

R-C Thermal Model Parameters

DESCRIPTION

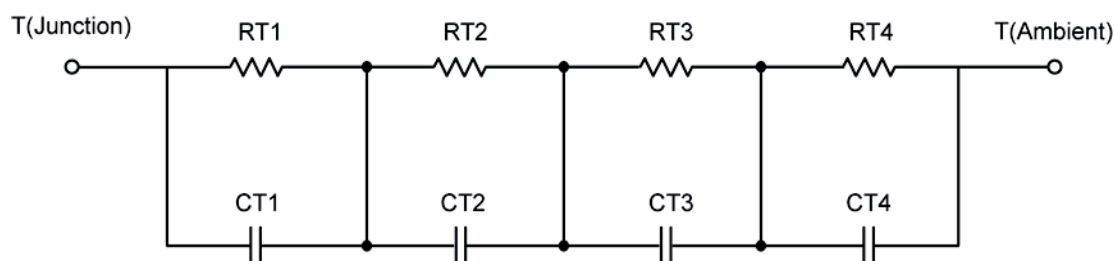
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

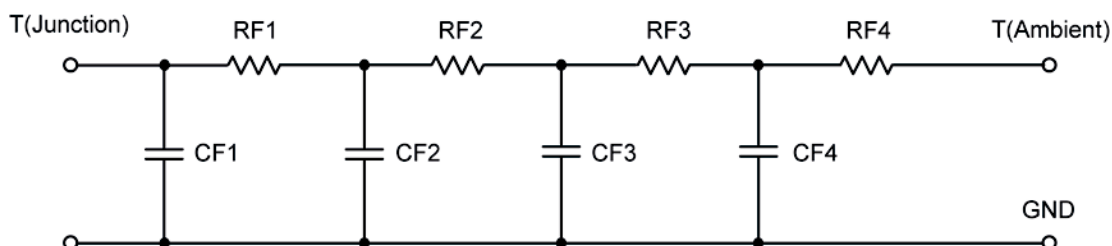
For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	9.5430	N/A	182.1251 m
RT2	32.9456	N/A	1.8140
RT3	16.1654	N/A	14.2372
RT4	51.0928	N/A	13.5405
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	1.2752 m	N/A	419.1259 u
CT2	7.6497 m	N/A	428.5498 u
CT3	385.3693 m	N/A	15.8268 m
CT4	2.0398	N/A	2.6908 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	13.2605	N/A	1.7930
RF2	31.4941	N/A	12.4855
RF3	21.5677	N/A	11.7174
RF4	43.8145	N/A	3.9084
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CF1	1.1320 m	N/A	173.5435 u
CF2	7.3026 m	N/A	1.6696 m
CF3	382.6052 m	N/A	5.3728 m
CF4	1.9872	N/A	79.6991 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

