

R-C Thermal Model Parameters

DESCRIPTION

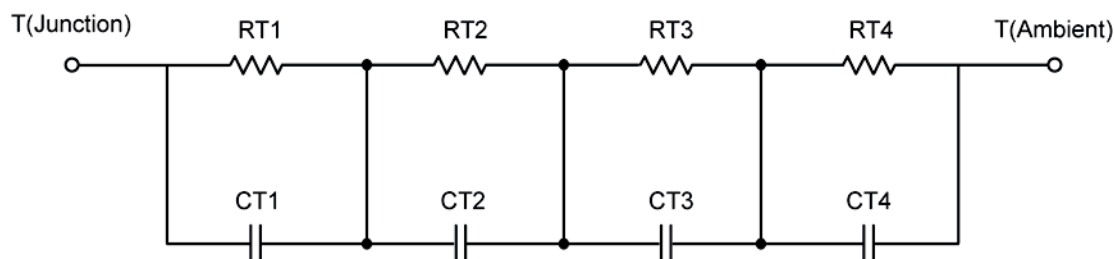
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse 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	24.8736	N/A	28.5067
RT2	6.8016	N/A	15.2315
RT3	70.9289	N/A	33.3805
RT4	47.3959	N/A	2.8813
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	5.8589 m	N/A	11.2005 m
CT2	1.8241 m	N/A	3.9988 m
CT3	14.1363 m	N/A	30.6373 m
CT4	1.6678	N/A	434.1574 u

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	18.1299	N/A	3.7502
RF2	40.2959	N/A	26.0342
RF3	44.5423	N/A	28.9295
RF4	47.0319	N/A	21.2861
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CF1	1.3357 m	N/A	347.1420 μ
CF2	4.9577 m	N/A	2.1365 m
CF3	10.2156 m	N/A	7.0796 m
CF4	1.5908	N/A	17.1357 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

