

R-C Thermal Model Parameters

DESCRIPTION

The parametric values in the R-C thermal model have been derived using curve-fitting techniques. R-C values for the electrical circuit in the Foster/Tank and Cauer/Filter configurations are included. When implemented in P-Spice, these values have matching characteristic curves to the single-pulse transient thermal impedance curves for the MOSFET.

These RC values can be used in the P-SPICE simulation to evaluate the thermal behavior of the MOSFET junction temperature under a defined power profile. These techniques are described in Application Note AN609, "Thermal Simulation of Power MOSFETs on the 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	3.8245	640.8249 m	N/A
RT2	3.0693	1.7141	N/A
RT3	14.1238	720.6751 m	N/A
RT4	48.9824	1.4244	N/A
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	22.2352 m	67.6363 m	N/A
CT2	3.0325 m	81.8977 m	N/A
CT3	102.3331 m	1.1101 m	N/A
CT4	1.2376	28.0503 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 ($^{\circ}\text{C}/\text{W}$)			
Junction to	Ambient	Case	Foot
RF1	5.2807	563.9859 m	N/A
RF2	15.2469	322.2296 m	N/A
RF3	18.0295	2.7153	N/A
RF4	31.4429	898.4845 m	N/A
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CF1	3.8026 m	994.7712 u	N/A
CF2	58.7565 m	1.5144 m	N/A
CF3	743.1440 m	13.7262 m	N/A
CF4	1.0644	138.7369 m	N/A

Note

NA indicates not applicable

