

R-C Thermal Model Parameters

DESCRIPTION

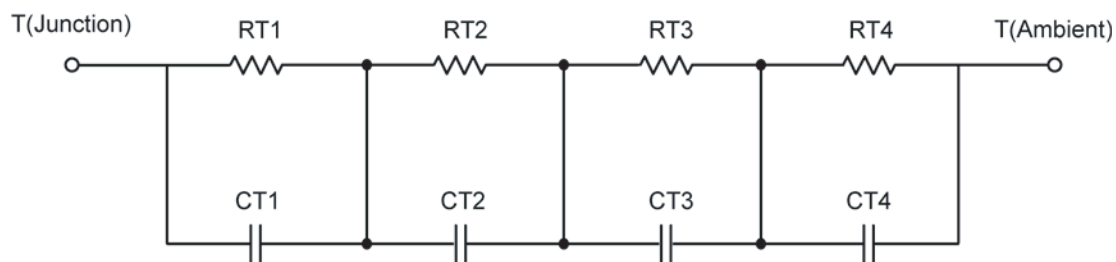
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse 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](#).

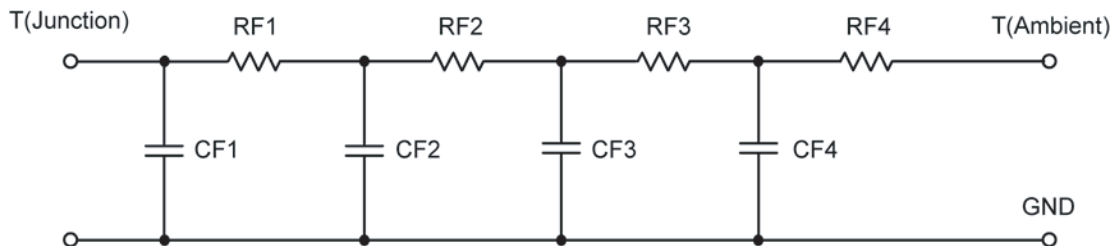
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION

Thermal Resistance ($^{\circ}\text{C}/\text{W}$)			
Junction to	Ambient	Case	Foot
RT1	4.7363	N/A	936.4287 m
RT2	30.5126	N/A	4.0889
RT3	26.4379	N/A	7.7916
RT4	22.9470	N/A	5.2468
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CT1	6.8648 m	N/A	1.7689 m
CT2	38.2608 m	N/A	139.3630 m
CT3	1.7360	N/A	222.9353 m
CT4	3.4174	N/A	7.8535 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 (°C/W)			
Junction to	Ambient	Case	Foot
RF1	3.1977	N/A	3.2821
RF2	32.5591	N/A	4.9830
RF3	28.9522	N/A	6.7463
RF4	20.4107	N/A	2.9144
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	1.0540 m	N/A	2.8814 m
CF2	30.6636 m	N/A	10.5206 m
CF3	891.1179 m	N/A	123.8977 m
CF4	1.9656	N/A	5.2684 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

