

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	OSCS + Pitch P + Body Length X Body Width X Height - Pin Qty
Oscillators, J-Lead	OSCSJ + 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: **CAPPA800W52L600D150B**

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: **CAPPR200W52D300H550B**

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 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**

PCB Matrix Naming Convention for Non-standard PTH Land Patterns

<u>Library Name</u>	<u>Land Pattern Name</u>
Amplifiers.....	AMP _Mfr.'s Part Number
Batteries	BAT _Mfr.'s Part Number
Bridge Rectifiers	DIOB _Mfr.'s Part Number
Capacitors, Non Polarized Axial	CAPA + Pin Spacing - Body Length X Body Diameter
Capacitors, Non Polarized Radial, Round	CAPR + Pin Spacing - Body Diameter X Component Height
Capacitors, Non Polarized Radial, Oval	CAPR + Pin Spacing - Body Width X Body Length X Component Height
Capacitors, Polarized Axial.....	CAPPA + Pin Spacing - Body Length X Body Diameter
Capacitor, Polarized Radial	CAPPR + Pin Spacing - Body Diameter X Component Height
Converters.....	CONV _Mfr.'s Part Number
Crystals	XTAL _Mfr.'s Part Number
Diodes (JEDEC Standard Package).....	DO - JEDEC Part Number
Diodes, Miscellaneous.....	DIO _Mfr.'s Part Number
Dual-In-Line Packages (JEDEC Standard Package).....	DIP + Pin Qty + Pin Span in MILS
Dual-In-Line Sockets	DIPS + Pin Qty + Pin Span in MILS
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
Headers, .100" Pin Centers	HDR + Number of Rows X Number of pins per Row
Heat Sinks	HSINK _Mfr.'s Part Number
Inductors.....	IND _Mfr.'s Part Number
Jumpers, Wire	JUMP + Distance between Pads
LED's.....	LED _Mfr.'s Part Number
Liquid Crystal Display	LCD _Mfr.'s Part Number
Microphones	MIC _Mfr.'s Part Number
Mounting Holes Nonplated	MTG + Hole Size
Mounting Holes Plated	MTG + Hole Size_Pad Size
Mounting Holes Plated with 8 Vias	MTG + Hole Size_Pad Size - VIA
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
Pin Grid Array's	PGA + Number of Pin Rows X Number of Pin Columns - Pin Qty
Regulators	REG _Mfr.'s Part Number
Relays	RELAY _Mfr.'s Part Number
Resistors, Axial Leads	RES + Pad Spacing - Body Length X Body Diameter
Resistor Networks	SIP + Pin Qty
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
Test Points, Round	TP + Pad Size + P + Hole Size + D + Height + H
Test Points, Square	TPS + Pad Size + P + Hole Size + D + Height + H
Test Points, Top & Bottom Pad Different Size	TP + Top Pad X Bottom Pad + P + Hole Size + D + Height + H
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 Leadless 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 & QFN RV, QFN RH – **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**