



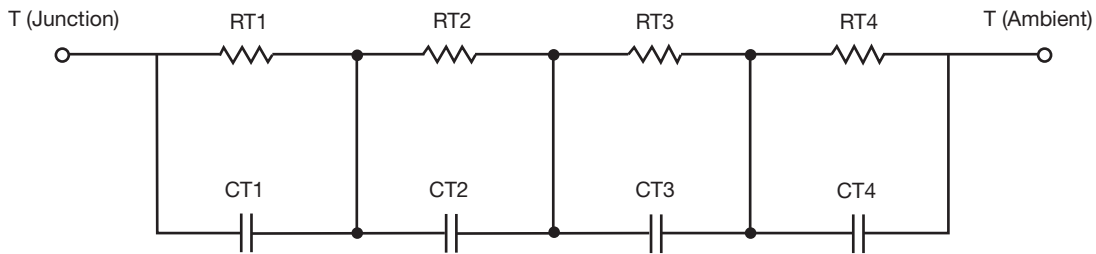
# R-C Thermal Model Parameters

## 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                               | n/a     | 42.7770m  | n/a  |
| RT2                               | n/a     | 63.5712m  | n/a  |
| RT3                               | n/a     | 353.3086m | n/a  |
| RT4                               | n/a     | 240.3432m | n/a  |
| THERMAL CAPACITANCE (Joules/°C)   |         |           |      |
| Junction to                       | Ambient | Case      | Foot |
| CT1                               | n/a     | 67.9642m  | n/a  |
| CT2                               | n/a     | 2.6422m   | n/a  |
| CT3                               | n/a     | 73.2436m  | n/a  |
| CT4                               | n/a     | 15.9001m  | n/a  |

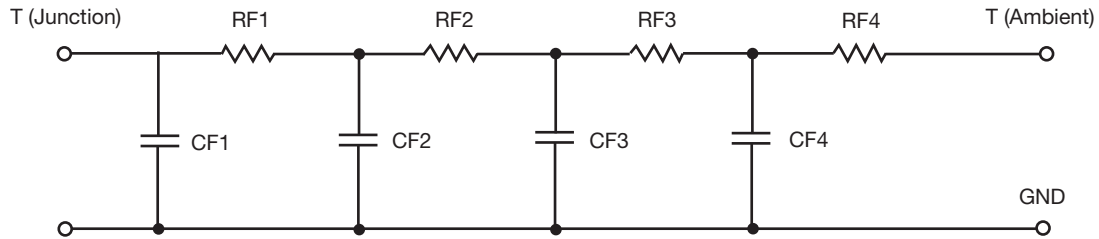
### Note

- 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                                 | n/a     | 111.9788m | n/a  |
| RF2                                 | n/a     | 340.4747m | n/a  |
| RF3                                 | n/a     | 203.9680m | n/a  |
| RF4                                 | n/a     | 43.5785m  | n/a  |
| THERMAL CAPACITANCE (Joules/°C)     |         |           |      |
| Junction to                         | Ambient | Case      | Foot |
| CF1                                 | n/a     | 2.6760m   | n/a  |
| CF2                                 | n/a     | 9.8292m   | n/a  |
| CF3                                 | n/a     | 87.8505m  | n/a  |
| CF4                                 | n/a     | 6.0494m   | n/a  |

Note

- n/a indicates not applicable

