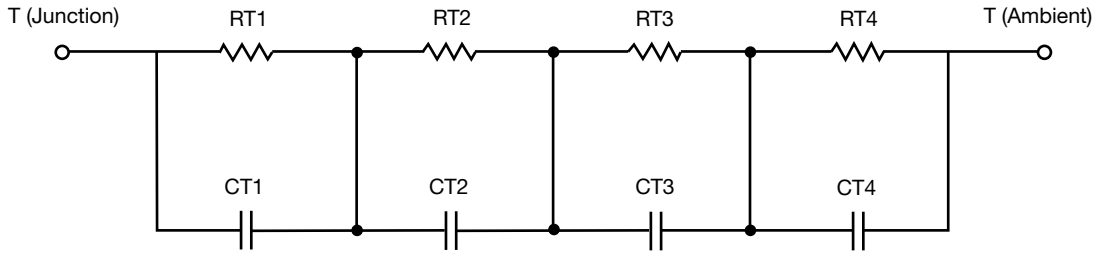
# R-C Thermal Model Parameters

## 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

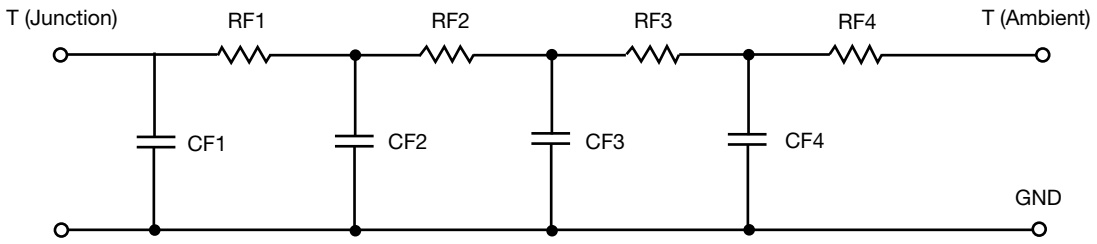



| R-C VALUES FOR TANK CONFIGURATION | | | |
|---|---|---|---|
| THERMAL RESISTANCE (°C/W) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| RT1 | 4.8881 | 1.5265 | N/A |
| RT2 | 12.6963 | 1.3113 | N/A |
| RT3 | 12.2819 | 714.7374m | N/A |
| RT4 | 50.8495 | 963.3426m | N/A |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CT1 | 4.2066m | 7.2472m | N/A |
| CT2 | 21.7184m | 16.3460m | N/A |
| CT3 | 188.4778m | 8.0088m | N/A |
| CT4 | 1.2411 | 529.9562u | 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 | 6.5649 | 596.3771m | N/A |
| RF2 | 16.4214 | 1.3870 | N/A |
| RF3 | 15.4782 | 52.5323m | N/A |
| RF4 | 42.3825 | 2.4591 | N/A |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CF1 | 3.1971m | 316.2933u | N/A |
| CF2 | 18.2266m | 782.7577u | N/A |
| CF3 | 318.8143m | 4.4959m | N/A |
| CF4 | 1.1858 | 9.2858u | N/A |

**Note**
N/A indicates not applicable