

## R-C Thermal Model Parameters

### DESCRIPTION

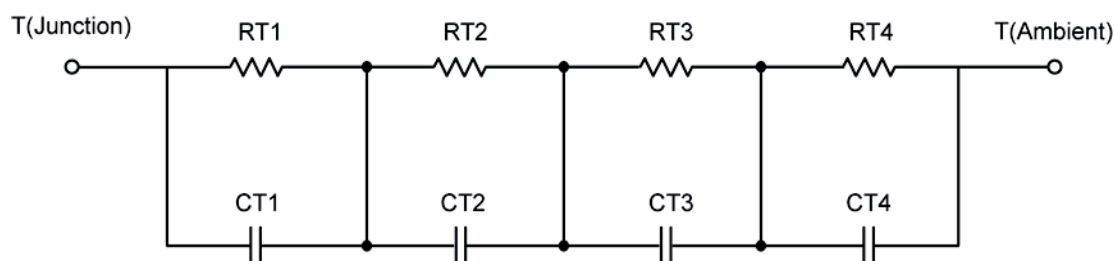
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

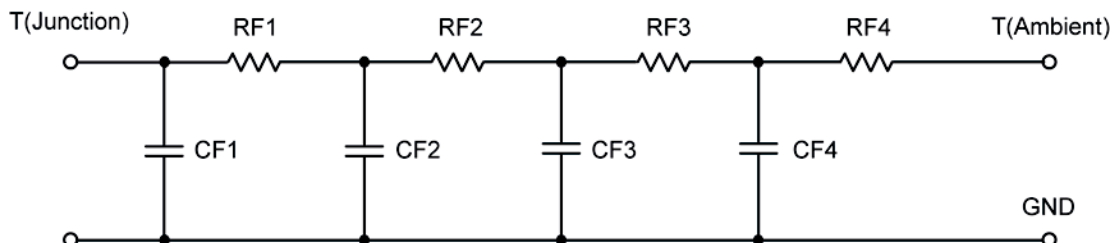
*For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).*

### 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	31.0361	N/A	21.1640
RT2	16.8933	N/A	6.2954
RT3	54.9529	N/A	32.9310
RT4	47.6532	N/A	29.6115
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	5.9498 m	N/A	12.4886 m
CT2	400.0475 u	N/A	121.7550 u
CT3	11.3709 m	N/A	25.8208 m
CT4	1.0877	N/A	1.5859 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	19.7727	N/A	12.0068
RF2	18.6919	N/A	42.4284
RF3	63.1758	N/A	19.8205
RF4	48.2182	N/A	15.7154
Thermal Capacitance (Joules/ $^{\circ}\text{C}$ )			
Junction to	Ambient	Case	Foot
CF1	395.0208 u	N/A	193.6596 u
CF2	2.3685 m	N/A	1.7025 m
CF3	3.3103 m	N/A	16.6349 m
CF4	954.6699 m	N/A	3.1352 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

