

R-C Thermal Model Parameters

DESCRIPTION

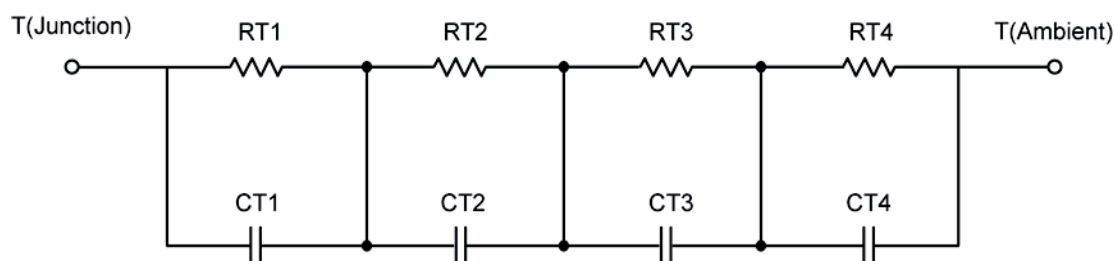
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

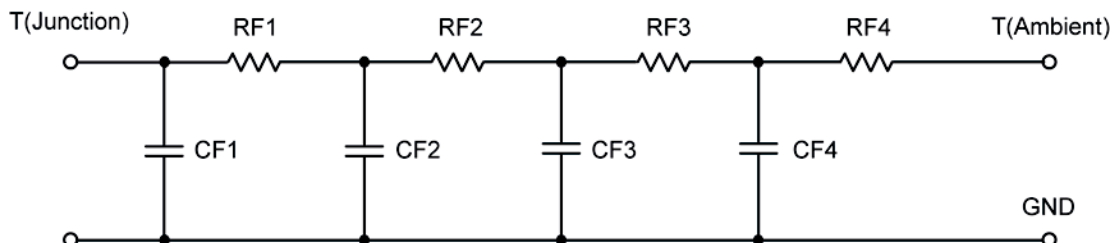
For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	6.1480	N/A	1.1236
RT2	24.4080	N/A	4.4461
RT3	26.0454	N/A	9.9726
RT4	27.2274	N/A	5.3859
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	22.0422 m	N/A	9.0587 m
CT2	56.2436 m	N/A	129.7015 m
CT3	3.5677	N/A	138.7031 m
CT4	2.3495	N/A	11.4484 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	2.4210	N/A	4.4473
RF2	16.7080	N/A	5.1144
RF3	13.7271	N/A	6.7581
RF4	51.0530	N/A	4.6120
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CF1	2.9174 m	N/A	5.1291 m
CF2	28.3980 m	N/A	11.2562 m
CF3	39.1252 m	N/A	82.6299 m
CF4	1.4468	N/A	16.4486 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

