

R-C Thermal Model Parameters

DESCRIPTION

The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse Transient Thermal Impedance curves for the MOSFET.

R-C values for the electrical circuit in the Foster/Tank and Cauer/Filter configurations are included.

Note:

For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION

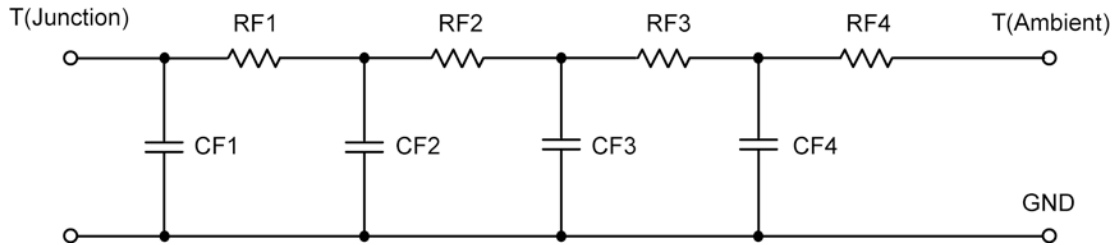


| R-C VALUES FOR TANK CONFIGURATION | | | |
|--|------------|------|------|
| Thermal Resistance (°C/W) | | | |
| Junction to | Ambient | Case | Foot |
| RT1 | 57.6290 | N/A | N/A |
| RT2 | 124.8459 | N/A | N/A |
| RT3 | 165.4179 | N/A | N/A |
| RT4 | 224.2225 | N/A | N/A |
| Thermal Capacitance (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CT1 | 310.3472 u | N/A | N/A |
| CT2 | 19.5184 m | N/A | N/A |
| CT3 | 1.1682 m | N/A | N/A |
| CT4 | 600.6152 m | N/A | N/A |

This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet 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 | 87.1458 | N/A | N/A |
| RF2 | 154.9843 | N/A | N/A |
| RF3 | 113.2883 | N/A | N/A |
| RF4 | 216.6971 | N/A | N/A |
| Thermal Capacitance (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CF1 | 239.4360 u | N/A | N/A |
| CF2 | 943.6527 u | N/A | N/A |
| CF3 | 19.9458 m | N/A | N/A |
| CF4 | 594.5374 m | N/A | N/A |

Note: NA indicates not applicable

Reference:

[1] "A Simple Method of Generating Thermal Models for a Power MOSFET" by Wharton McDaniel and Kandarp Pandya. IEEE / SEMITHERM 2002

