

R-C Thermal Model Parameters

DESCRIPTION

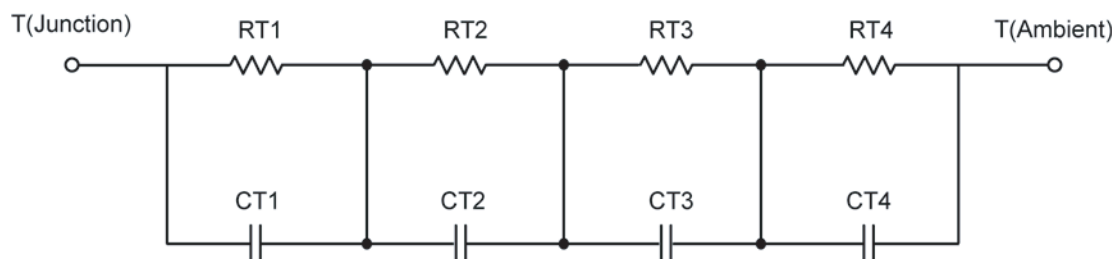
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

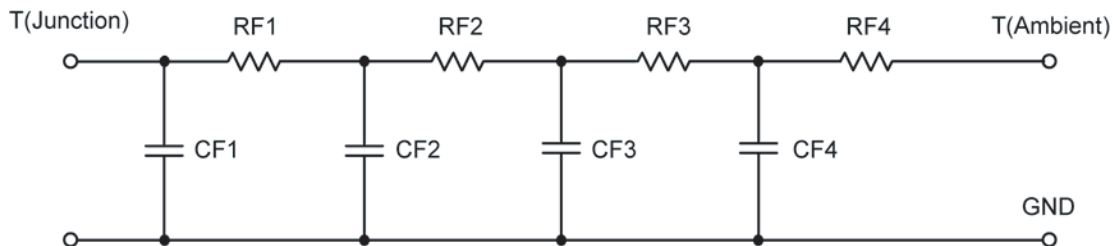
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION

Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	6.4825	N/A	1.1102
RT2	28.7773	N/A	4.7416
RT3	27.8777	N/A	7.6570
RT4	26.9568	N/A	6.4989
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	7.1415 m	N/A	1.4261 m
CT2	54.8961 m	N/A	95.7173 m
CT3	3.4923	N/A	189.0677 m
CT4	2.1934	N/A	6.3227 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	3.4142	N/A	2.9807
RF2	17.7659	N/A	7.0174
RF3	17.8077	N/A	4.9680
RF4	50.9042	N/A	4.9762
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	2.5888 m	N/A	1.6244 m
CF2	25.7333 m	N/A	7.0430 m
CF3	63.4122 m	N/A	95.1579 m
CF4	1.4217	N/A	16.3599 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

