

R-C Thermal Model Parameters

DESCRIPTION

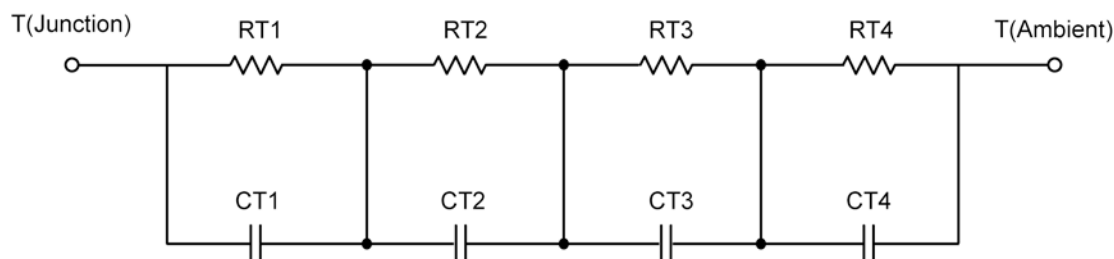
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

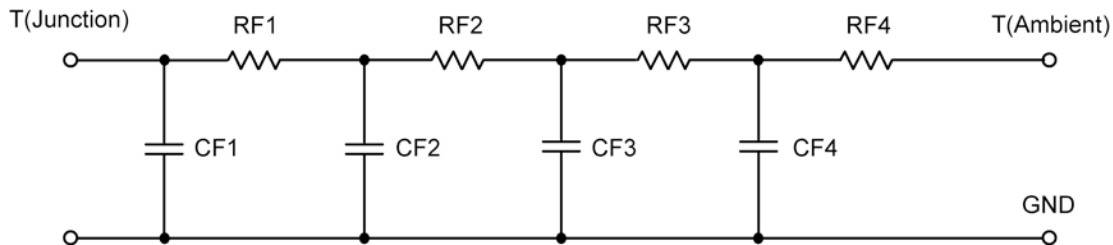
For a detailed explanation of implementing these values in P-Spice, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-Spice Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	11.6073	1.1343	N/A
RT2	5.5097	2.2508	N/A
RT3	17.8868	308.0000 m	N/A
RT4	44.9962	2.8069	N/A
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	218.0785 m	158.5416 u	N/A
CT2	440.3552 u	1.4572 m	N/A
CT3	6.6195 m	14.2076 m	N/A
CT4	1.7908	808.2979 u	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	5.1725	1.6109	N/A
RF2	17.9817	3.3756	N/A
RF3	12.9513	1.3951	N/A
RF4	43.8945	118.4000 m	N/A
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CF1	309.7858 u	107.5912 u	N/A
CF2	5.0133 m	355.4756 u	N/A
CF3	130.8574 m	1.2196 m	N/A
CF4	1.6377	4.2903 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

