

## R-C Thermal Model Parameters

### DESCRIPTION

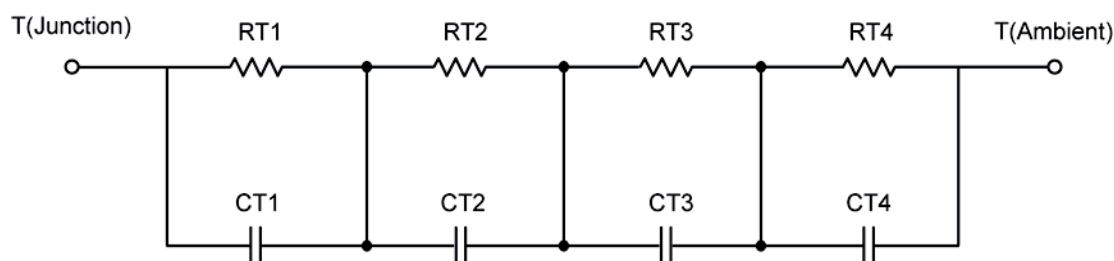
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

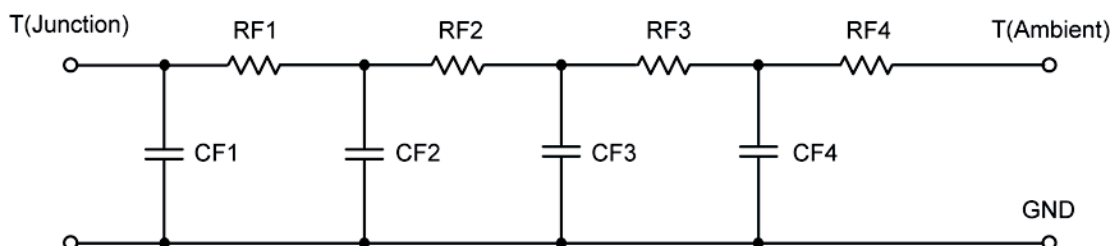
For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).

### 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	8.2256	N/A	1.2686
RT2	25.3685	N/A	26.8179
RT3	23.6711	N/A	9.2882
RT4	62.7348	N/A	7.6253
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	12.8734 m	N/A	2.7262 m
CT2	64.8508 m	N/A	28.4942 m
CT3	27.5267 m	N/A	249.8027 m
CT4	1.4374	N/A	13.8421 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	8.3990	N/A	2.4011
RF2	34.6353	N/A	13.4572
RF3	19.0115	N/A	18.1637
RF4	57.9541	N/A	10.9781
Thermal Capacitance (Joules/ $^{\circ}\text{C}$ )			
Junction to	Ambient	Case	Foot
CF1	5.4706 m	N/A	2.6364 m
CF2	8.7790 m	N/A	6.2356 m
CF3	98.0028 m	N/A	15.9082 m
CF4	1.4307	N/A	89.3111 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

