

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	27.8015	N/A	12.7735
RT2	24.7031	N/A	8.8948
RT3	7.9777	N/A	17.6431
RT4	29.5177	N/A	2.6886
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	8.7623 m	N/A	7.7024 m
CT2	164.4202 m	N/A	3.9007 m
CT3	1.4971 m	N/A	18.8631 m
CT4	2.6992	N/A	896.3501 u

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	12.3717	N/A	6.6258
RF2	26.9661	N/A	23.3911
RF3	24.7197	N/A	10.5594
RF4	25.9425	N/A	1.4237
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	1.4269 m	N/A	705.7715 u
CF2	8.3622 m	N/A	2.3888 m
CF3	167.0457 m	N/A	19.0033 m
CF4	2.9547	N/A	767.0814 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

