

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:

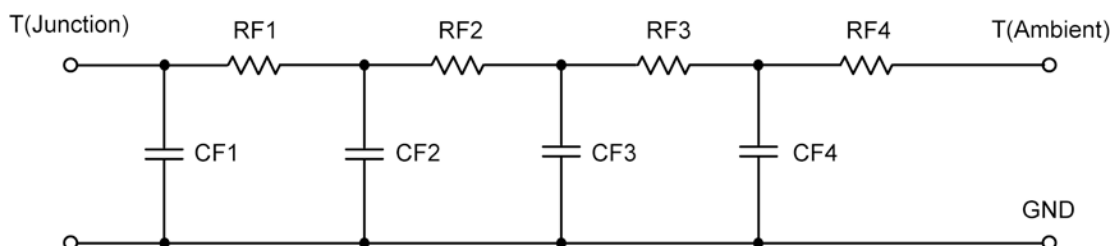
For a detailed explanation of implementing these values in P-Spice, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-Spice Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	11.7534	692.8935 m	N/A
RT2	5.5938	4.8360	N/A
RT3	8.6596	1.2052	N/A
RT4	48.9931	2.2659	N/A
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	59.7249 m	128.0461 m	N/A
CT2	1.7174 m	18.5169 m	N/A
CT3	949.6825 m	629.5880 u	N/A
CT4	1.5021	2.7227 m	N/A

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	6.7590	1.5904	N/A
RF2	17.1338	1.9114	N/A
RF3	21.3935	2.2528	N/A
RF4	29.7137	3.2453	N/A
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CF1	2.0414 m	393.2260 u	N/A
CF2	72.3781 m	1.8745 m	N/A
CF3	1.1263	7.1138 m	N/A
CF4	305.2718 m	13.4323 m	N/A

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

