one manufacturer to the next, the resulting footprint pad size and courtyard will be different but the footprint name will be the same. To discriminate between various manufacturer's package tolerances, we recommend that you use the component manufacturer's abbreviated name followed by a hyphen as the footprint name prefix. Example: TI-QFN50P350X350X100-19N = Texas Instruments QFN

See Appendix I for at the end of this document for the full list of all component manufacturer name abbreviations.

Component, Category

Footprint 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-co	ollapsing Balls
	CAPCAF + Pitch P + Body Length X Body Width X Height - Pin Qty
• • • • • • • • • • • • • • • • • • • •	CAPC + Body Length + Body Width X Height
	CAPPC + Body Length + Body Width X Height
Capacitors, Dual Flat No-lead	CAPDFN + Body Length + Body Width X Height
Capacitors, Polarized, Dual Flat No-lead	CAPPDFN + Body Length + Body Width X Height
Capacitors, Molded	CAPM + Body Length + Body Width X Height
Capacitors, Polarized, Molded	
Column Grid Array, Circular Lead	
Pillar Column Grid Array	PCGA + Pin Qty + S + Pitch P + Pin Columns X Pin Rows _ Body Length X Body Width X Height
Crystals (2 leads)	XTAL + Body Length X Body Width X Height
Crystals, Dual Flat No-lead	XTALDFN + Body Length X Body Width X Height
Crystals, Side Concave	XTALSC + Body Length X Body Width X Height
Diodes, Chip	
Diodes, Dual Flat No-lead	DIODFN + Body Length X Body Width X Height – Pin Qty
Diodes, Molded	
Diodes, Non-polarized Chip	
Diodes, Non-polarized Molded	DIONM + Body Length + Body Width X Height
Diodes, MELF	DIOMELF + Body Length + Body Diameter
Diodes, Side Concave, 2 Pin	
Diodes, Side Concave, 4 Pin	DIOSC+ Pitch P + Body Length X Body Width X Height - Pin Qty
Ferrite Bead, Chip	BEADC + Body Length + Body Width X Height
Fuses, Chip	FUSC + Body Length + Body Width X Height
Fuses, Dual Flat No-Lead	
Fuses, Molded	FUSM + Body Length + Body Width X Height
Fuses, Side Concave	
Inductors, Chip	INDC + Body Length + Body Width X Height
Inductors, Chip, Array, Concave	
Inductors, Chip, Array, Flat	
Inductors, Dual Flat No-lead	INDDFN + Body Length + Body Width X Height
Inductors, Molded	INDM + Body Length + Body Width X Height
	INDPM + Body Length + Body Width X Height
	INDSC + Body Length + Body Width X Height
• • • • • • • • • • • • • • • • • • • •	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
•	LEDC + Body Length + Body Width X Height
LED's, Dual Flat No-lead	LEDDFN + Body Length + Body Width X Height
	LEDM + Body Length + Body Width X Height
	LEDSC + Body Length X Body Width X Height - Pin Qty
	LEDSC + Pitch P + Body Length X Body Width X Height - Pin Qty
	OSCDFN + Pitch P + Body Length X Body Width X Height - Pin Qty
	OSCSC + Pitch P + Body Length X Body Width X Height - Pin Qty
	OSCSF + Pitch P + Body Length X Body Width X Height - Pin Qty
	OSCJ + Pitch P + Body Length X Body Width X Height - Pin Qty
	OSCL + Pitch P + Body Length X Body Width X Height - Pin Qty
	OSCCC + Body Length X Body Width X Height
	PLCC + Pitch P + Lead Span L1 X Lead Span L2 Nominal X Height - Pin Qty
	PLCCS + Pitch P + Lead Span L1 X Lead Span L2 Nominal X Height - Pin Qty
=	QFP + Pitch P + Lead Span L1 X Lead Span L2 Nominal X Height - Pin Qty
	CQFP + Pitch P + Lead Span L1 X Lead Span L2 Nominal X Height - Pin Qty
-	QFN + Pitch P + Body Length X Body Width X Height - Pin Qty + Thermal Pad
Quad Leadless Ceramic Chip Carriers	LCC + Pitch P + Body Length X Body Width X Height - Pin Qty

Quad Leadless Ceramic Chip Carriers (Pin 1 on Side)	LCCS + Pitch P + Body Length X Body Width X Height - Pin Qty RESC + Body Length + Body Width X Height
Resistors, Chip. Array. Concave	
Resistors, Chip, Array, Flat	RESCAF + Pitch P + Body Length X Body Width X Height - Pin Qty
Resistors, Dual Flat No-lead	
Resistors, MELF	
Resistors, Molded	
Resistors, Side Concave	
	SODFL + Lead Span Nominal + Body Width X Height
	SOJ + Pitch P + Lead Span Nominal X Height - Pin Qty
	SOL + 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 Length X Body Width X Height - Pin Qty + Thermal Pad
Thermistors, Chip	
Pull-back Small Outline No-lead	PSON + Pitch P + Body Length X Body Width X Height - Pin Qty + Thermal Pad
Small Outline Transistors, Flat Lead	SOTFL + Pitch P + Lead Span Nominal X Height - Pin Qty
	SOD + Lead Span Nominal + Body Width X Height
SOT143 & SOT343 (JEDEC Standard Package)	SOT + Pitch P + Lead Span Nominal X Height - Pin Qty
SOT143 & SOT343 Reverse (JEDEC Standard Package)	SOT + Pitch P + Lead Span Nominal X Height - Pin Qty + R
SOT23 & SOT223 Packages (Example: SOT230P700X180-4)	SOT + Pitch P + Lead Span Nominal X Height - Pin Qty
TO (Generic DPAK - Example: TO228P970X238-3)	
	TRXDFN + Body Length X Body Width X Height – Pin Qty
Varistors, Chip	VARC + Body Length + Body Width X Height

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 Footprints

The _ (underscore) is the separator between pin qty. in Hidden & Deleted pin components and to append modifiers at the end 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".

Suffix Naming Convention for Footprints

Co mmon SMD 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 (Density Level A)
- N...... Nominal Material Condition (Density Level B)
- L..... Least Material Condition (Density Level C)

Components with Hidden, Deleted or Reversed pins

Reverse Pin Order (or Mirrored Part)

• -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.

IPC-7352 Naming Convention for Standard Through-hole Land Patterns

Component, Category Footprint 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 1.50 mm 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 + 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 MountingCAPPA + 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 + 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 Example: DIOADV300W52L600D150 Diodes, Non Polarized Axial; Lead Spacing 8.00; Lead Width 0.52; Body Length 6.00; Body Diameter 1.50 ... DIP + Lead Span + W Lead Width + P Pin Pitch + L Body Length + H Component Height + Q Pin Qty Dual-In-Line Packages 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 Example: CDIP762W52P254L1905H508Q14 Ceramic 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 Packages with CavityDIPC + Lead Span + W Lead Width + P Pin Pitch + L Body Length + H Component Height + Q Pin Qty Example: DIPC762W52P254L1905H508Q14 Dual-In-Line Package with Cavity: Lead Span 7.62; Lead Width 0.52; Pin Pitch 2.54; Body Length 19.05; Body Height 5.08; Pin Qty 14 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 Example: TO170P2207X1028X470-5 Transistor Outline, Flange Mount: 1.70 Pin Pitch: 22.07 Body Length; 10.28 Body Width; 4.70 Height; 5 pins Example: TO127P817X1028X2084-5 Transistor Outline, Flange Mount: 1.27 Pin Pitch; 8.17 Body Length; 10.28 Body Width; 20.84 Height; 5 pins Example: TO508R895X660-4 Transistor Outline, Cylindrical: 5.08 Pin Radius; 8.95 Body Diameter; 6.60 Height; 5 pins

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HDRV20W64P254_2X10_2540X254X838 – 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 + Proportional Pad Stacks
Header, right angle, 2.54 mm pitch; 0.635 mm lead width, 20 pins, 2 rows, 10 pins per row, 25.40 mm L X 2.54 mm W X 5.08 mm H body
HDRRA20W64P254 2X10 2540X254X508 - 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 + Proportional Pad Stacks
Header, vertical, 2.54 mm pitch; 0.635 mm lead width, 50 pins, 3 rows, 25 pins per row, 63.50 mm L X 2.54 mm W X 8.38 mm H body HDRV50W64P254_3X25_6350X254X838 – 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 + Proportional Pad Stacks
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
                 Jumpers, Wire..
Example: JUMP500W52
Jumper; Lead Spacing 5.00; Lead Width 0.52
Mounting hole, plated; 8.70 mm land, 3.85 mm dia. hole, with 6 satellite vias
Example: MTGP870H385V6
Mounting hole, plated; 7.35 mm land, 3.85 mm dia. hole
Example: MTGP735H385
Mounting hole, non-plated, land = 50% of hole size but not the exceed 1.00 mm; 2.90 mm dia. hole, 3.89 mm anti-pad
Example: MTGNP100H290Z389
Mounting hole, non-plated with annular ring 5.00 mm land; 2.90 mm dia. hole, 3.89 mm anti-pad
Example: MTGNPA500H290Z389
Example for 8 pin Oscillator: OSC762W46P762L1320H600Q8
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: OSC762W53P1524L2080H508Q14
Oscillator: Lead Span 7.62; Lead Diameter 0.53; Pin Pitch 762; Body Length 20.80; Body Height 508; Pin Qty 14
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
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: SIP150W52P254L1905H508Q8
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; 0.635 mm lead width, round, 2.54 mm Diameter X 5.84 mm H body height.
TPCW64D254H584 – Example: round test point with round or square lead:
Test Points, TP + C + W + Lead Width + D + Body Diameter + H + Height
Test Point; 0.635 mm lead width, square, 2.54 mm W X 5.84 mm H body.
TPRW64L254H584 – Example: square test point with round or square lead:
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Header, vertical, 2.54 mm pitch; 0.635 mm lead width, 20 pins, 2 rows, 10 pins per row, 25.40 mm L X 2.54 mm W X 8.38 mm H body

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

Note: All component body values are in millimeters and go two places to the right of the decimal point and no leading zeros.

*PTH - Plated Through Hole