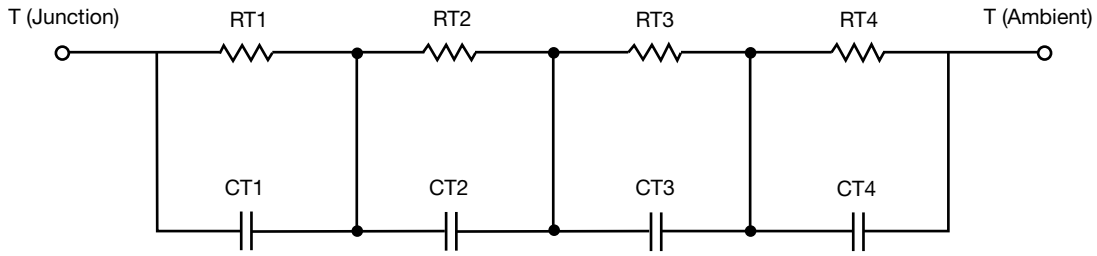
# R-C Thermal Model Parameters

## 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



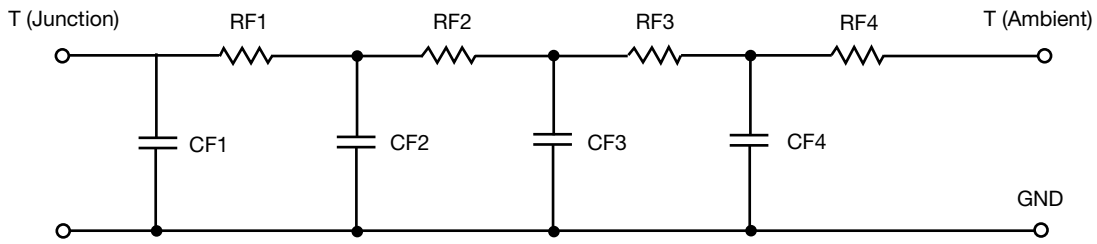

| R-C VALUES FOR TANK CONFIGURATION | | | |
|---|---|---|---|
| THERMAL RESISTANCE (°C/W) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| RT1 | n/a | 654.4054m | n/a |
| RT2 | n/a | 418.3270m | n/a |
| RT3 | n/a | 121.6249m | n/a |
| RT4 | n/a | 405.6427m | n/a |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CT1 | n/a | 1.6648m | n/a |
| CT2 | n/a | 60.2889m | n/a |
| CT3 | n/a | 32.1508m | n/a |
| CT4 | n/a | 361.4425m | 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 | n/a | 422.9873m | n/a |
| RF2 | n/a | 357.1151m | n/a |
| RF3 | n/a | 502.6891m | n/a |
| RF4 | n/a | 317.2085m | n/a |
| **THERMAL CAPACITANCE (Joules/°C)** | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CF1 | n/a | 1.5283m | n/a |
| CF2 | n/a | 46.4073m | n/a |
| CF3 | n/a | 42.0438m | n/a |
| CF4 | n/a | 360.7781m | n/a |

**Note**

- n/a indicates not applicable