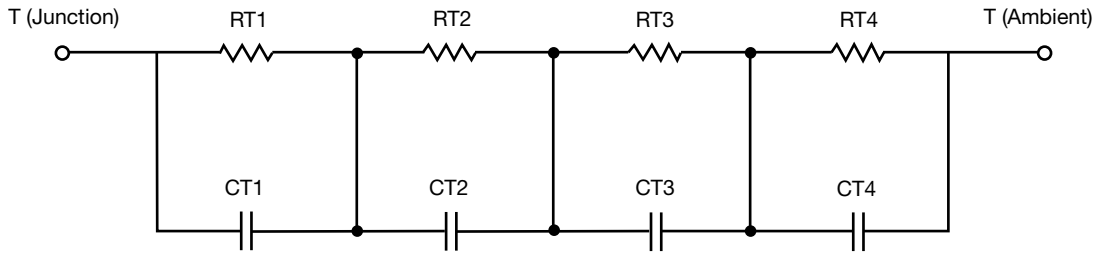
# R-C Thermal Model Parameters

## DESCRIPTION

The parametric values in the R-C thermal model have been derived using curve-fitting techniques. R-C values for the electrical circuit in the Foster/tank and Cauer/filter configurations are included. When implemented in PSpice, these values have matching characteristic curves to the single-pulse transient thermal impedance curves for the MOSFET.

These RC values can be used in the PSpice simulation to evaluate the thermal behavior of the MOSFET junction temperature under a defined power profile. These techniques are described in application note AN609, “Thermal Simulation of Power MOSFETs on the PSpice Platform”.

## R-C THERMAL MODEL FOR TANK CONFIGURATION



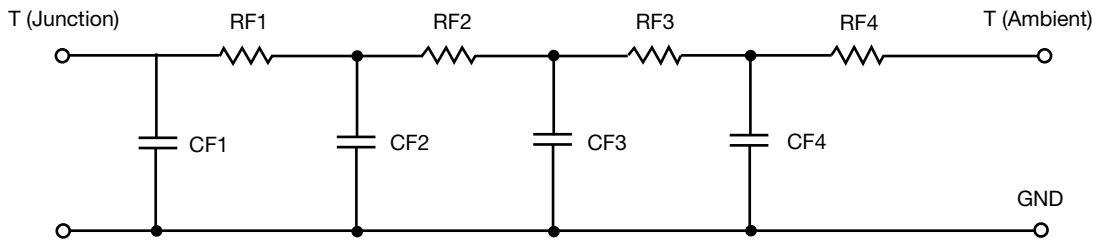

| R-C VALUES FOR TANK CONFIGURATION | | | |
|---|---|---|---|
| THERMAL RESISTANCE (°C/W) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| RT1 | 14.7029 | 541.0096m | n/a |
| RT2 | 5.9444 | 1.3410 | n/a |
| RT3 | 1.7862 | 152.0639m | n/a |
| RT4 | 47.4083 | 1.2751 | n/a |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CT1 | 107.3289m | 1.4299m | n/a |
| CT2 | 14.1960m | 5.2281m | n/a |
| CT3 | 550.3898u | 1.1000m | n/a |
| CT4 | 1.3364 | 7.5952m | n/a |

**Note**

- n/a indicates not applicable

*This document is intended as a SPICE modeling guideline and does not constitute a commercial product datasheet. Designers should refer to the appropriate datasheet 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 | 4.3254 | 482.8285m | n/a |
| RF2 | 12.5393 | 472.1456m | n/a |
| RF3 | 14.1304 | 1.6935 | n/a |
| RF4 | 38.8078 | 658.4397m | n/a |
| **THERMAL CAPACITANCE (Joules/°C)** | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CF1 | 1.8899m | 590.2401u | n/a |
| CF2 | 35.4800m | 1.6443u | n/a |
| CF3 | 326.7856m | 2.8424m | n/a |
| CF4 | 1.3118 | 1.7753m | n/a |

**Note**

- n/a indicates not applicable