

R-C Thermal Model Parameters

DESCRIPTION

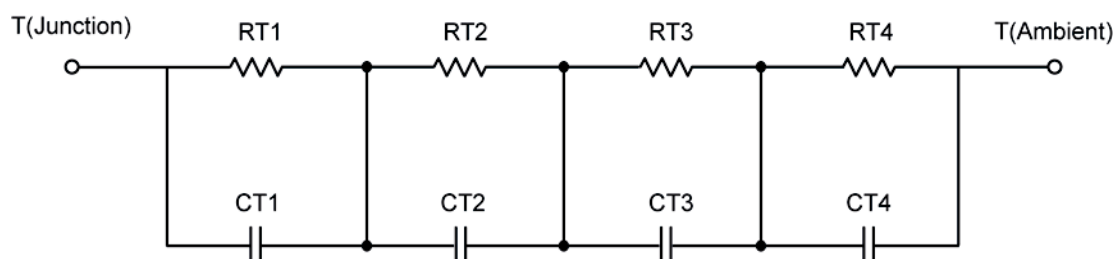
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

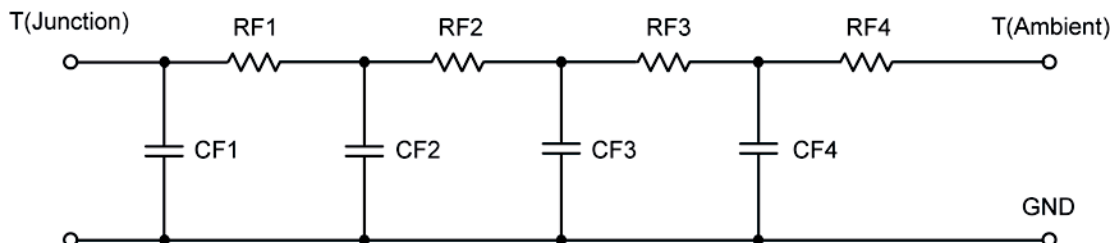
For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	10.2913	N/A	11.8569
RT2	24.3855	N/A	1.5467
RT3	21.6440	N/A	13.3672
RT4	54.1972	N/A	8.1168
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	6.1908 m	N/A	5.8935 m
CT2	94.9300 m	N/A	868.9811 u
CT3	23.9265 m	N/A	50.6851 m
CT4	1.5542	N/A	207.5273 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	7.0272	N/A	2.8948
RF2	19.2083	N/A	15.1042
RF3	30.5929	N/A	9.0359
RF4	52.9680	N/A	7.8293
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	2.9330 m	N/A	1.3771 m
CF2	6.4425 m	N/A	4.4732 m
CF3	34.8211 m	N/A	42.9820 m
CF4	1.4294	N/A	65.0020 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

