

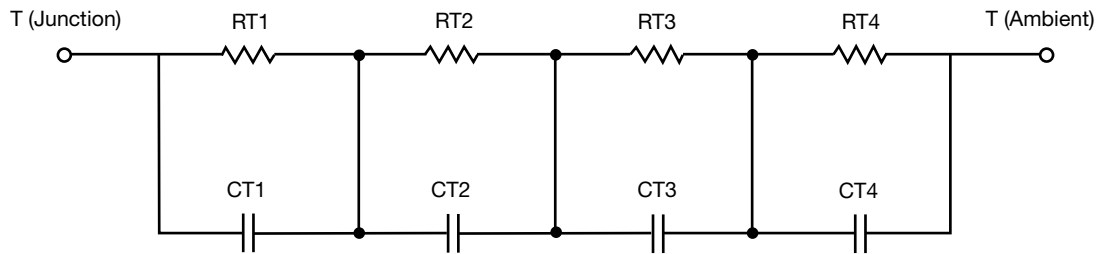
R-C Thermal Model Parameters

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 | 41.9031 | 2.8696 | n/a |
| RT2 | 12.8317 | 2.7378 | n/a |
| RT3 | 18.1752 | 152.6000m | n/a |
| RT4 | 7.09 | 2.24 | n/a |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CT1 | 2.1295 | 1.3933m | n/a |
| CT2 | 313.2599m | 925.0217u | n/a |
| CT3 | 6.0884m | 170.9073m | n/a |
| CT4 | 99.4504u | 138.2442u | n/a |

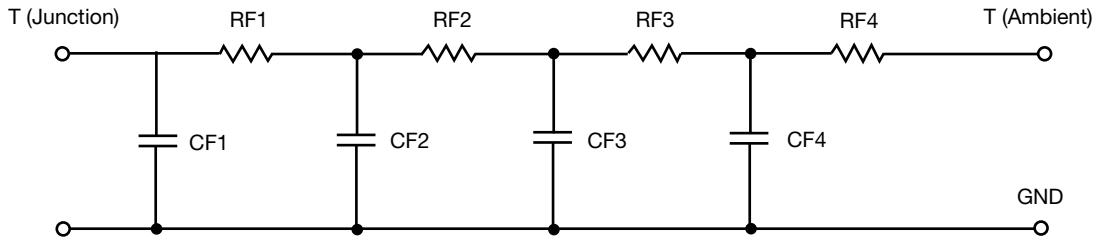
Note

- 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 | 7.0354 | 3.3153 | n/a |
| RF2 | 18.5212 | 1.7748 | n/a |
| RF3 | 15.8857 | 1.6543 | n/a |
| RF4 | 38.5577 | 1.2556 | n/a |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CF1 | 99.9035u | 109.2430u | n/a |
| CF2 | 5.3927m | 472.1952u | n/a |
| CF3 | 243.0740m | 61.1653u | n/a |
| CF4 | 2.034 | 1.7381m | n/a |

Note

- n/a indicates not applicable

