

R-C Thermal Model Parameters

DESCRIPTION

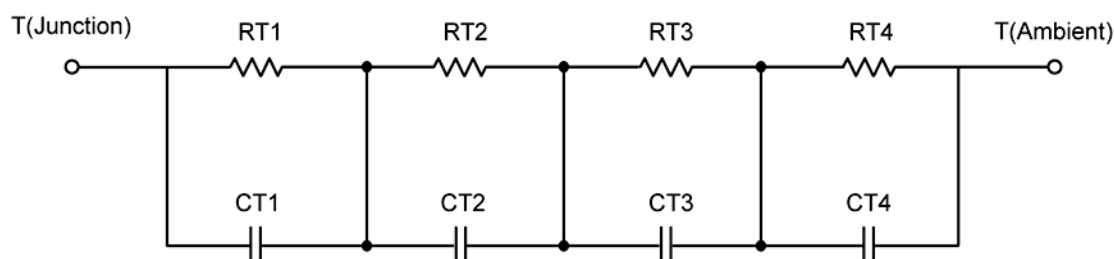
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

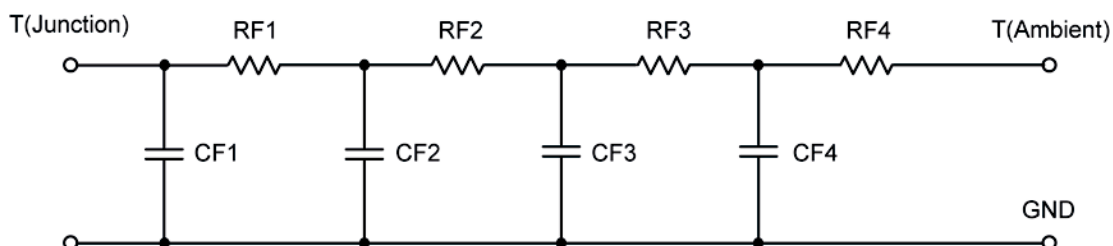
For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION					
Thermal Resistance (°C/W)					
Junction to	Ambient Ch1	Ambient Ch2	Case	Foot Ch1	Foot Ch2
RT1	14.0981	12.8797	N/A	15.1854	13.1980
RT2	25.1851	27.2257	N/A	10.8131	9.0014
RT3	16.0593	15.1325	N/A	9.0677	9.8702
RT4	56.1589	51.7621	N/A	2.9338	2.9304
Thermal Capacitance (Joules/°C)					
Junction to	Ambient Ch1	Ambient Ch2	Case	Foot Ch1	Foot Ch2
CT1	2.1329 m	2.6011 m	N/A	8.4573 m	15.5924 m
CT2	46.0132 m	71.8770 m	N/A	5.0171 m	4.9537 m
CT3	13.7142 m	35.5157 m	N/A	174.6442 m	213.8949 m
CT4	1.1678	1.3156	N/A	463.3081 u	344.2296 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 (°C/W)					
Junction to	Ambient Ch1	Ambient Ch2	Case	Foot Ch1	Foot Ch2
RF1	19.2157	18.7609	N/A	3.4522	3.7721
RF2	33.3818	34.7275	N/A	16.5222	16.1598
RF3	26.0428	24.2011	N/A	10.3236	8.8994
RF4	33.3597	29.3105	N/A	7.7020	6.1687
Thermal Capacitance (Joules/°C)					
Junction to	Ambient Ch1	Ambient Ch2	Case	Foot Ch1	Foot Ch2
CF1	1.7226 m	2.5388 m	N/A	320.7058 u	396.3230 u
CF2	14.6942 m	32.1099 m	N/A	2.4324 m	3.6307 m
CF3	654.3078 m	753.8542 m	N/A	6.5112 m	37.7652 m
CF4	1.3776	1.4308	N/A	197.4071 m	265.8452 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

