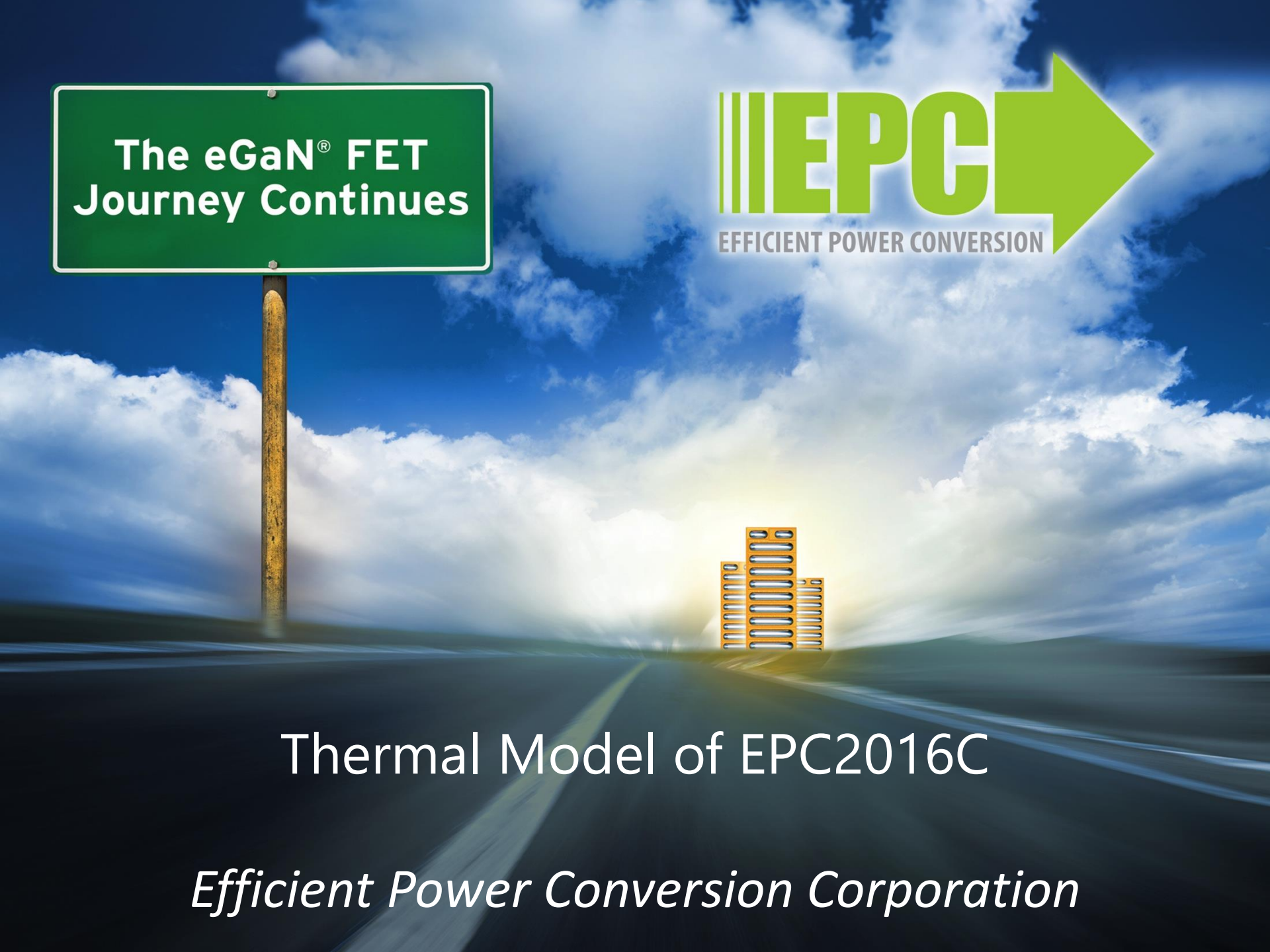


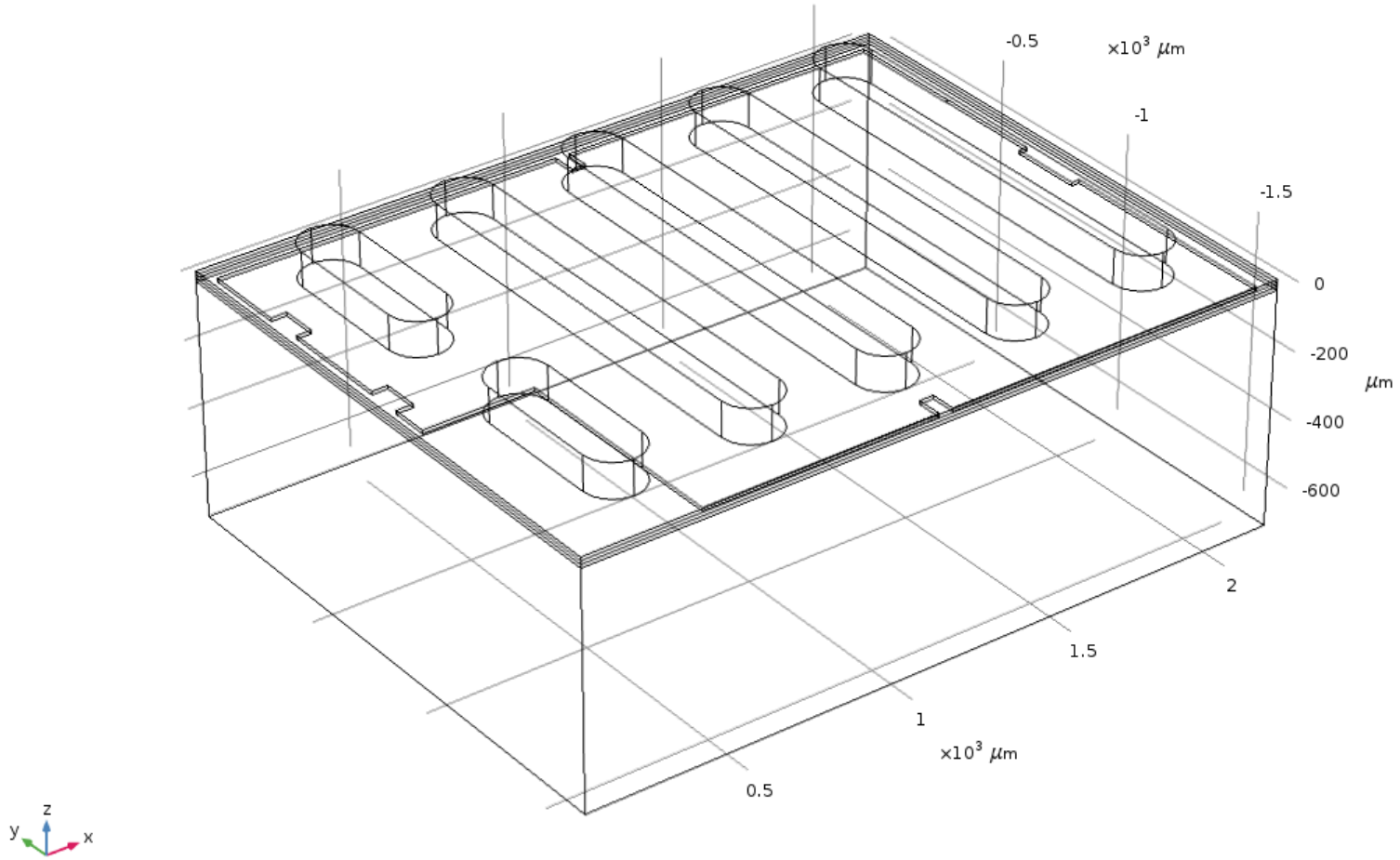
Thermal Model of EPC2016C

Efficient Power Conversion Corporation

EPC2016C FEA thermal simulation

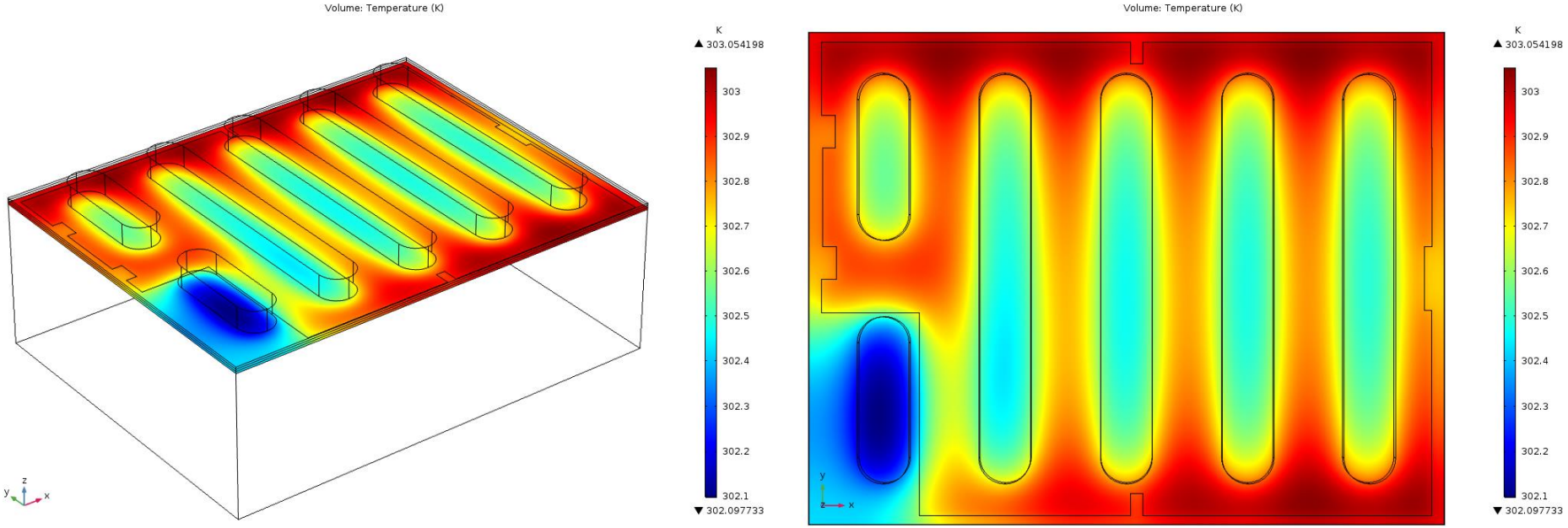
- The thermal model applies to EPC2016C.
- A power dissipation of 1 W in the device active area is assumed.
- Finite element analysis (FEA) thermal simulations
  - $R_{\Theta JB}$ and $R_{\Theta JC}$ are obtained by stationary simulations.
  - $Z_{\Theta JB}$ and $Z_{\Theta JC}$ are obtained by transient simulations.
- R-C thermal model is generated.

EPC2016C device structure



Steady-state $R_{\Theta JB}$

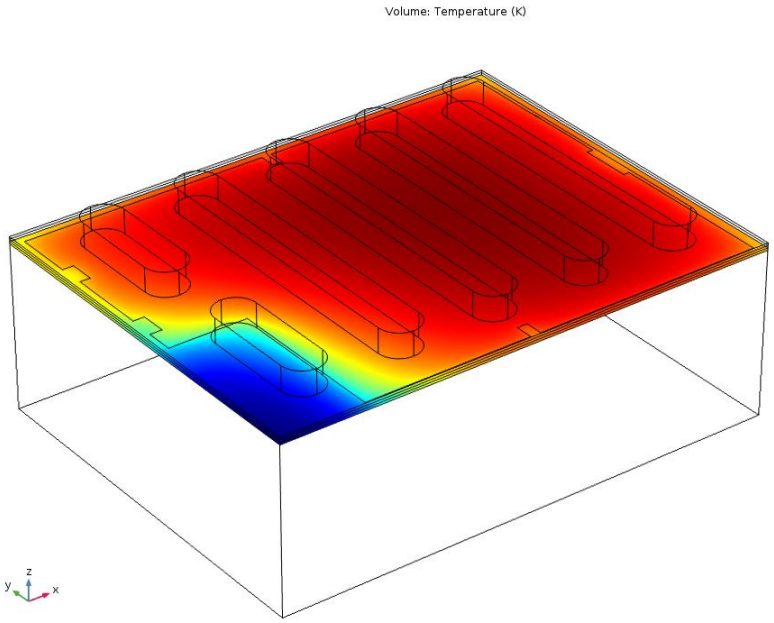
Typical $R_{\Theta JB}$ = 3 °C/W

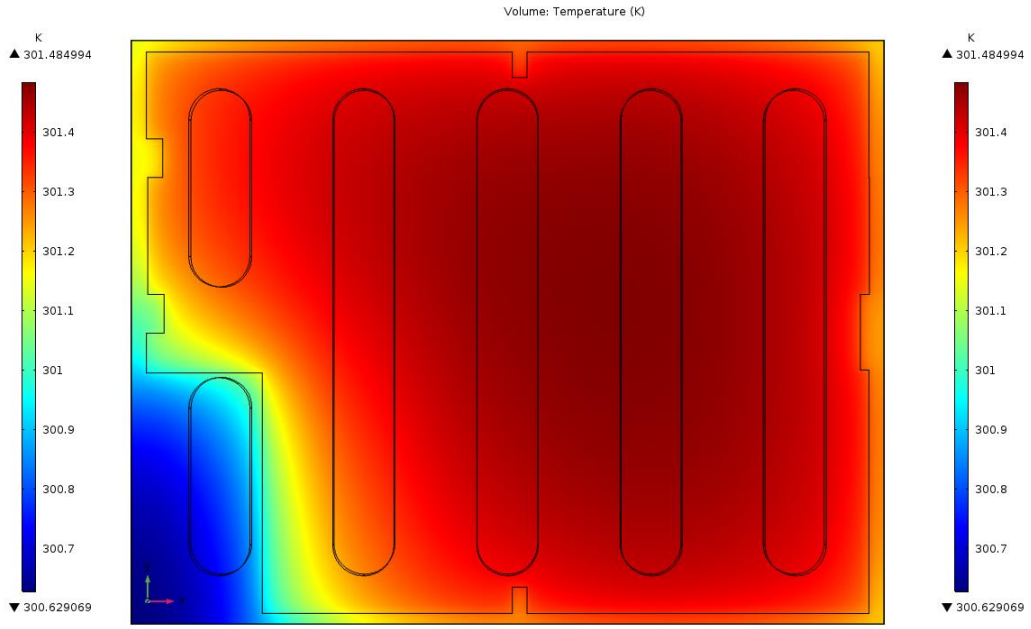


- Operating condition: Power = 1 W in the active area.
- Boundary condition: Temperature of top of solder bars set to be 300 K.

Steady-state $R_{\Theta JC}$

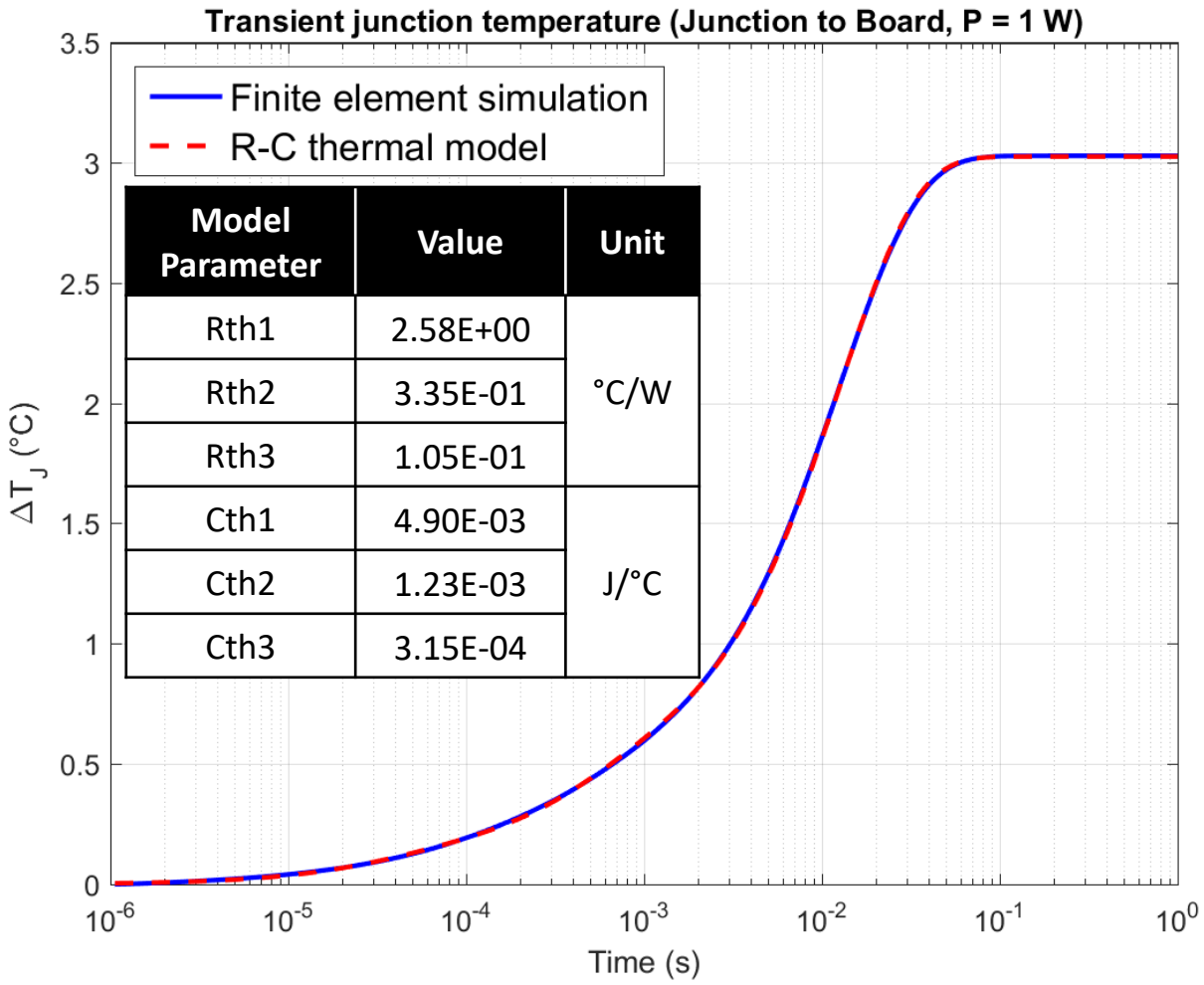
Typical $R_{\Theta JC}$ = 1.5 °C/W



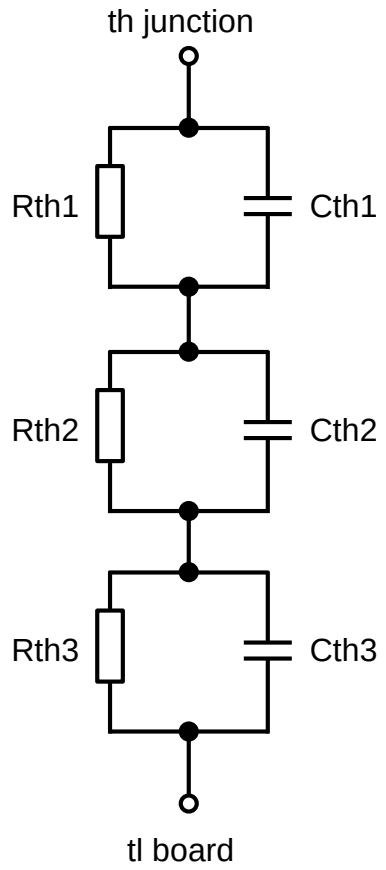


- Operating condition: Power = 1 W in the active area.
- Boundary condition: Temperature of bottom of the device backside set to be 300 K.

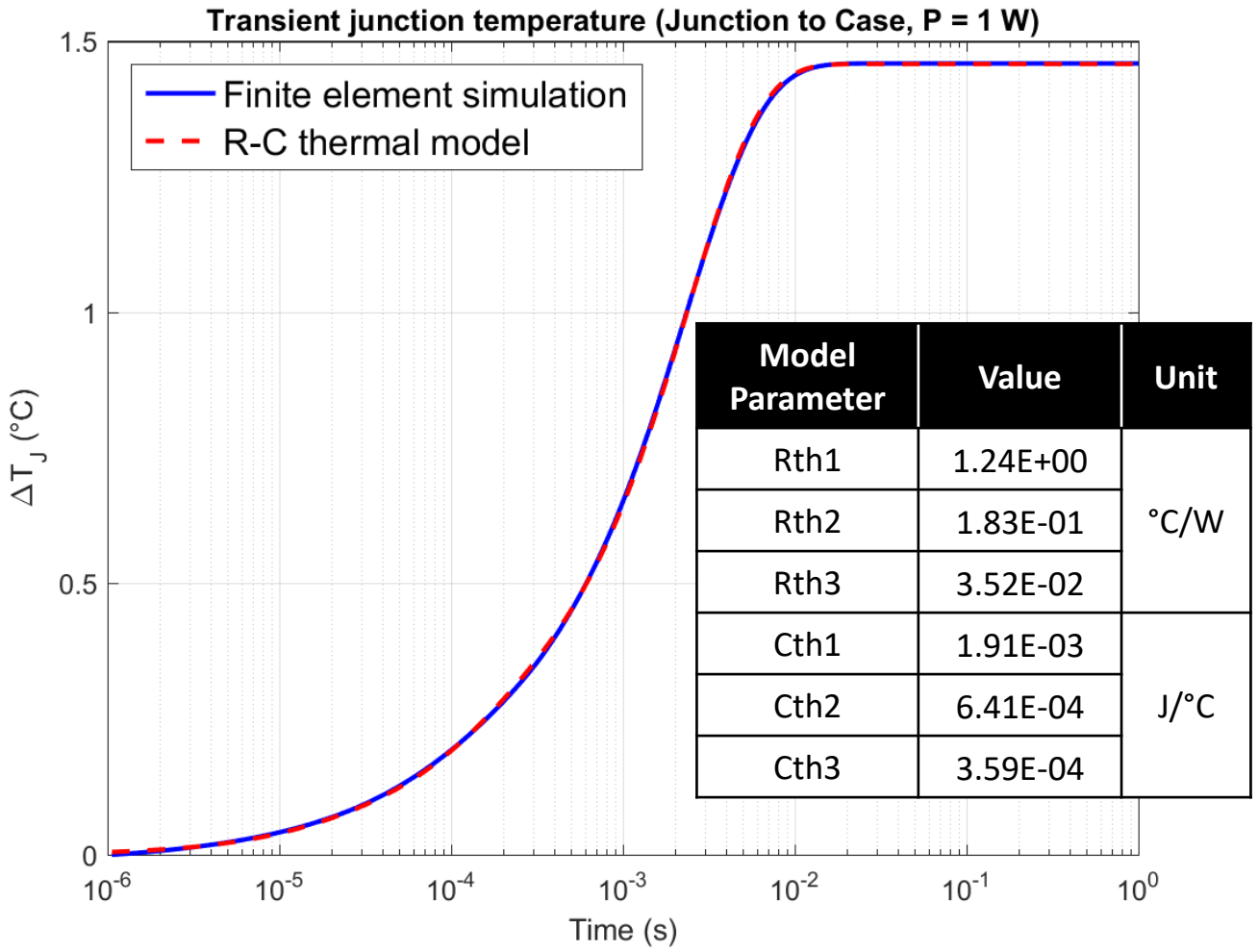
$Z_{\Theta JB}$ R-C thermal model



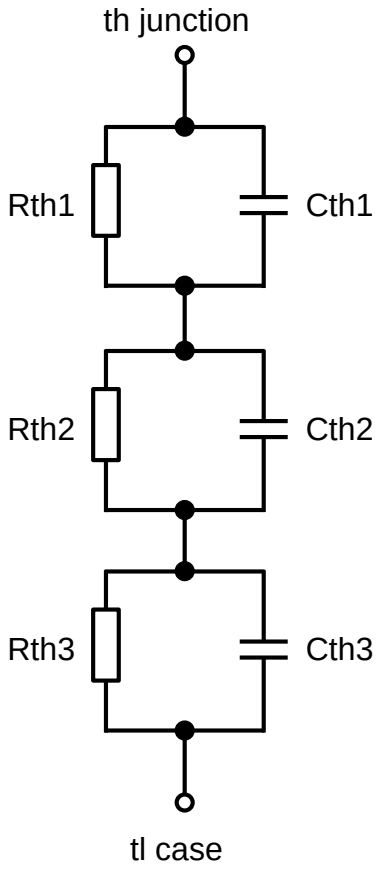
Model Parameter	Value	Unit
Rth1	2.58E+00	°C/W
Rth2	3.35E-01	
Rth3	1.05E-01	
Cth1	4.90E-03	J/°C
Cth2	1.23E-03	
Cth3	3.15E-04	



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



Model Parameter	Value	Unit
Rth1	1.24E+00	°C/W
Rth2	1.83E-01	
Rth3	3.52E-02	
Cth1	1.91E-03	J/°C
Cth2	6.41E-04	
Cth3	3.59E-04	



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