# 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
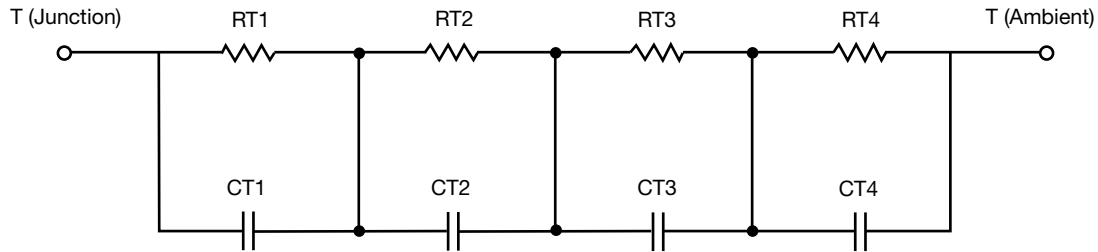


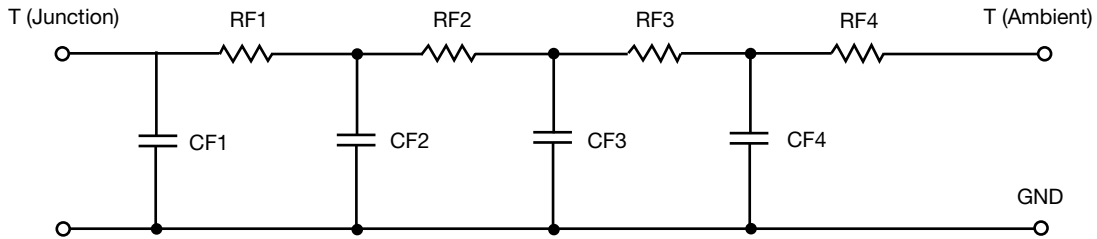| R-C VALUES FOR TANK CONFIGURATION | | | |
|---|---|---|---|
| THERMAL RESISTANCE (°C/W) | | | |
| Junction to | Ambient | Case | Foot |
| RT1 | N/A | 106.9664m | N/A |
| RT2 | N/A | 156.3672m | N/A |
| RT3 | N/A | 79.9820m | N/A |
| RT4 | N/A | 157.4914m | N/A |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CT1 | N/A | 69.7249m | N/A |
| CT2 | N/A | 177.0388m | N/A |
| CT3 | N/A | 20.1484m | N/A |
| CT4 | N/A | 174.1224m | 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 | 266.8418m | N/A |
| RF2 | N/A | 161.0757m | N/A |
| RF3 | N/A | 42.8509m | N/A |
| RF4 | N/A | 33.2921m | N/A |
| **THERMAL CAPACITANCE (Joules/°C)** | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CF1 | N/A | 17.6657m | N/A |
| CF2 | N/A | 66.4172m | N/A |
| CF3 | N/A | 378.3382m | N/A |
| CF4 | N/A | 5.7609m | N/A |

**Note**

• n/a indicates not applicable