

R-C Thermal Model Parameters

DESCRIPTION

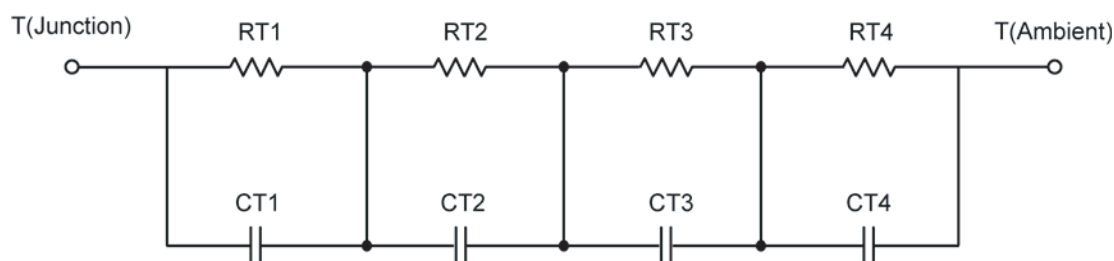
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

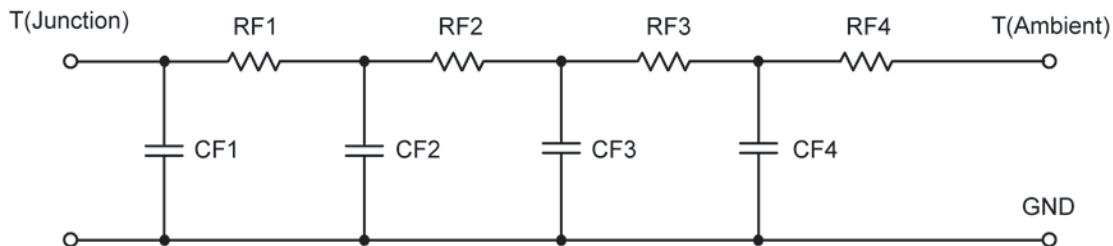
For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	40.0228	N/A	86.6558
RT2	172.7674	N/A	127.6465
RT3	189.8002	N/A	117.9792
RT4	56.6759	N/A	17.4969
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	1.7810	N/A	568.5740 μ
CT2	1.4584 m	N/A	5.1961 m
CT3	6.3595 m	N/A	2.8411 m
CT4	224.6024 μ	N/A	24.0585 μ

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	100.4816	N/A	45.5696
RF2	251.2978	N/A	139.9143
RF3	71.8818	N/A	141.9157
RF4	36.5110	N/A	21.7170
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	227.7360 μ	N/A	111.9800 μ
CF2	1.4169 m	N/A	2.1869 m
CF3	20.1814 m	N/A	395.4347 μ
CF4	2.2768	N/A	40.4951 μ

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

