

## 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



<b>R-C VALUES FOR TANK CONFIGURATION</b>			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	10.5725	2.2012	N/A
RT2	10.3867	1.1299	N/A
RT3	17.2644	1.5625	N/A
RT4	55.7764	1.1064	N/A
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	7.9507 m	2.1292 m	N/A
CT2	540.9137 u	3.9670 m	N/A
CT3	51.1922 m	294.0004 u	N/A
CT4	1.4858	4.2508 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	12.2111	2.2615	N/A
RF2	14.9938	1.5568	N/A
RF3	14.4561	1.1623	N/A
RF4	52.3390	1.0194	N/A
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	531.6919 u	230.3023 u	N/A
CF2	7.3833 m	795.8627 u	N/A
CF3	107.0630 m	135.4819 u	N/A
CF4	1.5376	1.5246 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

