

## R-C Thermal Model Parameters

### DESCRIPTION

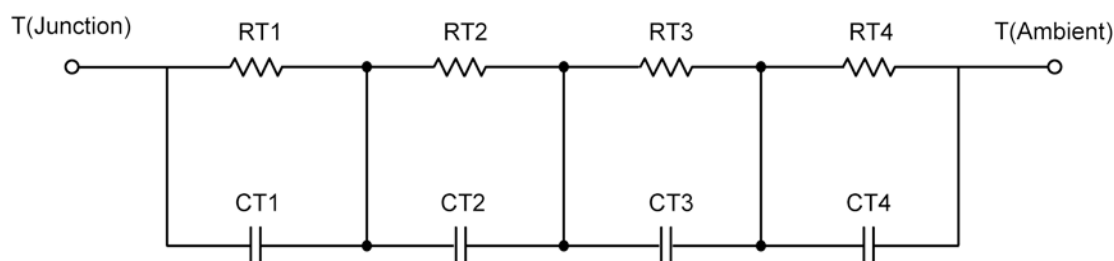
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

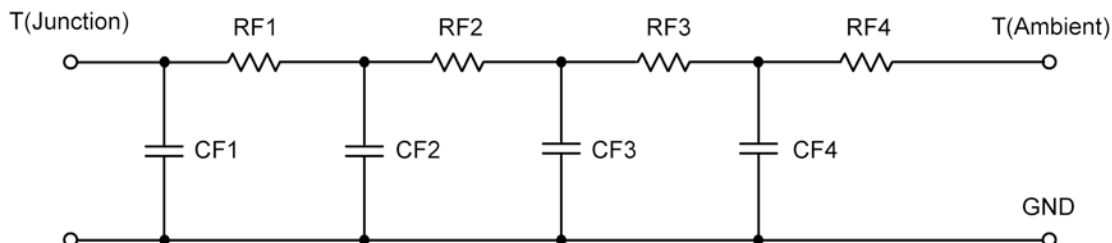
*For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).*

### 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	5.8024	227.9000 m	N/A
RT2	19.7128	909.8000 m	N/A
RT3	15.3152	1.4214	N/A
RT4	49.1696	1.4409	N/A
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	2.0323 m	262.1468 u	N/A
CT2	13.7537 m	255.2567 u	N/A
CT3	199.9929 m	1.3237 m	N/A
CT4	1.5759	1.2692 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	6.4287	1.5953	N/A
RF2	22.4787	1.6822	N/A
RF3	16.4303	591.1917 m	N/A
RF4	44.6623	131.3083 m	N/A
Thermal Capacitance (Joules/ $^{\circ}\text{C}$ )			
Junction to	Ambient	Case	Foot
CF1	1.5435 m	125.1166 u	N/A
CF2	10.6442 m	553.3575 u	N/A
CF3	209.4752 m	545.8594 u	N/A
CF4	1.5018	55.4171 u	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

