

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

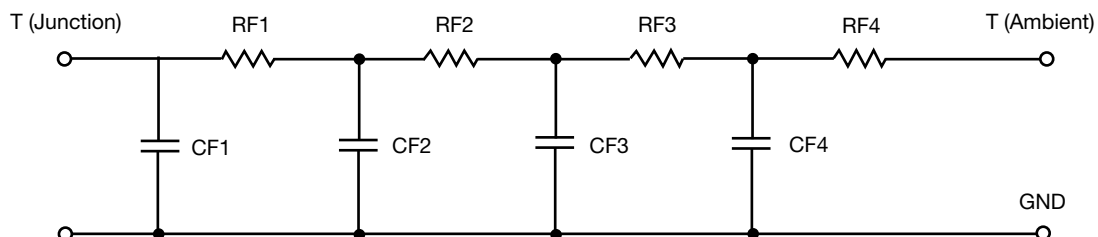


| R-C VALUES FOR TANK CONFIGURATION | | | |
|-----------------------------------|----------|------|-----------|
| THERMAL RESISTANCE (°C/W) | | | |
| Junction to | Ambient | Case | Foot |
| RT1 | 25.5186 | N/A | 13.9678 |
| RT2 | 18.9329 | N/A | 10.7523 |
| RT3 | 10.2161 | N/A | 9.3491 |
| RT4 | 54.9100 | N/A | 3.6489 |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CT1 | 61.7522m | N/A | 102.4517m |
| CT2 | 15.4133m | N/A | 11.1116m |
| CT3 | 3.2722m | N/A | 11.4946m |
| CT4 | 1.1792 | N/A | 2.1096m |

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 | 9.6280 | N/A | 9.9682 |
| RF2 | 26.7245 | N/A | 11.3722 |
| RF3 | 21.3170 | N/A | 6.9864 |
| RF4 | 51.8716 | N/A | 9.5084 |
| THERMAL CAPACITANCE (Joules/°C) | | | |
| Junction to | Ambient | Case | Foot |
| CF1 | 1.5621m | N/A | 1.9164m |
| CF2 | 8.3489m | N/A | 5.0716m |
| CF3 | 60.9434m | N/A | 9.1035m |
| CF4 | 1.1792 | N/A | 167.2022m |

Note

N/A indicates not applicable

