

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

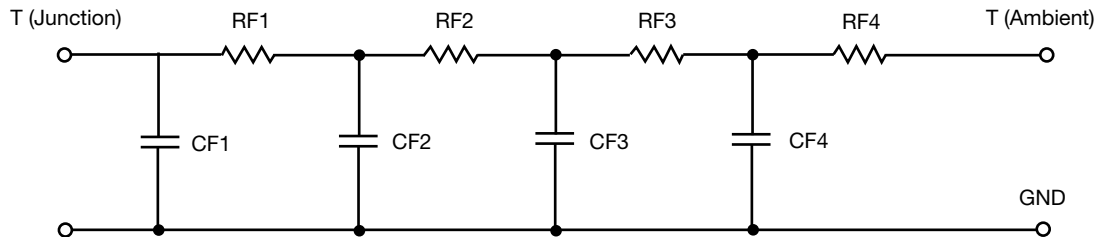


| R-C VALUES FOR TANK CONFIGURATION | | | |
|-----------------------------------|-----------|-----------|------|
| THERMAL RESISTANCE (°C/W) | | | |
| Junction to | Ambient | Case | Foot |
| RT1 | 27.1864 | 226.4103m | N/A |
| RT2 | 10.1627 | 3.7152 | N/A |
| RT3 | 16.3707 | 3.4716 | N/A |
| RT4 | 51.2802 | 2.0730 | N/A |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CT1 | 2.8361m | 9.9552m | N/A |
| CT2 | 158.1645u | 427.5633u | N/A |
| CT3 | 138.5874m | 126.9821u | N/A |
| CT4 | 1.5909 | 114.2547u | 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 | 14.2316 | 2.7405 | N/A |
| RF2 | 31.2018 | 4.8557 | N/A |
| RF3 | 23.4768 | 148.0019m | N/A |
| RF4 | 36.0898 | 1.7443 | N/A |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CF1 | 202.3462u | 32.0110u | N/A |
| CF2 | 4.7858m | 77.9058u | N/A |
| CF3 | 413.4002m | 542.5505u | N/A |
| CF4 | 2.3931 | 15.9981u | N/A |

Note

N/A indicates not applicable

