

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:

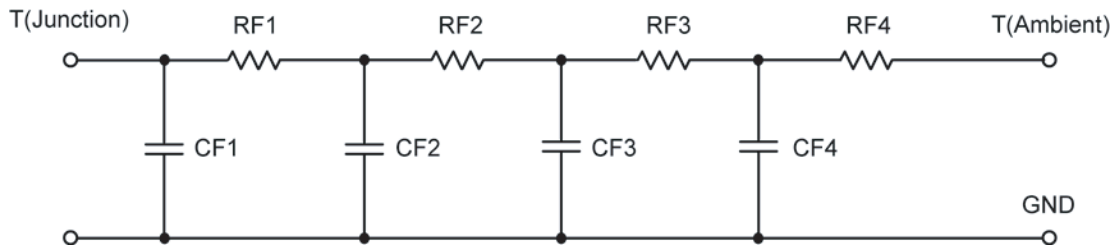
For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	8.1551	N/A	19.0682
RT2	29.8274	N/A	3.4197
RT3	14.4661	N/A	14.5204
RT4	57.5514	N/A	2.9917
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	1.1056 m	N/A	67.9737 m
CT2	18.9141 m	N/A	360.9499 u
CT3	146.2789 m	N/A	6.4281 m
CT4	1.3108	N/A	10.3350 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	9.2561	N/A	5.2763
RF2	19.2431	N/A	16.3258
RF3	24.8792	N/A	4.4271
RF4	56.6216	N/A	13.9708
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CF1	1.0868 m	N/A	419.8312 u
CF2	12.7918 m	N/A	4.4691 m
CF3	21.1836 m	N/A	21.2194 m
CF4	1.2680	N/A	68.9719 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

