

## 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>			
<b>Thermal Resistance (°C/W)</b>			
<b>Junction to</b>	<b>Ambient</b>	<b>Case</b>	<b>Foot</b>
RT1	4.3526	362.3679 u	N/A
RT2	7.8613	504.3467 m	N/A
RT3	12.0154	972.1139 m	N/A
RT4	56.7707	923.1770 m	N/A
<b>Thermal Capacitance (Joules/°C)</b>			
<b>Junction to</b>	<b>Ambient</b>	<b>Case</b>	<b>Foot</b>
CT1	6.5696 m	1.9260 m	N/A
CT2	31.5646 m	787.5516 u	N/A
CT3	118.2264 m	18.2079 m	N/A
CT4	1.2151	9.3126 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**

<b>R-C VALUES FOR FILTER CONFIGURATION</b>			
Thermal Resistance ( $^{\circ}\text{C}/\text{W}$ )			
Junction to	Ambient	Case	Foot
RF1	7.4586	6.0391 m	N/A
RF2	9.9846	670.9463 m	N/A
RF3	10.8213	1.0320	N/A
RF4	52.7355	691.0146 m	N/A
Thermal Capacitance (Joules/ $^{\circ}\text{C}$ )			
Junction to	Ambient	Case	Foot
CF1	5.8233 m	125.4667 u	N/A
CF2	23.7571 m	695.7232 u	N/A
CF3	158.3257 m	6.0783 m	N/A
CF4	1.1324	527.9622 u	N/A

**Note**

NA indicates not applicable

