

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	23.8233	N/A	699.1000 m
RT2	7.3482	N/A	3.6036
RT3	25.6885	N/A	12.0744
RT4	28.1400	N/A	5.6229
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	52.4141 m	N/A	698.7679 u
CT2	6.0208 m	N/A	6.7953 m
CT3	4.3517	N/A	114.3837 m
CT4	1.6141	N/A	23.7765 m

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 ($^{\circ}\text{C}/\text{W}$)			
Junction to	Ambient	Case	Foot
RF1	4.7196	N/A	1.1253
RF2	18.0747	N/A	7.0316
RF3	14.6489	N/A	6.1369
RF4	47.5568	N/A	7.7062
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CF1	2.5399 m	N/A	795.9928 u
CF2	23.4737 m	N/A	5.2004 m
CF3	151.1154 m	N/A	36.9043 m
CF4	1.3725	N/A	136.0152 m

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

