# 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
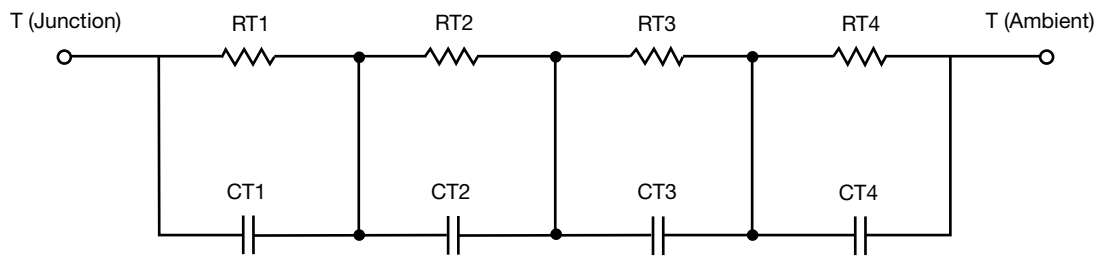


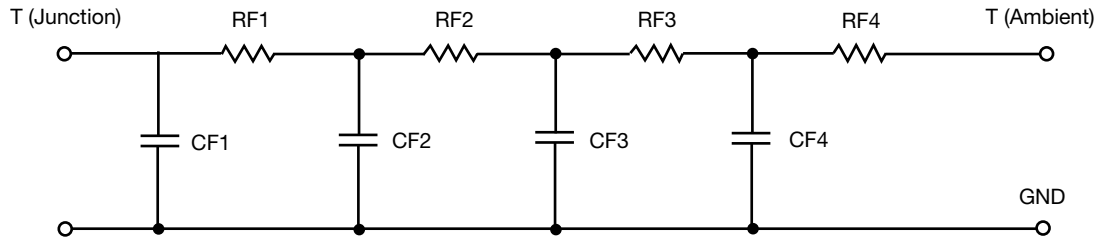| R-C VALUES FOR TANK CONFIGURATION | | | |
|---|---|---|---|
| **THERMAL RESISTANCE (°C/W)** | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| RT1 | n/a | 112.2723m | n/a |
| RT2 | n/a | 236.1522m | n/a |
| RT3 | n/a | 575.1598m | n/a |
| RT4 | n/a | 28.9012m | n/a |
| **THERMAL CAPACITANCE (Joules/°C)** | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CT1 | n/a | 6.8072m | n/a |
| CT2 | n/a | 12.5372m | n/a |
| CT3 | n/a | 70.2128m | n/a |
| CT4 | n/a | 476.8608u | 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 | 115.9868m | n/a |
| RF2 | n/a | 320.3595m | n/a |
| RF3 | n/a | 447.5658m | n/a |
| RF4 | n/a | 68.6261m | n/a |
| **THERMAL CAPACITANCE (Joules/°C)** | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CF1 | n/a | 1.7833m | n/a |
| CF2 | n/a | 5.6662m | n/a |
| CF3 | n/a | 68.6805m | n/a |
| CF4 | n/a | 1.2345m | n/a |

**Note**
- n/a indicates not applicable