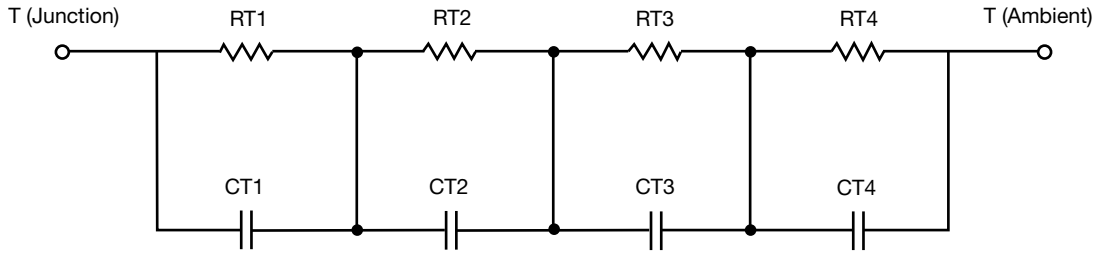
# R-C Thermal Model Parameters

## 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



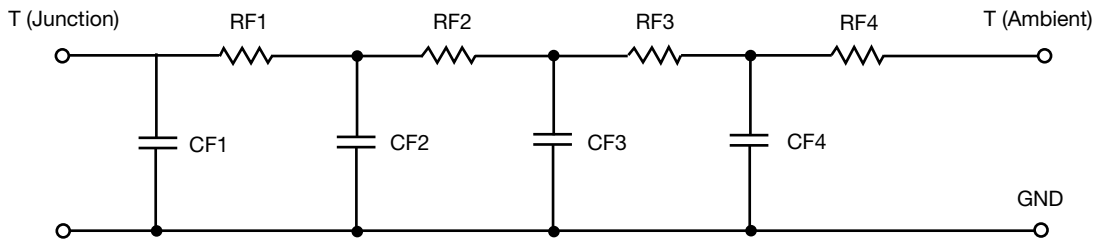

| R-C VALUES FOR TANK CONFIGURATION | | | |
|---|---|---|---|
| THERMAL RESISTANCE (°C/W) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| RT1 | 2.5955 | 285.3705m | N/A |
| RT2 | 15.3264 | 2.8979 | N/A |
| RT3 | 11.4405 | 734.4058m | N/A |
| RT4 | 51.2221 | 596.6741m | N/A |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CT1 | 961.2283u | 8.0532m | N/A |
| CT2 | 14.5446m | 5.2671m | N/A |
| CT3 | 201.9937m | 489.1647u | N/A |
| CT4 | 1.2088 | 7.1523m | 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 | 2.9841 | 596.3746m | N/A |
| RF2 | 17.6627 | 1.3870 | N/A |
| RF3 | 15.1786 | 52.5320m | N/A |
| RF4 | 44.8720 | 2.4591 | N/A |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CF1 | 1.0740m | 316.2890u | N/A |
| CF2 | 12.3408m | 782.7561u | N/A |
| CF3 | 215.8681m | 4.4959m | N/A |
| CF4 | 1.1907 | 9.2858u | N/A |

**Note**

- n/a indicates not applicable