



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 | 23.4478 | 50.0169m | n/a |
| RT2 | 797.1000m | 157.3543m | n/a |
| RT3 | 14.6351 | 123.7291m | n/a |
| RT4 | 1.12 | 68.8997m | n/a |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CT1 | 7.4629 | 12.7568m | n/a |
| CT2 | 28.7196m | 75.1826m | n/a |
| CT3 | 2.1169 | 434.9016m | n/a |
| CT4 | 1.6092 | 834.9932m | 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 | 804m | 31.6358m | n/a |
| RF2 | 2.0816 | 93.3162m | n/a |
| RF3 | 21.3247 | 175.4962m | n/a |
| RF4 | 15.7897 | 99.5518m | n/a |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CF1 | 17.7230m | 7.1603m | n/a |
| CF2 | 551.1173m | 18.7343m | n/a |
| CF3 | 1.0762 | 57.7902m | n/a |
| CF4 | 8.1645 | 471.4502m | n/a |

Note

- n/a indicates not applicable

