

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:

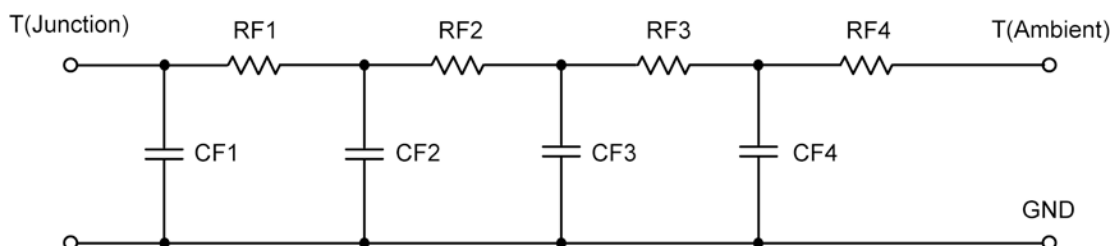
For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	14.1987	N/A	2.3864
RT2	13.4985	N/A	7.0958
RT3	7.2391	N/A	1.8619
RT4	37.0637	N/A	8.6559
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	9.1933 m	N/A	1.6637 m
CT2	1.3008 m	N/A	3.8613 m
CT3	1.1522	N/A	100.1966 m
CT4	1.8243	N/A	5.0436 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	14.4487	N/A	6.1334
RF2	13.0397	N/A	8.6330
RF3	14.2175	N/A	4.0416
RF4	30.2941	N/A	1.1920
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	1.0284 m	N/A	907.6343 u
CF2	6.0241 m	N/A	1.6859 m
CF3	580.7078 m	N/A	166.2879 u
CF4	1.4614	N/A	183.8196 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

