



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 | n/a | 1.6473 | n/a |
| RT2 | n/a | 859.5215m | n/a |
| RT3 | n/a | 439.8421m | n/a |
| RT4 | n/a | 853.3364m | n/a |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CT1 | n/a | 14.4765m | n/a |
| CT2 | n/a | 25.0334m | n/a |
| CT3 | n/a | 580.9189u | n/a |
| CT4 | n/a | 28.3500m | 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 | n/a | 608.8810m | n/a |
| RF2 | n/a | 1.3299 | n/a |
| RF3 | n/a | 264.4190m | n/a |
| RF4 | n/a | 1.5968 | n/a |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CF1 | n/a | 785.6023u | n/a |
| CF2 | n/a | 6.3037m | n/a |
| CF3 | n/a | 39.0859u | n/a |
| CF4 | n/a | 1.2868m | n/a |

Note

- n/a indicates not applicable

