

## 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

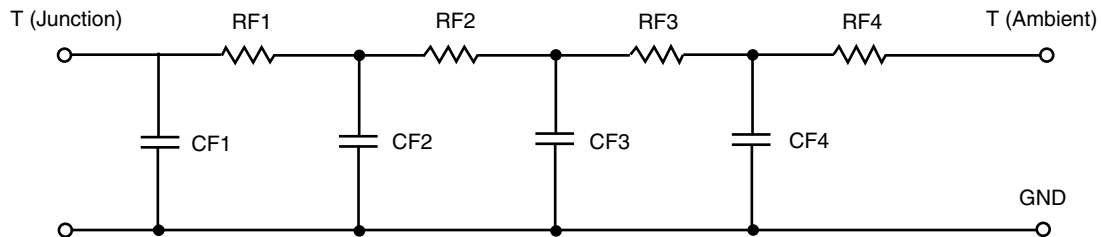


| R-C VALUES FOR TANK CONFIGURATION |            |            |      |
|-----------------------------------|------------|------------|------|
| THERMAL RESISTANCE (°C/W)         |            |            |      |
| Junction to                       | Ambient    | Case       | Foot |
| RT1                               | 4.2525     | 362.4000 u | N/A  |
| RT2                               | 7.7612     | 504.3467 m | N/A  |
| RT3                               | 12.2156    | 972.1139 m | N/A  |
| RT4                               | 56.7707    | 923.1770 m | N/A  |
| THERMAL CAPACITANCE (Joules/°C)   |            |            |      |
| Junction to                       | Ambient    | Case       | Foot |
| CT1                               | 6.7215 m   | 1.9260 m   | N/A  |
| CT2                               | 30.3603 m  | 787.5516 u | N/A  |
| CT3                               | 114.6204 m | 18.2079 m  | N/A  |
| CT4                               | 1.2151     | 9.3126 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                             | 7.6647     | 2.8700 m   | N/A  |
| RF2                             | 9.5907     | 672.0000 m | N/A  |
| RF3                             | 10.8274    | 1.0331     | N/A  |
| RF4                             | 52.8172    | 692.0300 m | N/A  |
| THERMAL CAPACITANCE (Joules/°C) |            |            |      |
| Junction to                     | Ambient    | Case       | Foot |
| CF1                             | 5.9406 m   | 125.4667 u | N/A  |
| CF2                             | 24.1531 m  | 695.7232 u | N/A  |
| CF3                             | 154.1887 m | 6.0783 m   | N/A  |
| CF4                             | 1.1220     | 527.9622 u | N/A  |

**Note**

N/A indicates not applicable

