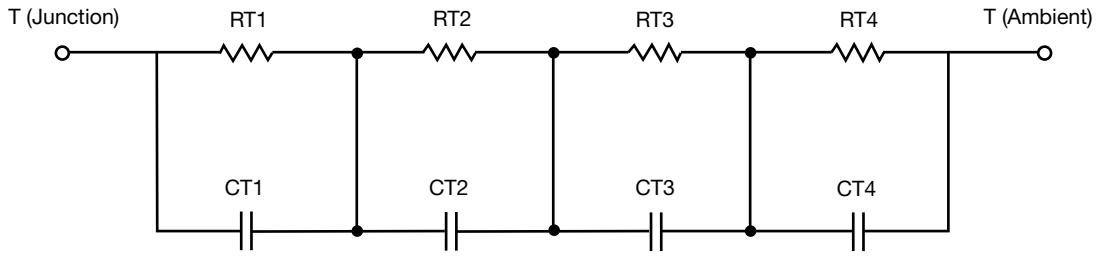
# R-C Thermal Model Parameters

## 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



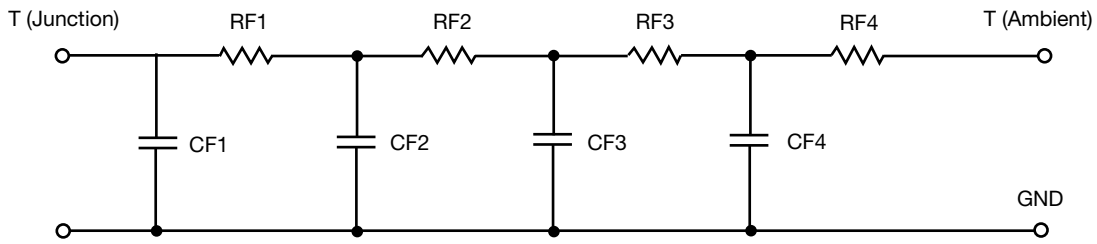

| R-C VALUES FOR TANK CONFIGURATION | | | |
|---|---|---|---|
| THERMAL RESISTANCE (°C/W) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| RT1 | 1.9287 | 181.2813m | n/a |
| RT2 | 6.2888 | 376.6000m | n/a |
| RT3 | 26.8123 | 274.5636m | n/a |
| RT4 | 19.9702 | 267.5551m | n/a |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CT1 | 3.2878m | 232.3778u | n/a |
| CT2 | 98.2082m | 1.1703m | n/a |
| CT3 | 4.5873 | 2.4221m | n/a |
| CT4 | 1.0223 | 6.2823m | 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 | 2.2390 | 245.6013m | n/a |
| RF2 | 7.4663 | 528.4207m | n/a |
| RF3 | 26.8394 | 248.3842m | n/a |
| RF4 | 18.4553 | 77.5938m | n/a |
| **THERMAL CAPACITANCE (Joules/°C)** | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CF1 | 4.0708m | 149.8094u | n/a |
| CF2 | 87.8504m | 493.0816u | n/a |
| CF3 | 764.3636m | 1.8502m | n/a |
| CF4 | 5.3730 | 323.3921u | n/a |

**Note**

- n/a indicates not applicable