

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:

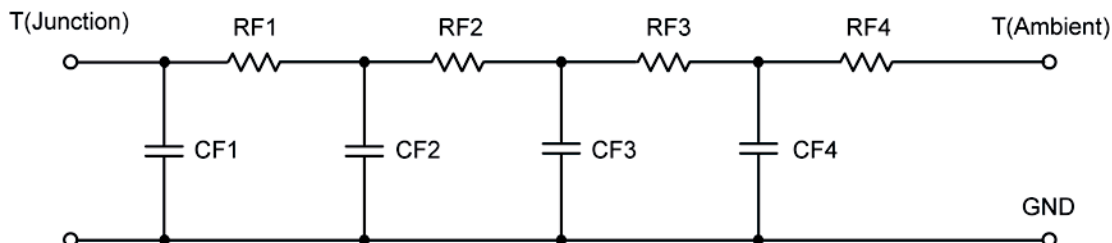
For a detailed explanation of implementing these values in P-SPIICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPIICE Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	31.0829	N/A	531.9000 m
RT2	3.4656	N/A	4.0685
RT3	20.2205	N/A	8.3295
RT4	25.2310	N/A	8.0701
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	387.0355 m	N/A	1.7792 m
CT2	6.6225 m	N/A	13.2059 m
CT3	30.6901 m	N/A	173.7542 m
CT4	4.5429	N/A	18.2511 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 ($^{\circ}\text{C}/\text{W}$)			
Junction to	Ambient	Case	Foot
RF1	11.4701	N/A	1.1453
RF2	19.1685	N/A	10.9244
RF3	30.3075	N/A	5.2964
RF4	19.0539	N/A	3.6339
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CF1	9.4371 m	N/A	2.5171 m
CF2	44.9154 m	N/A	5.3154 m
CF3	405.1807 m	N/A	73.8924 m
CF4	5.7272	N/A	365.1368 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

