

## R-C Thermal Model Parameters

### DESCRIPTION

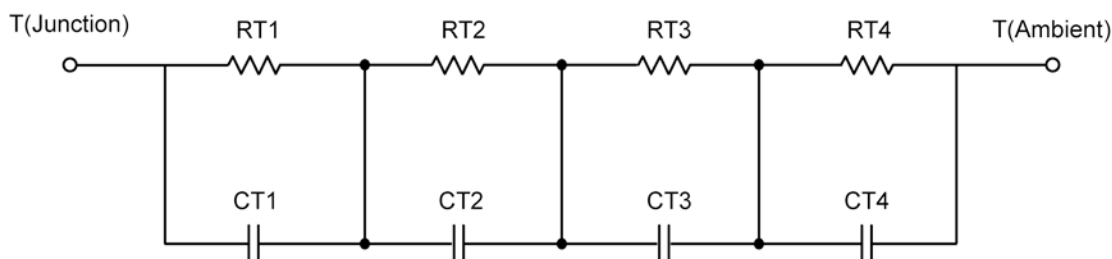
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

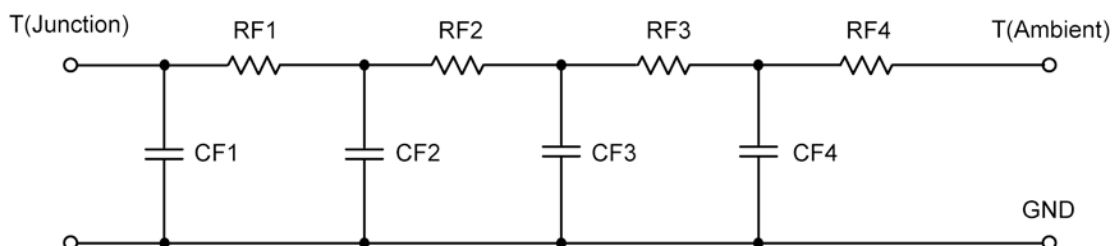
*For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).*

### R-C THERMAL MODEL FOR TANK CONFIGURATION



<b>R-C VALUES FOR TANK CONFIGURATION</b>			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	6.7987	N/A	4.3992
RT2	5.7943	N/A	8.1152
RT3	35.8559	N/A	4.0411
RT4	46.5511	N/A	13.4445
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	1.2053 m	N/A	352.6090 $\mu$
CT2	5.7429 m	N/A	9.8498 m
CT3	35.0152 m	N/A	26.4721 m
CT4	1.3575	N/A	134.3235 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 ( $^{\circ}\text{C}/\text{W}$ )			
Junction to	Ambient	Case	Foot
RF1	10.0985	N/A	4.0831
RF2	18.4045	N/A	7.3684
RF3	22.7346	N/A	7.4610
RF4	43.6853	N/A	11.0875
Thermal Capacitance (Joules/ $^{\circ}\text{C}$ )			
Junction to	Ambient	Case	Foot
CF1	902.7400 $\mu$	N/A	279.2437 $\mu$
CF2	18.7163 m	N/A	4.1858 m
CF3	35.1264 m	N/A	11.4958 m
CF4	1.4280	N/A	149.1656 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

