

Thermal Model of EPC2204A



EFFICIENT POWER CONVERSION

EPC2204A FEA thermal simulation

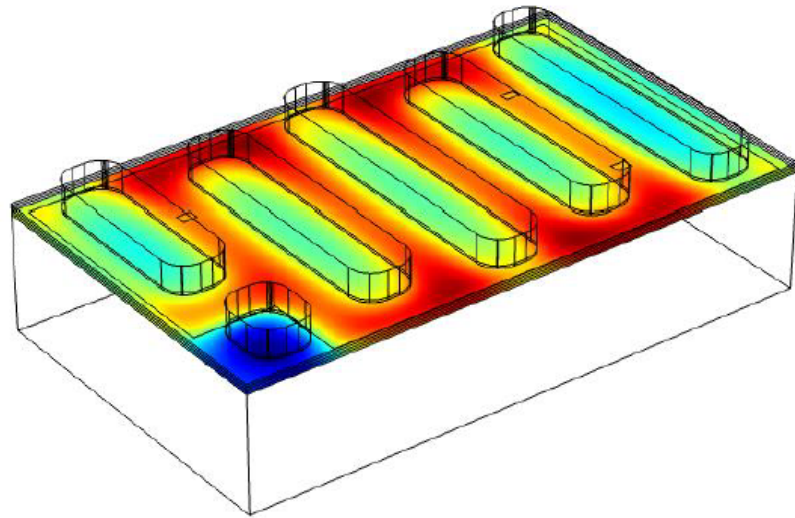


- The thermal model applies to EPC2204A.
- A power dissipation of 1 W in the device active area is assumed.
- Finite element analysis (FEA) thermal simulations
 - $R_{\Theta JB}$ and $R_{\Theta JC}$ are obtained by stationary simulations.
 - $Z_{\Theta JB}$ and $Z_{\Theta JC}$ are obtained by transient simulations.
- R-C thermal model is generated.

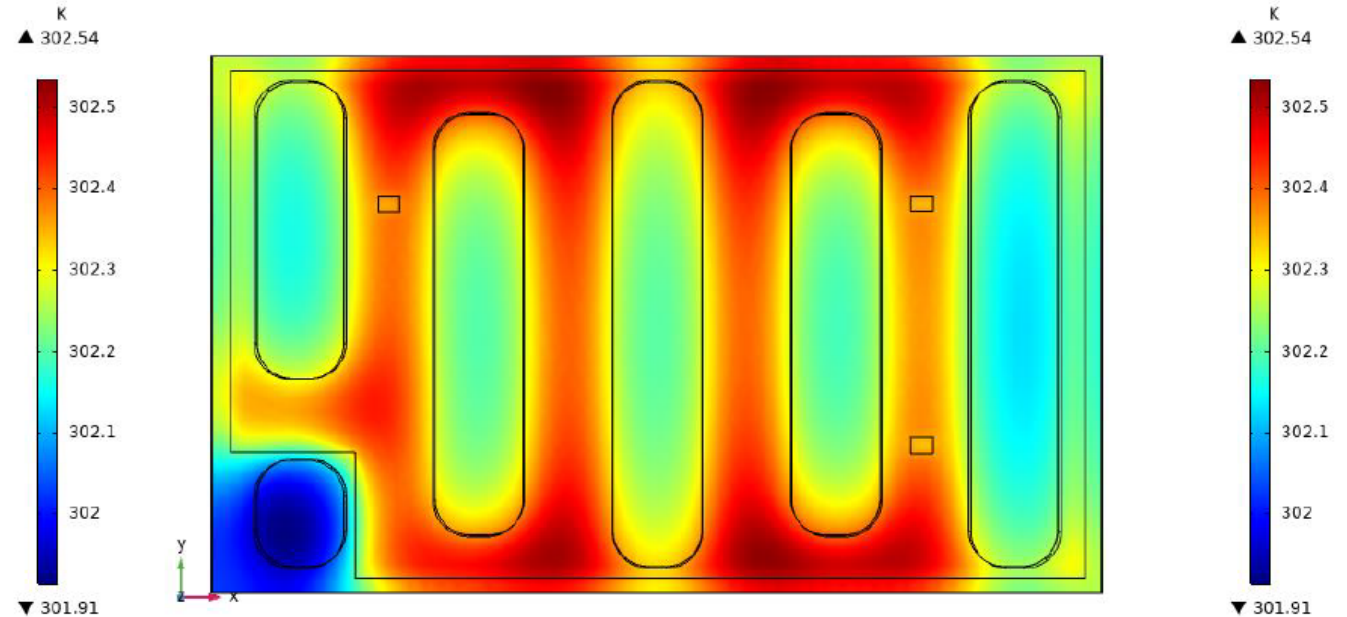
Steady-state $R_{\Theta JB}$

Typical $R_{\Theta JB} = 2.5 \text{ } ^\circ\text{C/W}$

Volume: Temperature (K)



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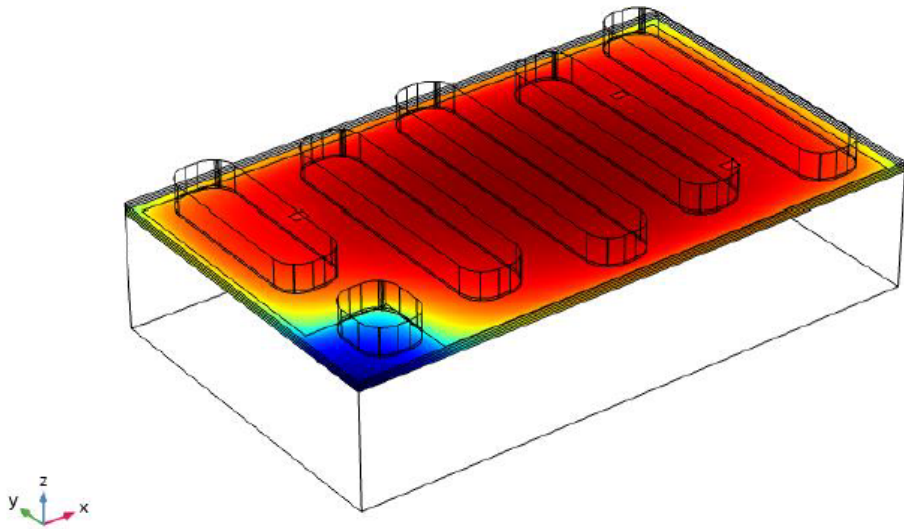


- Operating condition: Power = 1 W in the active area.
- Boundary condition: Temperature of top of solder bumps set to be 300 K.

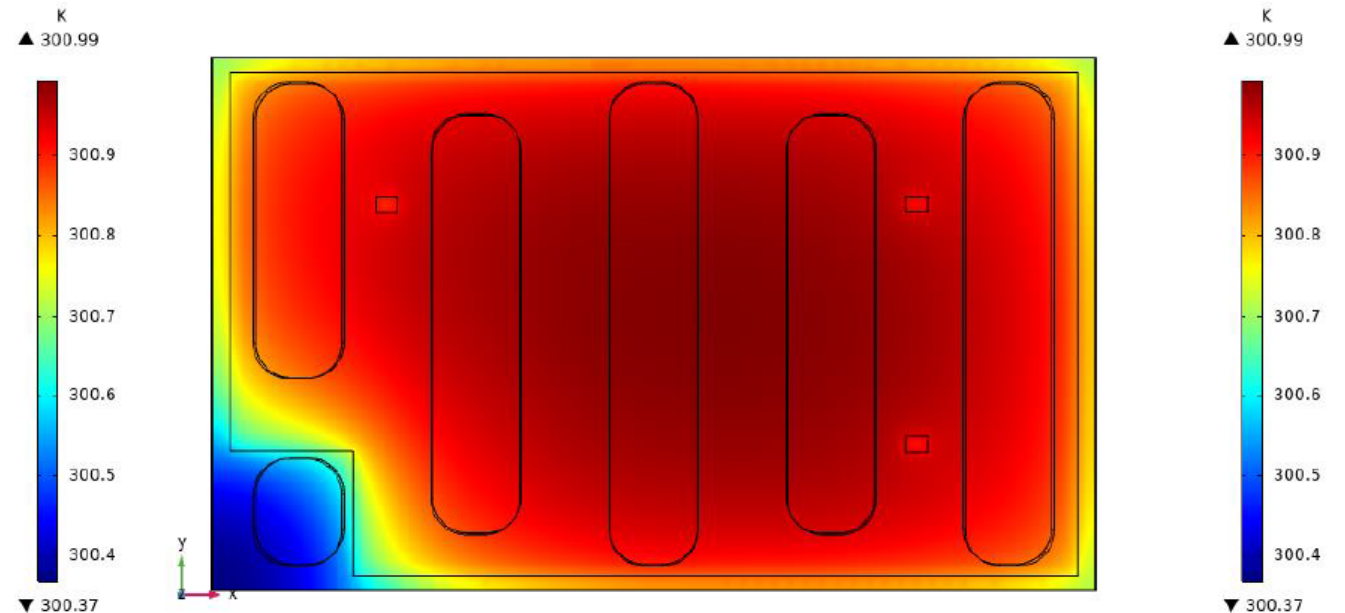
Steady-state $R_{\Theta JC}$

Typical $R_{\Theta JC} = 1 \text{ } ^\circ\text{C/W}$

Volume: Temperature (K)

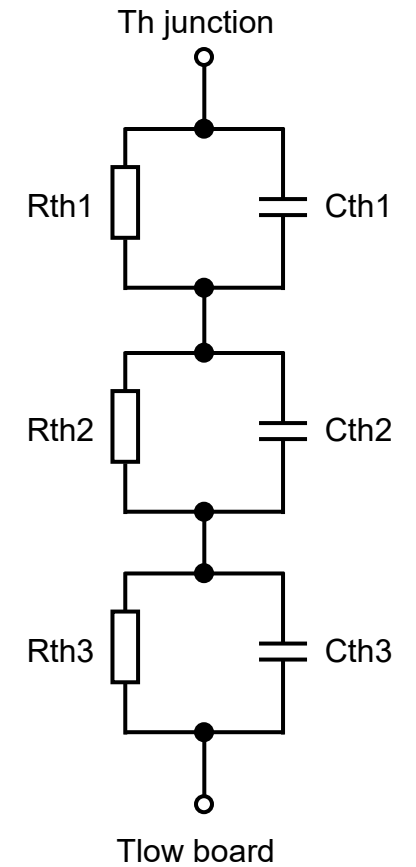
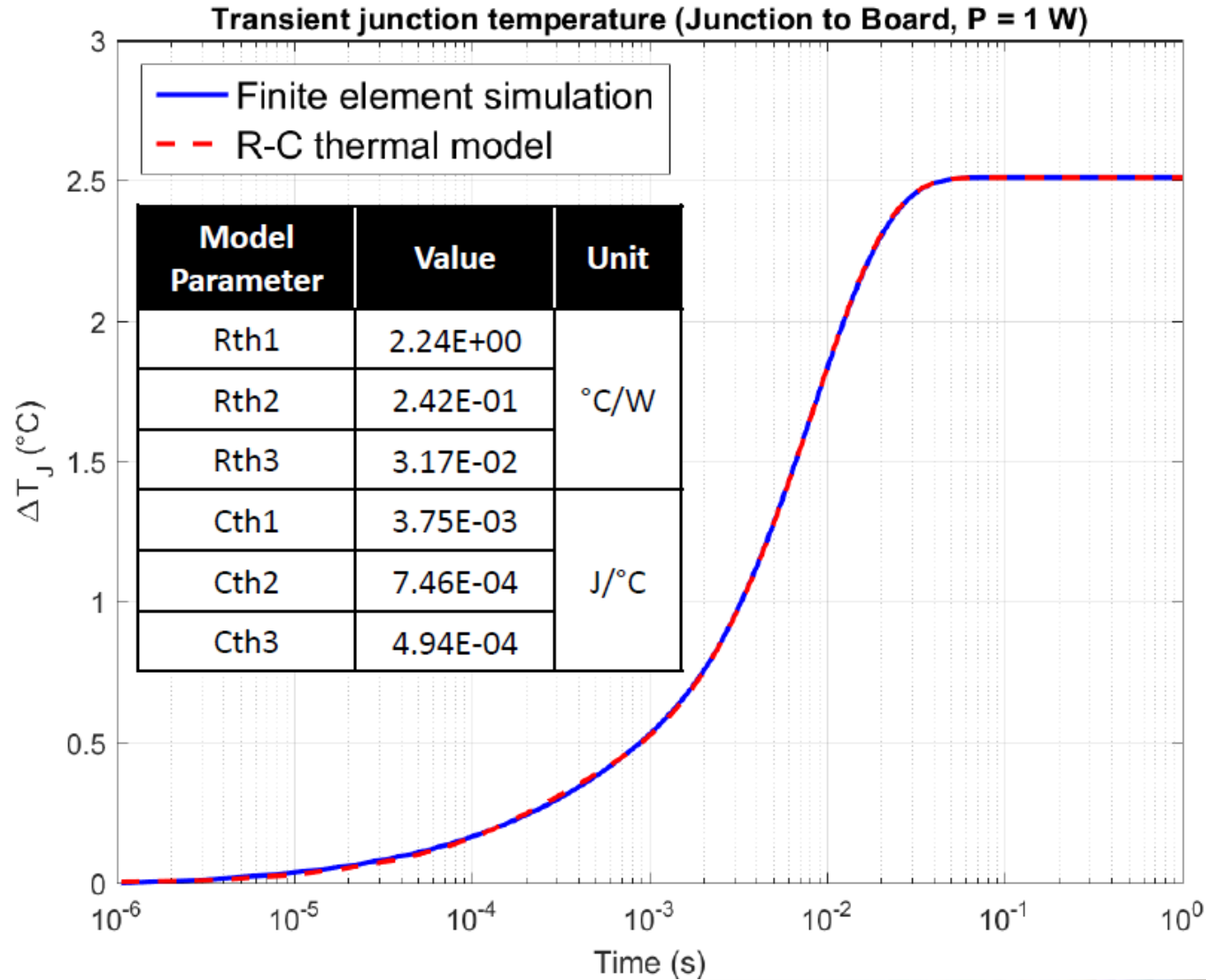


Volume: Temperature (K)

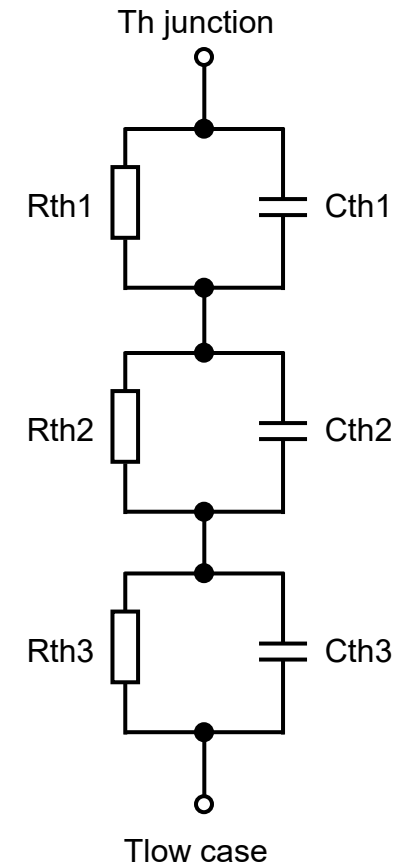
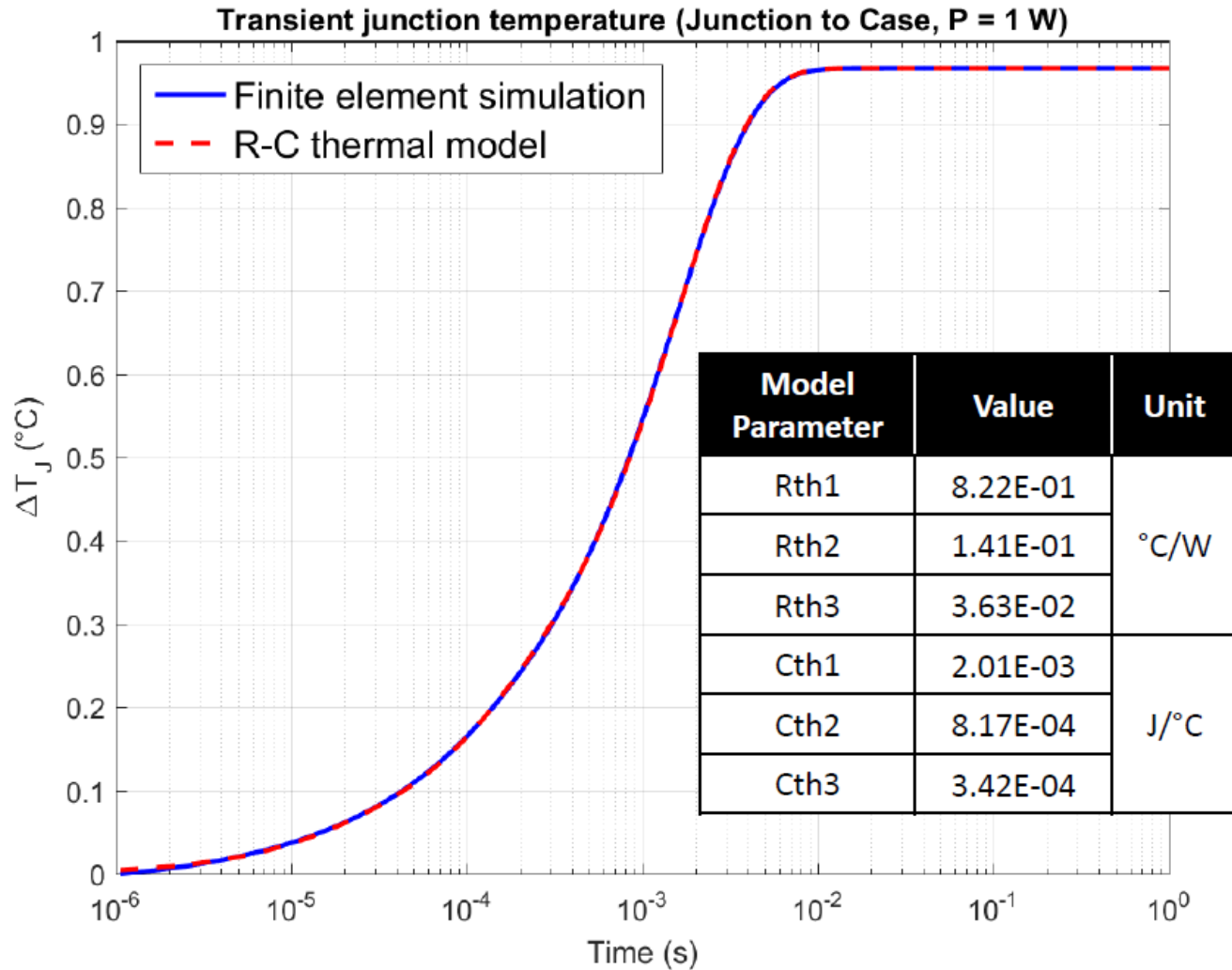


- Operating condition: Power = 1 W in the active area.
- Boundary condition: Temperature of the device backside set to be 300 K.

$Z_{\Theta JB}$ R-C thermal model



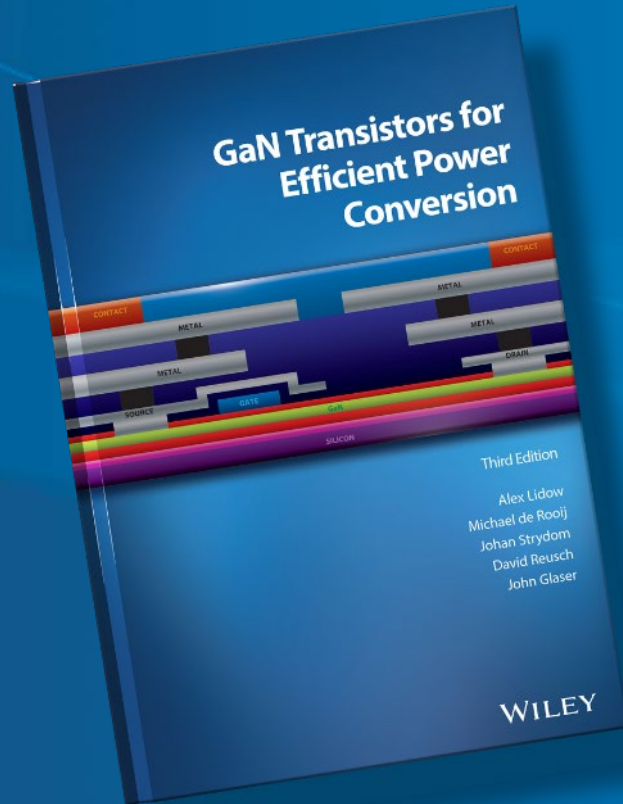
$Z_{\Theta JC}$ R-C thermal model



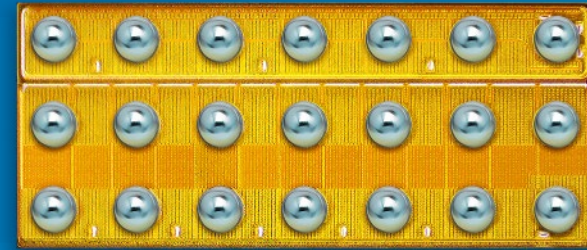


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