

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 | 50.1434 | N/A | N/A |
| RT2 | 42.8981 | N/A | N/A |
| RT3 | 22.1855 | N/A | N/A |
| RT4 | 5.3903 | N/A | N/A |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CT1 | 580.2952m | N/A | N/A |
| CT2 | 98.3493m | N/A | N/A |
| CT3 | 18.4890m | N/A | N/A |
| CT4 | 2.4647m | N/A | 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 | 18.0080 | N/A | N/A |
| RF2 | 46.1654 | N/A | N/A |
| RF3 | 46.8120 | N/A | N/A |
| RF4 | 9.2335 | N/A | N/A |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CF1 | 4.7558m | N/A | N/A |
| CF2 | 35.7696m | N/A | N/A |
| CF3 | 252.0909m | N/A | N/A |
| CF4 | 5.4562 | N/A | N/A |

Note

N/A indicates not applicable

