

Diodes

List of Diode Package Thermal Resistance

This application note provides reference values for thermal resistance in typical diode packages. If the data sheet lists thermal resistance, use that value. RthJA should be used for thermal estimation during the initial study with the understanding that the values will vary depending on the different boards being measured (board size, copper foil area, copper foil thickness, number of board layers, etc.).

ROHM Package	Package Code	JEITA Package Code	RthJA [°C/W]	RthJC [°C/W]	PCB for which RthJA was measured
DFN1006-2W	SOD-882	-	144	Ψ_{JT} 94	Outline dimensions: 25mm x 25mm x 0.8mm Material: FR4 Trace thickness: Top 35 μ m, Bottom 35 μ m Copper foil area: Top 25mm x 25mm, Bottom 25mm x 25mm
EMD2	SOD-523	SC-79	254	Ψ_{JT} 169	Outline dimensions: 25mm x 25mm x 0.8mm Material: FR4 Trace thickness: Top 35 μ m, Bottom 35 μ m Copper foil area: Top 25mm x 25mm, Bottom 25mm x 25mm
EMD3	SOT-416	SC-75A	426	Ψ_{JT} 258	Outline dimensions: 25mm x 25mm x 0.8mm Material: FR4 Trace thickness: Top 35 μ m, Bottom 35 μ m Copper foil area: Top 25mm x 25mm, Bottom 25mm x 25mm
EMD3F	SOT-416FL	SC-89	240	Ψ_{JT} 136	Outline dimensions: 25mm x 25mm x 0.8mm Material: FR4 Trace thickness: Top 35 μ m, Bottom 35 μ m Copper foil area: Top 25mm x 25mm, Bottom 25mm x 25mm
EMD5	SOT-553	SC-107BB	500	Ψ_{JT} 170	Outline dimensions: 25mm x 25mm x 0.8mm Material: FR4 Trace thickness: Top 35 μ m, Bottom 35 μ m Copper foil area: Top 25mm x 25mm, Bottom 25mm x 25mm
EMD6	SOT-563	SC-107C	500	Ψ_{JT} 170	Outline dimensions: 25mm x 25mm x 0.8mm Material: FR4 Trace thickness: Top 35 μ m, Bottom 35 μ m Copper foil area: Top 25mm x 25mm, Bottom 25mm x 25mm
LPDL	TO-263L	-	55	2.4	Outline dimensions: 50mm x 50mm x 1.6mm Material: FR4 Trace thickness: Top 35 μ m Copper foil area: Top 50mm x 50mm
PMDE	-	-	90	Ψ_{JT} 28	Outline dimensions: 25mm x 25mm x 0.8mm Material: FR4 Trace thickness: Top 35 μ m, Bottom 35 μ m Copper foil area: Top 25mm x 25mm, Bottom 25mm x 25mm
PMDS	DO-214AC (SMA)	-	85	Ψ_{JT} 23	Outline dimensions: 25mm x 25mm x 0.8mm Material: FR4 Trace thickness: Top 35 μ m, Bottom 35 μ m Copper foil area: Top 25mm x 25mm, Bottom 25mm x 25mm
PMDTM	SOD-128	-	87	Ψ_{JT} 22	Outline dimensions: 25mm x 25mm x 0.8mm Material: FR4 Trace thickness: Top 35 μ m, Bottom 35 μ m Copper foil area: Top 25mm x 25mm, Bottom 25mm x 25mm
PMDTP	SOD-128	-	86	Ψ_{JT} 20	Outline dimensions: 25mm x 25mm x 0.8mm Material: FR4 Trace thickness: Top 35 μ m, Bottom 35 μ m Copper foil area: Top 25mm x 25mm, Bottom 25mm x 25mm

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PMDU	SOD-123FL	SC-109B	98	Ψ_{JT} 27	Outline dimensions: 25mm × 25mm × 0.8mm Material: FR4 Trace thickness: Top 35μm, Bottom 35μm Copper foil area: Top 25mm × 25mm, Bottom 25mm × 25mm
SMBP	DO-214AA(SMB)	-	80	Ψ_{JT} 14	Outline dimensions: 25mm × 25mm × 0.8mm Material: FR4 Trace thickness: Top 35μm, Bottom 35μm Copper foil area: Top 25mm × 25mm, Bottom 25mm × 25mm
SMD3	SOT-346	SC-59	338	Ψ_{JT} 214	Outline dimensions: 25mm × 25mm × 0.8mm Material: FR4 Trace thickness: Top 35μm, Bottom 35μm Copper foil area: Top 25mm × 25mm, Bottom 25mm × 25mm
SMD5	SOT-25	SC-74A	338	Ψ_{JT} 214	Outline dimensions: 25mm × 25mm × 0.8mm Material: FR4 Trace thickness: Top 35μm, Bottom 35μm Copper foil area: Top 25mm × 25mm, Bottom 25mm × 25mm
SMD6	SOT-457	SC-74	338	Ψ_{JT} 214	Outline dimensions: 25mm × 25mm × 0.8mm Material: FR4 Trace thickness: Top 35μm, Bottom 35μm Copper foil area: Top 25mm × 25mm, Bottom 25mm × 25mm
SOT-23	SOT-23	-	310	Ψ_{JT} 209	Outline dimensions: 25mm × 25mm × 0.8mm Material: FR4 Trace thickness: Top 35μm, Bottom 35μm Copper foil area: Top 25mm × 25mm, Bottom 25mm × 25mm
SSD3	SOT-23	-	244	Ψ_{JT} 140	Outline dimensions: 25mm × 25mm × 0.8mm Material: FR4 Trace thickness: Top 35μm, Bottom 35μm Copper foil area: Top 25mm × 25mm, Bottom 25mm × 25mm
TO-220AC	TO-220AC	-	3	1.8	Measured without PCB because of through-hole package
TO-220ACFP	ITO-220AC	-	14	4	Measured without PCB because of through-hole package
TO-220FN (2PIN)	ITO-220AC	-	10	3	Measured without PCB because of through-hole package
TO-220FN (3PIN)	ITO-220AB	-	10	3	Measured without PCB because of through-hole package
TO-220NFM (2PIN)	ITO-220AC	-	13	4	Measured without PCB because of through-hole package
TO-247GE-2L	TO-247	-	35	0.8	Measured without PCB because of through-hole package
TO-252	TO-252 (DPAK)	SC-63	75	2.8	Outline dimensions: 50mm × 50mm × 1.6mm Material: FR4 Trace thickness: Top 35μm Copper foil area: Top 50mm × 50mm
TO-263S (D2PAK)	TO-263S (D2PAK)	SC-83	55	2.4	Outline dimensions: 50mm × 50mm × 1.6mm Material: FR4 Trace thickness: Top 35μm Copper foil area: Top 50mm × 50mm
TO-277GE	TO-277A	-	90	3	Outline dimensions: 50mm × 50mm × 1.6mm Material: FR4 Trace thickness: Top 35μm Copper foil area: Top 50mm × 50mm
TSMD5	SOT-25T	-	125	Ψ_{JT} 61	Outline dimensions: 25mm × 25mm × 0.8mm Material: FR4 Trace thickness: Top 35μm, Bottom 35μm Copper foil area: Top 25mm × 25mm, Bottom 25mm × 25mm
TSMD6	SOT-457T	SC-95	125	Ψ_{JT} 61	Outline dimensions: 25mm × 25mm × 0.8mm Material: FR4 Trace thickness: Top 35μm, Bottom 35μm Copper foil area: Top 25mm × 25mm, Bottom 25mm × 25mm
TSMD8	TSMD8	-	86	Ψ_{JT} 27	Outline dimensions: 25mm × 25mm × 0.8mm Material: FR4 Trace thickness: Top 35μm, Bottom 35μm Copper foil area: Top 25mm × 25mm, Bottom 25mm × 25mm

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TUMD2M	SOD-323HE	SC-108B	89	Ψ_{JT} 37	Outline dimensions: 25mm × 25mm × 0.8mm Material: FR4 Trace thickness: Top 35μm, Bottom 35μm Copper foil area: Top 25mm × 25mm, Bottom 25mm × 25mm
TUMD5	SOT-353T	SC-113CA	131	Ψ_{JT} 56	Outline dimensions: 25mm × 25mm × 0.8mm Material: FR4 Trace thickness: Top 35μm, Bottom 35μm Copper foil area: Top 25mm × 25mm, Bottom 25mm × 25mm
UMD2	SOD-323FL	SC-90A	247	Ψ_{JT} 159	Outline dimensions: 25mm × 25mm × 0.8mm Material: FR4 Trace thickness: Top 35μm, Bottom 35μm Copper foil area: Top 25mm × 25mm, Bottom 25mm × 25mm
UMD3	SOT-323	SC-70	351	Ψ_{JT} 196	Outline dimensions: 25mm × 25mm × 0.8mm Material: FR4 Trace thickness: Top 35μm, Bottom 35μm Copper foil area: Top 25mm × 25mm, Bottom 25mm × 25mm
UMD3F	SOT-323FL	-	249	Ψ_{JT} 162	Outline dimensions: 25mm × 25mm × 0.8mm Material: FR4 Trace thickness: Top 35μm, Bottom 35μm Copper foil area: Top 25mm × 25mm, Bottom 25mm × 25mm
UMD5	SOT-353	SC-88A	339	Ψ_{JT} 213	Outline dimensions: 25mm × 25mm × 0.8mm Material: FR4 Trace thickness: Top 35μm, Bottom 35μm Copper foil area: Top 25mm × 25mm, Bottom 25mm × 25mm
UMD6	SOT-363	SC-88	339	Ψ_{JT} 213	Outline dimensions: 25mm × 25mm × 0.8mm Material: FR4 Trace thickness: Top 35μm, Bottom 35μm Copper foil area: Top 25mm × 25mm, Bottom 25mm × 25mm
VMN2	SOD-923	-	226	Ψ_{JT} 128	Outline dimensions: 25mm × 25mm × 0.8mm Material: FR4 Trace thickness: Top 35μm, Bottom 35μm Copper foil area: Top 25mm × 25mm, Bottom 25mm × 25mm
VMN2M	SOD-923	-	162	Ψ_{JT} 76	Outline dimensions: 25mm × 25mm × 0.8mm Material: FR4 Trace thickness: Top 35μm, Bottom 35μm Copper foil area: Top 25mm × 25mm, Bottom 25mm × 25mm

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