

R-C Thermal Model Parameters

DESCRIPTION

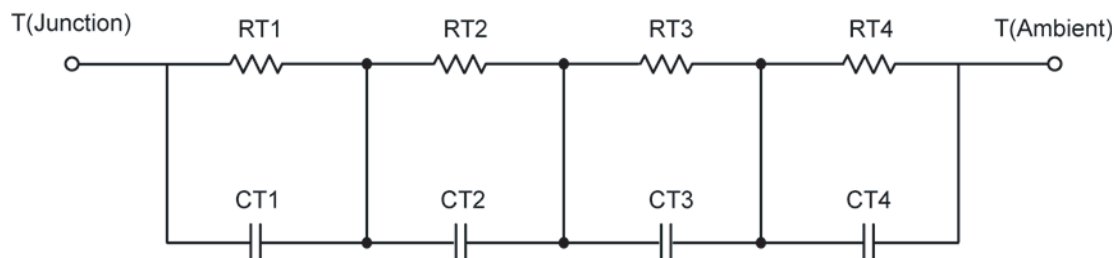
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

R-C values for the electrical circuit in the Foster/Tank configuration are included. The corresponding values for the Cauer/Filter configuration are available upon request.

Note:

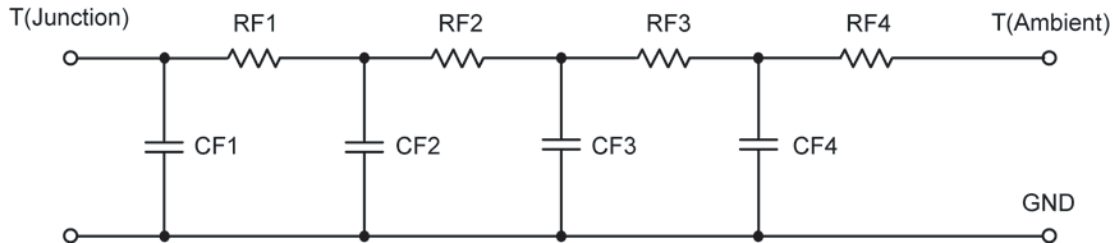
For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	2.0053	N/A	468.2017 m
RT2	20.8011	N/A	4.8276
RT3	28.2729	N/A	7.4177
RT4	28.8060	N/A	5.9020
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	1.6405 m	N/A	2.0074 m
CT2	24.4894 m	N/A	39.9180 m
CT3	358.8053 m	N/A	189.7165 m
CT4	2.5583	N/A	11.7115 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	1.3054	N/A	3.1425
RF2	24.3531	N/A	8.7149
RF3	34.9946	N/A	3.5588
RF4	19.2364	N/A	3.1301
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	263.0147 μ	N/A	4.8377 m
CF2	19.8868 m	N/A	7.2041 m
CF3	325.1676 m	N/A	168.4432 m
CF4	3.6944	N/A	17.9200 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

