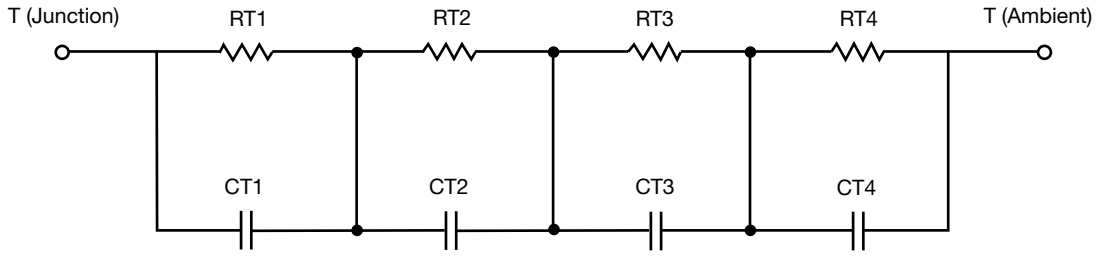
# R-C Thermal Model Parameters

## 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 P-SPICE, 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 P-SPICE 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 P-SPICE Platform”.

## R-C THERMAL MODEL FOR TANK CONFIGURATION

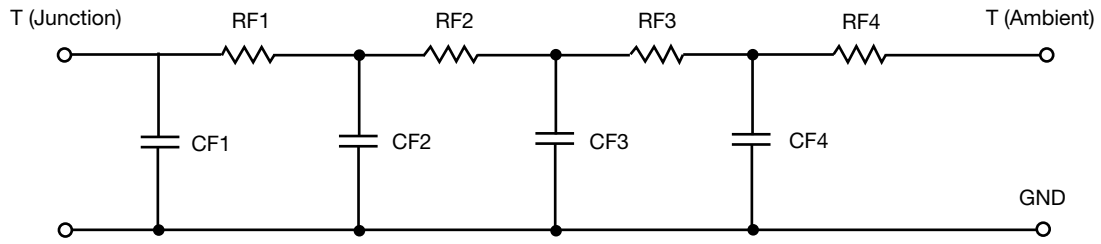



| R-C VALUES FOR TANK CONFIGURATION | | | |
|---|---|---|---|
| THERMAL RESISTANCE (°C/W) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| RT1 | 4.1459 | 740.5859m | N/A |
| RT2 | 19.9929 | 910.8433m | N/A |
| RT3 | 12.9917 | 1.0463 | N/A |
| RT4 | 32.5254 | 1.5245 | N/A |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CT1 | 800.9505u | 241.0045u | N/A |
| CT2 | 801.4770m | 9.0340m | N/A |
| CT3 | 44.6295m | 29.8575m | N/A |
| CT4 | 3.5701 | 2.9782m | 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 | 4.4762 | 1.2356 | N/A |
| RF2 | 12.8051 | 1.4012 | N/A |
| RF3 | 22.9291 | 45.9081m | N/A |
| RF4 | 29.3529 | 1.4940 | N/A |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CF1 | 1.1555m | 306.2783u | N/A |
| CF2 | 36.6809m | 2.4813m | N/A |
| CF3 | 472.5804m | 51.2240u | N/A |
| CF4 | 2.8344 | 3.7492m | N/A |

**Note**
N/A indicates not applicable