

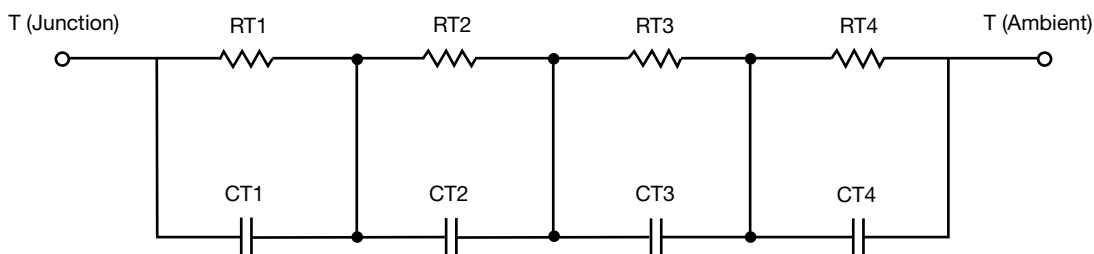
## R-C Thermal Model Parameters

### 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                               | 3.9506    | 362.3000u | n/a  |
| RT2                               | 7.5613    | 504.3467m | n/a  |
| RT3                               | 12.7154   | 972.1139m | n/a  |
| RT4                               | 56.7727   | 923.1771m | n/a  |
| THERMAL CAPACITANCE (Joules/°C)   |           |           |      |
| Junction to                       | Ambient   | Case      | Foot |
| CT1                               | 6.5672m   | 1.9260m   | n/a  |
| CT2                               | 27.5455m  | 787.5516u | n/a  |
| CT3                               | 107.3820m | 18.2079m  | n/a  |
| CT4                               | 1.2177    | 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                             | 7.4585    | 6.0391m   | n/a  |
| RF2                             | 9.7845    | 691.0146m | n/a  |
| RF3                             | 11.0215   | 1.0320    | n/a  |
| RF4                             | 52.7355   | 670.9463m | n/a  |
| THERMAL CAPACITANCE (Joules/°C) |           |           |      |
| Junction to                     | Ambient   | Case      | Foot |
| CF1                             | 5.7772m   | 125.6006u | n/a  |
| CF2                             | 22.9987m  | 711.8881u | n/a  |
| CF3                             | 156.0909m | 6.1264m   | n/a  |
| CF4                             | 1.1367    | 528.5035u | n/a  |

#### Note

- n/a indicates not applicable

