



## R-C Thermal Model Parameters

### DESCRIPTION

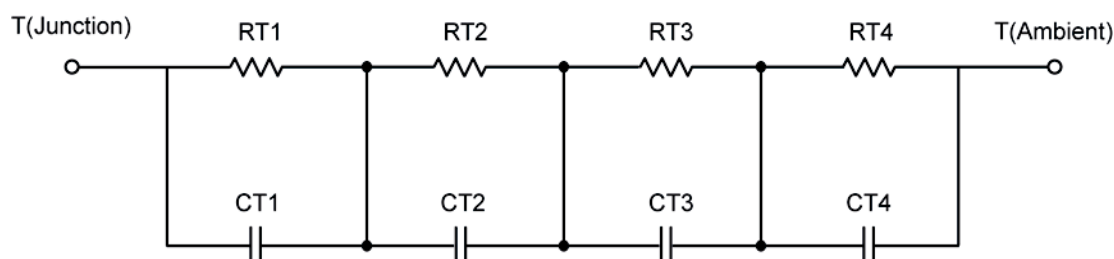
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

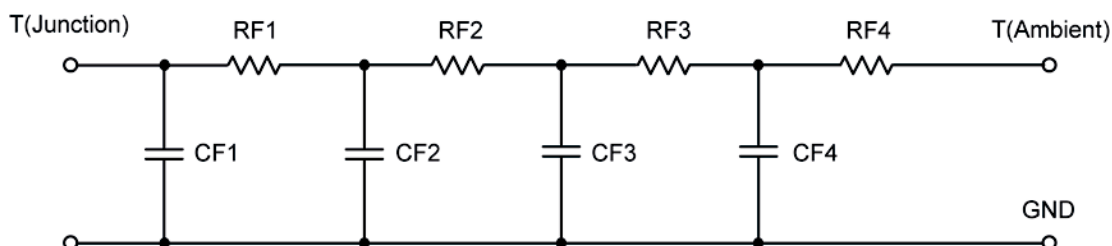
For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).

### R-C THERMAL MODEL FOR TANK CONFIGURATION



| R-C VALUES FOR TANK CONFIGURATION |            |            |      |
|-----------------------------------|------------|------------|------|
| Thermal Resistance (°C/W)         |            |            |      |
| Junction to                       | Ambient    | Case       | Foot |
| RT1                               | 1.7021     | 4.4900 m   | N/A  |
| RT2                               | 12.9417    | 763.6100 m | N/A  |
| RT3                               | 9.6767     | 1.5502     | N/A  |
| RT4                               | 45.6795    | 1.1817     | N/A  |
| Thermal Capacitance (Joules/°C)   |            |            |      |
| Junction to                       | Ambient    | Case       | Foot |
| CT1                               | 1.6680 m   | 5.8976 m   | N/A  |
| CT2                               | 410.1105 m | 817.8572 u | N/A  |
| CT3                               | 34.0136 m  | 13.5077 m  | N/A  |
| CT4                               | 1.6033     | 11.1571 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 (°C/W)       |            |            |      |
|---------------------------------|------------|------------|------|
| Junction to                     | Ambient    | Case       | Foot |
| RF1                             | 3.1831     | 12.9831 m  | N/A  |
| RF2                             | 12.8594    | 880.7106 m | N/A  |
| RF3                             | 21.2722    | 1.6900     | N/A  |
| RF4                             | 32.6853    | 916.3063 m | N/A  |
| Thermal Capacitance (Joules/°C) |            |            |      |
| Junction to                     | Ambient    | Case       | Foot |
| CF1                             | 3.2541 m   | 85.5122 u  | N/A  |
| CF2                             | 42.8876 m  | 513.3697 u | N/A  |
| CF3                             | 483.6856 m | 5.6650 m   | N/A  |
| CF4                             | 1.7209     | 367.8514 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

