

R-C Thermal Model Parameters

DESCRIPTION

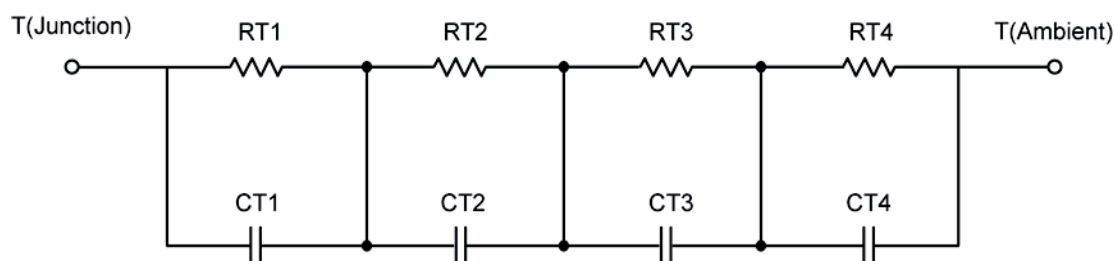
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

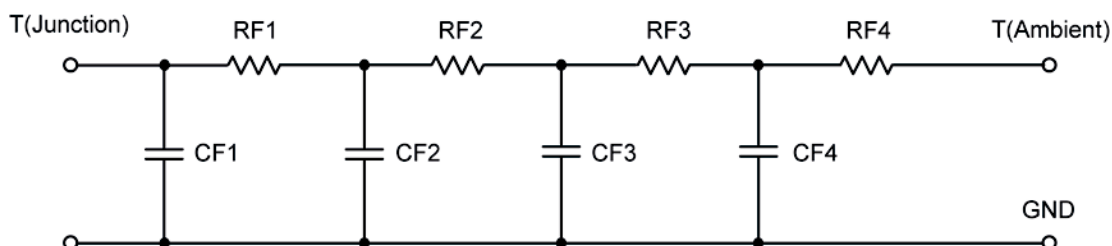
For a detailed explanation of implementing these values in P-Spice, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-Spice Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	29.7421	N/A	12.7993
RT2	9.5540	N/A	1.8294
RT3	23.5755	N/A	10.9604
RT4	46.8383	N/A	9.3467
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	16.2988 m	N/A	5.6731 m
CT2	3.6612 m	N/A	432.3721 u
CT3	212.6839 m	N/A	40.0102 m
CT4	1.8218	N/A	119.7781 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	13.9028	N/A	2.8545
RF2	30.2392	N/A	18.8990
RF3	25.0887	N/A	10.5696
RF4	40.5773	N/A	2.7886
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CF1	2.9045 m	N/A	796.0956 u
CF2	13.0647 m	N/A	4.6616 m
CF3	205.6532 m	N/A	52.2295 m
CF4	1.9069	N/A	330.8464 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

