

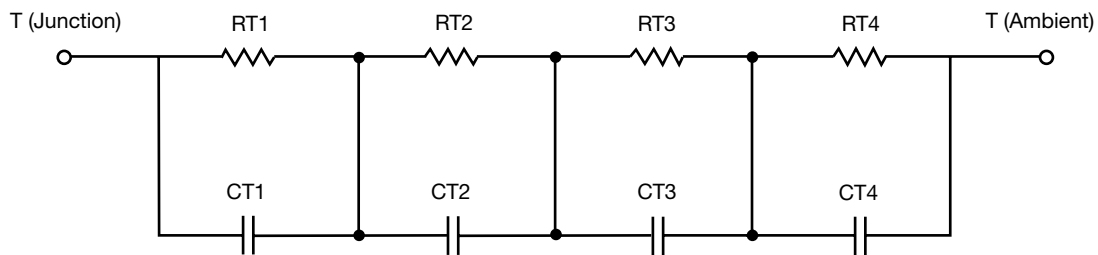
R-C Thermal Model Parameters

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 | 21.9182 | N/A | 17.6010 |
| RT2 | 9.1628 | N/A | 6.0143 |
| RT3 | 22.9659 | N/A | 10.3938 |
| RT4 | 55.9531 | N/A | 6.9909 |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CT1 | 4.7036m | N/A | 3.3764m |
| CT2 | 460.0169u | N/A | 333.5540u |
| CT3 | 38.2393m | N/A | 12.2456m |
| CT4 | 1.5490 | N/A | 201.9479m |

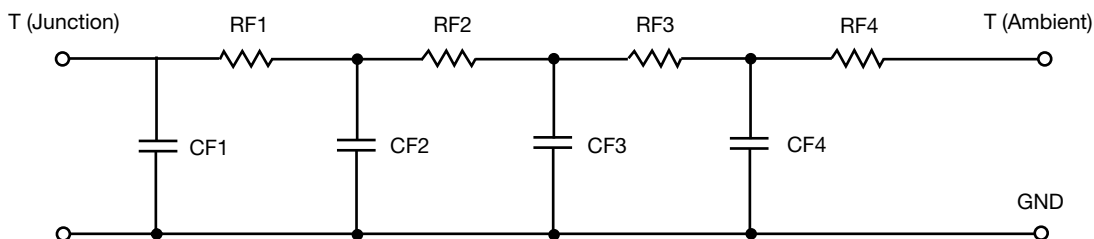
Note

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



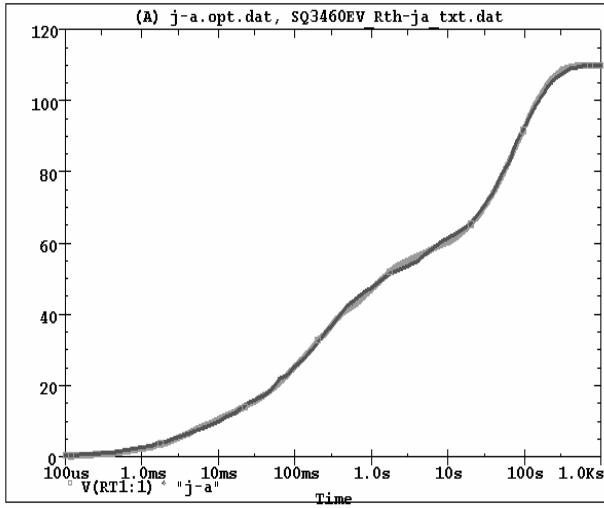
| R-C VALUES FOR FILTER CONFIGURATION | | | |
|--|----------------|-------------|-------------|
| THERMAL RESISTANCE (°C/W) | | | |
| Junction to | Ambient | Case | Foot |
| RF1 | 13.2339 | N/A | 8.6544 |
| RF2 | 27.3289 | N/A | 24.4520 |
| RF3 | 15.8435 | N/A | 4.8373 |
| RF4 | 53.5937 | N/A | 3.0563 |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CF1 | 491.5052u | N/A | 355.3918u |
| CF2 | 5.0623m | N/A | 2.6358m |
| CF3 | 76.7809m | N/A | 68.7880m |
| CF4 | 1.5606 | N/A | 698.4197m |

Note

N/A indicates not applicable

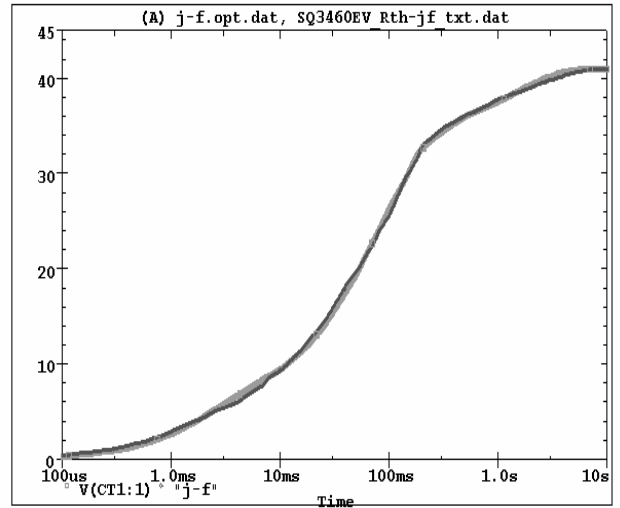


SQ3460EV Tank j-a Temperature: 27.0



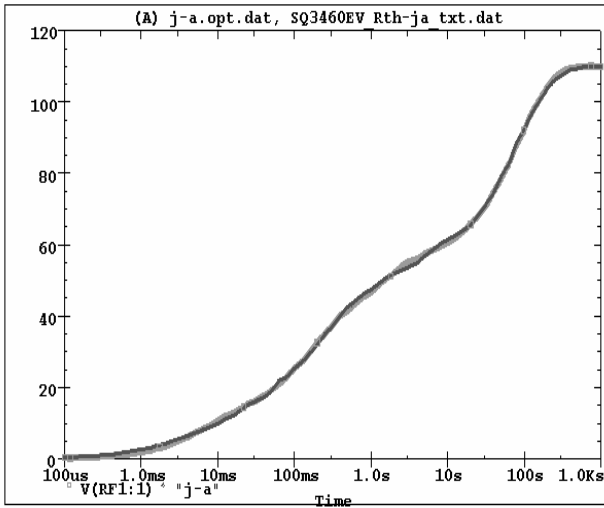
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SQ3460EV Tank j-f Temperature: 27.0



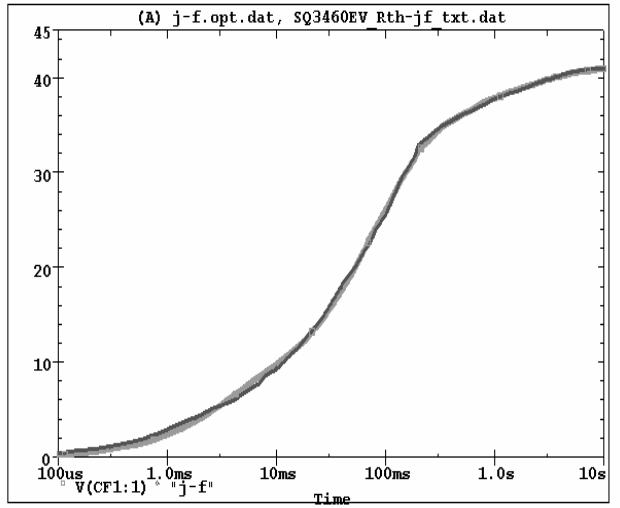
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SQ3460EV Filter j-a Temperature: 27.0



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SQ3460EV Filter j-f Temperature: 27.0



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