

## R-C Thermal Model Parameters

### DESCRIPTION

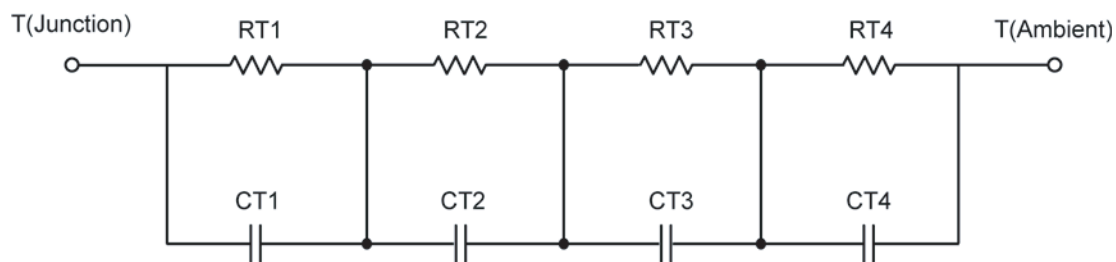
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

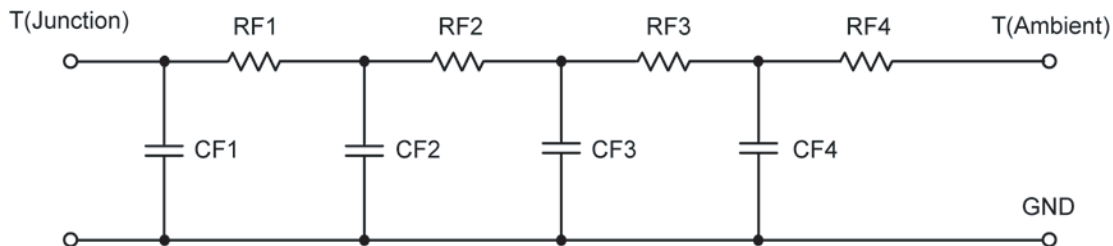
### R-C THERMAL MODEL FOR TANK CONFIGURATION



### R-C VALUES FOR TANK CONFIGURATION

Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	7.5111	N/A	1.3836
RT2	28.2372	N/A	5.5041
RT3	21.2833	N/A	9.0276
RT4	27.9216	N/A	6.0953
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	4.2636 m	N/A	1.3161 m
CT2	44.2218 m	N/A	36.4143 m
CT3	2.9587	N/A	106.6606 m
CT4	2.1215	N/A	11.2373 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**

<b>R-C VALUES FOR FILTER CONFIGURATION</b>			
<b>Thermal Resistance (<math>^{\circ}\text{C}/\text{W}</math>)</b>			
<b>Junction to</b>	<b>Ambient</b>	<b>Case</b>	<b>Foot</b>
RF1	5.0156	N/A	3.9027
RF2	30.2279	N/A	8.8634
RF3	26.3698	N/A	4.8270
RF4	23.4457	N/A	4.3723
<b>Thermal Capacitance (Joules/<math>^{\circ}\text{C}</math>)</b>			
<b>Junction to</b>	<b>Ambient</b>	<b>Case</b>	<b>Foot</b>
CF1	1.0537 m	N/A	2.9341 m
CF2	29.9132 m	N/A	6.6125 m
CF3	859.8470 m	N/A	67.0295 m
CF4	1.3858	N/A	1.8546 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

