

R-C Thermal Model Parameters

DESCRIPTION

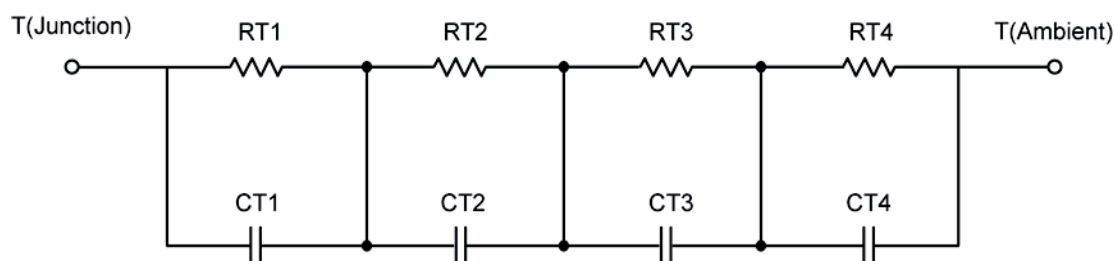
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

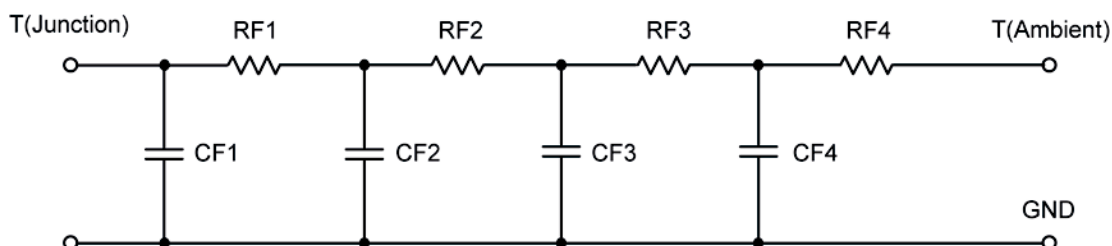
For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	40.9471	N/A	25.8832
RT2	90.1932	N/A	12.8887
RT3	38.5858	N/A	35.7078
RT4	5.2739	N/A	3.5203
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	1.6877	N/A	9.6862 m
CT2	12.5004 m	N/A	2.2361 m
CT3	1.8943 m	N/A	20.7116 m
CT4	132.4314 u	N/A	125.9647 u

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	18.3453	N/A	7.7948
RF2	49.5833	N/A	28.5633
RF3	67.7656	N/A	32.4733
RF4	39.3058	N/A	9.1686
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CF1	536.8807 μ	N/A	317.7109 μ
CF2	2.4197 m	N/A	2.3996 m
CF3	13.5492 m	N/A	8.9406 m
CF4	1.7985	N/A	36.4406 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

