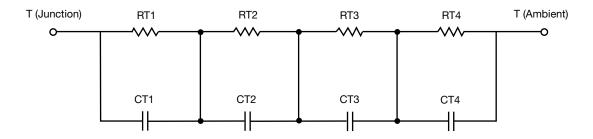# R-C Thermal Model Parameters

## 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



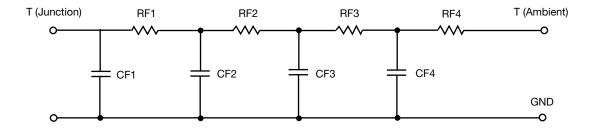| R-C VALUES FOR TANK CONFIGURATION | | | |
|---|---|---|---|
| THERMAL RESISTANCE (°C/W) | | | |
| Junction to | Ambient | Case | Foot |
| RT1 | n/a | 110.2109m | n/a |
| RT2 | n/a | 163.6133m | n/a |
| RT3 | n/a | 174.5481m | n/a |
| RT4 | n/a | 1.6277m | n/a |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CT1 | n/a | 250.3450m | n/a |
| CT2 | n/a | 23.5235m | n/a |
| CT3 | n/a | 167.0594m | n/a |
| CT4 | n/a | 5.8191m | 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 | 179.5682m | n/a |
| RF2 | n/a | 1.7275u | n/a |
| RF3 | n/a | 32.7454m | n/a |
| RF4 | n/a | 237.3969m | n/a |
| **THERMAL CAPACITANCE (Joules/°C)** | | | |
| Junction to | Ambient | Case | Foot |
| CF1 | n/a | 16.2094m | n/a |
| CF2 | n/a | 20.0193m | n/a |
| CF3 | n/a | 3.2008m | n/a |
| CF4 | n/a | 60.9663m | n/a |

**Note**

• n/a indicates not applicable

For technical questions, contact: