

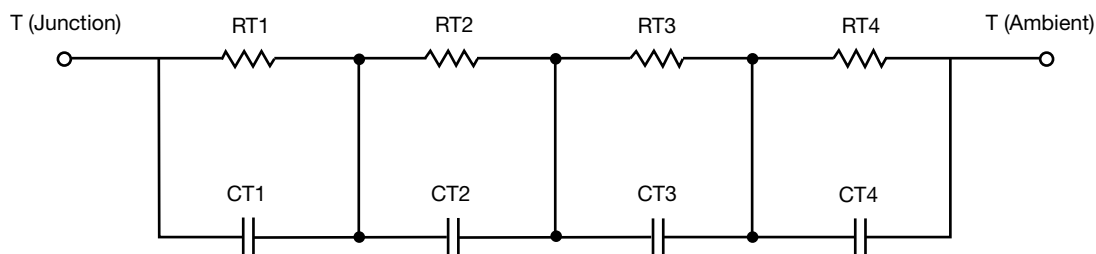
## R-C Thermal Model Parameters

### 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                               | 12.2122   | 616.8401m | n/a  |
| RT2                               | 14.6817   | 515.6631m | n/a  |
| RT3                               | 4.0169    | 517.7977m | n/a  |
| RT4                               | 39.0892   | 554.0696m | n/a  |
| THERMAL CAPACITANCE (Joules/°C)   |           |           |      |
| Junction to                       | Ambient   | Case      | Foot |
| CT1                               | 992.1414m | 5.1771m   | n/a  |
| CT2                               | 25.9155m  | 5.0661m   | n/a  |
| CT3                               | 1.9190m   | 457.2168u | n/a  |
| CT4                               | 2.2785    | 15.3650m  | 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                                 | 5.2854    | 821.3550m | n/a  |
| RF2                                 | 13.7239   | 902.8437m | n/a  |
| RF3                                 | 16.6906   | 198.9964m | n/a  |
| RF4                                 | 34.3001   | 270.9111m | n/a  |
| THERMAL CAPACITANCE (Joules/°C)     |           |           |      |
| Junction to                         | Ambient   | Case      | Foot |
| CF1                                 | 2.1527m   | 425.3180u | n/a  |
| CF2                                 | 25.0676m  | 2.3152m   | n/a  |
| CF3                                 | 500.3781m | 521.9958u | n/a  |
| CF4                                 | 1.8089    | 15.8242m  | n/a  |

### Note

- n/a indicates not applicable

