

R-C Thermal Model Parameters

DESCRIPTION

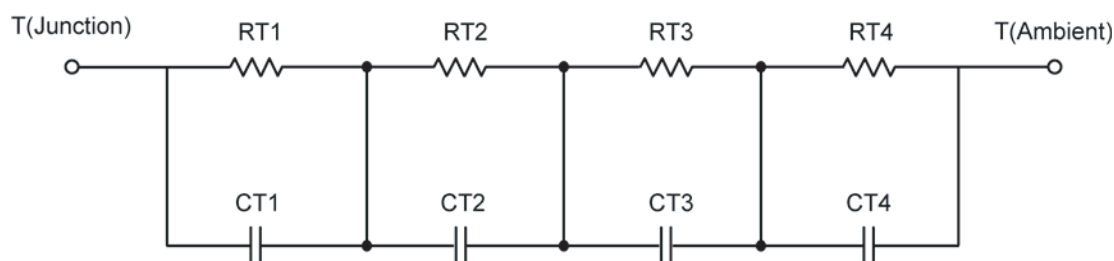
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

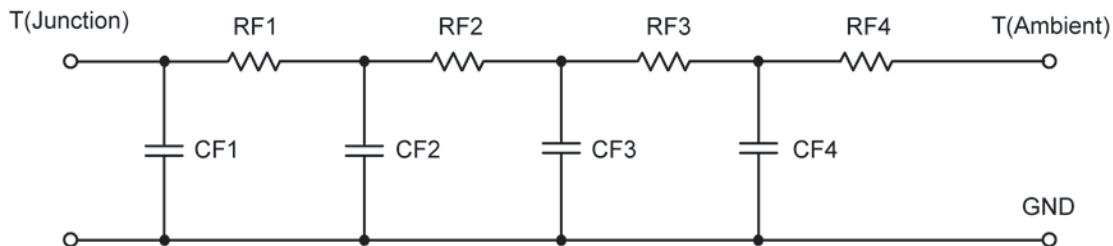
For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance ($^{\circ}\text{C/W}$)			
Junction to	Ambient	Case	Foot
RT1	4.9280	N/A	536.3249 m
RT2	26.4288	N/A	4.6553
RT3	26.4135	N/A	10.1038
RT4	27.3492	N/A	5.6867
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CT1	7.0702 m	N/A	644.2123 μ
CT2	45.4725 m	N/A	65.5331 m
CT3	1.8744	N/A	157.8483 m
CT4	4.2541	N/A	10.8807 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	2.6273	N/A	2.7852
RF2	27.5087	N/A	8.1195
RF3	23.0822	N/A	5.8581
RF4	31.8094	N/A	4.2091
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	1.0532 m	N/A	3.5316 m
CF2	30.2590 m	N/A	10.7913 m
CF3	783.3855 m	N/A	104.4945 m
CF4	1.7732	N/A	59.3930

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

