



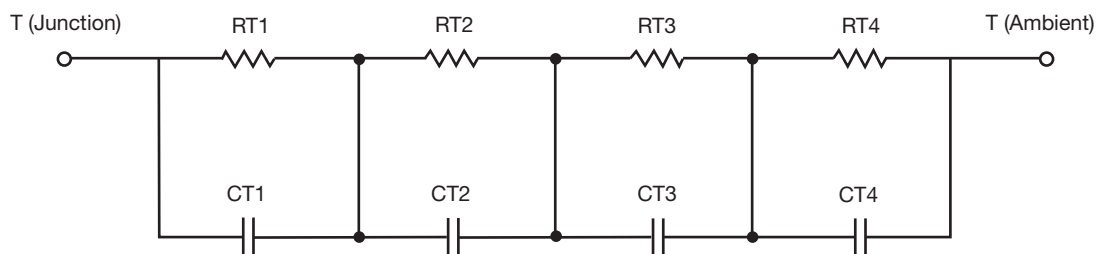
## R-C Thermal Model Parameters

### 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                               | 3.1734    | 158.9524m | n/a  |
| RT2                               | 5.5419    | 393.1358m | n/a  |
| RT3                               | 10.6722   | 139.9867m | n/a  |
| RT4                               | 22.9122   | 27.9335m  | n/a  |
| THERMAL CAPACITANCE (Joules/°C)   |           |           |      |
| Junction to                       | Ambient   | Case      | Foot |
| CT1                               | 11.5171m  | 9.8236m   | n/a  |
| CT2                               | 305.0076m | 927.6306u | n/a  |
| CT3                               | 22.4570   | 185.0871u | n/a  |
| CT4                               | 1.8013    | 56.8041m  | n/a  |

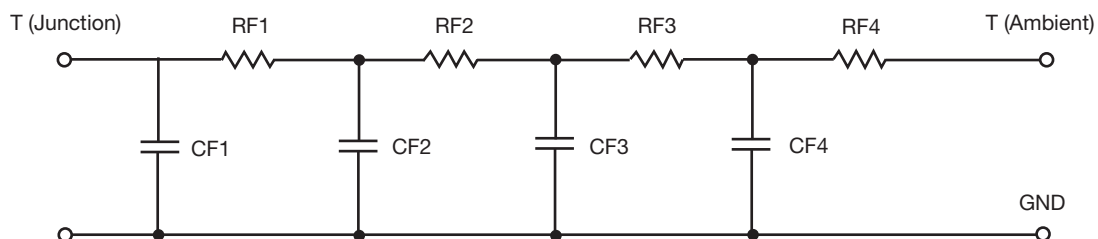
#### Note

- 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                                 | 2.9729    | 322.2585m | n/a  |
| RF2                                 | 7.1949    | 1.0353m   | n/a  |
| RF3                                 | 22.1252   | 210.5813m | n/a  |
| RF4                                 | 9.5835    | 187.1602m | n/a  |
| THERMAL CAPACITANCE (Joules/°C)     |           |           |      |
| Junction to                         | Ambient   | Case      | Foot |
| CF1                                 | 8.9247m   | 213.8844u | n/a  |
| CF2                                 | 205.9857m | 1.5682m   | n/a  |
| CF3                                 | 1.3841    | 112.7852u | n/a  |
| CF4                                 | 13.8466   | 57.3493u  | n/a  |

### Note

- n/a indicates not applicable

