



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 | 17.0294 | 366.3725m | n/a |
| RT2 | 3.1368 | 6.6290m | n/a |
| RT3 | 1.3633 | 98.7891m | n/a |
| RT4 | 18.5467 | 131.0779m | n/a |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CT1 | 4.9710 | 29.2583m | n/a |
| CT2 | 2.2365 | 121.0969u | n/a |
| CT3 | 143.2271m | 12.5289m | n/a |
| CT4 | 6.0270 | 465.9219m | n/a |

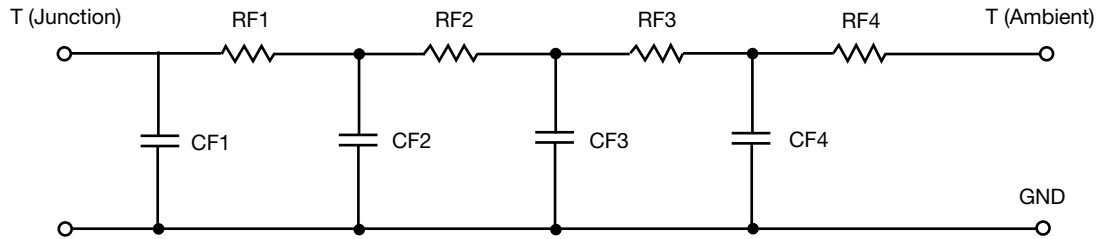
Note

- 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 | 1.6950 | 24.2094m | n/a |
| RF2 | 8.2556 | 157.3992m | n/a |
| RF3 | 21.6592 | 268.3010m | n/a |
| RF4 | 8.4253 | 150.1487m | n/a |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CF1 | 113.7574m | 3.1297m | n/a |
| CF2 | 1.2365 | 6.2111m | n/a |
| CF3 | 1.2905 | 16.3751m | n/a |
| CF4 | 4.8640 | 196.0951m | n/a |

Note

- n/a indicates not applicable

