

## 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



<b>R-C VALUES FOR TANK CONFIGURATION</b>			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	20.8369	N/A	5.4283
RT2	6.2505	N/A	8.8890
RT3	16.9980	N/A	5.6926
RT4	40.9146	N/A	4.9901
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	349.7313 m	N/A	137.5043 m
CT2	471.3733 u	N/A	11.6764 m
CT3	20.7614 m	N/A	1.9521 m
CT4	2.6297	N/A	138.3748 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 ( $^{\circ}\text{C}/\text{W}$ )			
Junction to	Ambient	Case	Foot
RF1	6.4674	N/A	5.8106
RF2	17.7225	N/A	6.5174
RF3	22.8037	N/A	7.9891
RF4	38.0064	N/A	4.6829
Thermal Capacitance (Joules/ $^{\circ}\text{C}$ )			
Junction to	Ambient	Case	Foot
CF1	445.4930 u	N/A	132.2512 u
CF2	17.6454 m	N/A	1.5505 m
CF3	244.3055 m	N/A	9.2501 m
CF4	2.3329	N/A	117.6707 m

**Note**

NA indicates not applicable

