

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 | 161.0019 | N/A | N/A |
| RT2 | 282.5926 | N/A | N/A |
| RT3 | 174.2067 | N/A | N/A |
| RT4 | 32.1988 | N/A | N/A |
| Thermal Capacitance (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CT1 | 995.1151 m | N/A | N/A |
| CT2 | 41.5062 m | N/A | N/A |
| CT3 | 26.6171 m | N/A | N/A |
| CT4 | 11.2040 m | N/A | N/A |

This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet 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 | 59.1325 | N/A | N/A |
| RF2 | 295.9712 | N/A | N/A |
| RF3 | 165.5854 | N/A | N/A |
| RF4 | 129.3109 | N/A | N/A |
| Thermal Capacitance (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CF1 | 6.4904 m | N/A | N/A |
| CF2 | 7.8497 m | N/A | N/A |
| CF3 | 48.2527 m | N/A | N/A |
| CF4 | 1.2162 | N/A | N/A |

Note

NA indicates not applicable

