

## 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.

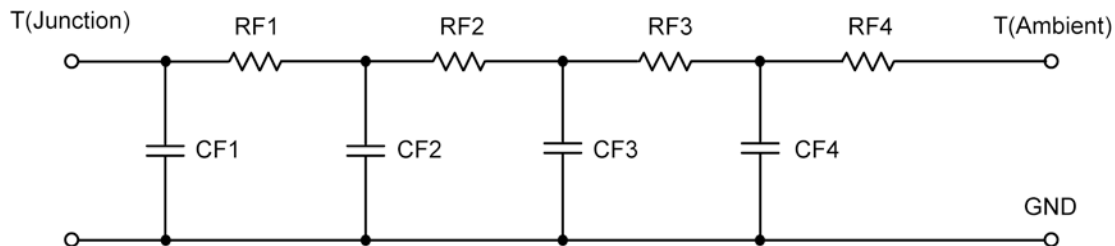
These RC values can be used in the P-SPICE simulation to evaluate the thermal behavior of the MOSFET junction temperature under a defined power profile. These techniques are described in Application Note AN609, "Thermal Simulation of Power MOSFETs on the P-Spice Platform."

### 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	21.7093	N/A	12.5651
RT2	38.9649	N/A	3.6412
RT3	74.1761	N/A	28.1417
RT4	40.1497	N/A	33.6520
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	912.9326 u	N/A	2.3531 m
CT2	6.3002 m	N/A	115.1624 u
CT3	18.5836 m	N/A	8.5129 m
CT4	1.3989	N/A	24.8971 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 ( $^{\circ}\text{C}/\text{W}$ )			
Junction to	Ambient	Case	Foot
RF1	13.0369	N/A	3.4209
RF2	45.7533	N/A	16.7866
RF3	77.5694	N/A	43.1277
RF4	38.6404	N/A	14.6648
Thermal Capacitance (Joules/ $^{\circ}\text{C}$ )			
Junction to	Ambient	Case	Foot
CF1	432.6249 $\mu$	N/A	88.0878 $\mu$
CF2	1.7423 m	N/A	1.2591 m
CF3	12.0840 m	N/A	4.8278 m
CF4	1.4185	N/A	62.2955 m

**Note**

NA indicates not applicable

