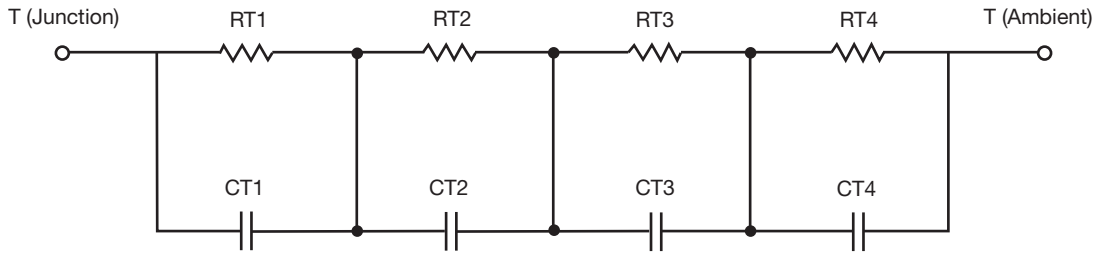
# R-C Thermal Model Parameters

## 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



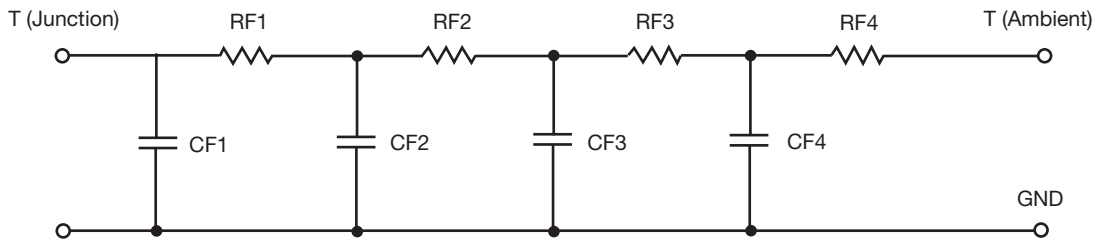

| R-C VALUES FOR TANK CONFIGURATION | | | |
|---|---|---|---|
| THERMAL RESISTANCE (°C/W) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| RT1 | 20.0863 | 216.4569m | n/a |
| RT2 | 10.8636 | 754.9670m | n/a |
| RT3 | 4.2288 | 186.1504m | n/a |
| RT4 | 29.8213 | 542.4257m | n/a |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CT1 | 1.1400 | 288.8781u | n/a |
| CT2 | 98.3500m | 4.8205m | n/a |
| CT3 | 5.1471m | 30.7426u | n/a |
| CT4 | 4.1972 | 1.4187m | 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 | 4.4887 | 353.8692m | n/a |
| RF2 | 12.3836 | 590.0752m | n/a |
| RF3 | 30.9686 | 219.4408m | n/a |
| RF4 | 17.1592 | 536.6148m | n/a |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CF1 | 4.6123m | 43.6352u | n/a |
| CF2 | 78.5369m | 785.6194u | n/a |
| CF3 | 841.9231m | 13.4004u | n/a |
| CF4 | 7.2152 | 5.8633m | n/a |

**Note**

- n/a indicates not applicable