

R-C Thermal Model Parameters

DESCRIPTION

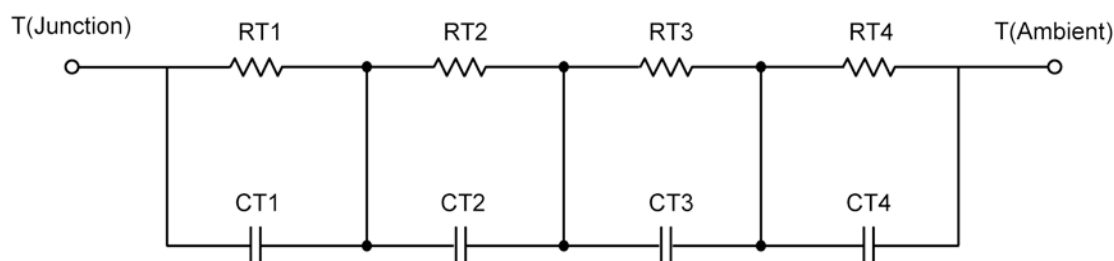
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

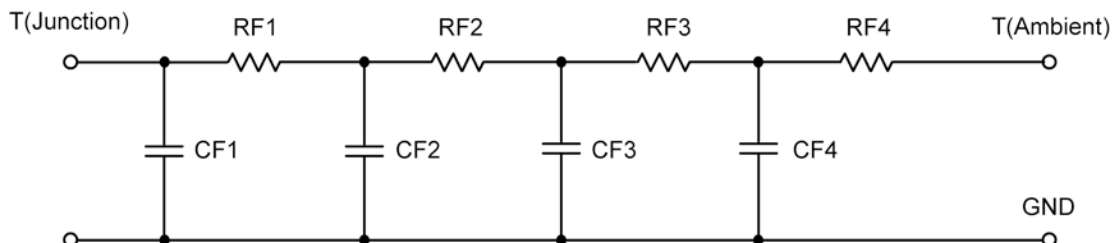
For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	5.5620	N/A	4.9132
RT2	29.8649	N/A	9.8704
RT3	20.0813	N/A	12.0178
RT4	54.4919	N/A	13.1985
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	1.2913 m	N/A	340.2249 μ
CT2	63.3771 m	N/A	5.7329 m
CT3	11.2330 m	N/A	45.4003 m
CT4	1.7476	N/A	4.6444 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	6.2528	N/A	5.4940
RF2	25.9178	N/A	21.7455
RF3	24.5193	N/A	8.1005
RF4	53.3100	N/A	4.6599
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	785.8928 u	N/A	240.7782 u
CF2	8.4891 m	N/A	1.9507 m
CF3	58.9603 m	N/A	23.1890 m
CF4	1.6140	N/A	44.2266 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

