

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	18.3700	N/A	5.0412
RT2	6.5597	N/A	4.6217
RT3	18.0816	N/A	482.9088 m
RT4	35.6388	N/A	5.8220
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	86.3027 m	N/A	17.9107 m
CT2	23.0335 m	N/A	163.2064 m
CT3	2.1550	N/A	4.9535 m
CT4	3.0729	N/A	352.6703 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 (°C/W)			
Junction to	Ambient	Case	Foot
RF1	6.0264	N/A	1.8131
RF2	19.1477	N/A	6.2051
RF3	21.3201	N/A	7.0589
RF4	32.3275	N/A	899.3765 m
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	13.0130 m	N/A	7.1559 m
CF2	46.5802 m	N/A	12.6441 m
CF3	856.5592 m	N/A	154.0294 m
CF4	1.7078	N/A	2.2187

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

