

## 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 P-SPICE, 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 P-SPICE 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 P-SPICE 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     | 254.3427 m | N/A  |
| RT2                               | N/A     | 227.5478 m | N/A  |
| RT3                               | N/A     | 134.2796 m | N/A  |
| RT4                               | N/A     | 33.8299 m  | N/A  |
| THERMAL CAPACITANCE (Joules/°C)   |         |            |      |
| Junction to                       | Ambient | Case       | Foot |
| CT1                               | N/A     | 438.5086 m | N/A  |
| CT2                               | N/A     | 97.8604 m  | N/A  |
| CT3                               | N/A     | 22.5297 m  | N/A  |
| CT4                               | N/A     | 3.2729 m   | N/A  |

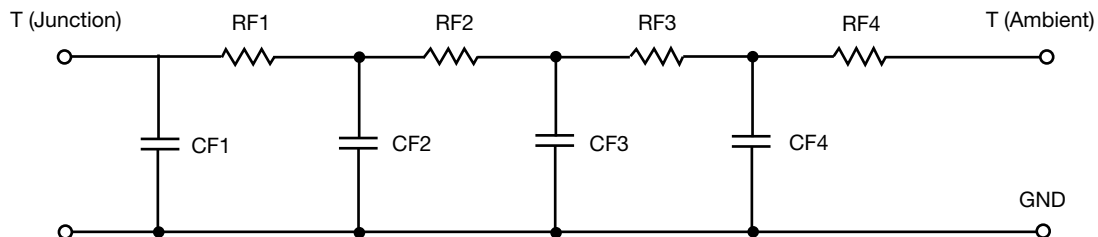
#### Note

- 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     | 90.0724 m  | N/A  |
| RF2                                 | N/A     | 222.6090 m | N/A  |
| RF3                                 | N/A     | 218.2549 m | N/A  |
| RF4                                 | N/A     | 119.0637 m | N/A  |
| THERMAL CAPACITANCE (Joules/°C)     |         |            |      |
| Junction to                         | Ambient | Case       | Foot |
| CF1                                 | N/A     | 4.3981 m   | N/A  |
| CF2                                 | N/A     | 26.8346 m  | N/A  |
| CF3                                 | N/A     | 101.1615 m | N/A  |
| CF4                                 | N/A     | 897.0791 m | N/A  |

**Note**

- N/A indicates not applicable

