

## R-C Thermal Model Parameters

### DESCRIPTION

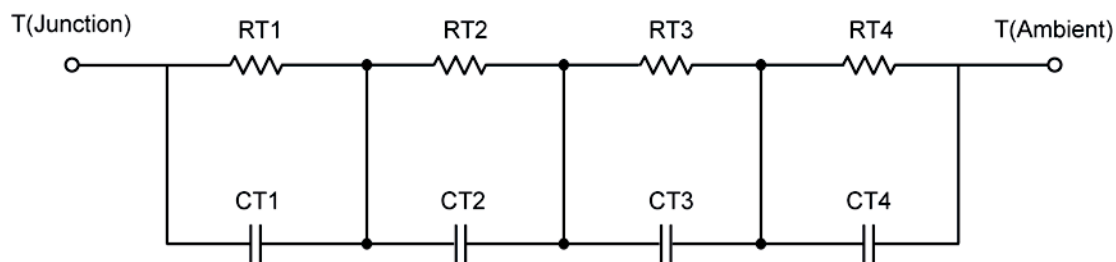
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse 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-SPIICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPIICE 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	10.0467	11.1427 m	N/A
RT2	8.9444	351.4412 m	N/A
RT3	3.0733	650.9284 m	N/A
RT4	42.2102	1.5854	N/A
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	70.3638 m	25.7393 u	N/A
CT2	735.9924 m	44.3702 m	N/A
CT3	7.3054 m	1.6631 m	N/A
CT4	1.8384	9.5592 m	N/A

*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	3.2800	315.5162 m	N/A
RF2	11.5237	890.5887 m	N/A
RF3	14.7761	68.3465 m	N/A
RF4	34.6481	1.3290	N/A
Thermal Capacitance (Joules/ $^{\circ}\text{C}$ )			
Junction to	Ambient	Case	Foot
CF1	5.4022 m	880.6088 u	N/A
CF2	49.7918 m	1.4238 m	N/A
CF3	465.7518 m	6.9610 m	N/A
CF4	1.6423	2.0529 m	N/A

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

