

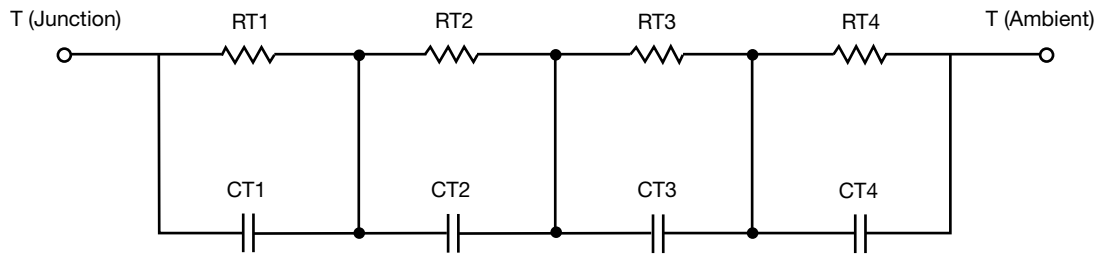
## R-C Thermal Model Parameters

### 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                               | 4.3526    | 362.3679u | n/a  |
| RT2                               | 7.8613    | 504.3467m | n/a  |
| RT3                               | 12.0154   | 972.1139m | n/a  |
| RT4                               | 56.7707   | 923.1770m | n/a  |
| THERMAL CAPACITANCE (Joules/°C)   |           |           |      |
| Junction to                       | Ambient   | Case      | Foot |
| CT1                               | 6.5696m   | 1.9260m   | n/a  |
| CT2                               | 31.5646m  | 787.5516u | n/a  |
| CT3                               | 118.2264m | 18.2079m  | n/a  |
| CT4                               | 1.2151    | 9.3126m   | n/a  |

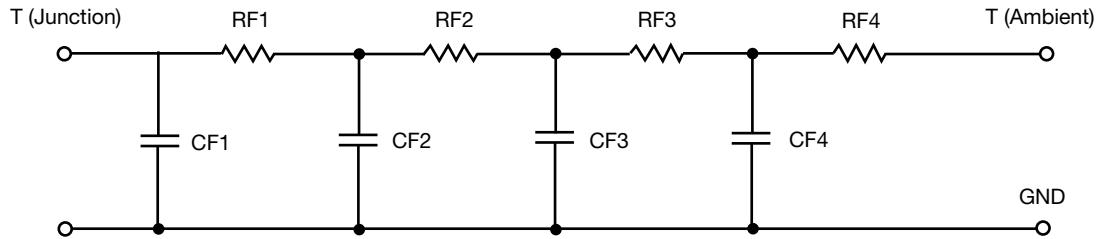
#### Note

- 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                                 | 7.4586    | 6.0391m   | n/a  |
| RF2                                 | 9.9846    | 670.9463m | n/a  |
| RF3                                 | 10.8213   | 1.0320    | n/a  |
| RF4                                 | 52.7355   | 691.0146m | n/a  |
| THERMAL CAPACITANCE (Joules/°C)     |           |           |      |
| Junction to                         | Ambient   | Case      | Foot |
| CF1                                 | 5.8233m   | 125.4667u | n/a  |
| CF2                                 | 23.7571m  | 695.7232u | n/a  |
| CF3                                 | 158.3257m | 6.0783m   | n/a  |
| CF4                                 | 1.1324    | 527.9622u | n/a  |

Note

- n/a indicates not applicable

