

R-C Thermal Model Parameters

DESCRIPTION

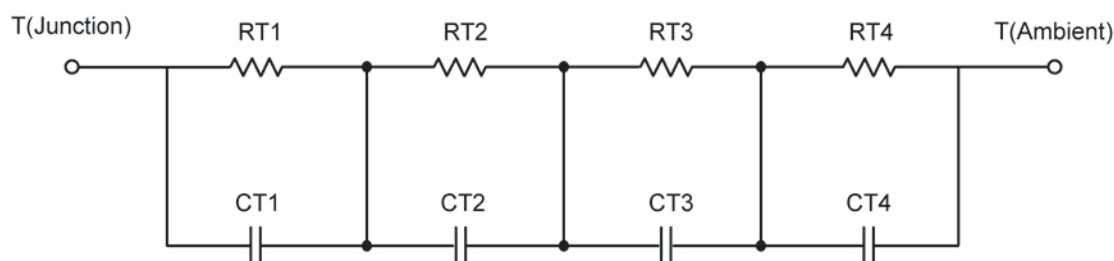
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

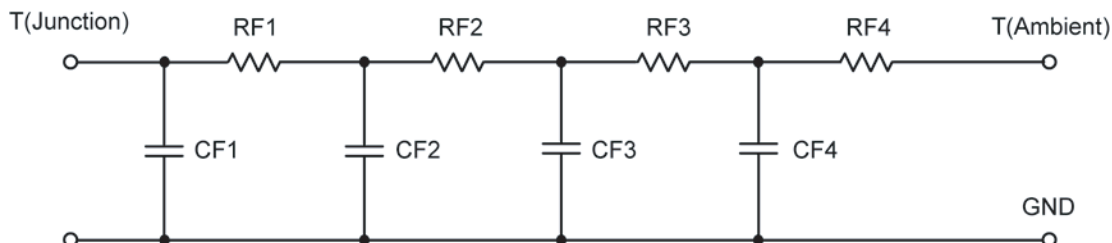
For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	6.7278	N/A	11.6583
RT2	29.6140	N/A	3.6731
RT3	25.9110	N/A	8.9996
RT4	47.7472	N/A	19.6690
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	347.8859 u	N/A	2.2210 m
CT2	56.4091 m	N/A	170.7109 u
CT3	6.7511 m	N/A	180.0765 m
CT4	1.0972	N/A	11.0677 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	10.1112	N/A	6.2766
RF2	32.1645	N/A	20.6392
RF3	25.8678	N/A	14.5542
RF4	41.8565	N/A	2.5300
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CF1	598.8307 μ	N/A	223.8922 μ
CF2	7.0365 m	N/A	2.6660 m
CF3	77.6027 m	N/A	29.6184 m
CF4	1.2885	N/A	919.3445 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

