

## R-C Thermal Model Parameters

### DESCRIPTION

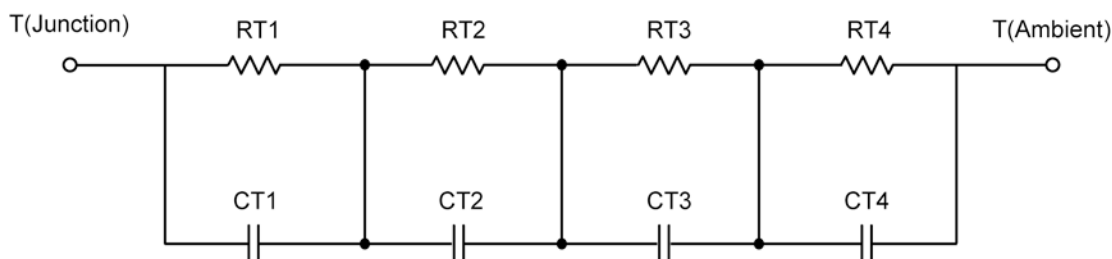
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

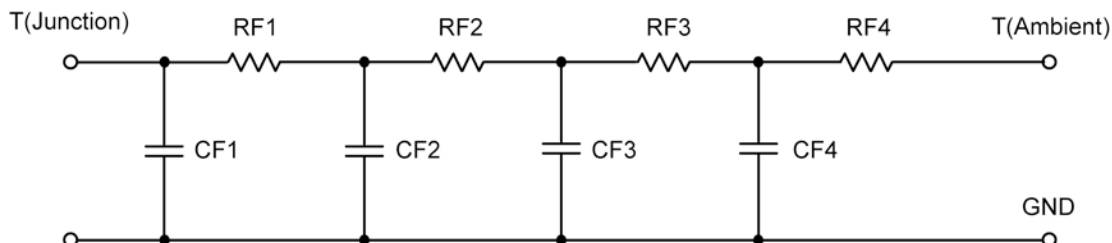
### R-C THERMAL MODEL FOR TANK CONFIGURATION



<b>R-C VALUES FOR TANK CONFIGURATION</b>					
Thermal Resistance (°C/W)					
Junction to	Ambient Nch	Ambient Pch	Foot	Case Nch	Case Pch
RT1	5.4645	6.2984	N/A	1.4162	1.7936
RT2	36.2556	28.0418	N/A	1.8527	1.4731
RT3	5.2004	4.5184	N/A	4.0143	2.3114
RT4	11.0795	14.1414	N/A	2.1168	2.4219
Thermal Capacitance (Joules/°C)					
Junction to	Ambient Nch	Ambient Pch	Foot	Case Nch	Case Pch
CT1	33.3249 m	53.6736 m	N/A	22.0317 m	6.0921 m
CT2	2.5391	3.5517	N/A	169.5772 u	1.7575 m
CT3	285.3666 u	411.9905 u	N/A	680.3845 u	255.3153 u
CT4	897.1188 m	1.0889	N/A	36.6533 m	28.8758 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 (°C/W)					
Junction to	Ambient Nch	Ambient Pch	Foot	Case Nch	Case Pch
RF1	5.5332	4.5279	N/A	777.2483 m	472.8569 m
RF2	5.9452	6.9184	N/A	4.0716	3.6979
RF3	19.3872	19.3923	N/A	2.0747	2.2147
RF4	27.1344	22.1614	N/A	2.4764	1.6144
Thermal Capacitance (Joules/°C)					
Junction to	Ambient Nch	Ambient Pch	Foot	Case Nch	Case Pch
CF1	307.3259 u	398.9623 u	N/A	10.8965 u	5.7512 u
CF2	38.0829 m	48.3541 m	N/A	313.2300 u	373.2073 u
CF3	653.7611 m	723.9502 m	N/A	2.2898 m	5.5858 m
CF4	2.6123	3.2158	N/A	24.1255 m	34.1336 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

