

R-C Thermal Model Parameters

DESCRIPTION

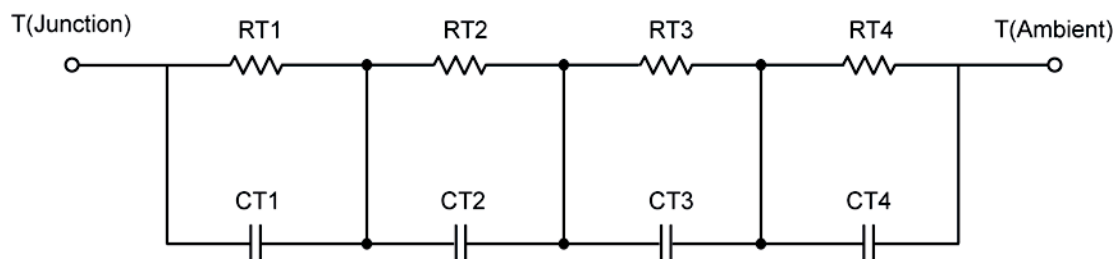
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

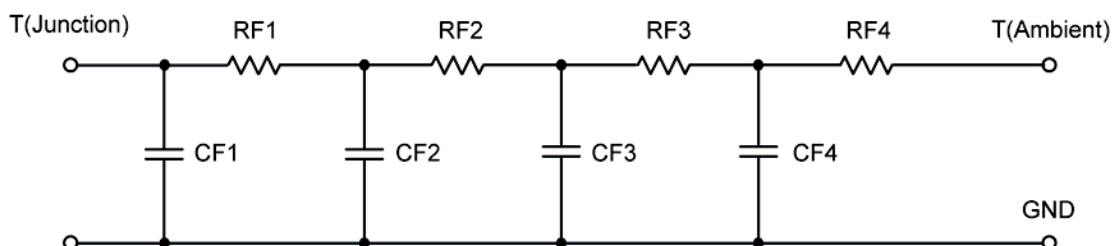
For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	8.3317	N/A	12.8074
RT2	21.6042	N/A	6.6905
RT3	26.1607	N/A	5.5298
RT4	53.9035	N/A	14.9724
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	179.1861 u	N/A	1.6504 m
CT2	26.5256 m	N/A	186.0167 u
CT3	1.6198 m	N/A	163.4987 m
CT4	1.4637	N/A	3.2815 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	12.1630	N/A	7.6073
RF2	25.8698	N/A	17.7596
RF3	19.2265	N/A	10.3944
RF4	52.7407	N/A	4.2386
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CF1	212.0208 u	N/A	167.8469 u
CF2	1.5983 m	N/A	665.0326 u
CF3	27.4261 m	N/A	3.9489 m
CF4	1.4711	N/A	212.0831 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

