

R-C Thermal Model Parameters

DESCRIPTION

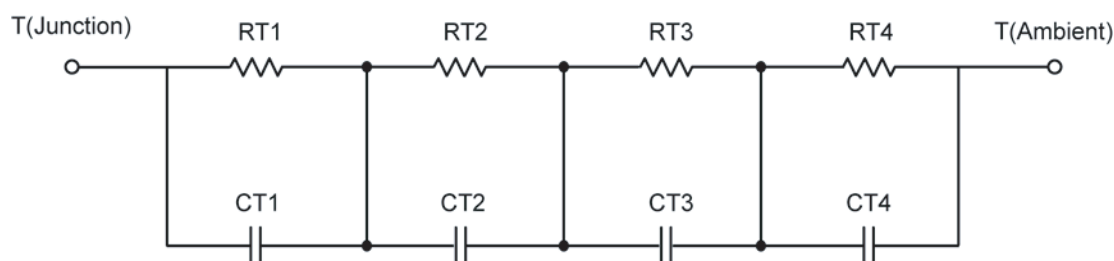
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

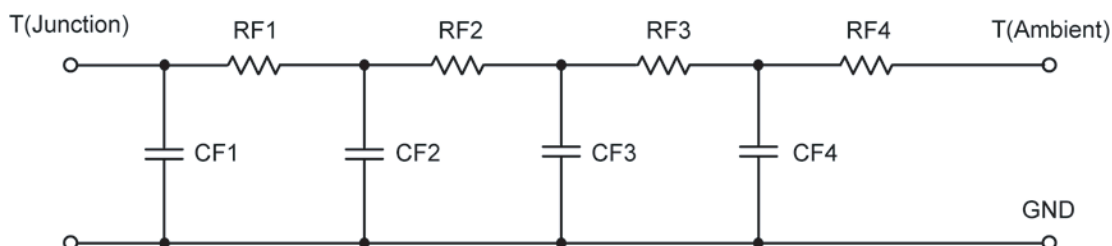
For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	65.5873	N/A	8.9261
RT2	48.4784	N/A	2.2188
RT3	41.7261	N/A	7.5485
RT4	10.2082	N/A	31.3066
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	1.2959	N/A	3.4093 m
CT2	18.9433 m	N/A	176.6667 u
CT3	3.0757 m	N/A	249.5384 m
CT4	621.6217 u	N/A	11.8045 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 (°C/W)			
Junction to	Ambient	Case	Foot
RF1	28.8474	N/A	4.1847
RF2	58.0126	N/A	16.1156
RF3	22.7396	N/A	26.5456
RF4	56.4004	N/A	3.1541
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	847.3246 u	N/A	417.5770 u
CF2	4.3966 m	N/A	3.1453 m
CF3	171.3231 m	N/A	12.3850 m
CF4	1.4809	N/A	736.9739 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

