

R-C Thermal Model Parameters

DESCRIPTION

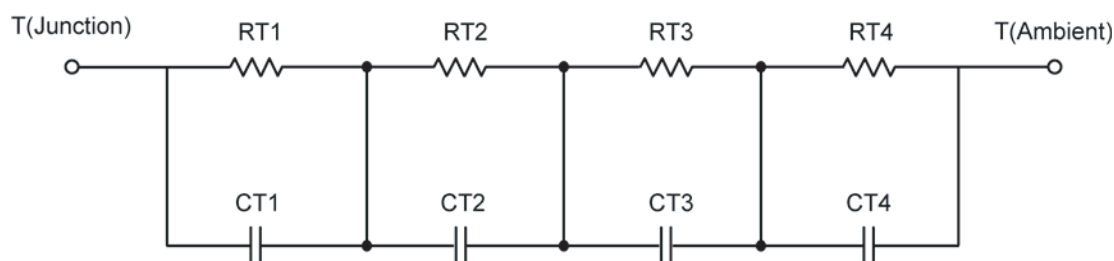
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

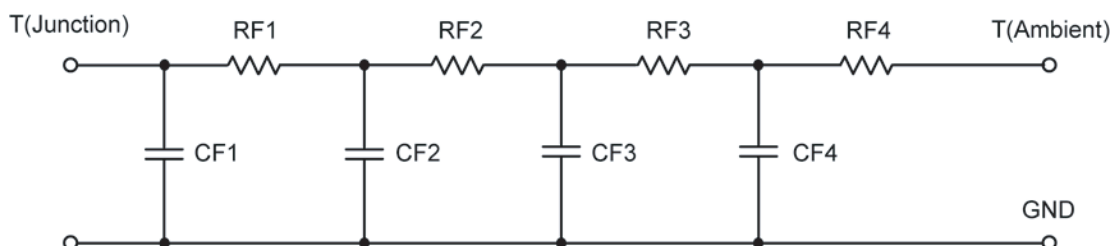
For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	31.8140	N/A	16.3442
RT2	9.6316	N/A	5.8412
RT3	27.1992	N/A	6.1172
RT4	55.9540	N/A	16.6502
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	2.4568 m	N/A	1.4474 m
CT2	301.4906 u	N/A	165.7211 u
CT3	32.4440 m	N/A	159.1680 m
CT4	1.2575	N/A	4.0724 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	15.5451	N/A	9.3126
RF2	32.2463	N/A	27.7163
RF3	21.0748	N/A	8.4387
RF4	52.8993	N/A	5.5442
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CF1	354.0867 μ	N/A	170.4864 μ
CF2	2.7813 m	N/A	1.1574 m
CF3	60.9173 m	N/A	1.9990 m
CF4	1.3215	N/A	191.7478 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

