

R-C Thermal Model Parameters

DESCRIPTION

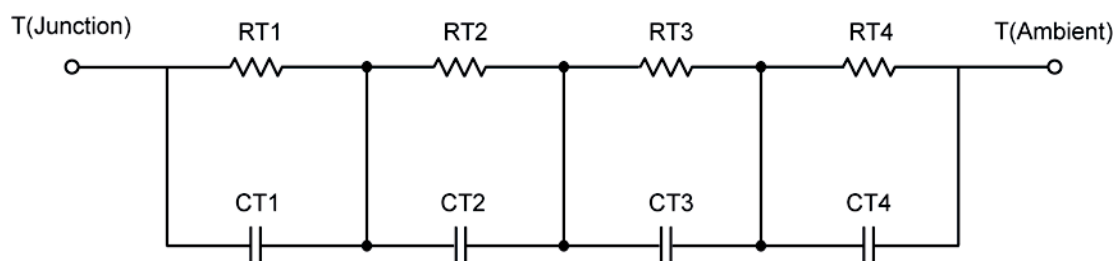
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse 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	20.7292	N/A	23.3961
RT2	11.8457	N/A	5.5170
RT3	30.3153	N/A	1.5526
RT4	57.1098	N/A	9.5343
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	40.3213 m	N/A	972.5905 u
CT2	240.0099 u	N/A	171.7277 u
CT3	1.9082 m	N/A	1.3394
CT4	1.2761	N/A	13.1827 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	11.2778	N/A	9.1707
RF2	31.5863	N/A	18.3070
RF3	21.1256	N/A	10.3585
RF4	56.0103	N/A	2.1638
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CF1	158.9403 u	N/A	162.5999 u
CF2	1.2977 m	N/A	822.9837 u
CF3	33.7013 m	N/A	4.4936 m
CF4	1.2477	N/A	543.2878 m

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

