

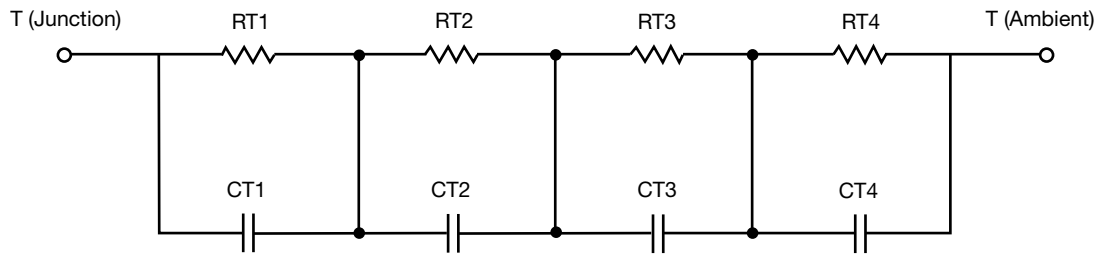
R-C Thermal Model Parameters

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 | 30.6943 | N/A | 19.6269 |
| RT2 | 25.6066 | N/A | 11.2760 |
| RT3 | 10.8922 | N/A | 6.7062 |
| RT4 | 57.8069 | N/A | 7.4109 |
| THERMAL CAPACITANCE (JOULES/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CT1 | 2.7069m | N/A | 2.9106m |
| CT2 | 47.5358m | N/A | 2.2316m |
| CT3 | 289.2588u | N/A | 184.2558u |
| CT4 | 1.6008 | N/A | 265.9319m |

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 | 14.0749 | N/A | 6.8364 |
| RF2 | 32.3325 | N/A | 20.8315 |
| RF3 | 22.7760 | N/A | 10.1486 |
| RF4 | 55.8166 | N/A | 7.1835 |
| THERMAL CAPACITANCE (JOULES/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CF1 | 293.6227u | N/A | 126.1423u |
| CF2 | 2.6071m | N/A | 944.0284u |
| CF3 | 60.7101m | N/A | 2.1748m |
| CF4 | 1.6334 | N/A | 221.8686m |

Note

- n/a indicates not applicable

