



## R-C Thermal Model Parameters

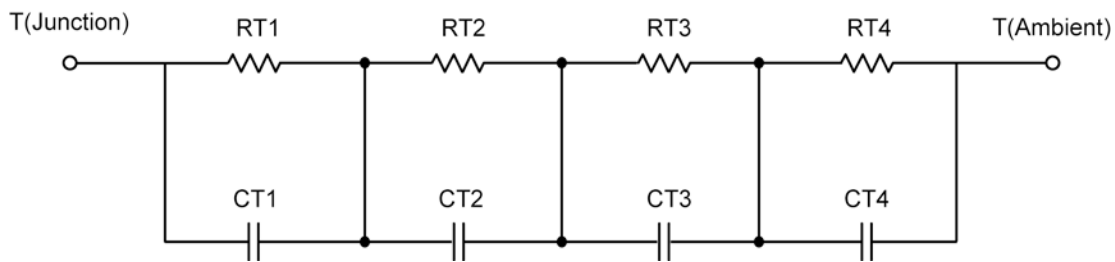
### DESCRIPTION

The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse Transient Thermal Impedance curves for the MOSFET.

R-C values for the electrical circuit in the Foster/Tank and Cauer/Filter configurations are included.

*Note:*  
For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on 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                               | N/A     | 130.9769 m | N/A  |
| RT2                               | N/A     | 114.2253 m | N/A  |
| RT3                               | N/A     | 235.6721 m | N/A  |
| RT4                               | N/A     | 319.1257 m | N/A  |
| Thermal Capacitance (Joules/°C)   |         |            |      |
| Junction to                       | Ambient | Case       | Foot |
| CT1                               | N/A     | 7.2835 m   | N/A  |
| CT2                               | N/A     | 94.8217 m  | N/A  |
| CT3                               | N/A     | 281.3450 m | N/A  |
| CT4                               | N/A     | 74.0590 m  | N/A  |

*This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet 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     | 147.9516 m | N/A  |
| RF2                                 | N/A     | 313.1341 m | N/A  |
| RF3                                 | N/A     | 205.7999 m | N/A  |
| RF4                                 | N/A     | 133.1144 m | N/A  |
| Thermal Capacitance (Joules/°C)     |         |            |      |
| Junction to                         | Ambient | Case       | Foot |
| CF1                                 | N/A     | 6.1558 m   | N/A  |
| CF2                                 | N/A     | 21.1073 m  | N/A  |
| CF3                                 | N/A     | 68.5826 m  | N/A  |
| CF4                                 | N/A     | 111.7531 m | N/A  |

Note: NA indicates not applicable

Reference:

[1] "A Simple Method of Generating Thermal Models for a Power MOSFET" by Wharton McDaniel and Kandarp Pandya. IEEE / SEMITHERM 2002

