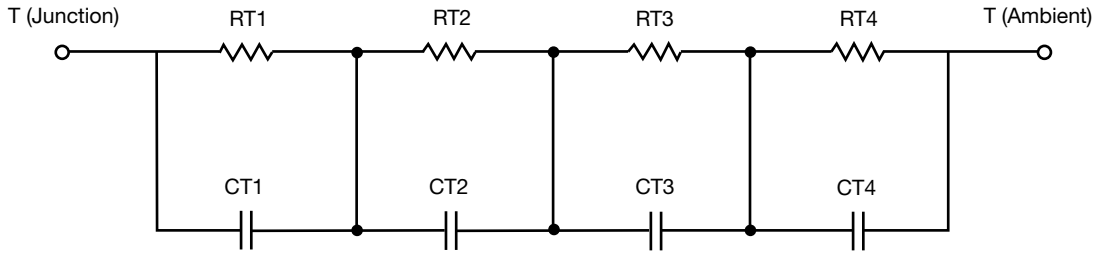
# R-C Thermal Model Parameters

## 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

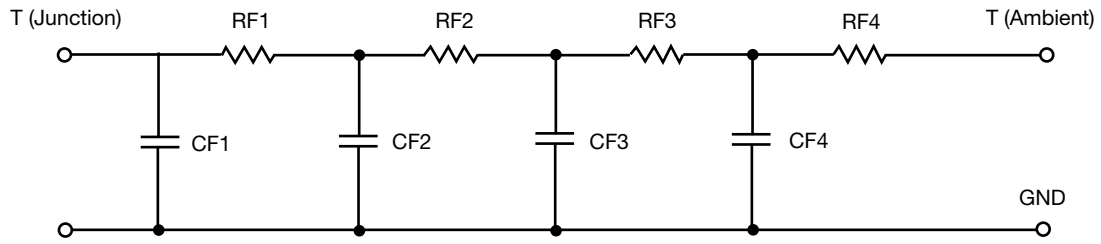



| R-C VALUES FOR TANK CONFIGURATION | | | |
|---|---|---|---|
| THERMAL RESISTANCE (°C/W) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| RT1 | 13.5639 | N/A | 18.9693 |
| RT2 | 36.8842 | N/A | 17.8660 |
| RT3 | 25.3778 | N/A | 6.3780 |
| RT4 | 49.1741 | N/A | 1.7867 |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CT1 | 167.2465u | N/A | 840.9884u |
| CT2 | 2.1381m | N/A | 3.5773m |
| CT3 | 43.3579m | N/A | 89.6286u |
| CT4 | 1.3696 | N/A | 415.0526m |

**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 | 16.0375 | N/A | 11.0535 |
| RF2 | 35.7520 | N/A | 24.8198 |
| RF3 | 24.9851 | N/A | 4.4654 |
| RF4 | 48.2254 | N/A | 4.5795 |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CF1 | 166.9774u | N/A | 112.6885u |
| CF2 | 1.9125m | N/A | 798.1252u |
| CF3 | 35.8816m | N/A | 7.3841m |
| CF4 | 1.3368 | N/A | 120.9719u |

**Note**
N/A indicates not applicable