



# Excilibur Embedded Processor Solutions Thermal Resistance

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Data Sheet

Table 1 in this data sheet provides  $\theta_{JA}$  (junction-to-ambient thermal resistance) and  $\theta_{JC}$  (junction-to-case thermal resistance) values for Altera<sup>®</sup> Excilibur<sup>™</sup> embedded processor solutions available in FineLine<sup>®</sup> Ball-Grid Array (FBGA).



For additional packaging information, refer to the *Altera Device Packaging Data Sheet*.

**Table 1. Thermal Resistance of Excilibur Embedded Processor Solutions**

Device	Pin Count	Package	$\theta_{JC}$ (° C/W)	$\theta_{JA}$ (° C/W) Still Air	$\theta_{JA}$ (° C/W) 100 ft./min.	$\theta_{JA}$ (° C/W) 200 ft./min.	$\theta_{JA}$ (° C/W) 400 ft./min.
EPXA1	484	FBGA	4.0	20.0	18.3	15.8	13.9
	672	Flip Chip FBGA (Cu lid)	0.52	11.3	9.3	7.9	6.7
	672	Flip Chip FBGA (AlSiC lid)	0.78	12.2	10.2	8.6	7.2
EPXA4	672	Flip Chip FBGA (Cu lid)	0.21	10.8	8.8	7.3	6.2
	672	Flip Chip FBGA (AlSiC lid)	0.31	11.6	9.6	7.9	6.6
	1,020	Flip Chip FBGA (Cu lid)	0.21	9.9	7.9	6.5	5.4
	1,020	Flip Chip FBGA (AlSiC lid)	0.32	10.4	8.5	6.9	5.7
EPXA10	1,020	Flip Chip FBGA (Cu lid)	0.11	9.6	7.6	6.2	5.1
	1,020	Flip Chip FBGA (AlSiC lid)	0.17	10.0	8.0	6.4	5.7



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