

IPC-7351 Land Pattern Quick Reference

IPC-7351 SMD LAND PATTERN DIMENSIONS

Density Level B (Median) Values for Common SMD Packages

CHIP COMPONENTS (Resistors, Capacitors, Inductors)

Package | Pad W(mm) | Pad L(mm) | Gap(mm) | Toe(mm) | Heel(mm)

-----		-----		-----		-----		-----		
0201		0.30		0.30		0.20		0.00		-0.05
0402		0.55		0.50		0.40		0.05		-0.05
0603		0.90		0.95		0.60		0.15		0.00
0805		1.30		1.30		0.70		0.25		0.05
1206		1.80		1.70		1.20		0.25		0.05
1210		1.80		2.30		1.20		0.25		0.05
2010		2.70		2.70		1.80		0.40		0.05
2512		3.30		3.30		2.20		0.40		0.05

SOT (Small Outline Transistor)

Package | Pad W(mm) | Pad L(mm) | Pitch(mm) | Gap(mm)

-----		-----		-----		-----		-----
SOT-23		0.95		0.95		0.95		1.90
SOT-223		1.20		2.00		2.30		3.00
SOT-323		0.50		0.60		0.65		1.30
SOT-363		0.35		0.55		0.65		1.30

SOIC (Small Outline IC)

Package | Pad W(mm) | Pad L(mm) | Pitch(mm) | Body Width

-----		-----		-----		-----		-----
SOIC-8		0.60		1.55		1.27		5.20mm
SOIC-14		0.60		1.55		1.27		6.00mm
SOIC-16		0.60		1.55		1.27		6.00mm
SOIC-20W		0.50		1.50		1.27		9.00mm
TSSOP-8		0.35		1.30		0.65		4.40mm
TSSOP-14		0.30		1.25		0.65		5.00mm
TSSOP-20		0.30		1.25		0.65		6.50mm

QFP (Quad Flat Pack)

Package | Pad W(mm) | Pad L(mm) | Pitch(mm) | Body Size

-----		-----		-----		-----		-----
LQFP-32		0.35		1.50		0.80		7x7mm
LQFP-48		0.30		1.50		0.50		7x7mm

LQFP-64	0.30	1.50	0.50	10x10mm
LQFP-100	0.25	1.50	0.50	14x14mm
LQFP-144	0.25	1.50	0.50	20x20mm

QFN (Quad Flat No-Lead)

Package | Pad W(mm) | Pad L(mm) | Pitch(mm) | EPad Size | Thermal Vias

-----	-----	-----	-----	-----	-----
QFN-16	0.28	0.55	0.50	2.0x2.0mm	4-9 vias
QFN-24	0.28	0.55	0.50	2.7x2.7mm	9 vias
QFN-32	0.25	0.55	0.50	3.5x3.5mm	16 vias
QFN-48	0.25	0.55	0.50	5.5x5.5mm	25 vias

BGA (Ball Grid Array)

Package | Ball Dia(mm) | Pad Dia(mm) | Pitch(mm) | Array

-----	-----	-----	-----	-----
BGA-64	0.50	0.40	0.80	8x8
BGA-100	0.45	0.38	0.80	10x10
BGA-144	0.40	0.33	0.65	12x12
BGA-256	0.35	0.28	0.50	16x16

SOD (Small Outline Diode)

Package | Pad W(mm) | Pad L(mm) | Gap(mm)

-----	-----	-----	-----
SOD-123	1.00	1.20	1.60
SOD-323	0.60	0.70	1.00
SOD-523	0.40	0.60	0.60
SOD-882	0.35	0.45	0.35

NOTES

- All dimensions in millimeters (mm)
- Density Level A (Maximum): Reduce pad dimensions by 8-12 percent
- Density Level C (Minimum): Increase pad dimensions by 10-15 percent
- For lead-free soldering, consider 0.05-0.10mm larger pads
- Always verify with your Contract Manufacturer before production
- For more details, refer to IPC-7351B standard document