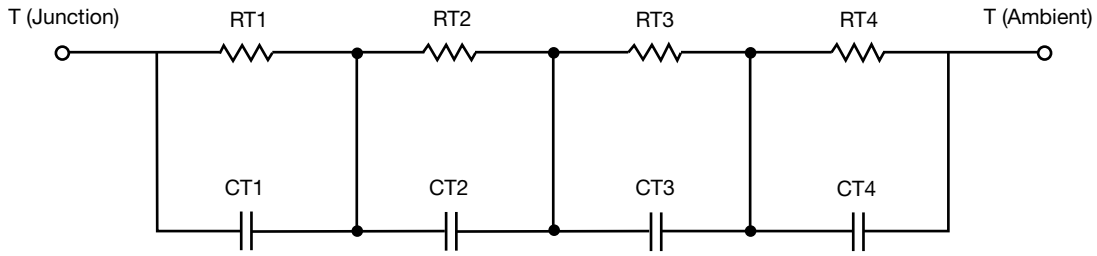
# R-C Thermal Model Parameters

## 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 | 4.4411 | 159.6456m | n/a |
| RT2 | 11.1420 | 414.5684m | n/a |
| RT3 | 29.1009 | 340.0141m | n/a |
| RT4 | 20.3160 | 485.7719m | n/a |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CT1 | 5.6972m | 43.2122u | n/a |
| CT2 | 106.8681m | 5.4166m | n/a |
| CT3 | 4.3775 | 292.3678u | n/a |
| CT4 | 1.2075 | 2.6255m | 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.*



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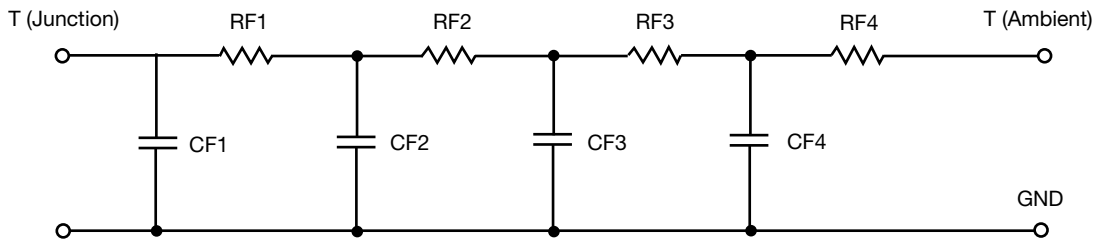
## R-C THERMAL MODEL FOR FILTER CONFIGURATION




| R-C VALUES FOR FILTER CONFIGURATION | | | |
|---|---|---|---|
| THERMAL RESISTANCE (°C/W) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| RF1 | 4.3744 | 198.6696m | n/a |
| RF2 | 12.2096 | 396.0526m | n/a |
| RF3 | 28.7971 | 780.8727m | n/a |
| RF4 | 19.6189 | 24.4051m | n/a |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| **Junction to** | **Ambient** | **Case** | **Foot** |
| CF1 | 4.4335m | 33.1252u | n/a |
| CF2 | 76.3340m | 222.7458u | n/a |
| CF3 | 785.8407m | 1.6142m | n/a |
| CF4 | 5.5215 | 185.4356m | n/a |

**Note**

- n/a indicates not applicable



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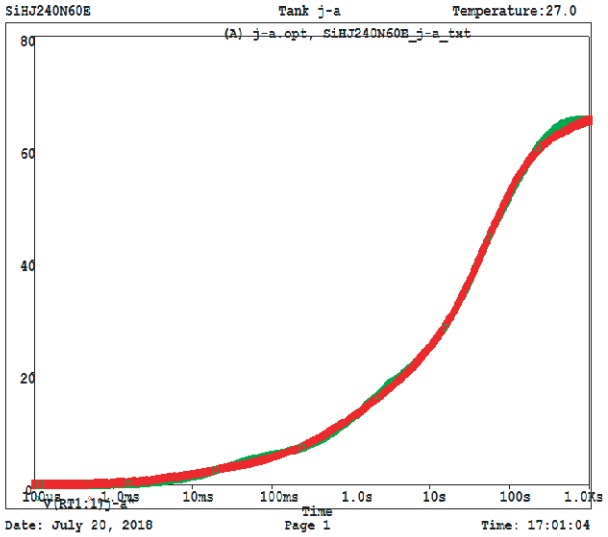


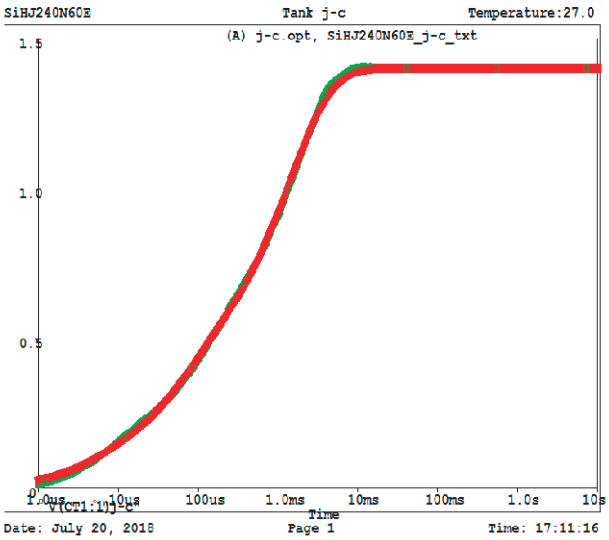


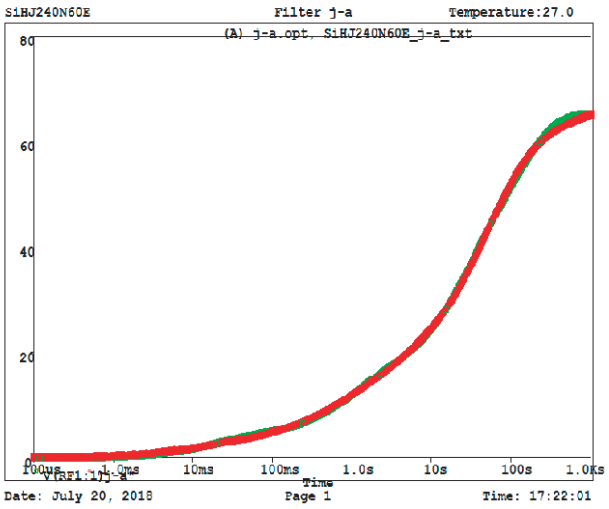


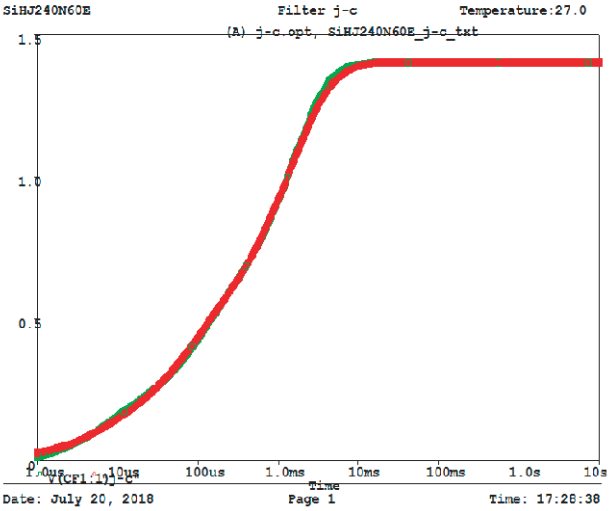




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