



# R-C Thermal Model Parameters

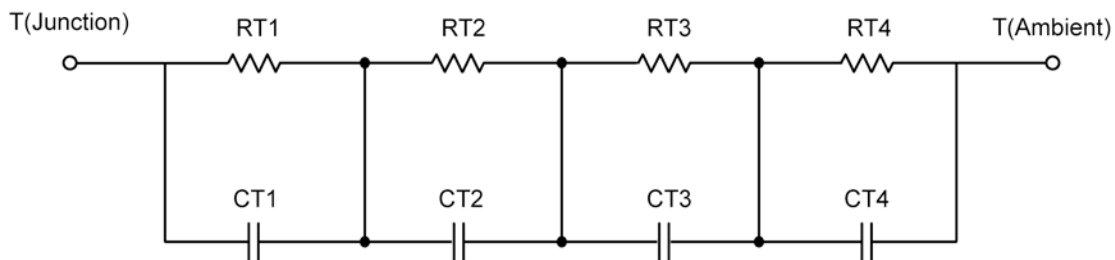
## DESCRIPTION

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

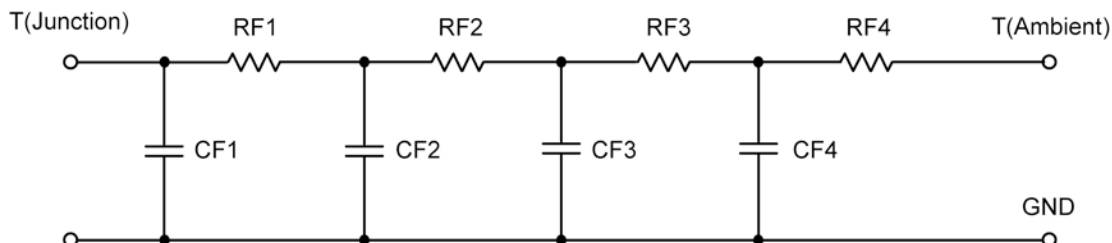


| R-C VALUES FOR TANK CONFIGURATION |         |            |      |
|-----------------------------------|---------|------------|------|
| Thermal Resistance (°C/W)         |         |            |      |
| Junction to                       | Ambient | Case       | Foot |
| RT1                               | N/A     | 2.7332 m   | N/A  |
| RT2                               | N/A     | 181.7412 m | N/A  |
| RT3                               | N/A     | 747.7478 m | N/A  |
| RT4                               | N/A     | 67.7778 m  | N/A  |
| Thermal Capacitance (Joules/°C)   |         |            |      |
| Junction to                       | Ambient | Case       | Foot |
| CT1                               | N/A     | 7.3467     | N/A  |
| CT2                               | N/A     | 4.2399 m   | N/A  |
| CT3                               | N/A     | 51.8375 m  | N/A  |
| CT4                               | N/A     | 4.0527     | 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                                 | N/A     | 242.7097 m | N/A  |
| RF2                                 | N/A     | 367.3133 m | N/A  |
| RF3                                 | N/A     | 365.0933 m | N/A  |
| RF4                                 | N/A     | 24.8837 m  | N/A  |
| Thermal Capacitance (Joules/°C)     |         |            |      |
| Junction to                         | Ambient | Case       | Foot |
| CF1                                 | N/A     | 4.5003 m   | N/A  |
| CF2                                 | N/A     | 56.0593 m  | N/A  |
| CF3                                 | N/A     | 38.2068 u  | N/A  |
| CF4                                 | N/A     | 2.1049     | 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

