

## R-C Thermal Model Parameters

### DESCRIPTION

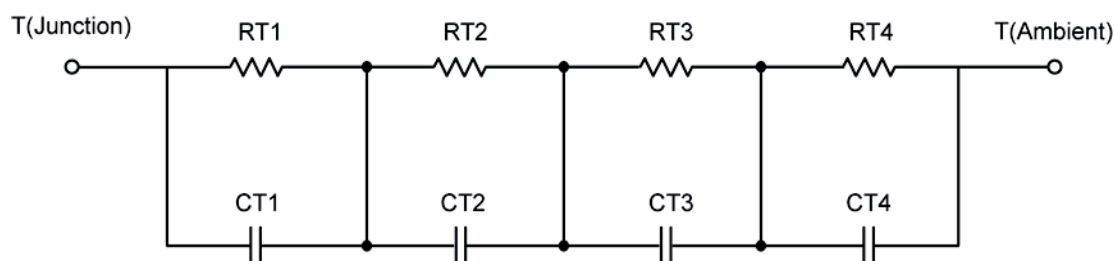
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

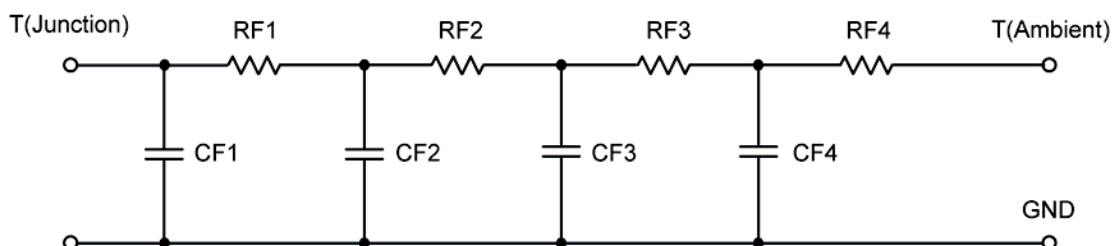
*For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).*

### 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	34.4210	N/A	4.7331
RT2	5.4870	N/A	1.4307
RT3	18.8020	N/A	1.5757
RT4	21.2900	N/A	8.2605
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	1.2814	N/A	24.9402 m
CT2	20.9559 m	N/A	23.1289 m
CT3	75.0816 m	N/A	3.5274
CT4	11.3428	N/A	150.3408 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	7.7368	N/A	2.5741
RF2	18.1600	N/A	4.3623
RF3	37.3247	N/A	6.6949
RF4	16.7785	N/A	2.3687
Thermal Capacitance (Joules/ $^{\circ}\text{C}$ )			
Junction to	Ambient	Case	Foot
CF1	15.0827 m	N/A	10.0825 m
CF2	53.1334 m	N/A	6.7682 m
CF3	1.0478	N/A	111.9135 m
CF4	9.5469	N/A	834.5832 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

