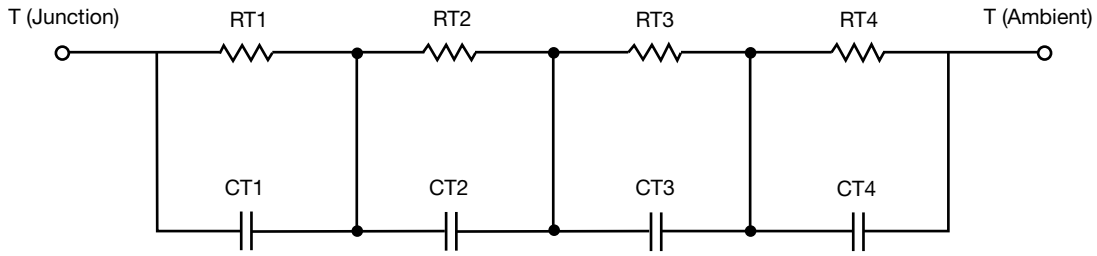
# R-C Thermal Model Parameters

## 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



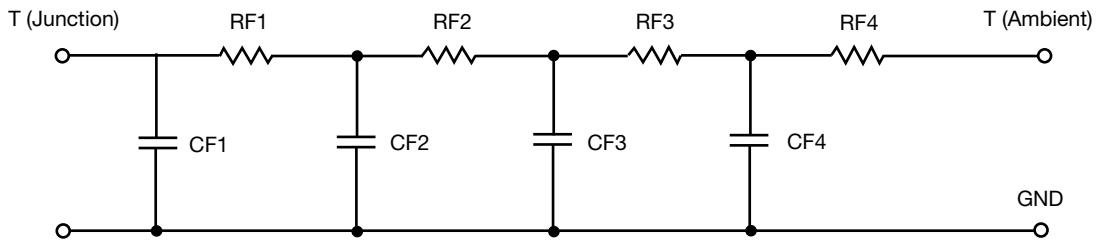

| R-C VALUES FOR TANK CONFIGURATION | | | |
|---|---|---|---|
| THERMAL RESISTANCE (°C/W) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| RT1 | 18.5376 | 135.3272m | n/a |
| RT2 | 16.3651 | 108.0265m | n/a |
| RT3 | 7.0559 | 75.7268m | n/a |
| RT4 | 2.0414 | 60.9195m | n/a |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CT1 | 5.1905 | 4.7982 | n/a |
| CT2 | 2.3878 | 547.7150m | n/a |
| CT3 | 199.3868m | 1.0087 | n/a |
| CT4 | 33.5463m | 205.0549m | 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 | 2.1358 | 66.5316m | n/a |
| RF2 | 8.0135 | 100.5608m | n/a |
| RF3 | 25.8313 | 87.9123m | n/a |
| RF4 | 8.1609 | 124.9953m | n/a |
| **THERMAL CAPACITANCE (Joules/°C)** | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CF1 | 24.6130m | 103.9792m | n/a |
| CF2 | 122.2192m | 143.9587m | n/a |
| CF3 | 1.4385 | 4.2599m | n/a |
| CF4 | 6.9247 | 4.3507 | n/a |

**Note**

- n/a indicates not applicable