

R-C Thermal Model Parameters

DESCRIPTION

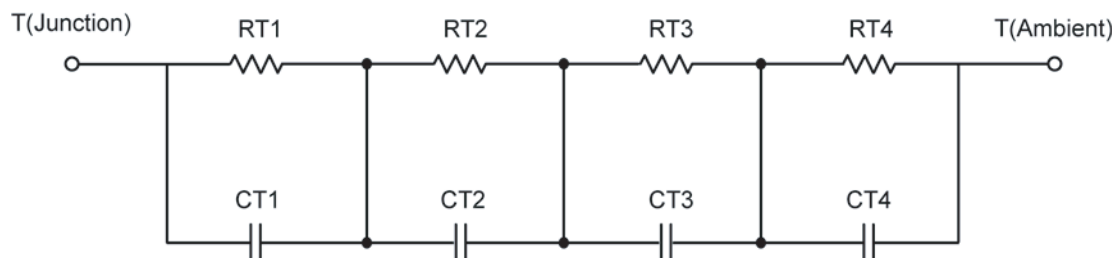
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

R-C values for the electrical circuit in the Foster/Tank configuration are included. The corresponding values for the Cauer/Filter configuration are available upon request.

Note:

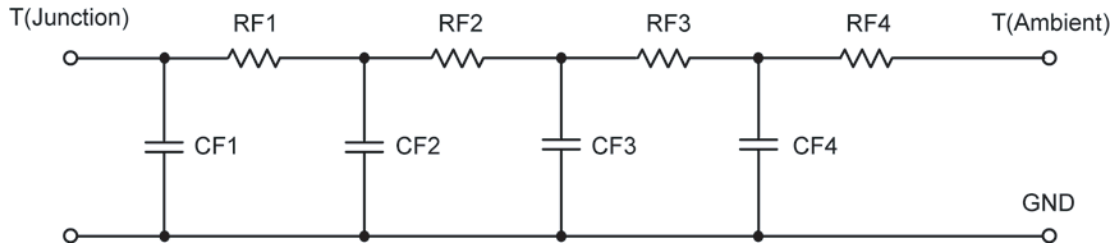
For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	5.4825	N/A	2.7730
RT2	14.0940	N/A	5.6035
RT3	11.8997	N/A	12.5420
RT4	18.5795	N/A	6.9783
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	8.6182 m	N/A	617.0550 μ
CT2	93.6547 m	N/A	18.1606 m
CT3	6.1489	N/A	73.2626 m
CT4	3.2294	N/A	9.1092 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	4.0154	N/A	3.2171
RF2	9.4382	N/A	13.5708
RF3	8.0801	N/A	4.3045
RF4	28.4203	N/A	6.7275
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	5.4161 m	N/A	475.8931 μ
CF2	37.1706 m	N/A	5.3294 m
CF3	176.0921 m	N/A	65.4259 m
CF4	1.9925	N/A	2.3240 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

