

## R-C Thermal Model Parameters

### DESCRIPTION

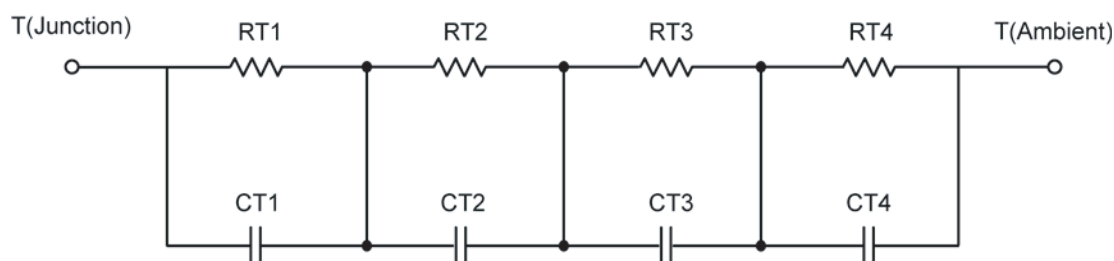
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse Transient Thermal Impedance curves for the MOSFET.

R-C values for the electrical circuit in the Foster/Tank and Cauer/Filter configurations are included.

*Note:*

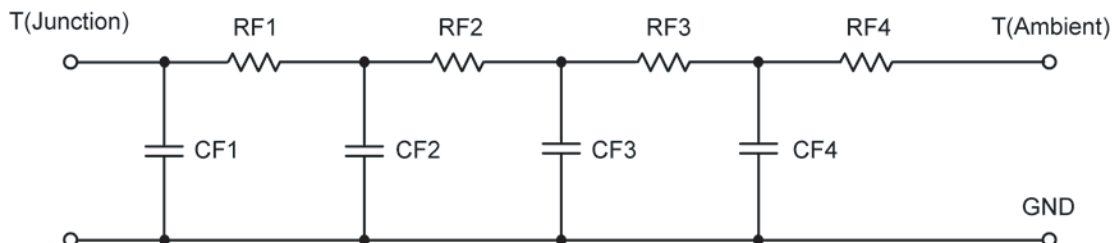
*For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).*

### R-C THERMAL MODEL FOR TANK CONFIGURATION



<b>R-C VALUES FOR TANK CONFIGURATION</b>			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	23.2577	N/A	14.2012
RT2	7.2785	N/A	4.0614
RT3	32.1851	N/A	13.7246
RT4	46.5708	N/A	7.9685
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	16.0609 m	N/A	7.7321 m
CT2	1.5763 m	N/A	868.0478 u
CT3	68.4318 m	N/A	51.6315 m
CT4	1.4579	N/A	223.4068 m

*This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.*

**R-C THERMAL MODEL FOR FILTER CONFIGURATION****R-C VALUES FOR FILTER CONFIGURATION**

Thermal Resistance ( $^{\circ}\text{C}/\text{W}$ )			
Junction to	Ambient	Case	Foot
RF1	7.1253	N/A	3.8109
RF2	25.5315	N/A	19.3349
RF3	31.9414	N/A	8.9855
RF4	44.5926	N/A	7.8455
Thermal Capacitance (Joules/ $^{\circ}\text{C}$ )			
Junction to	Ambient	Case	Foot
CF1	1.1214 m	N/A	777.7653 u
CF2	8.4755 m	N/A	4.9078 m
CF3	43.4389 m	N/A	48.1099 m
CF4	1.4268	N/A	45.2740 m

Note: NA indicates not applicable

Reference:

[1] "A Simple Method of Generating Thermal Models for a Power MOSFET" by Wharton McDaniel and Kandarp Pandya, IEEE / SEMITHERM 2002

